IN THE SUPERIOR COURT FOR THE STATE OF ALASKA

THIRD JUDICIAL DISTRICT AT ANCHORAGE

BP PIPELINES (ALASKA) INC., EXXONMOBIL PIPELINE COMPANY, UNOCAL PIPELINE COMPANY, CONOCOPHILLIPS TRANSPORTATION ALASKA, INC. and KOCH ALASKA PIPELINE COMPANY, LLC, Owners, and ALYESKA PIPELINE SERVICE COMPANY, as Agent for the Owners, and	)	
FAIRBANKS NORTH STAR BOROUGH and CITY OF VALDEZ,	)	
Appellants/Cross-Appellants,	)	
v.	)	
STATE OF ALASKA DEPARTMENT OF REVENUE, STATE ASSESSMENT REVIEW BOARD, and NORTH SLOPE BOROUGH,	)	
Appellees.	)	Case No. 3AN-06-8446 CI (Consolidated)

DECISION FOLLOWING TRIAL DE NOVO

2006 Assessed Valuation of the Trans Alaska Pipeline System

TABLE OF CONTENTS

I. PROCEDURAL BACKGROUND

1. This is an appeal of the State Assessment Review Board's ("SARB" or "Board") Decision and the Department of Revenue's ("Department") 2006 assessment of the Trans Alaska Pipeline System ("TAPS") for ad valorem property tax purposes under AS 43.56. SARB assessed the value of TAPS for 2006 at $4.3062718 billion.

2. Pursuant to AS 43.56.130(i), the appeal consisted of a non-jury trial before this Court lasting over five weeks beginning on August 10, 2009. Thousands of pages of exhibits and several depositions were admitted at the trial, together with the testimony of the parties' witnesses. This Court has also reviewed the record and transcript before SARB. Based on that evidence, and upon consideration of the applicable law, this Court is now entering the following findings of fact and conclusions of law.[1]

3. The ad valorem tax scheme for oil and gas property in the State of Alaska provides for all such properties to be centrally assessed by the Department of Revenue annually, based on a lien date of January 1. AS 43.56.010, *et seq.*, provides that the taxpayers and affected local governmental authorities have a right to appeal the Department's assessed valuation to SARB.

4. Both the property owners and the affected municipal governments then have a right to an appeal from SARB in the form of trial de novo before the Superior

[1] This Court is cognizant of Civil Rule 52(a)'s specification that the Court "shall find the facts specially and state separately its conclusions of law thereon." But for ease of comprehension of a decision with this number of issues and level of complexity, this Court has not segregated the conclusions of law, but instead notes that those instances in which this Court is interpreting the law, as opposed to making factual findings, should be clear from the context of this decision. See Civil Rules 92, 94.

Court under AS 43.56.130. Pursuant to that law, the Owners,[2] the Fairbanks North Star Borough, and the City of Valdez appealed SARB's 2006 Decision to this Court. The Department, SARB, and the North Slope Borough are Appellees in the appeal of the 2006 Decision. The appealing Municipalities, the Fairbanks North Star Borough and the City of Valdez, have asserted that TAPS' 2006 assessed value should be $11.570 billion. The Owners have asserted that TAPS' 2006 assessed value should be $850 million.

5. Prior to the de novo proceedings before this Court, the Municipalities had the right to participate and appeal the decisions of the Department and SARB, but had no right to discovery or to gather any proprietary information necessary or helpful in advancing an independent value of TAPS or gaining a full understanding of the basis for the Owners' positions or the Department's assessment. Unlike the Department, the Municipalities do not have a statutory right to subpoena information at the administrative level, and, with the partial exception of the North Slope Borough under a special arrangement with the Department, do not have the right to review information provided by the Owners to the Department that was maintained as taxpayer confidential information. [See Ex. MUN-920; Ex. MUN-924; Tr.[3] 625-27 (Hoffbeck)]

6. Evidence presented to this Court demonstrates that during the administrative proceedings, the Department repeatedly requested information from the Owners that was not provided. [Ex. SOA-16; Tr. 649-52 (Hoffbeck); R. 0895-0903]

[2] The owners of TAPS are BP Pipelines (Alaska) Inc., ConocoPhillips Transportation Alaska, Inc., ExxonMobil Pipeline Company, Koch Alaska Pipeline Company, and Unocal Pipeline Company (hereinafter "Owners").

[3] All references herein to Tr. are to the trial transcript unless otherwise provided.

The Municipalities attempted to gain access to the information that was provided to the Department, but the Owners were unwilling to release much of that information. [Ex. MUN-1007; Tr. 625-27, 681-84 (Hoffbeck)][4]

7. Significant motion practice respecting discovery in the case has taken place. This Court initially sought to restrict the scope of discovery and thereby limit the scope of the trial de novo. However, the Supreme Court summarily reversed that determination in an order entered in August 2008. Order on Petition for Review, No. S-13150 (Alaska Aug. 27, 2008). Since that time, considerably more discovery has been provided.

8. At the trial de novo, the Municipalities demonstrated that their lack of discovery rights and the Owners' unwillingness to provide proprietary information limited the Municipalities' ability to advance their positions to the Department and SARB. [Tr. 649-51 (Hoffbeck)] This limitation has been largely remedied by the discovery rights afforded the Municipalities through the trial de novo before this Court.

9. The Department interprets AS 43.56.130(f) and (i) to require that the introduction of new evidence be strictly limited at the trial de novo. Subsection (f) provides: "The only grounds for adjustment of assessed value is proof of unequal, excessive, or improper valuation or valuation not determined in accordance with the

[4] E-mails introduced at the trial de novo sent between the Owners and their experts demonstrate the Owners' efforts to limit information to the Department and the flow of that information to the Municipalities. [Ex. MUN-1401, MUN-1259] In one e-mail, counsel for the Owners suggests they should not provide detail requested by the Department with regard to the 2006 cost study prepared by Mustang Engineering, Inc. ("Mustang") because to provide the detail requested "would be all downside for us, there just does not appear to be any benefit—[Mr. Hoffbeck – the State Assessor] will not be happy but at least he won't be able to gather more negative ammunition." [Ex. MUN-1006 at 2; see also Tr. 676-77] In another e-mail, the lead appraisal witness for the Owners suggested that a presentation to Mr. Hoffbeck be designated as "taxpayer confidential" or be limited so as to avoid its review by the Municipalities. [Ex. MUN-1401; see, e.g., R. 0920-0922 (Stancil's presentation marked "Taxpayer Confidential")]

standards set out in this chapter, based on facts stated in a written appeal timely filed or proved at the hearing." Subsection (i) provides: "An owner or municipality may appeal to the superior court for, and is entitled to, trial de novo of the board's action." No prior case law has addressed the meaning of "trial de novo of the board's action" as it applies to AS 43.56 property. The Department argues that these two statutory provisions should be read together to mean that the only evidence that can be considered at the trial de novo is evidence that was introduced at the SARB hearing.[5] And the Department asserts that under that statutory scheme, "it could be perceived as inconsistent with the duties assigned this Court to permit the wholesale inclusion of, and rely upon, evidence that was not known or knowable to either the assessor or the SARB as of 2006."[6] Consistent with this procedural position, the Department has objected to the introduction of most of the evidence that was presented for the first time by the Municipalities and the Owners at the trial de novo before this Court. [See, e.g., Tr. 5339 (Counsel for the State, Mr. Johnson)] Also consistent with this procedural position, the Department's witnesses at the trial de novo had not reviewed or taken into consideration much of the new evidence presented by the Municipalities and the Owners to this Court and did not present new opinions with respect to that evidence.

10. This Court admitted the new evidence over the Department's objection and accorded the parties a lengthy trial, allowing considerable testimony and documentary evidence in augmentation of the record created before SARB. See Alaska R. App. P. 609(b). While the 2006 hearing before SARB lasted a few days, trial de novo before this Court lasted over five weeks. Had the Department's procedural position

[5] See Department's Proposed Conclusions of Law and Findings of Fact at 10-11.

[6] Id. at 12.

been adopted by this Court, it would have severely limited the Municipalities' opportunity to ever fully and fairly litigate the value of TAPS. If this Court had adopted the Department's procedural position, it would mean that the only proprietary evidence that would be considered in assessing TAPS would be evidence the Owners had selected to advance into the public record and any evidence the Department gathered from the Owners had the Department chosen to exercise its subpoena power. In other words, the Municipalities would be the only party before this Court without any opportunity at any point in the process to obtain and advance evidence held proprietary by the Owners. Particularly since the Department has elected not to use its subpoena power to gather proprietary information from the Owners, the Department's effort to restrict the scope of the trial de novo is rejected. [Tr. 1464-65 (Greeley); id. at 422-23 (Hoffbeck)] And, given the existence of the Department's subpoena power, the scope of what was "knowable" to the Department in 2006 could reasonably extend to all of the documentation from that time period that was not actually provided to the Department but was later obtained by the Municipalities after they undertook discovery during the course of this appeal. Consistent with this approach, when a party has exercised its right to a de novo trial under AS 43.56.130(i), this Court interprets the last phrase "proved at the hearing" of subsection (f) to refer to proved at the trial de novo, so as to permit a party to introduce new evidence at the trial de novo before the Superior Court and not be restricted to only that evidence introduced before SARB. This Court's consideration of additional evidence is also consistent with the Alaska Supreme Court's August 2008 Order in this case permitting the Municipalities (and other litigants)

discovery and, at least implicitly, the opportunity to introduce evidence at trial based upon that discovery.

11. For the foregoing reasons, all evidence in the SARB administrative record except as specifically ruled otherwise, as well as evidence admitted at the trial de novo, documentary and testimonial, has been considered by this Court in reaching the factual findings and legal conclusions included in this Decision. See Order (July 26, 2009).

12. This Court has issued numerous preliminary orders in these proceedings, including the standards to be applied for assessment purposes, the presumption of correctness to be applied to the assessor's choice and application of a particular assessment methodology, the definition of "proven reserves," the Board's adjustment of the assessment by inclusion of ad valorem taxes and interest during construction as elements of value of the TAPS, and the burden of proof to be applied in this proceeding.

II. LEGAL STANDARDS

A. Taxation Authority

13. The authority for taxation of the subject property and the applicable legal standards and process to be applied are set out in the Alaska Constitution, statutes, and regulations.

14. The Alaska Legislature has plenary constitutional authority to prescribe property assessment standards by statute. Alaska Const. art. IX, § 3; AS 43.56.060(a); Fairbanks N. Star Borough v. Golden Heart Utilis., Inc., 13 P.3d 263, 267 (Alaska 2000). [R. 666-680]

15. AS 43.56.010, *et seq*. became law in 1973. These statutes provide that property used for oil and gas exploration, production, and pipeline transportation is not

assessed by municipalities under AS 29.45;[7] instead, valuation of these types of properties is centrally assessed by the State under AS 43.56. The Alaska Legislature created this statutory scheme in order to provide a uniform system of assessment of oil and gas pipeline property throughout Alaska.[8]

16. AS 29.45.080(b) provides that "[a] municipality may levy and collect a tax on the full and true value of that portion of taxable property taxable under AS 43.56 as valued by the Department of Revenue … ."

17. The ad valorem assessment process begins each year with the property owner filing a rendition with the Department identifying all taxable property. [Tr. 302 (Hoffbeck)] In 2006, the TAPS Owners filed their rendition on February 15, 2006. [R. 0320-0370]

18. The first clause of AS 43.56.060(e)(2) is the primary statutory provision at issue in this litigation. That clause provides:

> The full and true value of taxable property used or committed by contract or other agreement for pipeline transportation of gas or unrefined oil or in the operation or maintenance of facilities for the pipeline transportation of gas or unrefined oil is: …
>
> (2) determined on each January 1 thereafter with due regard to the economic value of the property based on the estimated life of the proven reserves of gas or unrefined oil then technically, economically, and legally deliverable into the transportation facility[.]

The implementing regulation for this statute provides:

---

[7] Given that the Municipalities do not assess pipeline transportation property, the Owners' assertion that an assessment that deviates from market value would violate AS 29.45.110(a) is without merit. See TAPS Owners' Proposed Conclusions of Law at 30.

[8] House Fin. Comm., October 22, 1973 at 50, 54; House Fin. Comm., October 24, 1973 at 76; Senate Journal, November 3, 1973 at 81-82.

> [T]he full and true value of pipeline property in operation is its economic value based upon the estimated life of proven reserves of the gas or oil then technically, economically and legally deliverable into the transportation facility. Economic value is determined by the use of standard appraisal methods such as replacement cost less depreciation, capitalization of estimated future net income, analysis of sales, or other acceptable methods. The valuation may include any item contributing to value including capitalized interest.

15 AAC 56.110(c).

19. AS 43.56.060(e)(2) applies to property used for or in the operation or maintenance of the pipeline transportation of oil. There has been no claim or appeal point raised that the property subject to taxation in the assessment under review is not taxable under AS 43.56.060(e)(2). Accordingly, this Court finds that all property included in the 2006 TAPS assessment is property used or committed for pipeline transportation or in the operation or maintenance of facilities for the pipeline transportation of oil from the Alaska North Slope ("ANS") to Valdez and beyond and is, therefore, taxable under AS 43.56.060(e)(2) and AS 29.45.080.

B. Standard of Review and Burden of Proof

20. The burden of proof and standard of review under AS 43.56 are legal issues of first impression. This Court has previously determined that the appellants bear the burden of proof to prove by a preponderance of the evidence that an adjustment from SARB's assessed value is warranted, pursuant to the standard in AS 43.56.130(f): "The only grounds for adjustment of assessed value is proof of unequal, excessive, or improper valuation or valuation not determined in accordance with the standards set out in this chapter." See Orders (Nov. 6, 2007 and July 26, 2009).[9]

[9] In addition, a party could also present a constitutional challenge to an administrative determination, which is also addressed herein.

21. The Alaska Supreme Court has accorded broad discretion to taxing authorities in determining the valuation method. See Bullock v. State, 19 P.3d 1209, 1214 (Alaska 2001); Golden Heart Utils., 13 P.3d at 268; Cool Homes, Inc. v. Fairbanks N. Star Borough, 860 P.2d 1248, 1262 (Alaska 1993); N. Star Alaska Hous. Corp. v. Fairbanks Borough Bd. of Equalization, 778 P.2d 1140, 1143-44 (Alaska 1989); Twentieth Century Inv. v. City of Juneau, 359 P.2d 783, 788 (Alaska 1961).

22. Accordingly, this Court accords deference to the Department and SARB with respect to the premise of value and the selection of the appropriate methodology to apply to assess TAPS, particularly in light of the Department's and SARB's expertise in appraising oil and gas property. See Order (July 26, 2009). In Bullock, 19 P.3d at 1214 (citations omitted), the Alaska Supreme Court recognized that AS 43.56.010, *et seq.* evinces a legislative intent that the Department "utilize its expertise to decide how to determine" the value of AS 43.56 property.

23. The appellants' burden before this Court is to prove that the premise of value or the chosen valuation approach employed by the Department and SARB was based on a fundamentally wrong principle of valuation. See N. Star Hous. Corp., 778 P.2d at 1144 n.7; see also Order (July 26, 2009).

24. Assuming SARB did not adopt a fundamentally wrong principle of valuation, this Court has held that "with respect to the application of the methodology and any issues that were not in front of the Board, the parties will be permitted to bring forward relevant new evidence and seek adjustment of the 2006 TAPS value under a preponderance of the evidence standard based on a showing that SARB's decision

resulted in an unequal, excessive, or improper valuation. With respect to these issues, this Court may engage in original fact finding." See Order at 4 (July 26, 2009).

25. In evaluating the evidence, this Court has considered Civil Pattern Jury Instruction 02.23: "The evidence should be evaluated not only by its own intrinsic weight but also according to the evidence which is in the power of one party to produce and of the other party to contradict. If weaker and less satisfactory evidence is offered when it appears that stronger and more satisfactory evidence was within the power of one party to produce, the evidence should be viewed with caution." See Order Re Summary Judgment Motions at 3-5 (Sept. 24, 2007).

C. History of Department of Revenue/SARB Consideration of TAPS.

26. SARB is a five-member board which has as its sole purpose hearing appeals from assessed value determinations made under AS 43.56 by the Alaska Petroleum Property Assessor. AS 43.56.040. Each member of SARB is appointed by the Governor, confirmed by the Legislature, and must be knowledgeable of assessment procedures. Id.

27. Steve Van Sant was the Chair of the Board in 2001, when the first TAPS assessed value appeal was heard, and continued in the role through the 2008 SARB appeal. Mr. Van Sant is considered to be the "preeminent assessor in the state" and has over 30 years of experience in the assessment profession. [Tr. 311 (Hoffbeck)] In 2006, other members of SARB included (1) Rick Stovarsky, an appraiser form Fairbanks with 20 years experience in fee appraisals [Id. at 313]; (2) Alan Black, an assessor in the Mat-Su Borough with 20 years experience assessing properties in Wyoming, including oil and gas property [Id. at 314]; (3) Mickey Keller, a retired

assessor from Anchorage who had worked her entire career in the assessment field [Id.]; and (4) Mike Salazar, a machinery and equipment appraiser from Ketchikan. [Id. at 315]

28. From approximately 1977 until 1980, TAPS' value for ad valorem taxation purposes was determined using a cost approach. For several years thereafter, both cost and income approaches were considered. [Tr. 910, 919-21 (Hoffbeck)] During that same time, the State and the Owners were in litigation and negotiations over the tariff rate for TAPS. The TAPS Settlement Agreement resolved that dispute, established a TAPS Settlement Methodology ("TSM") which was approved by FERC in October 1985. [Ex. MUN-3 at 3]

29. Thereafter, beginning in 1986, and continuing through 2001, TAPS was valued each year using primarily the net present value of the tariff income stream for the income approach methodology, with some consideration of the trended original cost minus depreciation for the cost approach methodology. [Tr. 288-89, 337-38, 919-24 (Hoffbeck)]

30. Beginning in approximately 1986, the Department began using the TSM-based Horst Model to determine the projected income stream. From 1986 to 2000, the assessed value of TAPS decreased from $7.8 billion in 1986, to $3.45 billion in 1996, to $2.892 billion in 2000. [Ex. SOA-3 at 13]

31. In 1990, a Department hearing officer issued a finding (possibly comparable to an ICD) affirming the applicability of the income methodology under the circumstances then in existence. [Tr. 295 (Hoffbeck)] But there is no record that the 1990 finding was appealed to SARB or ever relied upon in any further proceedings.

32. A February 11, 1977 (pre-completion of TAPS) Department report on taxation in Alaska, developed by the Department of Revenue at the direction of then-Governor Jay Hammond for the purpose of interpreting the recently promulgated oil tax legislation, including the then-current version of AS 43.56, suggested both a tariff based income approach and a replacement cost analysis to value the pipeline at that time. [Tr. 291-293 (Hoffbeck); Ex. SOA-11 at 49-52] But that same report also noted that "the complex and confusing pipeline valuation portion of the property tax statute has led to litigations and uncertainty in the way that operating pipelines will be valued." [Ex. SOA-11 at 237] In 1977, TAPS had not yet been at all depreciated, such that a tariff-based income approach would then have been based on the full original cost of TAPS. This is unlike the situation in 2006 in which there has been accelerated deprecation of TAPS for ratemaking purposes for many years.

33. No appeal of the TAPS valuation was made prior to 2001 "because the TAPS assessed valuation was set in negotiated settlements between the [Department] and owners of the TAPS with little, if any, participation by the Municipalities." [R. 0004]

34. In 2001, the Department valued TAPS at $2.75 billion.

35. As SARB stated in its 2009 Certificate of Determination: "Because there had never been a replacement cost study for the TAPS, the 2001 cost value estimates had to be calculated based on the original cost of the TAPS. Having to adjust these original costs forward so many years made the valuations based on the original costs a very poor indicator of the 2001 value of the TAPS." [Ex. Mun-29 at 6; Ex. SOA-37 at 6]

36. In 2001, SARB concluded that, based upon the evidence then available, the Municipalities had supported an increase from the Department's value of $2.75 billion to $3.017 billion. [Ex. MUN-29 at 7]

37. Randy Hoffbeck was appointed the Department's Petroleum Property Assessor in 2001; 2002 was the first tax year he administered the assessment of AS 43.56 properties. [Tr. 278, 288 (Hoffbeck)] For assessment years 2002 through 2004, the Owners and three affected municipalities agreed not to challenge a TAPS valuation at or less than $3.017 billion. The agreement did not require or identify any specific methodology as a basis for valuation. [Id. at 297-98; Ex. SOA-13] The letter of agreement was signed by officers of BP Exploration (Alaska) Inc. and Phillips Alaska Inc. – not by the TAPS Owners. [Ex. SOA-13; Tr. at 298-300] As Assessor, Mr. Hoffbeck set the assessed value of TAPS each year from 2002 to 2004 at $3.017 billion, after calculating tariff-based income and cost approaches to value and concluding that the stipulated value fell within the range of his calculations, based on the information then known to the Department. [Tr. at 301-02]

38. At the trial de novo, Mr. Hoffbeck testified to his training and experience as an assessor that began in 1982. [Tr. 395-99, 402-08 (Hoffbeck); see also Ex. SOA-3 at 146] He testified that he had prepared assessments of tens of thousands of properties during his career as an assessor. [Tr. 404] He was qualified as an expert in assessment and appraisal practices and the application of those practices to AS 43.56 properties. [Id. at 407-08]

39. For the 2005 tax year, the Department received and relied upon replacement cost estimates prepared by the Owners and Municipalities. [R. 0007; Tr.

341-43, 921-22 (Hoffbeck)] The Owners' estimate was prepared by Mustang. The Municipalities' estimate for that year was prepared by R.W. Beck. [R. 2480-2525]

40. Mustang's 2005 cost study was provided to R.W. Beck after December 21, 2004. [Tr. 627 (Hoffbeck)] A meeting between the Department, Mustang, and R.W. Beck representatives, as well as the Owners' and NSB's representatives, occurred on January 20, 2005, where the Mustang study was discussed. [Ex. MUN-918; Tr. 628 (Hoffbeck)] The Department reviewed and compared the Mustang and R.W. Beck studies, and accorded more weight to the Mustang study based upon its determination that the Mustang study was more rigorous and because R.W. Beck had primarily relied on the Mustang study. [Tr. 433 (Hoffbeck)]

41. Because the North Slope Borough has had a memorandum of understanding with the Department under AS 43.56.060(g), the Owners and the Department allowed its attorneys and representatives to see the details of the Mustang and R.W. Beck studies and participate in the reconciliation discussions between Mustang and R.W. Beck, while the other municipalities did not have that opportunity. [Tr. 660-61, 682-83 (Hoffbeck)] Mr. Hoffbeck acknowledged that both the FNSB and Valdez "did want more information" and sought it through requests and at meetings with the Department. [Id. at 681] They requested access to the same level of detail of the 2005 Mustang study as the North Slope Borough, but their efforts ultimately proved unsuccessful at the administrative level. [Id. at 680-83] Consequently, until discovery was granted in these Superior Court proceedings, details of the original Mustang 2005 and 2006 Revision 0 studies that had been provided to the Department and North Slope Borough had not been made available to the Appealing Municipalities.

42. In 2005, the Department considered the tariff income, integrated income, sales comparison (including partial interest sales and stock and debt) and replacement cost approaches in determining the full and true value of TAPS. [R. 2427; Ex. SOA-50; Ex. SOA-51; Ex. SOA-3] It concluded that TAPS is a special-purpose property. [Ex. SOA-50 at 3; Ex. SOA-3 at 14] It also concluded that the cost approach captured the full and true value of TAPS, while the tariff income stream did not do so. [Ex. SOA-50 at 3; Ex. SOA-3 at 41-42] The Department's Informal Conference Decision No. 05-56-12, concluded that "[b]ecause current reliable cost information is available for this year's assessment, the [replacement cost new less depreciation or "RCNLD"] method provides a more reliable indicator of the total value of all taxable interests in TAPS than the sales comparison or income approach." [Ex. SOA-50 at 4] The Department determined that the assessed value of TAPS in 2005 was $3.0 billion. [Ex. SOA-50]

43. Both the Owners and the Municipalities appealed the Department's 2005 decision to SARB. [R. 2427] After a three-day hearing, the Board agreed with the Department that it would be improper to give significant weight to the income approach because it was an unreliable indication of value resulting from insufficient or unreliable information. [Id. at 2422-2442]

44. SARB concluded in 2005 that, based on the evidence and arguments presented, neither the Owners nor the Municipalities had met their burden of proving that the $3 billion assessed value for the TAPS was "unequal, excessive, improper or otherwise contrary to the standards set out in AS 43.56," even though the Board found that it was "at the low end of an acceptable value range." [R. 2441]

45. Both the Owners and the Municipalities appealed the 2005 SARB Decision to the Superior Court. [Ex. SOA-14] However, the appeals were not litigated. By stipulation of the parties, the Court ordered dismissal of the appeals from the 2005 SARB Decision. [Id.]

46. For the 2006 assessment, the Department's Assessor Mr. Hoffbeck considered two income approaches (tariff and integrated), the cost approach, and sales comparison approaches (comparable property sales, partial interest sales, stock and debt, and market-to-book ratio) before concluding that the cost approach provided the most reliable indicator of value of TAPS. [R. 0377-0379; Tr. 413-14 (Hoffbeck)] As a starting point for the 2006 Replacement Cost New ("RCN") analysis, the Department utilized its 2005 RCN, then adjusted it using an inflation index. [Tr. 438-40 (Hoffbeck)] After considering all of the approaches, the Department ultimately relied exclusively on the cost approach to determine the assessed value of the TAPS for 2006 at $3.641 billion. [R. 0375-0388]

47. In 2006, Mr. Hoffbeck used a cost approach to value all pipelines subject to AS 43.56.060(e)(2). [Tr. 1033 (Hoffbeck)] As such, no disparity or inequality in valuation methodology for AS 43.56 pipelines existed. There is no basis in the record to support a claim that the 2006 TAPS' assessment violates the equal protection clause under either the state or federal Constitution, or is otherwise impermissibly discriminatory. In this regard, the State's current petroleum property assessor, James Greeley Jr., testified at the trial de novo that if the original cost of TAPS were trended forward using the same trended original cost approach that is used to assess all other

Alaska pipelines, the assessed value of TAPS in 2006 would have been $23.3 billion. [Ex. MUN-52 at 64]

48. In 2006, Mr. Hoffbeck determined the assessed value of TAPS within the limited period of time required by AS 43.56 as part of a mass appraisal process. [Tr. 457-59 (Hoffbeck); id. at 1087-89 (Goodwin)] Mass appraisal is "the process of valuing a universe of properties as of a given date using standard methodology, employing common data, and allowing for statistical testing." [2009 USPAP at U-4] In this case, the universe of properties consists of all pipelines in Alaska assessed under AS 43.56.060(e)(2), as well as other AS 43.56 production and exploration property, constituting over 700 accounts and 130 different taxpayers. [Tr. 359, 458-59; (Hoffbeck)] The approach taken by Mr. Hoffbeck was wholly consistent with applicable Uniform Standards of Professional Appraisal ("USPAP") provisions, specifically USPAP Standard 6 applicable to mass appraisals and USPAP Advisory Opinion 32. [Tr. 882-83 (Hoffbeck); Ex. SOA-6 at 8-9; USPAP Advisory Opinion 32 at A-112]

49. The parties appealed the Department's 2006 determination to SARB. A three-day hearing was held before SARB in May 2006. [R. 0001-30] SARB determined that reliance on the RCNLD methodology was proper, but held that the Department should not have reduced the RCN by capitalized interest and ad valorem taxes, since those indirect costs are normally included in a RCN and there was no jurisdictional exception that mandated those deductions. SARB also concluded that a program manager profit should have been included in the RCN. [Id. at 20-21]

50. In its 2006 Decision, SARB disagreed with the Owners' experts that asserted TAPS should be valued based on its tariff income stream. SARB concluded

that those opinions were based on the erroneous assumption that TAPS was built for its tariff income. [R. 0023] In this regard, SARB held:

> The market in the theoretical sale of TAPS that would include just the buyers who were interested in TAPS only for the future tariff income stream, would be a market that did not include the owners of most of the Alaska North Slope oil reserves. The Board believes that the owners of the Alaska North Slope oil reserves would replace the TAPS if necessary to transport their oil to market. The alignment of interests between ownership of Alaska North Slope oil reserves and the ownership of the TAPS further decreases the alignment between the value [of] the TAPS tariff income and the TAPS' economic value. A tariff income stream valuation envisions a third party buyer purchasing all of the TAPS and none of the Alaska North Slope oil reserves. The evidence does not indicate that the Owners would be willing to sell their interests in the TAPS to a third party with no interest in Alaska North Slope oil for the value of the tariff income stream.

[Id.]

51. SARB's 2006 Decision increased the assessed value from the $3.641 billion set by the Department to $4.3062718 billion. [R. 0030] The Owners, as well as the Fairbanks North Star Borough and City of Valdez all appealed that determination to this Court, which is the subject of this decision.

52. In 2007, James Greeley became the State's Petroleum Property Assessor. [Tr. 1380] At the trial de novo before this Court on the 2006 tax year, Mr. Greeley was qualified as an expert in assessment and appraisal practices and the application of those practices to AS 43.56 property. [Id. at 1403]

53. In its 2007 Decision, the SARB reaffirmed its 2005 and 2006 conclusions, based upon its members' combined training and experience as appraisers and assessors, that the term "economic value" in AS 43.56.060(e)(2) "means more than the value obtained using a simple willing buyer, willing seller, open market model." [Ex. SOA-35 at 14] SARB reasoned:

> Often there is no open market for oil and gas transportation pipelines in production as stand alone properties. Often there is no willing buyer or a willing seller for an Alaska pipeline at [a] price that would reflect the pipeline's value. Attempts to create a model based on a willing buyer and willing seller may overstate or understate the value of such a pipeline because its value is often more closely tied to the economic life of [the] oil field it serves than its value in a theoretical open market without reference to the oil fields it serves. Hence Alaska Statute 43.56.060(e)(2) requires an assessed valuation based on the pipeline's economic value with due consideration given to the reserves the pipeline serves in estimating that economic value.

[Id.]

54. In the 2007 SARB proceeding, the Owners maintained their assertion that the assessed value of TAPS could not exceed the value of its regulated tariff income stream. [Ex. SOA-35 at 16] The Board found that the "tariff is based on depreciated capital costs, not current market value as a stand alone property or the pipeline's current value as part of an economic unit. A regulated tariff does not produce an income that would capture the current economic value of the pipeline." [Id.] Further, the Department and SARB concluded that "uncertainty about future tariff rates makes any valuation based on capitalization of future tariffs very unreliable." [Id.]

55. In its 2007 Decision, SARB also noted that it "was concerned about the Division's frequent use of the term conservative in reference to some of its assumptions and estimates." [Ex. SOA-35 at 20] The Board held that "the object of an assessor valuing property under Alaska Statute 43.56.060(e)(2), is to make the best estimate of value, that is, to determine the pipeline's most likely value based on the available evidence, not to make a conservative estimate of value, or the lowest estimate of value within an acceptable range of possible values." [Id.] SARB concluded that the assessed value of TAPS in 2007 was $4.588895312 billion. [Id. at 24]

56. In 2008, the Municipalities presented a RCN study for the pipeline prepared by John Ellwood, Gerald Steindorff, and Earl Tise ("ProPlus study"). Due to a lack of information regarding the Valdez Marine Terminal ("VMT") at that time, they simply inflation-trended Mustang's prior estimate for that component of TAPS. [Tr. 1411 (Greeley)] The Owners relied on an inflation-trended update of Mustang's 2005 study. [Ex. SOA-36 at 15] The Department's Assessor, Mr. Greeley, reviewed the ProPlus study and accepted its replacement cost for the pipeline, but concluded that Mustang's estimate was more reliable for the VMT. [Tr. 1411] On appeal, SARB held that the Department's reliance on the ProPlus study for the pipeline was reasonable because "the ProPlus cost study was generally more detailed and more reliable than the current and previous Mustang cost study." [Ex. SOA-36 at 19]

57. However, in 2008 SARB did not accept the ProPlus contingency estimate of 25%. [Ex. SOA-36 at 19-20] The Board concluded that the increased reliability of the ProPlus study should have resulted in the contingency going down, not up. [Id.] Therefore, in its 2008 Decision, SARB set the contingency at 5%. [Id.]

58. In its 2008 Decision, SARB agreed with the Assessor that the deduction historically made for roads and bridges and for salvage value of camps was not supported by the facts or law. [Ex. SOA-36 at 21-23] Ultimately, the Board concluded that the Assessor had "made a careful, good faith effort, based on reasonable assumptions and using accepted methodology, to obtain its 2008 estimate of the TAPS value." [Id. at 26]

59. Due to the decrease in the contingency, the Board adjusted the 2008 assessment value of the TAPS from $7.16589746 billion to $6.15447972 billion. [Ex. SOA-36 at 26]

60. By 2009, the Municipalities had received significant materials through the discovery process in the 2006 case before this Court. The 2009 ProPlus team added M. Kieth Phillips, an expert on pipeline construction and estimation, and Stan Lloyd and Gerald Baker, marine terminal and berth specialists. [Tr. 2402 (Ellwood)]

61. For the 2009 assessment, the Assessor accepted and relied upon the "updated and more detailed Pro Plus replacement cost study," including the VMT, and concluded that it was more accurate than the updated Mustang study presented by the Owners. [Ex. SOA-37 at 16] SARB also found that the ProPlus witnesses had provided full support for a 25% contingency and owners' costs of 10% and found these amounts should be included in the TAPS 2009 ad valorem assessment. [Id. at 17, 19]

62. In 2009, SARB adjusted the Assessor's value from $7.6589746 billion to $9.0458952 billion due to adjustments in the contingency and owners' costs. [Ex. SOA-37 at 17] That determination, as well as SARB's determinations from 2007 and 2008, is currently on appeal to this Court, with trial de novo set for those three years currently scheduled for the fall of 2011.

63. This Court finds that the Owners' assertion that the Department abruptly, and without notice, changed its policy to consider the cost approach for the first time in 2005 is not supported by the evidence. There is no basis in the record to support a claim that the 2006 assessment violates the due process clause under either the state or federal Constitution or that is constituted a "de facto regulation." See TAPS Owners'

Proposed Findings of Fact at ¶7. Instead, the applicable regulation has expressly permitted reliance on a replacement cost less depreciation approach for decades, and the evidence demonstrates that the Department has given at least some consideration to a cost approach every year that the TAPS has been assessed. Further, the Owners have been given ample opportunity to participate in the development of a replacement cost estimate and in critiquing the estimates of others since 2004.

III. PREMISE OF VALUE

64. AS 43.56.060(e)(2) uses the term "economic value" for assessing TAPS – a term for which there is no generally accepted definition in the appraisal profession. [Tr. 3884-85 (Podwalny)] At the trial de novo, all parties presented appraisal experts who testified as to appraisal practices and the premise of value.

65. A premise of value is included in all appraisals of property. Valuing Machinery and Equipment at 2.[10] "Assessed value applies in ad valorem taxation and refers to the value of a property according to the tax rolls. Assessed value may not conform to market value, but is usually calculated in relation to a market value base." The Appraisal of Real Estate at 32 (13th ed. 2008). Whether AS 43.56.060(e)(2) requires or warrants a market-based premise of value derived from TAPS' tariff income stream is a central dispute in this case.

66. The Alaska Constitution directs the Legislature to prescribe assessment standards. Alaska Const. art. IX, § 3. The Legislature prescribed the assessment

[10] Machinery and Technical Specialties Committee of the American Society of Appraisers, Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets at 3 (2nd ed. 2000) (hereinafter "Valuing Machinery and Equipment"). Portions of this treatise are contained within Ex. MUN-60 and those portions make reference to that exhibit.

standard, or premise of value, for oil pipeline transportation property in operation as the "full and true value," to be determined "with due regard to the economic value of the property based on the estimated life of the proven reserves of gas or unrefined oil then technically, economically, and legally deliverable into the transportation facility." AS 43.56.060(e)(2).

67. 15 AAC 56.110(c) implements AS 43.56.060(e)(2) and reinforces that for assessment purposes, TAPS' "full and true value" must be determined within the context of the ANS reserves that are to be shipped through TAPS. The regulation also provides that "replacement cost less depreciation" is a permitted methodology to appraise TAPS. This regulation has been in effect for over three decades.

68. Different concepts of value arise from economic principles, including the concepts of value in exchange and use value. See generally The Appraisal of Real Estate at 15-32 (13th ed. 2008).

69. Value in exchange is also referred to as market value. The Appraisal of Real Estate at 23 (13th ed. 2008). It is generally expressed as the amount that a willing buyer will pay and a willing seller will accept, in an arm's length negotiation, to transfer the property, with both buyer and seller being knowledgeable about the property. [Id.] Market value is a transactional-based concept. [Tr. 4211 (Lennhoff)]

70. "Use value is the value a specific property has for a specific use. In estimating use value, the appraiser focuses on the value the real estate contributes to the enterprise of which it is a part without regard to the highest and best use of the

property or the monetary amount that might be realized from its sale." The Appraisal of Real Estate at 27 (13th ed. 2008).[11]

71. "If a property's current use is so specialized that there is no demonstrable market for it but the use is viable and likely to continue, the appraiser may render an opinion of use value if the assignment reasonably permits a type of value other than market value. Such an estimate should not be confused with an opinion of market value." The Appraisal of Real Estate at 28 (13th ed. 2008).

72. As explained further in The Appraisal of Real Estate:

> Court decisions and specific statutes may … create the need for use value appraisals. … Use value appraisals often involve limited-market properties, i.e., properties of a type that has relatively few potential buyers at a particular time. Large manufacturing plants, railroad sidings, and research and development properties are examples of limited-market properties that typically appeal to relatively few potential purchasers.

Id. at 27.

73. The Department and SARB strived to value TAPS at its "full and true value" as required by the statute and regulation. [Ex. SOA-3 at 6] Mr. Hoffbeck testified that he assessed TAPS based on a premise of its economic value in the continued use of the property as developed – to transport ANS oil to market. [Tr. 416-17 (Hoffbeck)]

74. The Owners have asserted that the appropriate premise of value for the valuation of TAPS is a tariff-based market value or value in exchange – that is, a willing buyer/willing seller standard. They maintain that "[t]he market value premise of value captures all of the objective value of TAPS and provides the highest possible value

[11] As explained in The Appraisal of Real Estate at 28 (13th ed. 2008), "[t]he term 'value in use' is often used by appraisers synonymously with 'use value,' but the former term has specific meanings in other contexts, which can cause confusion." Specifically, the term "value in use" has been defined as "the present value of estimated future cash flows expected to arise from the continuing use of an asset and from its disposal at the end of its useful life." Id. (citing International Valuation Standards ("IVS")).

consistent with an objective standard."[12] But in the case of TAPS, as in the case of many other pipeline properties in Alaska, AS 43.56.060(e)(2)'s reference to "economic value" and not "market value" is consistent with the reality that there is no market for the pipeline as a stand-alone investment based solely on its tariff income, since it is an integrated property with its Owners' affiliates. The Owners' appraiser, Kathy Spletter, acknowledged that she is unaware of any crude oil pipeline, refinery products pipeline, or gas pipeline built in Alaska that is owned by an investor solely for tariff income. [Tr. 6135-37 (Spletter)][13]

75. This Court has previously determined that the Legislature's use of "economic value" and omission of the "willing buyer/willing seller" standard in AS 43.56.060(e)(2) demonstrates an intent "to accord the Department greater flexibility with respect to the valuation methodologies for the considerably more unique type of property – oil and gas pipelines." Order on Summary Judgment Motions at 3-4 (Sept. 24, 2007); see also Order (July 26, 2009).

76. Evidence that the Legislature could have, but chose not to, require that the premise of value for AS 43.56.060(e)(2) be a market value standard, lies in its use of the terms "open market" and "willing seller and a willing buyer" to describe the premise of value for many other types of property in Alaska – including exploration property under AS 43.56.060(c) – in notable contrast to the absence of that language in

[12] Owners' Proposed Findings of Fact at 28, ¶ 101.

[13] Tr. 3876-77 (Mr. Podwalny describes and distinguishes an investment property from a non-investment property; id. at 3878 (explains Ms. Spletter misclassified TAPS as an investment property; id. at 3879-80 (explains no investor would purchase TAPS to operate as a stand-alone property); id. at 3904 (explains TAPS was undervalued because it was misclassified as an investment property); id. at 3911 (explains that TAPS is operated in conjunction with other vertically integrated properties and not on a stand-alone basis); id. at 3915 (explains the misclassification of TAPS as an investment property is inconsistent with the highest and best of use TAPS).

subsection (e) for the valuation for pipeline property.[14] It is further supported by the enactment, in 1975, of a reserves tax less than two years after AS 43.56 – AS 43.58.010, *et seq.* (eff. June 26, 1975). For unlike AS 43.56.060(e)(2), AS 43.58.040(b) provided that the full and true value of taxable production property was to be determined using a willing buyer/willing seller premise. This demonstrates some likelihood that the Legislature was fully cognizant of the willing buyer/willing seller standard when it enacted AS 43.56.060(e)(2).

77. This Court has previously held, and reaffirms, that it "concurs with SARB's interpretation of AS 43.56.060(e)(2) as set forth in its 2006 Decision when it found that the statute 'encourages the Division to determine the pipeline's full economic value in the context of the particular oil and gas fields the pipeline serves.'" Order on Summary Judgment Motions at 4 (Sept. 24, 2007).

78. The fee simple interest, as an analytical tool, includes the full bundle of rights subject only to the four powers of government: police power, escheat, eminent domain, and taxation. The Appraisal of Real Estate at 122 (13th ed. 2008). Of these powers, the issue of "police power" in the context of appraisal theory was not raised before SARB in 2005 or 2006. But at the trial de novo, the Owners have asserted that the governmental regulation of the rates for transport is a form of police power that diminishes the value of TAPS. [15]

79. Regulation may diminish the value of the regulated property. Wash. Gas Light Co. v. Baker, 188 F.2d 11, 19 (C.A.D.C. 1950) (citing Fed. Power Comm'n v. Hope

[14] See also AS 29.45.110(a).

[15] The Appraisal of Real Estate at 122 (13th ed. 2008).

Natural Gas Co., 320 U.S. 591, 601 (1944)). But, as several witnesses testified at the trial de novo, regulation may also have no effect on a property's value or increase its value. [See, e.g. Tr. 6027 (Tegarden)] The assessor must consider the extent to which the exercise of police power or any other governmental power impacts the value of the particular property being assessed.

80. Assuming, without deciding, that rate regulation may be a form of police power, it does not alter the premise of value for TAPS. Rather, it requires the assessor to consider whether and to what extent rate regulation impacts the value of TAPS. Under a cost approach to valuation, this issue can be determined when addressing the degree of any economic obsolescence caused by rate regulation.

81. The New Jersey Supreme Court in Transcontinental Gas Pipe Line Corp. v. Bernards Township held:

> the fact that FERC's regulatory scheme includes a value determination for its own purposes does not bind municipalities to that figure for the purpose of ad valorem property taxation.

545 A.2d 746, 758 (N.J. 1988) (citation omitted). See also id. at 763; County of Wayne v. Mich. State Tax Comm'n, 682 N.W.2d 100, 126 (Mich. 2004); Tenn. Gas Pipeline Co. v. Town of Hudson, 766 A.2d 672, 675-76 (N.H. 2000) (holding that replacement cost method, not the net book cost method, was the proper method for valuing the pipeline company's FERC-regulated property); Appeal of Pub. Serv. Co. of N.H., 471 A.2d 1182, 1185-86 (N.H. 1984); Matter of Tenneco, Inc.-Tenn. Gas Pipeline Div. v. Town of Cazenovia, 104 A.D.2d 511, 512 (N.Y. App. Div. 1984); Polk County v. Tenneco, Inc., 554 S.W.2d 918, 922-23 (Tex. 1977). [R. 1085-1093].

82. The Owners filed a motion for summary judgment on preemption and the filed rate doctrine on July 19, 2009. After reviewing the motion, oppositions, reply, and surreply thereto, and hearing oral argument, this Court denied that motion. See Order (March 30, 2010).

83. FERC does not have jurisdiction to determine the proper value of TAPS for state ad valorem tax purposes. But, as the Owners acknowledged, a tariff-based valuation of TAPS would effectively make FERC the only forum for the Municipalities to assert their position regarding the State's ad valorem property valuation. [Oral Argument Tr. 04:31:21-04:32:48 (Sept. 3, 2009)]

84. In the case of TAPS, the evidence presented at the trial de novo persuasively demonstrated that TAPS is a non-investment property, the principal value of which lies not in its tariff income, but in its use. As explained by Robert Podwalny,[16] "a noninvestment property is one where the owner does not get a direct monetary return from the property, but rather through its use. And in combination with another property." [Tr. 3876-77 (Podwalny)] As such, TAPS is "actually used to generate the revenue from transporting the oil from the North Slope to the market." [Id. at 3877] As a non-investment property within an integrated system, the Department and SARB correctly concluded that tariff income is not the appropriate determinant of the full and true value of TAPS. [See R. 0026-28 (SARB 2006 Decision)]

85. Two different hypotheticals clarified the limitations of the Owners' proposed premise of value. In the first hypothetical, Mr. Lennhoff, an appraisal theory

[16] Robert Podwalny is an expert appraiser and review appraiser. Among his designations and certifications, Mr. Podwalny holds a Senior ASA designation in Machinery and Equipment as well as in Appraisal Review and Management with the American Society of Appraisers. [Tr. 3856-73]

expert for the Owners, determined that a gathering line – a pipeline that transported oil from a field to the TAPS and thus had no tariff – would have no market value. [Tr. 4210-13 (Lennhoff)] Thus, if AS 43.56.060(e)(2) were interpreted to require a market value determination, then that gathering line would have no taxable value. This Court has not accorded weight to Mr. Lennhoff's opinions on the appropriate appraisal methodology for determining the economic value of TAPS. Although Mr. Lennhoff is clearly a nationally recognized appraisal expert, he does not appraise discrete machinery and equipment, has never valued a pipeline or a vertically integrated owner company, and demonstrated minimal understanding of the particular economic realities of TAPS. [Id. at 4106, 4112 (Lennhoff)] This Court was fully persuaded by the weight of the evidence at the trial de novo that Mr. Lennhoff's fundamental assumption that TAPS "would undoubtedly be purchased on the basis of the tariff revenue stream" is erroneous. [Ex. TO-8 at PG000004]

86. In the second hypothetical, the Owners' economist expert, Daniel Rubinfeld, Ph.D., testified that if a regulated pipeline were fully depreciated such that there was no tariff income, then the tariff income method would not be likely to represent the value of the asset. [Tr. 5105-06 (Rubinfeld)] In effect, the testimony acknowledges the disconnect between tariff income and full and true value of pipeline properties. Although Dr. Rubinfeld, like Mr. Lennhoff, is clearly an expert of some distinction in his field, the evidence at the trial de novo demonstrated that his expert reports were in large part prepared by the Owners' counsel and that he had quite limited knowledge of both TAPS and the specifics of the FERC regulatory process. [Id. at 5058-

59; id. at 5065-66; Ex. TO-25; Ex. TO-9] For these reasons, this Court has not accorded weight to Dr. Rubinfeld's reports or testimony.

87. Thomas Tegarden also testified on behalf of the Owners and was qualified as an expert appraiser of regulated public utility properties, including regulated pipelines. [Tr. 5975] Mr. Tegarden did not clearly articulate a position on the premise of value for TAPS, although he indicated that "most of the states [undertaking ad valorem property assessments] are attempting to find market value. [Id. at 5981] However, Mr. Tegarden acknowledged that "owners of property may be motivated by other reasons to own property or to build property than the direct rent that the property can produce." [Id. at 6051] But in the case of TAPS, Mr. Tegarden's testimony and reports appeared to be premised on his opinion that the economic driver for TAPS is its tariff income. [Exs.TO-11; TO-18] Because this Court was fully persuaded by the other evidence at the trial de novo that tariff income is not the economic driver of TAPS, this Court has accorded little weight to Mr. Tegarden's testimony.

88. Highest and best use generally considers the most probable use that is physically possible, legally permissible, financially feasible, and maximally productive. See The Appraisal of Real Estate at 278 (13th ed. 2008); Valuing Machinery and Equipment at 212. The purpose of a highest and best use analysis is to evaluate alternative uses to assist the appraiser in determining the use which creates the highest value of the property. The concept is most typically, but not always, applied when the premise of value is market value. [Tr. 5983 (Tegarden)]

89. Mr. Hoffbeck testified that limited-market, special-purpose property such as TAPS is often valued based on its current or existing use. [Tr. 426 (Hoffbeck)] That

is consistent with The Appraisal of Real Estate at 294 (13th ed. 2008), which states: "The highest and best use of a special-use property as improved is probably the continuation of its current use if that use remains viable." This particular statement in the treatise demonstrates an application of the "highest and best use" concept to a "use value" premise.

90. The evidence clearly established that the continuing use of TAPS to transport ANS oil to market is viable. No witness testified otherwise.

91. Of the many experts who testified before this Court at the trial de novo as to the premise of value, this Court found most persuasive the testimony and reports of appraiser Robert Podwalny. [Tr. 3856-3969; Ex. MUN-4] This Court finds that Mr. Podwalny's description of TAPS as a non-investment property in an integrated system, together with his explanation as to why a tariff-based income approach would not capture the full value of TAPS within that integrated system, is consistent with the statute and best supports the Department and SARB's determination with respect to the premise of value.

92. This Court finds that the premise of value adopted by both the Department and SARB – which strives to determine the full and true value of TAPS based on the economic value of its continued use as developed for the transportation of ANS product to market – has not been demonstrated to constitute a fundamentally wrong principle of valuation. This Court further finds that neither the term "full and true value" nor the term "economic value" as used in subsection .060(e)(2) mandates, as a matter of law, the

exclusive reliance on the regulated tariff revenue stream to derive a value of TAPS for property tax purposes.[17]

93. As explained by SARB in its 2006 decision:

> The term 'economic value' in AS 43.56.060(e)(2) is broader than merely the income approach to valuation, and encompasses value that is not accounted for in TAPS tariff income. The Board respectfully disagreed with the Owners' experts who stated that the TAPS was built for its tariff income.
>
> * * *
>
> The language of Alaska Statute 43.56.060(e)(2) encourages the Division to look beyond a pipeline's limited value in a market that is restricted to purchasers of its regulated income stream. That statute encourages the Division to determine the pipeline's full economic value in the context of the particular oil and gas fields the pipeline serves.

[R. 0023, 26]

> The economic reality is that the longer an Alaska oil transportation pipeline has been in operation, transporting limited reserves from a remote field, the more the value of the pipeline is likely to become dependent on its value as part of an economic unit that includes the reserves it serves and the other production facilities, and the less likely it is that the pipeline's value can be accurately ascertained by attempting to value it through a theoretical independent sale of the pipeline or its income stream as stand alone investments.

[Id. at 0024]

94. The Owners maintain that the property's use value is an inappropriate premise because it is subjective by considering only a specific investor's use of the property for a particular use. Owners' Proposed Findings of Fact at ¶104. But for a special-purpose property that has no market other than its users, the statute does not preclude and the treatises permit a use value premise. See The Appraisal of Real Estate at 27-28 (13th ed. 2008). To do otherwise and apply a "market value" approach

[17] See Golden Heart Utils., 13 P.3d at 268 ("The central question … is whether the appraisal method employed by the assessor resulted in an unreasonable valuation.").

to only one component of the property's value – its tariff income stream – would result in an undervaluation of the asset. Moreover, the use value premise is in accord with the valuation approach applied to all pipelines in Alaska – including gathering lines that generate no income. To the extent that there is a market for TAPS, it is the affiliated ANS producers (or an integrated refinery operation in the case of Koch). For the evidence persuasively demonstrates that the affiliated producers would rebuild TAPS at a cost of billions of dollars to transport ANS petroleum products to market if TAPS was not in existence as of the lien date. And the affiliated producers would replace TAPS not for the tariff income they might realize, but to monetize the approximately $350 billion of proven reserves that were at the ANS as of the lien date.

95. This Court finds that the premise of value of TAPS employed by the Department and SARB under AS 43.56.060(e)(2) – as with all other pipeline property in Alaska – is best described as a "use value" premise – the value that TAPS has for its specific use in an integrated system in transporting ANS products from the Owners' affiliates from the Alaska North Slope to market.

IV. DESCRIPTION OF THE PROPERTY

A. Ownership

96. As of January 1, 2006, TAPS was owned by BP Pipelines (Alaska) Inc. (46.9%), ConocoPhillips Transportation Alaska, Inc. (28.3%), ExxonMobil Pipeline Company (20.3%), Koch Alaska Pipeline Company (3.1%), and Unocal Pipeline

Company (1.4%). [Tr. 1895-96 (Sullivan[18]); R. 210-211] The Alyeska Pipeline Service Company ("Alyeska") is the operating agent for the Owners and operates TAPS.

97. The Owners each have an undivided ownership interest in TAPS [Ex. MUN-24 at 462] – an ownership structure that is unique in that it is specifically adapted to accommodate the use of TAPS by its individual owners as part of their vertically integrated business operations. [See generally, Ex. MUN-1 at 1-2; Tr. 720 (Hoffbeck); Tr. 1875 (Sullivan); Tr. 1982-83 (Brown[19])] Each of the Owners maintains a separate tariff and each accepts nominations to its undivided ownership interest separately from the others. [Tr. 1204-05 (Goodwin)] Each of the Owners is part of an affiliated group of companies that uses TAPS as part of its integrated business operations.[20]

[18] Barry E. Sullivan is President of Brown, Williams, Moorhead & Quinn, a consulting firm specializing in FERC regulation. Mr. Sullivan was employed at FERC for over 26 years. During this time, Mr. Sullivan worked in the litigation section at first in the Office of Pipeline and Producer Regulation and later in the Office of Administrative Litigation. His last position with FERC was as a supervisor in the Division of Technical Analysis in the Office of Administrative Litigation. [Tr. 1865-74 (Sullivan)] Mr. Sullivan testified as to the light-handed regulation of crude oil pipelines by FERC.

[19] John F. Brown is the Chairman of the consulting firm Brown, Williams, Moorhead & Quinn. Mr. Brown has been extensively involved with pipeline matters for 50 years. During this time, he bore responsibility for rate and regulatory matters for pipeline companies with approximately 13,000 miles of pipelines and has been extensively involved in and presented testimony on rate and regulatory matters before FERC as well as before numerous state regulatory agencies, Courts, and arbitration panels. [Tr. 1975-80 (Brown)] Mr. Brown testified on the history of FERC and RCA regulation of TAPS. Mr. Brown also explained that the prior regulation of TAPS was unique, shaped future rates, and reflects a settlement process rather than standard ratemaking or underlying economics. [Id. at 1899-1904]

[20] See, e.g., Ex. MUN-714 at 37-39 (Owners' witness Kalt testifies before FERC that oil company affiliates are integrated); Ex. MUN-718 at 6-16 (In P-03-4, Ms. Yaege, President of Phillips Transportation Alaska, Inc. ("PTAI"), the ConocoPhillips' affiliate which had the ownership interest in TAPS, testified that she did not know which affiliate paid her, that PTAI had no employees, that she did not know which employees worked for which affiliate, that she did not know the identity of the directors of PTAI, that she could not recall PTAI having a board of directors meeting, that she had never seen a PTAI financial statement or balance sheet, that she had never signed a PTAI check, and that she did not know whether PTAI had a bank account); Tr. 1687, 1693, 1700, 1721-22, 1724-26, 1735 (Cicchetti-Confidential), 1742-43, 1745-53, 1760-61 (Cicchetti); id. at 1982-83, 2021 (Brown).

B. Physical Description

98. TAPS is a unique assemblage of machinery and equipment that also includes real property. Physically, TAPS is an 800-mile-long, 48-inch wide crude oil pipeline system that crosses three mountain ranges, over 800 rivers and streams, and three climates zones during its traverse from the ANS oil fields to the port terminal and loading facility at the VMT. [Ex SOA-3 at 9; MUN-24 at 14-16] Approximately 420 miles of the 800-mile pipeline are above ground and supported by 39,000 pairs of Vertical Support Members ("VSMs"). [Ex. MUN-7 at 13] TAPS is the only pipeline transporting crude oil from the North Slope, and is therefore a basin-opening transportation system connecting the nation's largest oil fields to market. As of January 1, 2006, there were no other viable transportation alternatives to carry significant quantities of oil from the North Slope to market. [Tr. 421-22 (Hoffbeck); id. at 1206-07 (Goodwin)]

C. Original Construction

99. Actual construction of TAPS began in 1975 and was completed in the summer of 1977. [Ex. MUN-7 at 8] The construction of TAPS was a massive undertaking and an engineering marvel. It required 515 federal permits and 832 state permits [Ex. MUN-24 at 143] and 465 federal notices and 403 state notices to proceed. [Id. at 136] There were 14 airfields of varying lengths built to support the construction of TAPS. [Id. at 108] The construction workforce totaled approximately 70,000, with a peak number of 28,000 employees working in October 1975. [Ex. MUN-7 at 14] At the time of its construction, TAPS was the most expensive private construction project in history. Before construction began, TAPS' original estimated cost was set at $863,000,000. However, when finally completed in 1977, the final cost of TAPS was

nearly ten times greater at over $8 billion – an amount that is the equivalent of at least $24 billion in 2006 dollars. [Ex. MUN-7 at 8; Tr. 3905 (Podwalny)]

100. The design capacity for TAPS was originally 1.4 million barrels per day ("bbl/d") of throughput.[21] The first oil began to flow through TAPS on June 20, 1977. [Ex. MUN-24 at 14] The first tanker of crude oil left the VMT on August 1, 1977. [Id.] At that time, ANS proven reserves were approximately 9.6 billion barrels. [Ex. MUN-14 at 3] As of January 1, 2006, over 15 billion barrels had been transported through TAPS. [Ex. MUN-15 at 4] As of January 1, 2006, there were more than 7 billion barrels of proven reserves on the North Slope to be transported to market through TAPS. [Id.; Tr. 523 (Hoffbeck); Ex. SOA-3 at 39]

101. Portions of TAPS are located in the Municipalities of the North Slope Borough, the Fairbanks North Star Borough, and the City of Valdez. The remainder of TAPS is located in the Unorganized Borough of Alaska. [R. 0003]

D. Limited-Market Property

102. The evidence clearly demonstrates that TAPS is a limited-market property.[22] [Tr. 3730 (Clarkson[23])] There is a very limited market for the sale of any ownership interest in TAPS. [Ex. MUN-1 at 3] When those interests have changed hands, the buyers have purchased those interests as part of a broader transaction that

[21] With the use of Drag Reducing Agent ("DRA") implemented in a 1977 letter agreement among the Owners, TAPS was able to transport 2.1 million bbl/d at its peak production in 1986. After peaking in the late 1980s, throughput has gradually reduced. As of the January 1, 2006 lien date, the Department of Revenue estimated production of 884,000 bbl/d for fiscal year 2006. [Ex. SOA-10 at 47]

[22] "Limited-market property: A property that has relatively few potential buyers at a particular time." The Appraisal Institute, The Appraisal of Real Estate at 25 (12th ed. 2001).

[23] James Michael Clarkson is the President of Technical Valuation Services, Inc., which specializes in the valuation of machinery and equipment. His certifications include being an instructor of Machinery and Technical Specialties Appraisal courses for the American Society of Appraisers. [Tr. 3503-16 (Clarkson)]

has included the buyers' use of TAPS to transport affiliated ANS production to market. [Id.] Every prior or current TAPS Owner, with one exception, has been affiliated with a sister-company producer of ANS crude oil.[24] The exception is Koch Alaska Pipeline Company, which has a sister-company refinery at North Pole, Alaska. Each of the Owners has a right of first refusal should any other Owner elect to sell its interest in TAPS. [Ex. MUN-24 at 475; Tr. 2196 (Grasso[25])]

103. Dr. Jaffe is a prominent economic expert who testified before FERC on behalf of the Owners in support of FERC's adoption of the Amended Capacity Settlement Agreement reached between the Owners and the State of Alaska. In his testimony before FERC, Dr. Jaffe noted the unique nature of the affiliated domination of TAPS by observing: "[t]he market for transportation of oil through TAPS is very different from markets in which competition is typically evaluated, and is even different in significant ways from most other oil pipelines." [Ex. MUN-24 at 705 (Jaffe Affidavit)] He also noted that "[t]he movement of petroleum through the pipeline is dominated by shipments in which the shipper is among the corporate affiliates of the carriers." [Id. at 706] Dr. Jaffe further noted that, "TAPS is largely a closed system in which the vast majority of business is transacted among affiliated buyers and sellers. In this way, it is very different from 'textbook' markets." [Id. at 708]

[24] Tr. 2021 (Brown – TAPS Producers/Owners part of vertically integrated companies); Ex. MUN-726 (Department Rept. re: oil industry profitability – shows that oil companies are run as integrated unit rather than on profitability of individual parts); Ex. MUN-727 (Industry response to Department Rept.); Tr. 1721-23 (Cicchetti – discusses Ex. MUN-726 and Ex. MUN-727); Ex. MUN-731 (Lucas Memo re: highest tariff); Tr. 1723-26 (Cicchetti).

[25] Gary Grasso is a consultant with over 25 years of experience working in the energy filed with particular expertise in pipeline and TAPS rates matters. Mr. Grasso testified that the tariff income approach proposed by the Owners is flawed in several respects. [Tr. 2073-79]

104. As of the lien date, the parent companies of the three largest owners of TAPS (BP, ConocoPhillips, and ExxonMobil) had a combined 95% ownership interest in TAPS. [Tr. 1753-55 (Cicchetti); id. at 1895-97 (Sullivan); Ex. MUN-1 at 8; Ex. MUN-3 at 15, 19] That same year, these same three parent companies had a combined total of 91.4% of the estimated production on the North Slope. [Ex. MUN-1 at 8] One of the Municipalities' experts, Mr. Van Dyke,[26] prepared an estimate of future production by ANS working owners through 2050. [Ex. MUN-457] He persuasively demonstrated that – excluding the State and other parties' royalty shares – the current three largest ANS operators (BP, ExxonMobil, and ConocoPhillips) are projected to continue to produce a combined total of at least 88% of each year's total ANS production every year through 2050. [Id. at 6, 17]

105. At the trial de novo before this Court, the Owners' experts cited to Lower 48 transactions and asserted that there is an active marketplace for investors in crude oil pipelines such as TAPS based solely on tariff income. But the evidence demonstrated that Lower 48 pipelines are unlike TAPS, in that they are not single pipelines to an entire oil region, are subject to greater market forces and alternative forms of transportation, and are not owned primarily by vertically integrated affiliated users. The Lower 48 investor marketplace described by the Owners' experts does not have an economic counterpart in Alaska. [Tr. 560-61 (Hoffbeck); id. at 1094-95, 1208 (Goodwin)] In Alaska, the vertically integrated producers have maintained ownership and control of the pipelines they rely upon to bring their crude oil to market. The

[26] William Van Dyke is an expert in oil production on the Alaska North Slope. Mr. Van Dyke has over 33 years of experience in the oil and gas industry in Alaska during which time he has been involved with all aspects of oil and gas development in Alaska. [Tr. 3207-12 (Van Dyke); Ex. MUN-15 at 99-101] Mr. Van Dyke testified concerning the ANS proven reserves and the throughput profile for TAPS.

Owners' appraisal expert acknowledged she was not aware of any "crude oil pipeline or refinery products pipeline or gas pipeline in Alaska … owned by a master limited partnership or an investor for tariff income only." [Id. at 6136-37 (Spletter)] In short, the record persuasively demonstrates that TAPS was built and is operated and would be replaced based upon the economics of transporting affiliated ANS production to market. [Tr. 705-06 (Hoffbeck); 1468 (Greeley)] The record does not indicate that TAPS was built for or would be replaced for its tariff income. See also In re Trans Alaska Pipeline Rate Cases, 436 U.S. 631, 633 n.21 (1978).

E. Special-Purpose Property

106. The evidence demonstrates that TAPS is also a special-purpose property.[27] [Tr. 720-21 (Hoffbeck); 1206-07 (Goodwin)] TAPS is unique and was specifically designed, constructed, and adapted to its particular use – to move affiliated crude oil from the ANS to Valdez. [See, e.g., Ex. MUN-1 at 2; Tr. 721 (Hoffbeck)] The ANS supplies 17% of the nation's supply of oil. [Tr. 419 (Hoffbeck)] TAPS is the only viable means of transporting ANS oil to market. [Id. at 1206-07 (Goodwin); Ex. MUN-1 at 2] As a prior expert witness for the Owners noted, "all of the carriers entered into the construction of the pipeline primarily for the purpose of ensuring a means of transporting their own oil." [Ex. MUN-24 at 708 (Jaffe)]

107. The affiliated producers of the Owners typically nominate their ANS production to their affiliated TAPS Owner [Tr. 2022-23 (Brown)]; and typically do not sell their ANS production to a third party at any point upstream of TAPS that would permit a

[27] "Special-purpose property: A limited-market property with a unique physical design, special construction materials, or a layout that restricts its utility to the use for which it was built; also called special-design property." The Appraisal of Real Estate at 25 (12th ed. 2001).

third-party purchaser to nominate to a nonaffiliated TAPS Owner. [Ex. MUN-1 at 16; Tr. 1714, 1750 (Cicchetti); Ex. MUN-219 at 2; Tr. 2015-16 (Brown)]

108. The record demonstrates that when ANS production is sold to a third-party purchaser, the sale may be on a delivered basis, typically to destinations outside of Alaska. [Ex. MUN-1 at 16] Under the terms of such a sale, each major TAPS Owner maintains control of the transportation of its ANS production from the point of production to the point of delivery on the West Coast. [Id.] "This is a bundling, if you will, of oil, transportation, port facilities and then shipment to delivery markets. And these are not the kind of things that you see in the Lower 48 or around the rest of the world." [Tr. 1751 (Cicchetti)]

109. The Owners' terms and conditions of providing transportation service on TAPS give "Regular Shippers" (i.e., the Owners' affiliated producers) priority in accessing TAPS capacity, which serves to support affiliated dominance of TAPS. [Ex. MUN-202 at 7, 16, 21-27; Tr. 2008-10 (Brown)]

110. The evidence demonstrates that the Owners are almost completely dependent upon their affiliate and parent companies. [Ex. MUN-1 at 19-24; Tr. 1751 (Cicchetti)] With one limited exception, the Owners do not have employees, independent financial capacity, or substantial assets, other than their interest in TAPS. [Ex. MUN-1 at 21-22; Ex. MUN-717 at 28, 74; Tr. 1751 (Cicchetti); Tr. 2021 (Brown)] The Owners did not and could not have independently financed the original construction of TAPS and they do not independently finance substantial improvements to TAPS – instead, the affiliated production companies have financed TAPS. [Ex. MUN-3 at 4; Tr. 1705 (Cicchetti); Tr. 1209-10 (Goodwin)]

F. Unique Regulatory Status.

111. FERC has a policy of light-handed regulation with regard to pipelines and, in particular, crude oil pipelines. [Ex. MUN-1 at 32-35; Tr. 1724, 1739, 1744 (Cicchetti); Ex. MUN-1022 at 2; Tr. 1907 (Sullivan)] Federal regulation of TAPS has been even more light-handed than the norm. [Ex. MUN-1 at 33-34] The situation is similar under RCA regulation of intrastate rates. [Id. at 35-37]

112. During much of the first several years' of TAPS operation, the amount of the tariff was in litigation. In 1985, the Owners and the State entered into the TAPS Settlement Agreement ("TSA"). For the next two decades, the Owners' rates were based on the TAPS Settlement Methodology ("TSM") and were never evaluated under the just and reasonable standard. [Ex. MUN-3 at 8, 12; Tr. 1738 (Cicchetti); id. at 1899 (Sullivan); id. at 1986 (Brown); BP Pipelines (Alaska), Inc., 119 F.E.R.C. ¶ 63,007 at P 48, 54 (2007)] Unlike standard ratemaking, the TSM front-end loaded the recovery of the initial cost of TAPS to such a degree that the original investment has been largely recovered decades before any reasonable estimate of the end of the economic life of TAPS. [Ex. MUN-1 at 29; Ex. MUN-3 at 12-13; Ex. MUN-700; Tr. 1696, 1716-17 (Cicchetti); Ex. MUN-716; Tr. 1990-92 (Brown)] The TSM also included a non-cost based revenue stream in the form of an allowance per barrel, which significantly differentiated the TSM from traditional original cost tariff models. [Tr. 5367 (Spletter)] While in effect, the TSM resulted in considerably higher tariffs than might otherwise have been permitted under the just and reasonable standard. [Ex. MUN-3 at 14; Tr. 1980 (Brown)] As of the lien date, the term of the TSA was coming to a close, and tariff rates were in litigation before both FERC and RCA. The history of rate regulation

suggests that future rates on TAPS are likely to be based on settlements and are likely to be higher than would otherwise be permitted under the just and reasonable standard. [Tr. 1986-88 (Brown); id. at 1902 (Sullivan – "In my experience, in the oil pipeline business, most rate cases are filed and settled based on settlement of the parties, and normally, those settlements result in rates that are significantly higher than a just and reasonable rate would have resulted there.")]

V. CHOICE OF VALUATION METHOD

A. The Cost Approach Is an Appropriate Valuation Method.

113. All parties agree and every appraiser testified that in appraising a property, appraisers typically consider three generally recognized approaches to value: the cost approach, the income approach, and the comparable sales approach. The cost approach is based upon a principle of substitution. This principle provides that a prudent buyer will not pay more for an existing property than the cost of acquiring a substitute property of equivalent utility. The Appraisal of Real Estate at 38-39 (13th ed. 2008). Under the income approach, "value is indicated by a property's earning power, based on the capitalization of income." [Id. at 130] Under the comparable sales approach, "value is indicated by recent sales of comparable properties in the market and other supporting transactional information." [Id.]

114. In this case, the applicable statute and regulation require an assessment that captures the "economic value" of TAPS within the context of the ANS reserves. TAPS' economic value derives from its use in providing affiliated transportation and market access for an entire oil region that includes the two largest oil fields in North America. Since 2005, SARB has repeatedly held that the cost approach is the valuation

approach that best captures the entire economic value of TAPS consistent with AS 43.56.060(e)(2). [Ex. SOA-37 at 8]

115. The unique nature of TAPS as a limited-market and special-purpose property supports SARB's reliance upon the cost approach. The Appraisal of Real Estate at 382 (13th ed.). TAPS was specifically designed, constructed, and adapted to its particular use – to move affiliated ANS crude oil from the North Slope to Valdez. [Ex. MUN-5 at 7; Tr. 721 (Hoffbeck)] A property with this unique function is properly valued under the cost approach. [Ex. MUN-4 at 11; Tr. 1206-07 (Mr. Goodwin describes TAPS as a unique property for which the few potential purchasers would have an integrated interest in a mid-stream pipeline); Tr. 1467 (Mr. Greeley explains that TAPS is a limited-market, special-purpose property); Tr. 3888-89 (Mr. Podwalny explaining that "most publications" suggest that earnings are difficult to isolate and there are not adequate sales to use with limited-market, special-purpose properties); Tr. 5281 (Ms. Spletter acknowledging that the cost approach is typically used for limited-market, special-purpose property, but disagreeing that TAPS should be valued in that manner)]

116. The cost approach is particularly reliable when a property is first built or when it undergoes a substantial renovation. The Appraisal of Real Estate at 382-383 (13th ed. 2008) At the time of the 2006 valuation of TAPS, a Strategic Reconfiguration ("SR") was underway that will upgrade TAPS based upon modern and flexible technology, pumps, and equipment. In the past few years, the Owners have spent over $600 million on SR. [Tr. 1396 (Greeley)] Such a substantial and recent renovation of TAPS further supports the use of the cost approach as the most reliable valuation approach at this time.

117. The Department uses the cost approach to determine the ad valorem value for all oil and gas pipelines in Alaska subject to tax under AS 43.56.060(e)(2). [Tr. 366, 604 (Hoffbeck)] That also supports SARB's reliance upon the cost approach for TAPS. [Id. at 366 (Hoffbeck)] Consistent and nondiscriminatory tax treatment is sound public policy and tax policy for Alaska.

118. As discussed in detail below, this Court has relied upon the ProPlus replacement cost study in applying the cost approach to valuing TAPS in 2006. The high quality of the ProPlus cost study further supports reliance upon the cost approach.

B. The Income and Comparable Sales Approaches Are Not Appropriate Valuation Methods.

119. The cost approach is also proper to rely upon because the tariff income approach and the sales comparison approach are not reliable as applied to TAPS.

120. An income approach based solely upon tariff income is not reliable for valuing an integrated, special-purpose property that has been adapted to a specific use for which the income stream is not the economic driver or basis for the property's construction and continued use. While there was disagreement concerning the degree to which the production and delivery of ANS oil should be considered an integrated economic enterprise, the record demonstrates that at the very least the upstream production operations and TAPS are fully integrated. Thus, under a comprehensive income approach, the income arising from this integrated economic enterprise – not just the tariff income – would have to be properly determined and allocated among its constituent parts. This Court was persuaded that pipeline tariff income alone is not an appropriate proxy for the income stream that should be considered when valuing the contribution of TAPS to this entire, integrated economic enterprise.

121. In its 2009 Decision, SARB explained its rejection of a tariff-based income approach as follows:

> The income approach is typically used for the valuation of income producing property, but the TAPS was not built for the tariff income that it produces.
>
> * * *
>
> The fact that the TAPS produces a tariff income in addition to transporting oil would not justify reliance on an income approach, as opposed to the generally applied cost approach, because oil transportation, not the TAPS tariff income stream, is the motivation for ownership of the TAPS.

[Ex. SOA-37 at 28, 30]

122. The sales comparison approach is not generally reliable for valuing limited-market properties or special-purpose properties such as TAPS when there are no comparable sales, or the sales that do exist are not comparable because the subject property has been adapted to a particular use at a particular location. [Tr. 502, 560 (Hoffbeck)]

123. In addition, the sales comparison approach is also not generally used for valuing properties that are integrated with other properties because each sale has to be substantially adjusted to reflect only the portion of the integrated enterprise being valued.

124. In the case of TAPS, every sale of an interest in TAPS has been part of a larger integrated transaction. One of the Owners' experts who primarily values hotel properties does not use the sales comparison approach because he does not consider the sale of hotels to be comparable with each other because of the integrated nature of the sales and the dissimilar units of comparison among them. [Tr. 4201-02 (Lennhoff)] If two hotels that sell in Washington, D.C. as part of integrated transactions are too dissimilar to apply the sales comparison approach, it is unlikely that any sale of a

pipeline as part of a larger integrated transaction would be a proper comparison for determining the value of TAPS.

125. SARB's consideration, then rejection of both the income and comparable sales approaches is consistent with the standard treatise for machinery and technical specialties ("MTS") which states:

> The income approach to value is not widely used today by most MTS appraisers; the reasons given include the difficulty in determining income that can be directly related to a specific asset, the concern over the reliability of income forecasts, and the multitude of variables involved in this valuation approach.
>
> * * *
>
> The sales comparison approach is not feasible when the subject property is unique.

[Ex. MUN-60 at 79, 116-117]

126. Other courts have similarly held that regulated pipelines should not be valued for ad valorem purposes under the income or comparable sales approach. Transcon. Gas Pipe Line Corp., 545 A.2d at 746; Tenneco, 104 A.D.2d at 514; Matter of Onondaga County Water Dist. v. Bd. of Assessors of Town of Minetto, 350 N.E.2d 390, 392 (N.Y. 1976); Tex. E. Transmission Corp. v. E. Amwell Twp., 13 N.J. Tax. 24, 28-29 (N.J. Tax. Ct. 1992). [R. 694-734]

C. SARB Had a Reasonable Basis for Its Reliance Upon the Cost Approach.

127. For the reasons set forth in Section V above, the record before this Court demonstrates SARB had a reasonable basis for its decision to rely upon the cost approach to determine the "full and true" value of TAPS for 2006. SARB carefully considered all three of the primary approaches to valuation before determining that the RCNLD approach was appropriate. [R. 0024; 0377-0379; Tr. 410-11 (Hoffbeck)]

128. This Court notes that the Legislature intended to permit the Department and SARB considerable discretion in determining the appropriate method of valuation when appraising properties.[28] Based on the record before it, this Court upholds the Department and SARB's reliance on the replacement cost new less depreciation approach for the valuation of TAPS in 2006.

VI. THE COST APPROACH

A. Replacement Cost New.

129. The Replacement Cost New ("RCN") is the starting point for applying the cost approach. Under the RCNLD approach,

> the appraiser starts with the current replacement cost new of the property being appraised and then deducts for the loss in value caused by physical deterioration, functional obsolescence, and economic obsolescence. The logic behind the cost approach is the principle of substitution: a prudent buyer will not pay more for a property than the cost of acquiring a substitute property of equivalent utility.

[Ex. MUN-60 at 2]

130. At the trial de novo before this Court, the Municipalities presented the ProPlus study and asserted that the cost of replacing the functional utility of TAPS in 2006 was $18,712,247,300.[29] The Owners presented Mustang cost studies and asserted that it would cost $8,545,185,500 to replace TAPS in 2006.[30] SARB and the

[28] See, e.g., Golden Heart Utils., 13 P.3d at 267-68; Hoblit v. Greater Anchorage Area Borough, 473 P.2d 630, 632 (Alaska 1970); Twentieth Century Inv. Co. v. City of Juneau, 359 P.2d 783, 788 (Alaska 1961) (assessor may choose one recognized method of valuation over another).

[29] Ex. MUN-7; Ex. MUN-561; Ex. TO-236.

[30] Ex. TO-4 at MU000046.

Department asserted that the RCN of $8,781,184,105 from the 2006 SARB determination should be affirmed.[31]

131. The RCN is "the current cost of a similar new property having the nearest equivalent utility as the property being appraised, as of a specific date." [Ex. MUN-60 at 186] It has also been defined as "the estimated cost to construct, as of the effective appraisal date, a substitute for the [property] being appraised using contemporary materials, standards, design, and layout." The Appraisal of Real Estate at 385 (13th ed. 2008).

132. There are three potential starting points for the application of the cost approach: original cost, reproduction cost, or replacement cost. Given that TAPS is now over 30 years old, and both the available technologies and labor costs have substantially changed during that time, this Court was fully persuaded that a replacement cost approach, if accurately computed, would provide the best indicator of value.

133. The use of original cost, either in nominal dollars or indexed to current dollars, is a limited but useful indicator of the cost of building TAPS today. TAPS cost approximately $8 billion to build in 1977 dollars – an amount which equates to approximately $24 billion in 2006 dollars. [Ex. MUN-24 at 117; Tr. 3905 (Podwalny)] However, the evidence demonstrates that the original design of TAPS is no longer optimal and would require substantial adjustment to reflect the costs adjusted to January 1, 2006. [Tr. 337-38 (Hoffbeck)] Likewise, the reproduction cost is the cost to replicate an exact duplicate of what is in place, which includes substantial

[31] Ex. SOA-3 at 40. This number is slightly different than the number in the SARB decision because Mr. Hoffbeck made minor math corrections.

obsolescence. In contrast, a replacement cost analysis replaces the current equivalent utility based on the current design, materials, and construction techniques. The Appraisal of Real Estate at 385-86 (13th ed. 2008).[32]

134. The replacement cost estimate for TAPS which formed the basis for the Department and SARB's 2006 valuation of TAPS was $8,781,159,747. [R. 0022] This number was derived primarily from Mustang's 2005 partial replacement and partial reproduction cost estimate, trended for 2006. [Id. at 1478-1529 (2006 Mustang cost study, Revision 0; id. at 0001-30] The Department and SARB also accorded some weight to the cost study undertaken by the R.W. Beck for the Municipalities. [Id. at 2444-2659] Evidence presented at the trial de novo to this Court persuasively demonstrated that in 2006, the Department and SARB were not able to obtain all of the necessary detail from Mustang to properly confirm the accuracy of that cost study. This Court has reviewed the Mustang 2006 Revision 0 cost study and finds that it is substantially lacking in both detail and substance. [Id. at 1478-1529] There are no detailed Gantt charts coordinating the work, no crew-up sheets, and no workpapers supporting that cost study.[33] At the trial de novo, Mustang no longer supported the Revision 0 cost study, but instead asserted that this Court should adopt its updated cost study of Revision 2. Thus, the Department asks this Court to accept a Mustang cost study (Revision 0), that is no longer sponsored by the engineering firm that prepared it.

[32] The Stancil Appraisal presented by Ms. Spletter on occasion improperly uses the term "reproduction" to refer to the replacement cost study undertaken by Mustang. Cf. TO-3 at ST000779 and ST000715.

[33] When the Court asked counsel at closing argument in November 2009 to identify all the Gantt sheets in the record that support the Mustang 2006 Revision 0 cost study, the following day the Owners were able to identify only one such page, which had been included in the State's exhibits – Ex. SOA-12 at 232.

135. This Court applies a preponderance of the evidence standard to the new evidence presented at the trial de novo to determine if SARB's assessment was improper, excessive, or not in accordance with the standards set out in AS 43.56. See Order re Admission of the Administrative Record, Burden of Proof and Standard of Review at 4 (July 26, 2009). Pursuant to this standard and for the reasons further explained below, and with the benefit of the considerable additional evidence presented to this Court at the trial de novo, this Court finds that the appellants have persuasively demonstrated that the Department and SARB's reliance on the trended 2005 Mustang cost study for the 2006 TAPS assessment resulted in an improper valuation of TAPS. This Court will not rely upon a cost study whose own preparer testified before this Court that it is not an accurate indication of the RCN of TAPS in 2006 and which lacks detailed support for its RCN conclusion in the record before this Court.

136. A total of five cost studies are included in this record: (1) the original Mustang cost study relied upon by the Department and SARB in 2006, with a RCN of $7.9 billion [R. 1478-1529 (Revision 0)], (2) the R.W. Beck Appraisal, dated May 9, 2006 relied upon by the Municipalities before SARB, with a RCN of $10.0 billion [Id. at 2444-2659]; (3) the Mustang cost study (Revision 2), relied upon by the Owners at the trial de novo, with a RCN of $8.545 billion [Ex. TO-4], (4) Mustang's cost study (Revision 4) prepared only as a "validation run" to Mustang's Revision 2 and not as an opinion of value, which computed the RCN at $8.9 billion [Ex. TO-5], and (5) the ProPlus cost study relied upon by the Municipalities at trial, with an adjusted RCN of $18,712,247,300. [Ex. MUN-7; Ex. MUN-561; Ex. TO-236]

137. The ProPlus replacement cost estimate was prepared by a team of pipeline and marine terminal engineers, contractors, and cost estimators with extensive experience. [Tr. 2875-78 (Steindorff)] The team consists of engineer Gerald Steindorff, engineer John Ellwood, estimating and constructions specialists Earl Tise and M. Kieth Phillips, and engineers Stan Lloyd and Jerry Baker, who specialize in marine facilities. [Id.] All members of the ProPlus team testified before this Court. (Mr. Tise testified by deposition.)

138. The members of the ProPlus cost team have a combined total of over 250 years of hands-on experience in engineering, project management, estimating, and construction of pipelines and terminal facilities. [Tr. 2424 (Phillips); see also Ex. MUN-1013 at 4]

139. Mr. Ellwood worked approximately 32 years in the pipeline industry. In his last position, Mr. Ellwood was an executive VP and COO of Foothills Pipeline, Limited. Foothills Pipeline operated about 1200 kilometers of pipeline that exported gas from Alberta to the United States. In addition, Foothills Pipeline contracted with TransAlaska to assist with the proposed gas pipeline from Alaska to Canada. [Tr. 2282 (Ellwood)] While at Foothills, Mr. Ellwood also put together a proposal to take oil out of the TAPS pipeline at Delta Junction and bring it into Canada and down to Haines, Alaska. [Id. at 2384-85] Mr. Ellwood has estimated and built thousands of kilometers of pipeline a year. [Id. at 2877 (Steindorff)]

140. Mr. Tise has worked almost exclusively in the pipeline field for 60 years, and has performed thousands of cost estimates for over 10,000 miles of pipeline. [Tise Dep. at 152 (Aug. 15, 2009)] Mr. Tise worked on TAPS during its construction as a

construction manager for the section from Glenallen to Valdez. [Id. at 156] In addition, Mr. Tise prepared work plans for the Prudhoe Bay East-West pipeline and for an offshore pipeline from an island northeast of Prudhoe Bay to tie into the gathering system in Prudhoe Bay. [Id. at 153] Most recently, Mr. Tise prepared the budget estimate, work plan, blasting plan, and testing plan for a 530-kilometer, 48-inch pipeline project that ran from Hassi R'Mel to Morocco for Bechtel. [Id. at 154] He also recently prepared the work plan for the Alaska gas line for TransAlaska. [Id.]

141. Mr. Phillips was in the pipeline construction industry for the last 40-plus years. During those years, he worked on hundreds of pipeline projects and estimated several thousand miles of pipeline. [Tr. 2404-05 (Ellwood); id. at 2415, 2418 (Phillips)] Mr. Phillips started his career as a pipeliner working as a laborer. In 1968, Mr. Phillips took a job in Iran as an office manager for H.C. Price Company for several large diameter pipeline projects. Later, Mr. Phillips was employed as the workers' manager, construction manager, and project manager for a 300-mile, 30-inch pipeline project in Iraq. In 1978, Mr. Phillips started his 21-year career at Williams Brothers Pipelines (Willbros), one of the largest U.S. pipeline companies, from which he retired as president. Although he relied upon Mr. Tise for his Arctic experience, Mr. Phillips has worked on projects in South America, the Middle East, and Africa with very difficult terrain and conditions. [Id. at 2413-14 (Phillips)]

142. Mr. Tise testified that he recommended that Mr. Phillips join the team not only because of his experience, but also because "[i]f he didn't like the markup … he would change it." [Tise Dep. at 170 (Aug. 15, 2009)]

143. Mr. Lloyd is a civil engineer who specializes in marine terminal cost estimating, construction, and design. He has built port and harbor development facilities throughout the world. [Tr. 2746-51 (Lloyd)] Mr. Lloyd provided an overview as to his redesign and cost estimate for the Valdez Marine Terminal used in the ProPlus cost report. [Ex. MUN-7 at 24-31]

144. Mr. Steindorff has designed, estimated, and managed hundreds of pipeline-related projects. [Tr. 2870 (Steindorff)] He worked on the Prudhoe Bay gathering system from 1974 to 1976. [Id. at 2872] He was also involved with the 30-inch All American Pipeline project, which is a liquefied crude oil pipeline from California to Texas, and he was involved with a 360-mile, 24-inch gas line in Texas. [Id. at 2871] Mr. Steindorff also worked on an above-ground 12-inch pipeline in Guatemala. [Id.] He helped prepare the FERC application for the original Alaska gas pipeline. [Id. at 2871-72] Mr. Steindorff is currently the owner and president of ProPlus. [Id. at 2872] He has taught courses in pipeline and station design and construction for 30 years and is a member of the Pipeliners Hall of Fame. [Id. at 2872-73]

145. Every member of the ProPlus team reviewed the work of all fellow team members, and each member looked at every rendition of the team's work product. [Tr. 2985 (Steindorff)]

146. At the trial de novo, the Owners submitted and relied on Mustang Revision 2, a replacement cost estimate prepared by Mustang, an engineering firm. [Ex. TO-4]

147. Engineer K.C. Yost was the only witness to testify at the trial de novo on behalf of Mustang. He is currently the Director of Pipeline Engineering for Mustang. [Tr. 4619] Mr. Yost testified that he personally has never managed an oil pipeline

construction project in excess of 50 miles. [Id. at 4815, 4899] He has never been a project manager or director for any crude oil pipeline built in the Arctic. [Id. at 4898-99] Mr. Yost also testified that he has never been a construction manager for any project anywhere in the world. [Id. at 4899] He had never done a construction bid for a pipeline contractor. [Id. at 4896-97]

148. Mr. Yost testified that he had not done any of the functional work that went into Mustang's cost calculations. [Tr. 4900] He personally did not any crew-up sheets for the TAPS RCN and has never done a crew-up sheet for any crude oil pipeline. [Id. at 4900-01] He described his involvement in the preparation of the Mustang cost study at times as being "very high" level. [Id.]

149. Mr. Yost was unable to explain how basic pipeline construction would occur given the equipment configuration Mustang proposed. For example, he suggested that a VAC-U-LIFT would be attached to a backhoe and brought forward each time a pipe needed to be laid – with no reasonable explanation as to how the ditch would continue to be dug with the backhoe displaced or why there would be a backhoe present at all if the section were above ground. [Tr. at 4914-16] Mr. Yost's testimony before this Court demonstrated his unfamiliarity with the basic factual background used in the Mustang cost study. He was unable to find such background information in the Mustang report when given time to do so at the SARB 2008 hearing. [Id. at 4928-29] In sum, this Court finds that Mr. Yost did not do the vast majority of the actual work on the Mustang cost study and did not persuade this Court as to the validity of Mustang's conclusions. [See, e.g., id. at 4806-31, 4907-10, 4928-47]

150. At the trial de novo, Mr. Yost presented a large Gantt chart, but then acknowledged on cross-examination that he had not prepared the Gantt chart and had "very little" to do with its preparation. [Tr. 4900, 4957] Mr. Yost's testimony demonstrated he was unaware of the direction each of the six construction spreads was to be worked under Mustang's cost estimates – whether from North to South or from South to North. [Id. at 4967-70] He was also unaware that the 84 river crossings identified in Mustang's Gantt chart, an important aspect of construction installation, had simply been copied Mr. Tise's work from the ProPlus cost study without attribution. [Id. at 4966-67] This Court finds that the Owners failed to establish that the Gantt chart Mustang produced at the trial de novo was actually integrated with the Revision 2 cost study that Mustang sponsored to this Court.

151. At the trial de novo, Mr. Yost was clear that the version of the Mustang study that he was sponsoring was Revision 2 dated March, 2009, providing a RCN of $8.545 billion. [Ex. TO-4; Tr. 4911] Revision 2 has not been accepted by the Department or SARB and has not formed the basis for any value conclusion by any party in the past. [Tr. 4911] Mr. Yost was also clear in his testimony to this Court that he was not sponsoring any other revision of the Mustang cost studies. [Id. at 4911, 4913-14] In particular, he stressed that he was not sponsoring Revision 4, which was prepared in June, 2009 and had a RCN of $8.9 billion [Ex. TO-5; Tr. 4911, 4913-14], nor was he sponsoring Revision 0, which estimated a $7.9 billion RCN and was prepared in April 2006 and used by the Department and SARB in their determinations at that time. [Tr. 4903, 4913-14, 4933-34]

152. At the trial de novo, Mr. Yost was unsure how many revisions of the Mustang cost report had been prepared or produced and was unable to explain if there were other revisions (i.e. revisions 1 and 3) to the Mustang study that had not been produced in discovery to the other parties. [Tr. at 4901-03, 4905-07, 4912-13] In addition, Mr. Yost could not articulate the differences between the revisions of the Mustang cost study that had been produced. [Id. at 4905-11]

153. This Court notes that Mustang's June 2009 validation run (Revision 4) did have some detailed support. [Ex. TO-5] This unsponsored validation run was prepared after three rebuttal reports and the depositions of Mr. Yost and Mr. Marra. Importantly, because of the lack of detail supporting the Mustang cost study which Mr. Yost did sponsor (Revision 2 as set forth in the record as Ex. TO-4), the parties and this Court are forced to make comparisons between ProPlus and Mustang based upon the unsponsored validation run set forth in Revision 4 [Ex. TO-5] because there is insufficient detail in the cost study sponsored by Mr. Yost (Revision 2) set forth in Ex. TO-4. And yet there is a substantial difference in the RCN estimate between the two revisions – Revision 2 estimates an RCN of $8.545 billion, whereas the unsponsored Revision 4 validation run estimates a RCN of $8.9 billion. [Ex. TO-4; Ex. TO-5]

154. The Owners did not use all the trial time allotted to them. [See, e.g., Tr. 6447] Another Mustang employee, Mr. Marra, had been identified on the Owners' witness list on two separate occasions and was represented by the Owners to be the most knowledgeable witness with regard to the details underlying the various Mustang cost studies. But he was withdrawn as a witness by the Owners after Mr. Yost's cross-

examination by the other parties. [Id. at 4827] For whatever reason, the Owners failed to present detailed evidence to support their cost studies at the trial de novo.

155. Similar to the cost study that Mustang presented to SARB in 2006, (Revision 0), the only Mustang cost study sponsored by Mustang at the trial de novo (Revision 2) is largely unsupported by the record before this Court. There are no Gantt charts, no march charts, limited crew-up sheets, no workpapers, and no other detailed support for this revision in the record to support its calculation of the RCN for TAPS in 2006 at $8.545 billion. [Tise Dep. at 175-80 (Aug. 15, 2009)] As counsel for FNSB/Valdez comparatively noted in closing, there are over a thousand pages of support for the ProPlus cost study that were introduced into the record. [MUN-8] In responding to these concerns, counsel for the Owners implicitly acknowledged that such detailed support was not in the record by arguing that the Mustang cost studies were supported by information provided in discovery that they did not choose to introduce into evidence. [Tr. 7092] This argument was not persuasive, particularly since the other parties had repeatedly emphasized Mustang's lack of supporting documentation throughout these proceedings. Counsel for the Owners also directed this Court to the "sensitivity analysis" or "validation run" Revision 4 that was unsponsored by any witness. [Ex. TO-5; Owners' Proposed Findings of Fact ¶ 279(d); Tr. 4911 (Yost)] But this Court will not accord weight to that "validation run" as proxy support for a sponsored cost study that lacks such support. Like Revision 0, Mustang's Revision 2 is not adequately supported on the record before this Court.

156. The lack of transparency and detailed support in the record for Mustang's cost study is particularly apparent when comparing Mustang's work with that presented

by ProPlus. Two of the largest quantitative differences between the Mustang and ProPlus cost studies concern the costs associated with pipeline installation and contingency. [Ex. MUN-659] With regard to pipeline installation, using spread six as an example, ProPlus prepared and submitted in the record (1) a work plan which provides a detailed timeline of events [Ex. MUN-8 at 479], and (2) 42 pages of supporting documentation, including crew-up sheets and workpapers. [Ex. MUN-7 at 327-68] By stark comparison, on the same subject matter Mustang included only four lines of information on a single page (designated "Spread 6"). [Ex. TO-4 at MU000066] Similarly, with regard to the contingency calculation, the Mustang's Revision 2 sponsored at trial contains just three lines of information and no back-up support, while Dr. Cronshaw's contingency reports on behalf of the Municipalities were detailed and well-supported. [Ex. MUN-10; Ex. MUN-10a; Ex. MUN-12; TO-4 at MU000068]

157. Weeks into the trial de novo, after the State and the Municipalities had concluded their cases in chief, the Owners sought at the end of their case to call engineer Joe Riordan, an Alyeska employee, to testify primarily on issues related to the VMT. Mr. Riordan's deposition was held on July 29 and 31, 2009, approximately two weeks before trial. [Tr. 2578 (Riordan)] At the time of his deposition, Mr. Riordan testified that he did not know what he would be testifying about at trial and his memory was quite poor in many areas. [Id. at 2584-85] In addition, counsel for the TAPS Owners during the deposition indicated that "[a]s a fact witness he's not being asked for an opinion per se regarding certain issues … He's being asked for specific facts and items regarding TAPS." [Id. at 2560] For the reasons stated on the record at the trial de

novo, this Court precluded Mr. Riordan from testifying on topics as to which he had no recollection or opinion at the time of his deposition. [Id. at 2576-86]

158. Mustang's total replacement cost estimate for TAPS for 2006 changed from $7.9 billion (Revision 0) to $8.545 billion (Revision 2) to $8.9 billion (Revision 4). This variability among Mustang's various cost estimates for 2006 is not explained sufficiently in the record before this Court and raises a broader question as to the overall reliability of Mustang's cost estimate.

159. Unlike SARB and the Department, this Court has had the benefit of an extensive evidentiary proceeding after each party was accorded the right to considerable discovery. With the benefit of that substantial additional evidence, this Court turns to an analysis of the following specific components of each of the RCN studies.[34]

1. Direct Costs.

160. Costs are divided between direct costs and indirect costs. Direct costs include materials, pipe, pumps, and installation. [Tr. 2318 (Ellwood)] Installation includes labor and equipment. [Id.]

161. The direct costs in the ProPlus cost study totaled $11.1 billion. [Tr. 2348 (Ellwood)] The direct costs in Mustang's Revision 2 cost study totaled $6.3 billion. [Ex. TO-4 at MU000046]

a. Design Basis.

162. ProPlus used design criteria for 1.1 million bbl/d maximum throughput with a 48" diameter pipe size. [Tr. 2313 (Ellwood)] Mustang used design criteria for a 1.0

[34] As noted above, due to the lack of supporting data for Mustang's sponsored cost study, Revision 2, many of the comparisons that follow between the two estimates refer to Mustang's Revision 4, as to which more supporting documentation was made available.

million bbl/d maximum throughput. Like ProPlus, it also determined that a 48-inch pipe would be the most cost effective to fabricate and operate, assuming no use of drag reducing agents ("DRA"). [Id. at 2885-86 (Steindorff); id. at 4670, 4673-74 (Yost)] Both estimates assumed that the replacement pipeline would follow the existing route. [Id. at 2314 (Ellwood); id. at 2885 (Steindorff); id. at 4674 (Yost)] In addition, both estimates would use the existing above and below-ground configurations and the existing pump station and terminal locations. [Id. at 2314-15 (Ellwood); id. at 2885 (Steindorff); id. at 4674 (Yost)] Both estimates are based upon current technology and use modern construction methods. [Id. at 2377 (Ellwood); id. at 2445 (Phillips); id. at 4683 (Yost)] Additionally, both estimates use the four strategically reconfigured pump stations as a base assumption. [Id. at 2880 (Steindorff)] Both estimates used pricing information based on a January 1, 2006 date. [See Ex. MUN-7 at 3; Ex. TO-5 at MU000296]

163. Notwithstanding these similarities, the ProPlus study and Mustang cost studies vary significantly in the overall RCN for TAPS. The most significant areas of disagreement include the following direct costs: pipeline materials, pipeline installation, and VMT costs, as well as indirect costs, which are discussed below.

b. Pipeline Materials.

164. ProPlus determined its quantities for pipeline materials to replace TAPS mostly from the Alyeska website. [Ex. MUN-7 at 13-15; Tr. 2350-51 (Ellwood)] For example, ProPlus determined the number and the different kind of valves needed for the pipeline from that website. [Tr. 2351]

165. Mr. Ellwood testified that flow diagrams (e.g., a route map) also helped the engineers determine the correct amount of equipment and material costs. [Tr. 2318-19

(Ellwood)] As an example, Mr. Ellwood explained process-flow diagrams for each of the pump stations in order to estimate the needed quantities of material such as piping and fencing and the amount of labor needed to prepare each site. [Id.]

166. Mr. Steindorff testified that because of the lack of detail in Mustang's cost study, ProPlus could not find where Mustang had accounted for a number of known costs, such as explosives, disposal pits, and borrow pits. [Tr. 2902 (Steindorff)]

167. ProPlus also criticized Mustang for changing its numbers. [Tr. 2944 (Steindorff); Ex. MUN-1013 at 6] For example, in Mustang's June 26, 2009 Revision 4, Mustang increased the work pad volumes 5 to 10 times from its March 25, 2009 Revision 2, but decreased the cost per yard of gravel from $144.00 in Revision 2 to $14.40 per yard in Revision 4. [See Ex. MUN-1013 at 6] Mr. Yost confirmed that between March and June 2009, Mustang's volume of work pad went up 10 times, and its price per work pad went down 10 times. [Tr. 4843 (Yost)] On redirect, Mr. Yost testified that the Revision 2 $144.00 cost was a data entry error and that the correct cost is $14.40 per yard of gravel. [Id. at 4978].

168. ProPlus obtained price quotes for all major material items, such as line pipe, pumps, and mainline valves. [Tr. 2311, 2351 (Ellwood); id. at 2883 (Steindorff)] For the minor materials, ProPlus used information that was in Mr. Lloyd's and Mr. Steindorff's costing files. [Id. at 2311 (Ellwood)]

169. One of the criticisms of ProPlus by the Owners was that ProPlus did not have as great a buying power as Mustang, and that explains the difference in material prices. Mr. Steindorff disagreed with that premise and he testified that "we went to a lot of the same suppliers, and I'm certain that they probably gave us ... the same numbers."

[Tr. 2898-99 (Steindorff)] Based on this Court's opportunity to observe the demeanor of the witnesses at the trial de novo, this Court finds Mr. Steindorff's testimony persuasive.

170. Mr. Yost testified that Mustang obtained the material and equipment cost estimates and bids in 2006. [Tr. 4672 (Yost)] He also testified that Mustang searched its records for other 2006 projects and called its vendors to verify those numbers. But Mr. Yost indicated he did not personally call any vendors, and no other evidence as to the content of any Mustang calls to vendors was introduced at the trial de novo. [Id. at 4813-14]

171. Other differences related to pipeline materials are discussed below.

(1) Vertical Support Members.

172. The estimated cost of pipeline materials in the cost estimates differs by almost $1 billion, primarily related to the cost of materials for the above-ground supports – termed Vertical Support Members, or VSMs. [Tr. 2458, 2888, 2895, 2899-900 (Steindorff)] Mustang estimated the VSMs will cost approximately $500 million, while ProPlus estimated the cost at closer to $1.4 billion. [Id. at 2352 (Ellwood); Ex. TO-5 at MU000127; Ex. MUN-7 at 38]

173. Approximately 420 miles of TAPS is above-ground pipeline sitting upon 39,000 VSMs. [Tr. 2459, 2466 (Phillips)] The above-ground section was one of the most unusual and challenging aspects of the original construction of TAPS. [Id. at 2466 (Phillips)] The VSMs have to be installed perfectly vertical, and a survey engineer must be at each place setting. [Id. at 2458-59]

174. Both ProPlus and Mustang accounted for the same quantity of VSMs: 39,000 each. [See Ex. MUN-7 at 40; Ex. TO-5 at MU000138] Both Mustang and

ProPlus used the same steel for the VSM construction [Tr. 4953 (Yost)], but the amount of steel needed and the cost of that steel are contested issues.

175. Mr. Yost described how Mustang calculated the cost of the VSMs as follows: "Essentially, what we did was say, 'Here is the typical VSM. We know that there are roughly 37,000 [sic] of them, actually; so what we'll do is go ahead and design the regular VSM, the standard one, and we'll go ahead and put it in at a cost that we think is reasonable, actually, higher than quotes that we've gotten for fabrication en mass production and then go ahead and multiple that times 39,000 because that's what the facts book calls out as the number of VSMs.'" [Tr. 4715-16 (Yost)] He further stated, "So we took the vast majority, added a couple of bucks per item and called it good." [Id. at 4716]

176. Mr. Ellwood testified that the ProPlus team "really spent some time checking and double-checking" its $1.4 billion estimate for the cost of the materials for the VSMs. [Tr. 2352 (Ellwood)] Mr. Ellwood added that he was a little surprised at first when the estimate for these materials came up that high, but he is "convinced that that's the right number." [Id.]

177. ProPlus looked at the materials needed for the above-ground VSM structures and then calculated how many pounds of steel would be required to construct them. [Tr. 2352-53 (Ellwood)] ProPlus used a fabrication cost for the steel from the Houston/Gulf Coast, which is approximately two dollars per pound, and added the cost to ship the steel to Alaska. [Id. at 2353] Mr. Ellwood testified that two dollars per pound is a low fabrication cost. [Id.]

178. Mr. Steindorff testified that ProPlus accounted for modern fabrication techniques in costing the above-ground pipe supports; otherwise, ProPlus's estimate would have been three or four times the original cost. [Tr. 2899-2900 (Steindorff)]

179. Mr. Yost testified that ProPlus included about 5,100 pounds of structure for each VSM in its estimate, when in his view "[i]n reality, it's closer to 2000 pounds." [Tr. 4793 (Yost)] He further testified that "[w]hen you do the calculation for [ProPlus's] structural steel at 1.3 billion dollars for 5100 pounds for 39,000 VSMs, it works out to $6.67 per pound. We have quotes as recently as last week for $1.75 to $2 per pound for the VSM-type work, 2009 numbers." [Id.] The ProPlus team all testified before Mr. Yost at the trial de novo, and did not respond to this assertion. However, the record demonstrates that ProPlus spent a considerable amount of effort in calculating the amount of steel needed and the fabrication costs. [See MUN-8 at 86-88]

180. Mr. Steindorff testified that Mustang's cost estimate for the cross-members needed to build the VSMs is "an example of their unrealistic numbers." [Tr. 2909 (Steindorff)] The cross-members are 18-inches wide, 18-inches deep and about 20-feet long. [Id. at 2904, 2909] Each piece of steel weighs 130 pounds per foot. [Id. at 2909] Thus, each cross-member weighs 3,210 pounds. [Id.] Mustang's unit cost for each cross-member is $100. [See Ex. TO-5 at MU000138; Tr. 2904 (Steindorff)] Based on the size of the cross-members and the estimated price of steel, Mr. Steindorff computed Mustang's unit cost estimate for cross-members would equate to a price of steel of just five cents per pound. [Tr. 2909-10 (Steindorff)]

181. This Court finds that, based on the evidence, the unit price for each cross-member would far exceed $100. Instead, this Court finds ProPlus's unit cost for the cross-members at $5,500 considerably more reliable. [See Ex. MUN-7 at 40]

182. Both ProPlus and Mustang estimated 39,000 shoes and fittings, but ProPlus's unit cost is $12,000 and Mustang's unit cost is $2,800. [See Ex. MUN-7 at 40; Ex. TO-5 at MU0000138]

183. ProPlus estimated 39,000 pairs of pipe supports (there are two supports for each VSM), and Mustang estimated 78,000 pipe supports. Thus, the quantity is the same. ProPlus's unit cost for each pair of pipe supports is $15,000 (or $7,500 each), and Mustang's unit cost is $400 each. [See Ex. MUN-7 at 40; Ex. TO-5 at 0000138]

184. Both ProPlus and Mustang estimated $78,000 for bumper blocks, but ProPlus's unit cost is $500 and Mustang's unit cost is $200. [See Ex. MUN-7 at 40; Ex. TO-5 at MU000138]

185. This Court finds that the Mustang cost estimate does not adequately account for the complexity and materials necessary to build the VSMs in the budget they have allocate. This Court finds that the ProPlus estimate is a more reliable estimate of the cost to construct the VSMs.

(2) Refrigeration Systems.

186. The Owners also raised the issue of whether the refrigeration systems should have been included in the ProPlus cost study. [Tr. 2477-78 (Phillips)] ProPlus's cost estimate includes $325,000 for refrigeration systems. [Ex. MUN-7 at 47]

187. Under Mustang's key assumptions for its 2005 cost estimate, it stated that "[r]efrigerated piping will be designed to the 2004 standard, not the 1973/4 standard."

[Ex. MUN-447 at 2] Although Mustang's latest June 26, 2009 Addendum states that "[r]efrigerated piping has been removed from the estimate," Mr. Yost testified that this Court should not consider the June study. [Ex. TO-5 at MU000296; Tr. 4880, 4911, 4913 (Yost)]

188. Based on the evidence presented at trial, this Court finds that Pro-Plus's inclusion of $325,000 for refrigeration systems in its 2006 RCN estimate is reasonable.

c. Pipeline Installation.

189. Pipeline installation is another area of major disagreement between the two estimates. [Tr. 2895 (Steindorff)] ProPlus estimates $4,202,683,100 for installation costs, and Mustang estimates $1,687,177,500. [Ex. MUN-7 at 38; Ex. TO-5 at MU000128] For the reasons expressed below, this Court finds that the ProPlus estimate is far superior to the Mustang estimate with respect to determining the proper valuation of these replacement costs.

190. Along with relying on their expertise and experience, the ProPlus team members relied on numerous documents to create their cost estimate. For example, ProPlus used the Alyeska C Plan drawings, which are a set of drawings that show the contours and an aerial view of the approximate 500 river crossings. [Tise Dep. at 161 (Aug. 15, 2009)] ProPlus also used the Alyeska Facts Book and Google Earth. [Id.]

191. Mustang's cost estimate did not address the need to carefully time each of the different crews to avoid delays, logistical snafus, and other expensive costs associated with making a project of this magnitude.

(1) Pipeline Construction Process.

192. ProPlus's cost estimate thoroughly describes the process of constructing a pipeline. [Ex. MUN-7 at 15-21] In addition, the ProPlus team members described that process at trial. Mr. Ellwood provided a detailed, but simplified explanation of how a pipeline is built, using process-flow diagrams. [Tr. 2288-2302 (Ellwood)] ProPlus divided the 800-mile length of the TAPS pipeline into six sections, each one called a spread. [Id. at 2294] Each spread would be awarded to one contractor to construct. Six spreads were also used in the original construction. [Id.]

193. Mr. Ellwood testified that "pipelines today are a highly automated process. It's very much an assembly-line process. Things are timed sometimes to the second." Mr. Ellwood also testified that the ProPlus team took full advantage of this process in its estimate to ensure that everything runs in "a nice sequence and all stays together just like you would on a car assembly line." [Tr. 2299-2301 (Ellwood)]

194. Mr. Ellwood testified that one of the first tasks is clearing and grading to create a right-of-way. [Tr. 2288 (Ellwood)] He testified "to get an idea of what size of the crew, how many pieces of equipment, how many personnel are needed to do this, you have to understand how difficult the terrain is." [Id. at 2288-89] To determine the difficulty of the terrain, he studied aerial photos and maps. After assessing the terrain and determining how difficult it will be to construct each spread, the necessary crews, manpower, and equipment were assigned to accomplish each particular job. [Id.]

195. Mr. Yost did not provide any testimony on clearing and grading.

196. The pipe is then hauled in by trucks. The pipeline company lays the pipe, which is known as "stringing," to get it ready for welders to join. [Tr. 2290 (Ellwood)]

197. For the above-ground section, the pipeline company would have a piling crew to construct the VSMs, consisting of two piles augered into the ground, a cross-timber and then a supporting network that holds the cross-timber and allows the pipe to slide horizontally along the alignment. [Tr. 2291 (Ellwood)]

198. Next in the sequence comes the welding. [Tr. 2293 (Ellwood)] Mr. Ellwood testified that welding is done in two stages. First, the pipeline is lined up and held together with clamps, and an initial weld is made by the "pipe gang." When enough metal is welded to hold the pipes together, the clamp is released and moved to the next weld. Then the "firing line" comes in and completes the weld. [Id.] Each stage can be done by either automatic or manual welding.

199. The ProPlus cost estimate is based on automatic welding in four of the six spreads. [Tr. 2293-4 (Ellwood); Tise Dep. at 159 (Aug. 19, 2009)] For Spread 2, which is Atigun Pass, and Spread 6, which is Thompson Pass, the ProPlus team chose to use manual welding because each of those areas has much more difficult and steep terrain. [Tise Dep. at 159 (Aug. 19, 2009); Tr. 2332 (Ellwood)] Whichever method of welding ProPlus used was applied to both stages of the welds.

200. Mr. Yost testified that the Mustang cost estimate used both automatic welding and manual welding for each spread. [Tr. 4698 (Yost)] He added, "we're not in the market to tell contractors how to do the job; our job is to come up with numbers that are representative of the productivity or the lack of productivity at that particular point in time." [Id. at 4699]

201. Mr. Steindorff testified that ProPlus is unaware of anybody that has ever done welding the way Mustang's cost estimate assumed it could be done. [Tr. 2931

(Steindorff)] He explained that Mustang's "[w]elding is accomplished by basically two crews" at each spread -- one manual and one automated. [Id. at 2931] He said that is inefficient because the automatic welding machines are expensive, take time to set up, and have extra environmental protection requirements. [Id. at 2932]

202. This Court finds ProPlus's testimony and cost estimate for welding to be considerably more reliable than the Mustang study and Mr. Yost's testimony.

203. For difficult terrain, such as Thompson Pass, Mr. Ellwood testified that a "big notch" has to be cut out of the rock, rather than just digging the rock out. [Tr. 2299-300 (Ellwood)] To do that type of work, the pipeline company needs to drill and blast. In addition, the company would need cranes or towers for the "high line" operation, because the terrain is so steep that people will not be able to drive up and down. The high line would be used to haul the pipe up and down, like a ski lift hauls chairs. Mr. Ellwood testified that "[t]he pipe goes up, and that kind of operation we call 'stove-piping,' because you bring one piece of pipe up, you weld it on, then you go down, you pick up another piece of pipe, bring it up, and line it all up, weld it." [Id. at 2300]

204. The ProPlus estimate also accounted for getting a Caterpillar up to the top of Thompson Pass. [Tr. 2301 (Ellwood)] For the original construction, a Caterpillar was taken in pieces by helicopter up to the top of the Pass and reassembled at the top. The ProPlus estimate included a similar kind of operation. Although a Caterpillar could probably be driven to the top, Mr. Ellwood testified that ProPlus opted for the helicopter operation because the pipeline company has "to start this work in a number of places in order to get it finished in a reasonable time. If you start at one end and go all the way to

the other, you would be in … Thompson Pass … for nine months or a year, and so we moved it." [Id. at 2302]

205. No evidence was presented to dispute Mr. Ellwood's testimony on the Thompson Pass construction of TAPS.

206. The next step is coating the pipeline. Mr. Ellwood testified that in the past the entire pipeline was coated in the field. Now, pipeline companies coat the pipeline in the mill so that for the above-ground welds, all that is needed in the field is a fusion coat at the location of the welds. [Tr. 2294-95 (Ellwood)]

207. Mr. Ellwood testified that in addition to the fusion coat, another type of coating called "three-layer polyethylene" was used in the ProPlus cost estimate where the pipe is buried to give extra protection against rocks. [Tr. 2295 (Ellwood)] Once the coating is completed, the pipe is lowered into the ditch. [Id.]

208. No evidence was presented to dispute Mr. Ellwood's testimony on coating.

209. For the underground pipe, the backfill operation then starts, using a device called "the Mormon board and Caterpillar tractor." [Tr. 2296 (Ellwood)] That tractor is used to pull the dirt back into the ditch. [Id.] Because big rocks and other terrain cannot be pulled on top of the pipeline without damaging the coating of the pipe, ProPlus allowed in its estimate for specialized backfill. [Id.] This includes crushing rock down to a size that will not damage the coating. [Id.]

210. Mr. Ellwood's testimony specifically related to the backfill operations was not disputed. However, a point of contention is whether crushed gravel or rounded gravel should be used as bedding in the pipeline trench. ProPlus used crushed gravel in its estimate. [Tr. 2473-75 (Phillips), id. at 1551 (McAleb)]

211. There was insufficient evidence presented on whether crushed gravel would be more or less expensive than rounded gravel. In addition, there was insufficient evidence presented that the use of crushed gravel is flawed. Thus, based on the evidence presented to this Court at the 2006 trial de novo, this Court finds that either crushed gravel or rounded gravel is reasonable.

212. The next operation in the sequence is the tie-ins. Mr. Ellwood testified that "the people who can do this tie-in work are in short supply" and "make as much money as bending engineers." [Tr. 2296 (Ellwood)] Each tie-in is placed every few thousand feet along the pipe as it is welded up. [Id. at 2297]

213. There was some criticism of ProPlus's use of two tie-in crews for each spread. Mr. Phillips explained that "[o]ne of the biggest changes in the pipeline construction industry in the last … few years is the number of tie-in crews required to complete the projects on the major 42-inch projects going on in the Lower 48 … you will find 4 and 5 and 6 tie-in crews." [Tr. 2484 (Phillips)] Mr. Phillips testified that he had consulted with two major contractors on this issue and each had said that "there's no way to get by with one crew." [Id.] Mr. Phillips, therefore, went with two crews per spread, noting "I can assure you that if this job were to be built, you would end up with more than that." [Id.] Court finds Mr. Phillips' testimony persuasive on this issue.

214. Mr. Ellwood explained the different methods for taking a pipe across a stream. [Tr. 2297-99 (Ellwood)] If the stream is not large, a backhoe is used to dig a ditch across the stream, then a pipe is welded up on one side, picked up with the tractors, taken across the stream, and put in the ditch. [Id. at 2297-98] Then, sometimes the ditch is backfilled and sometimes the stream washes the backfill back

into the ditch. [Id. at 2298] The ProPlus estimate assumed that this method would be used for most stream crossings, because it is the least expensive method. [Id.]

215. Mr. Ellwood testified that the most common ways today to deal with larger stream crossings are either "a dam and pump" operation or "flume operation." [Tr. 2298 (Ellwood)] For both of these methods, a dam is put both upstream and downstream and the water is either pumped across or a flume might be carried to put across the pipe. These methods make the streambed dry while the pipe is laid.

216. An alternative method is to directionally drill. [Tr. 2298] For larger streams and rivers, both Mustang and ProPlus testified that they used some directional drilling in their cost estimates. [Id. at 2299 (Ellwood); id. at 4694 (Yost)] Under this method, a pipeline company drills a hole underneath the river and pulls the pipe through the hole using the drilling apparatus. Under this method, the streambed is not disturbed. [Id. at 2299]

217. Mr. Ellwood and Mr. Tise testified that the ProPlus estimate used directional drilling when the ProPlus team thought it was feasible. [Tr. 2299 (Ellwood)] Mr. Tise testified that "when we made the work plan – and it's shown on the [march] chart which rivers we installed in the winter and – we made a takeoff of all the river crossings and then made an assumption that the rivers that we listed as directional drills would be drilled and the other would be open cut during the winter season from October to March." [Tise Dep. at 158 (Aug. 19, 2009)]

218. This Court finds ProPlus's testimony in support of its estimated cost for stream crossings persuasive.

219. The last operation in building a pipeline is the cleanup. [Tr. 2299 (Ellwood)] This issue is not disputed.

(2) Crew and Equipment Coordination.

220. Mustang provided a bar chart schedule (Gantt chart) to the other parties, but not until July 29, 2009. [Ex. TO-20; Tr. 2928 (Steindorff)] A one-page Gantt chart summarizing Mustang's entire replacement project was provided in 2005. [Ex. SOA-12 at 232] Mr. Yost testified that he referenced a Gantt schedule in every report, but he does not think it was printed out in every report. [Tr. 4708 (Yost)]

221. Mr. Steindorff noted that although Mustang's estimate now had a Gantt chart, it is not a construction work schedule (march chart) that coordinates the crew and equipment with the pipeline construction process. [Tr. 2896 (Steindorff)]

222. The Municipalities persuasively demonstrated at the trial de novo that the Gantt chart presented by Mustang in July 2009 is not the original work of Mustang, but rather was derived from the work of ProPlus. [See Tr. 4957-71 (Yost)]

223. Mustang's Gantt chart is inconsistent with its cost estimate. For example, the Gantt chart allocates 420 days of drilling for Spread 5, but the cost estimate allocates only 110 days. [Tr. 4964-65 (Yost)] In addition, the river crossings listed on Mustang's Gantt chart are inconsistent with its cost estimate. [Id. at 4965-71]

224. Mr. Yost testified about the July 2009 Gantt chart and how it applies to Mustang's work schedule in some detail, but because Mustang's Gantt chart does not correspond to its Revision 2 cost estimate in many respects and because it was not created by Mustang, this Court finds the Mustang Gantt chart and Mr. Yost's testimony about it were not credible, and, therefore accords them no weight.

225. A march chart diagram, also known as a "work plan," tracks the progress of a number of the different crews and corresponds with the construction process of the pipeline. [Tr. 2327-28 (Ellwood); id. at 2924-25 (Steindorff)] Mr. Tise described the work plan as "a time and distance diagram that shows the time you're going to start and the location you're going to start and how you're going to proceed to the end of that section." [Tise Dep. at 162 (Aug. 19, 2009)] Mr. Phillips testified that "(i)n order to make an estimate, and especially of a project of this magnitude, you need to have a work plan." [Tr. 2449 (Phillips)] Mr. Ellwood and Mr. Steindorff described ProPlus's march chart and how it corresponds with its process flow diagrams and crew sheets. [Tr. 2327-34 (Ellwood)] On ProPlus's chart, the horizontal line traces the time and the vertical line traces the distance (e.g., Milepost 800 is at Valdez). [Id. at 2328] ProPlus adjusted the progress rate to match the degree of difficulties in the terrain. [Id. at 2329; id. at 2924 (Steindorff); see also Tise Dep. at 162-63 (Aug. 19, 2009)]

226. To determine its progress rate, ProPlus looked at each operation and broke it down by crew. [Tr. 2327-31 (Phillips); id. at 2925-26 (Steindorff)] ProPlus looked at the difficulty of the terrain, as well as each individual piece of equipment and individual operator to determine the pace that could be achieved on a particular area of the right-of-way. [Id. at 2329-31 (Phillips); Tise Dep. at 162-63 (Aug. 19, 2009)] After considering each of those individual factors, ProPlus determined an average progress rate. [Tr. 2438 (Phillips)]

227. Mr. Ellwood explained how to get from the march charts to a dollar estimate. [Tr. 2334 (Ellwood)] ProPlus's cost estimate is prepared on a crew-up basis. [Id. at 2312] Mr. Ellwood explained that a crew-up basis means that the work is broken

down into small enough tasks, so that ProPlus can "assign the personnel and the equipment needed to do that task, and then take labor rates and equipment rates, multiply them by the number of people, and get the cost." [Id. at 2313] ProPlus prepared a "crew-up" sheet for each crew on each spread. [Id. at 2342] Mr. Ellwood testified that there are several hundred crew-up sheets in the estimate, one for each crew on each contract, with a total of 25 contracts involved. [Id.]

228. The personnel needed (e.g., foreman, operators, truck drivers, semi-skilled labor, and labor) are broken down into categories on each crew-up sheet in the ProPlus estimate. [Tr. 2335-36 (Ellwood)] The crew-up sheet then shows the number of personnel needed for each category, and the daily base labor rate. [Id.] Those amounts are then multiplied to get the total daily labor cost. [Id.]

229. ProPlus's crew-up sheets also provide the numbers of each piece of equipment needed each day and the daily cost. [Tr. 2336 (Ellwood)] ProPlus distinguished between company-owned equipment and rented equipment. [Id.] However, because the extent to which each contractor would own its equipment is unknown, ProPlus used a blended rate for company-owned and rented daily cost. [Id.]

230. Mr. Ellwood testified that for pipeline construction, it is essential that all the crews on a spread work at the same pace:

> They must move down the line as a unit. You can't have the back end moving faster or they'll soon come to the point where they have to stop and wait. You don't want the front end to get out too far in advance. Then you have the long lengths of pipe laying on the ground. As an owner representative, we don't like that, for environmental reasons. All kinds of reasons, we'd like the pipe to be buried as soon as it can. We don't want it laying there for a month or two on the ground. It's essential that all of those crews go along as the same pace. It's an assembly line kind of operation.

[Tr. 2330 (Ellwood)]

231. Mr. Yost testified that the progress rates in Mustang's cost estimates are slower than rates that they obtained on the Midcontinent Express Pipeline, REX Pipeline project, and Ruby Pipeline. [Tr. 4726-27 (Yost)]

232. Mr. Phillips testified that Mustang's progress rates are too aggressive because Mustang did not fully take into consideration the terrain, the weather, and the mountains. [Tr. 2452 (Phillips)] Likewise, Mr. Steindorff testified that he had thoroughly studied Mustang's crew sheets, and had concluded that Mustang had "underestimated the numbers of people and the numbers of equipment and the types of equipment that it takes to accomplish the construction." [Id. at 2896 (Steindorff)]

233. Mr. Tise testified that Mustang's 2006 report included some crew-up sheets, but did not include all necessary crews, such as the restoration crew, installation crew, camp construction crew, and the pipe haul crew. [Tise Dep. at 177 (Aug. 19, 2009)] In addition, Mr. Steindorff testified that some of Mustang's "crew makeup's" have "higher productivity rates than what you can achieve in the Lower 48 … it's just not realistic." [Tr. 2898 (Steindorff)]

234. Mr. Steindorff testified that "there's so many things that are so obviously superficial about [Mustang's] time line." [Tr. 2927 (Steindorff)] For example, Mr. Phillips pointed out that Mustang's bar chart schedule inexplicably provides for exactly 211 days for the right-of-way grade for all six spreads, even though some spreads are 20 miles longer than other sections. [Id. at 2450 (Phillips)] Likewise, Mustang estimates four weeks for every river on every spread up and down the line for directional drilling, including the Yukon River. [See Ex. TO-20 at ID 524-534; Tr. 2927 (Steindorff)] In Mr.

Steindorff's opinion, it would take two or three months to put the crossing on the Yukon River. [Tr. 2927]

235. Mr. Yost explained that Mustang's crew-up sheets for different sections of the pipeline have the same durations, "because what we're trying to do is put a book mark in for that task for that contractor." [Tr. 4725 (Yost)] Mr. Yost testified that his philosophy is "tell them what to do, not how to do it." [Id. at 4709] For example, Mr. Yost stated, "Mr. Contractor, we don't care when you do that 200 days worth of work within this 40 or 50-week time frame. You schedule that." [Id. at 4710] Mr. Yost also stated, "what we'll do is adjust what we call special construction costs as a line item that can fluctuate anywhere from $500,000 per spread up to $25 million per spread." [Id. at 4726] But this Court was unable to locate a line item for special construction costs in Mustang's Revision 2 cost estimate to replace TAPS.

236. Mr. Yost testified that he personally did not prepare any crew-up sheets for the TAPS estimates and that he has never prepared a crew-up sheet for any crude oil pipeline. [Tr. 4900 (Yost)] Mr. Yost indicated he had only spot-checked the formulas in Mustang's spreadsheets submitted to this Court. [Id. at 4814-15 (Yost)] He testified that he had not personally verified any labor rates or equipments rates. [Id.]

237. Mustang's work crew-up sheet for the VSMs for Spread 6 estimated a cost of $15,080,095. But in his PowerPoint presentation to this Court, Mr. Yost testified that that same cost was $3,820,000. [Compare Ex. TO-5 at MU000277, Ex. TO-247 at 00042; see also Tr. 4850-51 (Yost)] Mr. Yost explained the difference, stating that "the [PowerPoint] presentation is a representation of an example of a work crew-up sheet … [it] does not necessarily reflect what we have in our report." [Tr. 4850] But this type of

apparently intentional discrepancy considerably reduced this Court's confidence in Mr. Yost's testimony about Mustang's cost estimate.

238. Mr. Steindorff testified that in his view, Mustang is just "playing with numbers." [Tr. 2944 (Steindorff)] For example, Mustang's June 26, 2009 addendum increased the dollar per foot of river crossings, but reduced the length of the river crossings from 120,000 feet to 60,000 feet. The result is a decrease in the estimated cost of the river crossings of $13,620,000 from Mustang's Revision 2 Report. [See Ex. MUN-1013 at 6; Tr. 2943-44]

239. A primary reason for the difference in the estimated construction costs between the Mustang and ProPlus cost studies is due to the considerably higher number of people and equipment that ProPlus estimated would be needed to construct the replacement pipeline. [Tr. 2896 (Steindorff)] ProPlus's testimony and other evidence regarding the number of people and equipment needed for the installation of TAPS was considerably more persuasive than Mustang's. Thus, the Court finds that ProPlus's estimated progress rates are considerably more reliable.

(3) Labor Rates.

240. Unionized pipeline contractors make agreements with unions to work with four craft unions: laborers, teamsters, welders, and operators. [Tr. 2337 (Ellwood)] The contractors must negotiate with specific locals of those unions. [Id.] For example, Local 798 of the United Association of Pipeliners ("UAP") of Tulsa, Oklahoma, negotiates with unionized contractors for the welders. [Id.]

241. There have been no contracts between the UAP and pipeline contractors for Alaska projects since the original construction of TAPS. [Tr. 2338 (Ellwood)] Mr.

Tise noted that UAP has union rates for every state except Alaska. "They know that there's going to be a pipeline built and they're going to pile on all they can." [Tise Dep. at 164 (Aug. 19, 2009)]

242. All parties agreed that a Master Labor Agreement ("MLA") would be negotiated, with UAP Local 798 leading the way. In the original build, the MLA resulted in significantly higher rates for all trades, including unskilled labor, than other construction projects in Alaska.

243. The likelihood that the labor costs would remain similar to the rates on current Alaska construction contracts is slight. Instead, the evidence at the trial de novo persuasively demonstrated that the likelihood is far greater that a negotiated MLA would increase the overall labor costs of the project.

244. To determine its base labor rates, ProPlus determined what the likely outcome would be if labor rates were negotiated as of the lien date. [Tr. 2338-39 (Ellwood)] After consulting with a union contractor, the ProPlus team applied the labor rates that exist between the four crafts unions and the unionized pipeline contractors that apply to the California Zone 1, which is the highest labor for those four crafts in the Lower 48, and then added 15 percent to that base labor rate. [Id. at 2338-39 (Ellwood); id. at 2426 (Phillips); Tise Dep. at 163-64 (Aug. 19, 2009)]

245. Mr. Phillips confirmed with the managing director of the PLCA, Pat Tilburg, that the California Zone 1 rate, plus 15 percent for a pipeline project in Alaska, was a good starting point for the TAPS wage rate. [Tr. 2425-26 (Phillips)] Mr. Phillips also testified that Nevada uses the California Zone 1 rate, as well as two or three other places in the country. [Id. at 2426] Mr. Ellwood believes that this rate is "by no means

high" for the TAPS replacement because an operator would likely not come to Alaska for only a 15 percent incentive when he could instead work near his home in California. [Id. at 2339 (Ellwood)] In addition to the 15 percent adjustment, ProPlus added the union benefits that are included in a union agreement, such as a pension fund. [Id.]

246. ProPlus then took that labor base rate and multiplied it by the hours worked per week to determine the daily labor rate. [Tr. 2339-40 (Ellwood)] ProPlus plans for personnel to work seven days a week, ten hours a day. [Id.] Above 40 hours, the labor rate is set at time and a half, and Sunday is at double time. [Id. at 2340 (Ellwood)] ProPlus planned that personnel would work 8 weeks on, and 2 weeks off, which is a schedule that some of the major contractors use today. [Id. at 2427 (Phillips)]

247. For personnel not covered under the agreements, ProPlus used the rates in the Alyeska Public Works publication and adjusted the labor rates proportionally to the increases it made for the unionized labor rates; however, ProPlus "rounded these [rates] off a little bit so that the 15 percent is not exact." [Tr. 2340 (Ellwood)]

248. Mr. Phillips testified that ProPlus's estimate included a labor force of approximately one-third of the original TAPS build. [Tr. 2442-43 (Phillips)] ProPlus has assumed that the productivity in the current labor force will be considerably slower than the original build, although the time frame to complete the construction will be the same, about two and a half years. That decrease in productivity is due at least in part to additional safety and environmental requirements. [Id. at 2455]

249. ProPlus estimated that considerable efficiencies should be realized as a result of using modern technology, equipment, techniques, and an adequate number of workers that will make up for the slower production rate. [Tr. 2377 (Ellwood)]

250. Mr. Yost testified that he disagrees with "Mr. Phillips' position that the productivity of the younger generation has fallen off dramatically. It just doesn't happen. It's not happening." [Tr. 4795 (Yost)] Mr. Yost based that conclusion on quotes from Life Magazine and on his work experiences with young engineers at Mustang. [Id.]

251. Mustang assumed that the labor rates are likely to be the same as those set by local unions for current Alaska construction projects. [Ex. TO-4 at MU0000038] Mustang estimates an anticipated work schedule for Teamsters and other personnel of six days a week, ten hours a day. [Tr. 4844-45 (Yost)] Mr. Yost testified that Mustang used a rate of $86 per hour for a Teamster I in both its original 2006 study and the updated 2009 Report, which equates to $6,020 a week or $1,003.33 a day. [Id. at 4844-46; Ex. TO-5 at MU 000330] However, Mustang's crew sheets indicate that the daily rate for a Teamster I is $722 per day. [Tr. 4846 (Yost)] On cross-examination, Mr. Yost could not explain the difference between those daily rates. [Id. at 4849] However, on redirect the next day, Mr. Yost explained the difference. [Id. at 4982-84] He testified that for standard additives,[35] Mustang had only billed for 40 hours per week rather than 60 hours per week. [Id. at 4983-84]

252. Mustang's cost estimate also has different daily rates for the Teamsters. [Tr. 4849 (Yost)] For example, the Teamster daily rate for group 1 is listed in different places of the Mustang cost estimate as $619 and $516, and the group 2 rate is listed as $619, $516, and $464. [See Ex. TO-5 at MU000180, MU000181, MU000208, MU000275, MU000262] The reason for these differences was not adequately explained at the trial de novo. Mr. Yost testified on redirect that Mustang has different

[35] Standard additives are "social security, union pension fund, local/state taxes, workman's compensation, subsidized medical and other contractor obligations." [Ex. TO-4 at 000038]

rates for the same group of Teamsters because seniority-level employees will have to be paid a "great deal of money," but this Court found that testimony unpersuasive to explain the different daily pay rates for the same group of Teamsters. [Tr. 4984 (Yost)]

253. Other Mustang usage rate differences were not adequately explained at the trial de novo. For example, Mr. Yost's PowerPoint presentation included a rate for Teamster group 2 at $930 per day for the Gulkana River to Valdez spread. [See Ex. TO-247 at 42; Tr. 4847-48 (Yost)] But Mustang's crew-up sheet had a rate of only $516 for that same spread. [See Ex. TO-5 at MU000277; Tr. 4848-49 (Yost)]

254. This Court finds that Mr. Yost's testimony did not adequately explain the numerous different labor rates in Mustang's cost estimate.

255. This Court finds ProPlus's base labor rates considerably more reliable than Mustang's labor rates.

(4) Equipment costs.

256. Mr. Yost testified that Mustang's "equipment rates were collected from various sources, manufacturers, other textbooks that our contract people are quite familiar with." [Tr. 4723 (Yost)] However, Mr. Yost testified that he did not personally verify any of the rates for the equipment in Mustang's cost estimates. [Id. at. 4814]

257. ProPlus included the rental rate for each piece of equipment in its cost estimate. Mr. Tise testified that ProPlus already had a lot of equipment rates because he was working on a 36-inch, 1,200-kilometer pipeline in Peru and he had already gone through the process of developing rates for that project. [Tise Dep. at 164 (Aug. 19, 2009)] In addition, ProPlus obtained rental rates from Pipeline Machinery, a company in Houston that had 900 pieces of equipment rented out worldwide. [Id.]

258. For equipment that is not normally used on a pipeline, such as big dirt haulers, ProPlus relied on information in the "Caterpillar Handbook" and on Mr. Tise and Mr. Phillips' expertise with estimating equipment costs. [Tr. 2341 (Ellwood)] The Caterpillar Handbook provides a method by which a contractor can estimate or calculate the rental rate for particular equipment and its fuel usage. Mr. Ellwood testified that "Mr. Tise and Mr. Phillips know this by heart, they use it so much in their work. They don't have to sit down and calculate very much, except for some pieces of specialized equipment that they don't use every day in the business." [Id.]

259. ProPlus criticized the types and numbers of heavy equipment in Mustang's cost estimate. [Ex. MUN-1013 at 11-12; Tr. 2938-39 (Steindorff)] For example, Mustang initially used the 320 series backhoes to dig the ditch. In its rebuttal report, ProPlus criticized the use of the 320 series as too small for the TAPS project. [Tr. 2939 (Steindorff)] In its latest revision of its cost estimate, Mustang changed its backhoes to the larger Caterpillar Model 345 instead of a model 320. But Mustang did not adjust the daily cost for the larger machine in that cost estimate, but continued to use its 320 series rate. [Ex. MUN-1013 at 11; Tr. 2939 (Steindorff)]

260. Mr. Yost defended that position, noting that "[t]he bottom line is, the unit price we have for the 320's actually was higher than the unit price that ProPlus had for the 345's. So, it really was a moot point." [Tr. 4724 (Yost)]

261. Another point of contention in the cost estimates relates to the VAC-U-LIFT. Mustang did not include a VAC-U-LIFT in its cost estimate, whereas ProPlus did include a VAC-U-LIFT in its estimate. [Tr. 2445-46 (Phillips); id. at 4855 (Yost)]

262. A VAC-U-LIFT is a device that attaches to the end of a backhoe that is used to unload and securely hold an 80-foot piece of pipe. [Tr. 2445 (Phillips)] In the original construction, a winch was used instead of a VAC-U-LIFT to unload each 80-foot pipe piece with hooks and ropes and two laborers to manually guide it. [Id. at 2445-46] Mr. Phillips testified that "the VAC-U-LIFT has been a big improvement over what we did in the past." He added that he does not understand why Mustang did not use this modern piece of equipment in its cost estimate. [Id. at 2446]

263. Mr. Yost initially testified to this Court that Mustang included a VAC-U-LIFT in its cost estimate. But on cross examination he was unable to find it in Mustang's cost estimates. [See Tr. 4854-55 (Yost)] Alternatively, Mr. Yost testified that the backhoe 345, which was included in the Mustang's Revision 4 cost estimate, could be changed into a VAC-U-LIFT simply by removing a pin. [Id. at 4855] But in order to use the backhoe 345 as a VAC-U-LIFT, Mustang's cost estimate assumed the contractor would remove a backhoe from the ditching crews digging the ditch in front of the stringing crew, hook a VAC-U-LIFT to the backhoe to unload pipes and then take it to back to the stringing crew to lay pipe. [Id. at 4915-16] But during that time, the ditching crew would be down one backhoe. [Id. at 4916] Based on the evidence presented, the Court finds this approach to be unreasonable.

264. ProPlus also persuasively criticized Mustang's choice to use the Caterpillar Model 589 sideboom. [Ex. MUN-1013 at 11] ProPlus noted that the Caterpillar Model 589 proved to be unmarketable to the pipeline industry because it was too slow, so Caterpillar discontinued the Model 589 and introduced the Model 587. [Id.] Only three Model 589s were ever made. [Id.]

265. ProPlus also provided evidence that Mustang has insufficient equipment maintenance costs in its estimate. In this regard, Mr. Tise testified that "they're using … two years construction time, two to 2-½ years, but they're only going to maintain the equipment for 170 days. That's a big cost difference." [Tise Dep. at 179 (Aug. 19, 2009)]

266. This Court finds that ProPlus's cost estimate for equipment costs is considerably more reliable than Mustang's estimate.

(5) Contracting Methods.

267. The cost estimates utilized different contracting methods. Mustang relied on a time plus materials, or cost-plus strategy, whereas ProPlus relied on a fixed unit-price strategy. [Tr. 2440-42 (Phillips); id. at 4776 (Yost)]

268. Using a fixed unit-price strategy, ProPlus assigned a unit rate to different activities on the crew-up sheet to determine its total estimate. There are unit rates for personnel, equipment and for extra costs like hay bales and fencing that are expected to be used. [Tr. 2440-41 (Phillips)] A contractor would bid a set amount to complete the project.

269. Under the cost-plus strategy, a contractor would not bid a set amount, but would be paid based on time and materials used. [Tr. 4790] He noted that the REX Pipeline and Mid Canada Pipeline had used a similar strategy. [Id.] He added the "best way to recognize a cost-plus benefit arrangement between an owner and a contractor is to do a T & M or time and material cost estimate, and what this number does is actually reflect what the total cost would be on a cost-plus basis with a bonus that the contractor might receive." [Id. at 4776]

270. Mr. Phillips testified that as a contractor he has worked under almost all the various contracting strategies. [Tr. 2439 (Phillips)] In criticizing Mustang's use of a cost-plus strategy, Mr. Philips opined that it is inevitable that a project using such a strategy will have more equipment and more employees working at slower pace than a project with a unit-price strategy. [Id. at 2444] Mr. Phillips recalled a total of only about five projects in his career at Willbros that had used a cost-plus strategy, and most of those projects were emergency situations. [Id. at 2441] For example, Willbros negotiated a cost-plus contract to reconstruct an Ecuador crude oil export line after an earthquake had destroyed it and completed another emergency post-war project in Kuwait on a cost-plus basis. [Id.]

271. Mr. Yost testified that contractors would likely not enter into a fixed-unit price contract for the construction of a replacement TAPS. [Tr. 4789 (Yost)] This admission is evidence, in this Court's view, of the risk associated with completing TAPS within Mustang's RCN estimate. Also, while Mustang utilized a cost-plus strategy and Mr. Yost testified as to the need to control the costs with cost and time incentives, this Court could not locate the inclusion of the cost of any such incentives in the Mustang RCN. [Id. at 4776-77; Ex. To-4]

272. Mustang also does not appear to have taken into account the reduced control over labor costs associated with a time and materials contract, making their total costs associated with the use of this contracting strategy considerably less reliable. [Tr. 4789-91 (Yost)]

273. The Municipalities' experts persuasively demonstrated at the trial de novo that the overall cost of a construction contract based on time and materials (also known as "cost-plus contract") is likely to far exceed the cost of a fixed unit-price contract.

274. This Court concludes that the ProPlus study is the more reliable of the two estimates on this point.

d. Pump Station Facilities.

275. Both the Mustang and ProPlus cost estimates used variable speed pumps like the pumps being installed by Alyeska as part of the strategic reconfiguration of the pipeline. [Tr. 4702 (Yost)]

276. ProPlus determined that the most efficient way to construct the pump stations would be to modularize the equipment as much as possible so that the major pieces of the pump station, such as the electrical generation, power distribution, and the control units, would be built in a yard off-site in a facility where there would be better control over the materials and the weather. [Tr. 2357-58 (Ellwood)] Then the modules would be hauled out to each pump station site and connected together. [Id.] Because ProPlus assumed this modular construction, the crew and camp stations needed out in the field are smaller than what was needed for the original construction project. [Id.]

277. This Court was persuaded that ProPlus's cost estimate on this part of the RCN analysis resulted in a proper valuation of these costs.

e. Valdez Marine Terminal.

278. The expert reports presented by the Owners and Municipalities at the trial de novo estimate a difference over $1.7 billion in cost to replace the utility of the Valdez Marine Terminal (VMT). Mustang estimated that the cost to replace the VMT and

berths at $546,261,000 before contingency. [Ex. TO-4 at 00046] ProPlus estimated the cost at $2,286,737,200 before contingency. [Ex. MUN-7 at 37]

279. The original VMT cost at least $1.12 billion to build in 1977 dollars, which equates to approximately $3.3 billion in 2006 dollars. [Ex. MUN-588 at 600; Tr. 3905 (Padwolny)]

280. When the original cost of the VMT is adjusted for inflation, the ProPlus VMT estimate is about two-thirds of the original cost, whereas the Mustang VMT estimate to replace the Valdez terminal is only about 17% of that original cost.

281. Mr. Lloyd prepared the VMT estimate portion of the ProPlus cost report. He based it upon a 1.1 million bbl/day capacity and the best technology available in 2006, which it considered to be a significant modernization compared to the technology in 1975-77. [Tr. 2754 (Lloyd)] Mr. Lloyd testified that he had estimated the cost of the VMT facilities based on how a general contractor on the project would estimate it, including subcontracts for specialty work. [Id. at 2883] Mr. Lloyd also considered the remote location in his estimate by including additional safety and functional protections, including a 100 percent redundancy for all critical operations – from receiving the crude oil through loading it onto ocean-going tankers. [Ex. MUN-7 at 25]

282. Mustang's RCN estimate assumed implementation of a VMT Strategic Reconfiguration Program. However, as of the lien date, the program and associated expenditure of the Owners' funds to implement it had not been approved by the Owners. [Tr. 2609-11, 2709 (Riordan)]

283. Six significant areas of disagreement between the two VMT cost studies are (1) fixed versus floating roof storage tanks, (2) number of loading berths, (3) number

of tanks, (4) excavation, (5) the ballast water treatment plant, and (6) seawater versus freshwater fire system.

(1) Fixed Roof Tanks v. Floating Roof Tanks.

284. The Mustang cost estimate included 12 floating roof tanks, with a total storage space for 6 million barrels. [Tr. 4679, 4791 (Yost)]

285. ProPlus's cost estimate included 15 fixed-roof tanks for a total storage space for 7.2 million barrels. [Tr. 2753 (Lloyd); Ex. MUN-7 at 28]

286. Mr. Lloyd used fixed roof tanks in his cost estimate due to concern about high seismic activity, the massive size of the tanks themselves, the tremendous snow load typical of Valdez winter weather, and the unknown risks about floating roofs. [Tr. 2762-67, 2791-92 (Lloyd)]

287. Mr. Riordan of Alyeska testified that Nyman & Associates had conducted a study for Alyeska with respect to floating roofs several years ago. [Tr. 2601-02 (Riordan)] However, Mr. Riordan indicated that it had been five or six years since he had last looked at that study. [Id.]

288. Mr. Lloyd looked at Mr. Nyman's report in preparation for the trial de novo. Mr. Lloyd stated that "in that report there's quite a bit of cautions they had in there about floating roofs." [Tr. 2764 (Lloyd)]

289. The Nyman report outlined three areas of concern in using floating roofs: (1) the potential for the floating roof to sink; (2) the floating roof as an ignition source; and (3) excessive loads on roof support columns. [Ex. MUN-431 at 32-33] The Nyman report also indicates that "[t]here appears to be a trend of greater percentage of floating roof damage with tank diameter" greater that 30 meters or approximately 95 feet. [Id. at

15-16] The diameter of the tanks at the VMT is approximately 250 feet. [Tr. 2794 (Lloyd)]

290. Mr. Yost, in the course of his testimony, presented a seismic zone map. [Tr. 4704] He testified that "between the San Andreas Fault in California up through and including points in Alaska … [there are] over 50 floating roof tanks ranging in diameter from 120 feet to 290, almost 300 feet in diameter." [Id.] Mr. Yost provided no listing of the locations of each of those tanks and no exhibit to support that assertion. In direct contravention of this Court's repeated disclosure orders, this seismic information was not provided to the other parties until Mr. Yost's testimony at the trial de novo. [See id. at 4951-53; Ex. TO-247 at 142-43] Thus, this Court will not accord any weight to Mr. Yost's testimony on this topic.

291. Mr. Lloyd testified that, based on a National Environmental Policy Act ("NEPA") review of Alyeska's Proposed SR VMT Project, there would be an increase in air emissions if floating roof tanks were used instead of fixed roof tanks. [Ex. MUN-432 at 58-59; Tr. 2795-96 (Lloyd)] Mr. Lloyd opined that there could be an engineered solution to this problem, but that would be an additional cost to the installation of the floating roof tanks. [Tr. 2795]

292. Mr. Yost testified that the "EPA [Environmental Protection Agency] prefers floating roof tanks, and the "API 650 says floating roof tanks are the way to go when you can use it." [Tr. 4703 (Yost)] No documentation was submitted to support either of these assertions.

293. ProPlus also selected the fixed roofs because the vapor created within the fixed tanks is needed to provide power at the VMT. [Tr. 2766 (Lloyd)] ProPlus allowed

for modern efficient gas turbine generators that will take the vapors from the tanks and burn them so as to create a reliable power source for the terminal. [Id. at 2767-68]

294. Mustang's cost estimate relies on Copper Valley Electric as the primary power source for the VMT. [Tr. 2784 (Lloyd); id. at 4974 (Yost)] Copper Valley Electric is an isolated rural electric company unconnected to the Alaska power grid. [Id. at 4937-38 (Yost)] Mustang's proposed backup power supply is diesel fuel turbine generate. [Id. at 4677-80] Mustang did not look into any other alternative source of power. [Id.]

295. Mr. Yost testified that "[w]e do know for a fact that the Copper … Valley Authority Co-op was very interested in supplying power to Valdez Marine Terminal, and in 2006 seemed to be rather disappointed that the TAPS Owners broke off negotiations. To be honest, I think I wouldn't be surprised if TAPS Owners went back and talked to Copper Valley later on to try and rekindle that negotiation." [Tr. 4677-78 (Yost)] However, Mr. Yost subsequently acknowledged that he did not know whether it was possible to supply power to the Valdez Marine Terminal from Copper Valley Electric on January 1, 2006, and that he does not know why the Owners are not continuing negotiations to buy power from Copper Valley Electric. [Id. at 4938-39, 4942-43]

296. Contrary to Mr. Yost's testimony, Alyeska engineer Joe Riordan testified that as of January 1, 2006, Copper Valley Electric did not have the ability to provide the necessary electricity to the VMT and that as of the date of the trial de novo in the fall of 2009, Alyeska had no plan in place for Copper Valley to supply the necessary power to the VMT. [Tr. 2719-20 (Riordan)] Mr. Lloyd testified that Copper Valley lacks sufficient generating capacity to power the terminal based on his review of a strategic discussion power paper Copper Valley Electric prepared in 2006. [Id. at 2771] He stated that

"there's very little margin [of electricity] left for anybody else, much less a major oil terminal." [Id.]

297. Mr. Lloyd testified that diesel generators could be an alternative source of power, but that would create significantly higher fuel costs. [Tr. 2768 (Lloyd)] If diesel fuel was used, Mr. Yost testified that it could be brought in by barge, but he did not know from where it would be barged. [Id. at 4945 (Yost)]

298. Based on the foregoing testimony, this Court finds that Copper Valley Electric did not have the ability to provide the necessary electricity to the VMT as of January 1, 2006, and that there is insufficient evidence of any economically rational alternative source of power if floating roof tanks were installed.

299. In addition to the other evidence the Municipalities introduced on the tank cover issue, ProPlus persuasively demonstrated that simply on the basis of the need for a reliable source of power at the VMT, the 2006 RCN for the VMT should be premised on the use of fixed, and not floating, roofs over the oil storage tanks.

300. This Court also found persuasive Mr. Lloyd's opinion that fixed roofs are less expensive than floating roofs to install and maintain, particularly where, as here, a floating roof would require some kind of cover due to snow loads. [Tr. 2762 (Lloyd)]

(2) Number of Berths.

301. The Mustang and ProPlus RCNs also disagree on whether there should be a lay berth at the VMT in addition to two berths capable of loading crude tankers.

302. Four tanker berths were built originally. Two of the original berths are currently capable of loading crude tankers. [Tr. 2613 (Riordan)] As of the lien date, a third berth was used for various purposes, including the delivery of diesel fuel and the

laying up of a tanker due to weather. [Ex. MUN-1424] The fourth original berth was completely out of use as of the lien date.

303. Mr. Lloyd testified that for the VMT replacement as of the lien date, "In terminal design, I would recommend to the client to put in the lay berth in a remote location like this for weather delays, ship repairs, [and] training sessions." He stated that you do not want to have a "ship waiting to get to a berth to load if there was a weather event." [Tr. 2778 (Lloyd)]

304. Mr. Lloyd's opinion is supported by Owners' application to the RCA to decommission their berths, dated December 12, 2008. In that application, the Owners asserted, "[t]he TAPS Carriers' intend to continue using Berth 3 indefinitely for purposes other than loading crude. Apart from loading crude oil, Berth 3 is currently and frequently used and useful as a layover berth in various circumstances, as for example, when Hinchinbrook Entrance is closed due to adverse weather conditions in the Gulf of Alaska, for crew member medical evacuations, for vessel repairs, or in support of oil spill drills." [Ex. MUN-498 at 6; Tr. 2802 (Lloyd)]

305. Mr. Riordan of Alyeska initially testified at the trial de novo that both Berths 1 and 3 are no longer used for any purpose and that he has not seen any tankers at either berth in a long time. [Tr. 2612, 2712-16 (Riordan)] However, after reviewing the berthing logs on cross-examination, he admitted that there had been approximately 75 vessels dockings at Berth 3 from 2003 to 2009. [Ex. MUN-1424; Tr. 2716] Mr. Riordan testified that he has had no involvement at Alyeska related to decommissioning of berths. [Tr. 2720 (Riordan)]

306. Mustang used two loading berths and omitted the lay berth from its cost estimate. [Tr. 4682 (Yost)] Mr. Yost testified that the lay berth was unnecessary because FERC filings stated that the third berth is almost never used. [Id.] Mr. Yost did not submit any FERC filings to this Court to support his position. Mr. Yost testified that it does not matter that the evidence demonstrated that 75 dockings have occurred at the third berth over the last six years, because tankers can also dock at the municipal dock at Valdez. [Id.] Mr. Yost showed the Court a satellite image of a tanker docked at the municipal dock at Valdez. [Id. at 4774-75 (Yost)]

307. This Court finds that ProPlus's reliance on the Owners' RCA filings regarding berth usage plans to be reasonable. Mr. Lloyd's testimony about those documents showed that the Owners intend to decommission and remove only one of the four original berths, but have sought to maintain the other "extra berth" for miscellaneous uses. Thus, two loading berths and one lay berth were in use and should reasonably be considered part of the existing useful property as of the lien date to be included in the RCN. Under the facts presented at trial, the ProPlus berth design more accurately replaces the existing utility of the system with respect to berths.

(3) Number of Tanks.

308. ProPlus and Mustang had different numbers of tanks in their cost studies. ProPlus had 15 tanks with a total of 7.2 million barrels of total storage capacity. [Ex. MUN-7 at 28] Mustang had 12 tanks with 6 million barrels of total storage capacity. [Ex. TO-4 at MU000029; Tr. 4679 (Yost)]

309. The ProPlus design includes 15 tanks of 510 bbls capacity each and is based on 1.1 million bbl/d throughput capacity. [Ex. MUN-7 at 28; Tr. 2759 (Lloyd)]

ProPlus's design capacity includes storage that could be used to store crude oil for up to 32 hours due to weather delay based on the capacity. [Tr. 2759-60]

310. Alyeska employee Tom Stokes was the VMT manager in 2006. [Tr. 2760, 2806 (Lloyd)] He testified in his deposition that the Owners are currently using 15 tanks. [Id.; Tom Stokes Dep. at 32 (August 15, 2008)]

311. A Petroleum News article dated December 29, 2008 stated that the pipeline had been shutdown for approximately six hours due to bad weather, the pipeline had been moving about 750,000 bbl/d, and the tanks were filled to 91 percent capacity. [Ex. MUN-427 at 1] ProPlus reasonably relied on this article to support its RCN using a 15 tank farm for the VMT.

312. Mr. Riordan testified that Alyeska had determined that it needed only 12 crude oil storage tanks to maintain on a going-forward basis. [Tr. 2595 (Riordan)] But on cross-examination, Mr. Riordan admitted that even though 15 tanks were in operation, Alyeska "had to shut down the pipeline because of insufficient tankage at Valdez" due to weather delays to the tankers. [Id. at 2734]

313. The Court finds ProPlus's use of 15 tanks for the VMT as of the lien date to be a more reliable estimate of a replacement cost than Mustang's estimate at 12 tanks.

(4) Amount of Excavation.

314. The issue of the appropriate number of tanks relates to another disputed issue regarding the necessary amount of excavation and fill.

315. On the original build, the final excavation amount was approximately 15 million cubic yards. [Ex. MUN-588 at 585; Tr. 2802-03 (Lloyd)]

316. Mr. Tise generated the excavation plan and costed out the gravel and movement of the gravel and rock for the VMT. [Tr. 2824 (Lloyd)] Mr. Lloyd testified that ProPlus excavated enough for 15 tanks and a small area for the power plant and ballast water plant. [Id. at 2783] He indicated that the area they planned to excavate was about two thirds of the original excavation. [Id. at 2802] And he persuasively testified that Jackson Point would need to be filled, as it had been in the original construction, so that there would be a level area to lay down equipment. In his words, "I don't know how we would build it otherwise." [Id. at 2829 (Lloyd)]

317. Mr. Steindorff testified that ProPlus could not find where Mustang accounted for all the excavation required in the Mustang RCN. [Tr. 2914 (Steindorff)] Mr. Yost testified that they had estimated about 4 million cubic yards of excavation, which he believed was "probably more than a million cubic yards than we need to take out for a million barrel flow rate." [Id. at 4791 (Yost)]

318. This Court finds that the ProPlus's estimate for the cost of excavation is reasonable and that insufficient evidence was provided to support the Mustang estimate.

(5) Ballast Water Treatment (BWT) Plant.

319. A BWT plant treats the ballast water from tankers. There are other uses for the plant. For example, if there is a spill at the tank farm during a rainstorm, the water must be treated before it is released. In addition, if there is a major fire, the fire waters contained inside the tank farm would have to be treated. [Tr. 2771-72 (Lloyd)]

320. ProPlus used a dissolved air flotation system for its BWT. [Tr. 2773 (Lloyd)] But Mr. Lloyd testified on direct that ProPlus had recently received a detailed

study on what is currently performed at the plant and over the "last few days, we've read through that, and I'll admit that that system to me looks like a much better, more efficient system than what we have included for the type of system." [Id.] However, ProPlus reasonably relied on the materials provided to it in pretrial discovery to prepare its cost estimate of the BWT.

321. This Court received insufficient information to support Mustang's cost estimate for a BWT.

(6) Seawater Fire System v. Fresh Water Fire System.

322. ProPlus included in its estimate a seawater fire system; Mustang included a fresh water fire system. [Tr. 2775 (Lloyd)]

323. Mr. Riordan testified that the conceptual plans for SR at the VMT would convert the salt water fire system to a fresh water system because salt water is very corrosive. [Tr. 2709 (Riordan); id. at 2776 (Lloyd)] The SR VMT plan would create a pond just above the west tank farm with a pipe that would run down and connect to the existing pipe. [Id. at 2608-09] However, Alyeska has no current plans to implement the VMT SR plan.

324. Mr. Lloyd testified that ProPlus used seawater in its RCN fire system because "[d]own the shoreline we've got … an infinite unlimited supply of water." [Tr. 2775, 2797 (Lloyd)] In contrast, Mr. Lloyd testified that there is risk involved in using a fresh water pond because it is subject to volume fluctuations if it freezes in the winter time or if there was a drought. [Id. at 2775] In addition, Mr. Lloyd believes that a seismic event could impact the amount of water available in the reservoir. [Id. at 2776] Mr.

Lloyd testified that "[t]he reservoir could leak severely, it could lose water, it could lose its capacity." [Id. at 2777]

325. This Court finds that ProPlus's estimate based on a seawater fire system is reasonable, and the inclusion of a fresh water system that the Owners have investigated and has not chosen to pursue would result in an improper valuation.

2. Indirect Costs.

326. Indirect costs are percentages that might be applied to all or some portion of the direct costs. [Tr. 2889 (Steindorff)]

327. Indirect costs at issue include (1) project and construction management, engineering, and inspection, (2) owners' costs, (3) inflation, (4) ad valorem taxes and interest during construction, and (5) contingency. Each of these items is typically calculated as a percentage of direct costs associated with a project. Both the Mustang and ProPlus RCN estimates for TAPS include the same categories. For the most part, the variances between the estimates for these indirect costs are due to the difference in the direct costs that form the basis for each indirect cost. [Ex. MUN-559 (comparing section X of Ex. MUN-7 and Ex. 561 with section I of Ex. TO-5)]. Major areas of disagreement between the studies are discussed below.

a. Project and Construction Management, Engineering, and Inspection.

328. In its 2006 TAPS assessment, SARB determined that there should be a program manager profit of 3 percent of direct costs. [R. 21] Beginning in 2008, SARB adopted a project management fee of 7.5 percent that included construction management, engineering, and inspection in addition to the project management fee. [Ex. SOA-36 at 18]

329. The ProPlus cost estimate for 2006 included an allowance of 7.5 percent of its direct costs for all project management costs. Mustang's study included an approximate 3 percent allowance for these costs. [Ex. MUN-559 at 2]

330. Referring to the Mustang's 3 percent project management expense, Mr. Steindorff testified that he has "never seen that low a percentage on any project for … project management, construction management, engineering, procurement, inspection, and right-of-way acquisition of permit." [Tr. 2920 (Steindorff)] From Mr. Steindorff's experience, the range of percentages on projects such as replacing TAPS "could be as low as 5 or 6 percent for just the pipeline portion; but when you [include] pump stations and terminals, the percentage goes up because there is a lot more engineering involved." [Id. at 2920-21]

331. Likewise, Mr. Ellwood testified that "if you were just building a straight pipeline, particularly if there are no pump stations involved, about 5 percent is what we would normally apply. Pump stations, things like the Valdez Terminal, are more engineering intensive, and we normally would use 10 to 15 percent. So, we put an average of 7½ percent to cover these costs." [Tr. 2362 (Ellwood)]

332. At the time of his deposition in this case in June 2009, Mr. Yost could not remember what the project management percentage was for the Mustang cost study. [Tr. 4812 (Yost)] At trial, Mr. Yost testified that Mustang had used 11.1% for "project, construction management, engineering, inspection services," but he did not explain how this was derived or where it is represented in the Mustang cost estimate. [Id. at 4777; Ex. TO-4 at MU000045-46] The executive summary of Mustang's Revision 2 lists one

line item – Program Management (Owner's Cost), which appears to encompass two different costs. [Ex. TO-4 at MU000046]

333. This Court was persuaded that project management costs are considerably greater than 3% and normally run from 5% on less complicated projects to as much as 15% for more complicated projects. Based on the evidence presented, including ProPlus's estimates for pipeline installation versus the pump stations and the VMT, ProPlus's 7.5% for program management costs is reasonable.

b. Owners' Costs.

334. The owners' costs on the original TAPS were approximately 11.9 percent of the total direct costs incurred for the construction. [Tr. 2365 (Ellwood)] These costs included items such as insurance, bonding, financing costs (the costs of owners' personnel to arrange financing and permitting costs. [Id.]

335. Mr. Yost indicated that Mustang estimated owners' costs at 8.4 percent of direct costs for 2006. [Tr. 4778 (Yost)] With respect to owners' insurance, Mustang's Revision 2 executive summary does not include any cost, indicating simply that that is to be "purchased by client." [Ex. TO-4 at MU000046]

336. ProPlus estimated owners' costs at 10 percent of direct costs in its 2006 RCN cost study.

337. Although Mustang and ProPlus percentages for owners' costs are fairly close, given the large difference between the two studies estimate of direct costs, the difference in owners' costs between the two studies when applied is approximately $600 million. [Tr. 2917 (Steindorff); Ex. MUN-559 at 2 (comparing section XI of Ex. MUN-7 and section XVIII of Ex. TO-5)]

338. In 2006, the Department relied primarily on a trended update of Mustang's 2005 original cost study. [R. 0380-82] That estimate does not appear to have a separate item for owners' cost. SARB made no determination on this issue in 2006. [R. 1-30]

339. In 2008, the State's Assessor, Mr. Greeley, agreed with ProPlus that 10 percent was most likely the correct estimate for the owners' cost portion of the RCN, but he "shaved it back to five percent" that year because he was concerned that he might potentially include costs that were not taxable or not directly related to the cost of construction, public relationships, legal fees, regulatory issues, or tariff issues. [Tr. 1434 (Greeley)] In 2008, SARB supported the Department's decision and set the owners' costs at 5%. [Ex. SOA-36 at 18]

340. In 2009, Mr. Greeley made the same 5% determination on owners' costs, but that year SARB found that the Municipalities had met their burden of proof to show that ProPlus's 10% for owners' costs were justified. [Ex. SOA-37 at 20] In this regard, SARB held that "[t]he Board found particularly persuasive the testimony for the Municipalities' witnesses on the importance, in a project like the TAPS, of having personnel from the Owners to shadow contractor personnel and closely monitor the ongoing construction work in order to limit delays and cost over-runs." [Id.]

341. Mr. Steindorff testified that he would expect the construction of TAPS by multiple owners to also impact the owners' cost, because "every owner, obviously, is looking after their own interest." [Tr. 2918 (Steindorff)] In addition, "[t]hese major companies … [each] have their own set of specifications." [Id. at 2919]

342. Overall, the evidence presented at the trial de novo persuasively demonstrates, and this Court finds, that owners' costs should be 10% of direct costs for the 2006 assessment, and that the failure to include such a figure would result in an improper valuation of TAPS.

c. Inflation.

343. Neither Mustang nor ProPlus included inflation in their RCN calculations. [Tr. 2323 (Ellwood); id. at 4740 (Yost)] Instead, each computed the cost to build an RCN pipeline as of January 1, 2006, and did not account for inflation after that date even though each cost estimate assumed that it would take many months to complete a replacement pipeline.

344. Carlton Karlik testified on behalf of the Owners that he believed that ProPlus had embedded some escalation or inflation in its cost study based on the following statement in ProPlus's report: "The contractor will also assume the risk of price inflation on items that he is responsible for purchasing, such as fuel and explosives." [Tr. 5721-22 (Karlik); Ex. MUN-7 at 21] Mr. Karlik's testimony on this issue was not persuasive, particularly since he did not prepare a cost estimate for TAPS, nor did he perform a Monte Carlo analysis. [Tr. 5890-92]

345. Mr. Ellwood testified that ProPlus allocated risks, such as price inflation, labor productivity, and equipment repair, to the contractor instead of to the owner because the contractor is in the best position to manage such risks, but that their cost estimate used prices as of January 1, 2006. [Tr. 2322-24]

346. Mark Cronshaw[36] testified persuasively that inflation and escalation risk is not included in ProPlus's Monte Carlo contingency. [Tr. 3018-19]

d. Ad Valorem Taxes & Interest During Construction.

347. The ProPlus estimate included $465,374,700 for ad valorem tax during construction, and the Mustang estimate included $259,259,500. [See Ex. MUN-559 at 2 (comparing section XIV of Ex. MUN-7 and XVI of Ex. TO-5)]

348. In the ProPlus estimate, the ad valorem tax is based upon a set formula employed by the Department as a percentage of direct costs. 15 AAC 56.110(b). [Ex. MUN-7 at 35] The ProPlus team "used Mr. Greeley's method of calculating the ad valorem tax that had also been accepted by SARB." [Tr. 2349 (Ellwood)]

349. The ProPlus estimate included $1,860,439,600 for interest during construction, and the Mustang estimate included $881,395,400. [Ex. MUN-559 at 2 (comparing section XV of Ex. MUN-7 and XIX of Ex. TO-5)]

350. In the ProPlus estimate, interest during construction was calculated by assuming a percentage of project spending spread over a seven-year period and assuming 100% debt at a cost of 6.00%. [Ex. MUN-7 at 35]

351. Mr. Steindorff testified that he could not find the calculations for the ad valorem tax and interest during construction in the Mustang cost estimate, so he was not certain if Mustang used the same methodology as ProPlus. [Tr. 2892] But he said it

[36] Dr. Mark Cronshaw was qualified as an expert in economics and risk assessment modeling. [Tr. 2993] Dr. Cronshaw is the Chief Economist with Gustavson Associates, a global consulting firm solving problems on all aspects of natural resource evaluations including the design and assessment of production facilities. Dr. Cronshaw has a Ph.D. in Engineering-Economics from Stanford University, an M.B.A. from Southern Methodist University, an M.S. in Chemical Engineering from the California Institute of Technology, and a B.A. in Chemical Engineering from Cambridge University. [Tr. 2987-2993]

appeared that the main reason for these differences in the two studies stem from the large differences in the direct costs between the two estimates.

352. The Municipalities have demonstrated that the ProPlus methodology for the inclusion of ad valorem taxes and interest during construction are appropriate steps for the proper determination of the assessed value of TAPS in 2006 and consistent with this Court's prior determinations on those issues.

e. Contingency.

353. It is standard practice to include a contingency in a cost estimate to account for uncertainty about the actual cost. Mr. Cronshaw's expert report stated that the Association for the Advancement of Cost Engineering ("AACE") defines contingency as "an amount added to an estimate to allow for items, conditions, or events for which the state, occurrence, or effect is uncertain and that experience shows will likely result, in aggregate, in additional costs." [Ex. MUN-10 at 7] Mr. Cronshaw testified that the standard approach to measure contingency is the P 50 or 50 percent level of confidence (i.e., the contingency amount that – when added to the base estimate – makes it equally likely that the project will cost more or less than the estimate). [Tr. 3000 (Cronshaw)] "The appropriate amount of contingency depends on the desired level of certainty that the actual cost of a project will not exceed the estimated cost." [Ex. MUN-10 at 7]

354. In 2006, there is no separate discussion in SARB's decision of a contingency in the assessed valuation of TAPS. Mr. Yost testified that a contingency totaling approximately 10% was in the Mustang RCN that was presented to and relied upon by the Board. [Tr. 4739 (Yost)] In 2007, the Department used an 8% contingency, which appears to have been adopted by the SARB. [Ex. SOA-35 at 12] In 2008, the

Department reduced ProPlus's proposed contingency factor from 25% to 20%. On review to SARB, the Board concluded that the contingency factor should be no more than 5%. [Ex. SOA-36 at 18-20] Most recently, in 2009, the Department used a 5% contingency factor which the Board rejected as improper and instead employed a 25% contingency. [Ex. SOA-37 at 18]

355. AACE has a system that uses a designation of Class 1 to 5 to estimate expected accuracy ranges of cost estimates. As explained by Mr. Cronshaw:

> The AACE defines five classes of cost estimates with Class 5 being preliminary or conceptual when there is a lot of uncertainty … Class 1 is a cost estimate that's prepared after all the bids have been received and it's referred to as a control estimate that might be used for budgeting process -- purposes.

[Tr. 3035 (Cronshaw)] A conceptual study, for example, would have a relatively high contingency because the detailed design basis, engineering and permitting would not yet have occurred, while a budgetary estimate would employ a lower contingency if a detailed cost estimate had been prepared. In addition to the level of design definition impacting the contingency, potential lenders for a project often require the project estimate be held to a high level of certainty (greater than P-50) and thus a lower contingency than might be used by management. [Id. at 2998-3000]

356. The contingencies estimated by the parties were substantially different as was the depth of the contingency estimates. In its Revision 2 cost estimate, Mustang's contingency analysis for the 2006 tax year is explained in less than one-half a page of text, with no backup materials or workpapers. [Ex. TO-4 at MU000019, MU000068] In its initial 2005 study, Mr. Yost testified that Mustang used a 5% contingency that was "built into" the estimate. [Tr. 4823-24] In the 2006 study presented to SARB, Mustang

broke contingency into three line items. "We had materials, roughly at 6.5 percent, [installation] at 10 percent, and then what we labeled as 'other' at 15 percent." [Id. 4739 (Yost)] According to Mr. Yost, that came out to about 10%. [Id. at 4743] In its updated study for 2006, Mr. Yost stated that Mustang used an approximate 9% contingency. [Ex. TO-4 at MU000019; Tr. 4835 (Yost)] Mr. Yost also testified that Susan Schweizerhof with Mustang performed a Monte Carlo analysis of the major cost categories that "came out a little bit lower than what this cumulative total was …." [Tr. 4744] However, the Owners did not offer Ms. Schweizerhof or any other witness to testify about the Mustang Monte Carlo modeling or Mr. Cronshaw's critiques of it that were set out in his rebuttal report. [Ex. MUN-12]

357. In his comments on the Mustang contingency analysis, Mr. Cronshaw stated that "[n]o discussion is presented for how these contingency percentages were derived, or if and how the results of the Monte Carlo analysis were used at all." [Ex. MUN-12 at 6] The Mustang Monte Carlo remained unsupported and unexplained to the Court by the end of the trial.

358. Mr. Karlik did not determine a specific contingency for TAPS. But he testified for the Owners that a range of 5% to 10% contingency was typical when doing a replacement cost new estimate (versus an original construction estimate). [Tr. 5715 (Karlik)] Based on the totality of evidence presented on the contingency issue, this Court found that testimony unpersuasive.

359. Mr. Cronshaw testified for the Municipalities. He presented a comprehensive and well-documented contingency analysis consisting of over 1600

pages of materials that were admitted into the record. [Exs. MUN-10; MUN-10A; MUN-11]

360. From his Monte Carlo analysis, Mr. Cronshaw concluded a 45% contingency was the appropriate amount for a P-50 case for the ProPlus study. [Tr. 2998-99 (Cronshaw)] ProPlus, based on the experience and consensus of the team, reduced that amount to a 25% contingency. [Tr. 2365-72 (Ellwood); id. at 2424-39 (Phillips); id. at 2830-31 (Lloyd); id. at 2881-82 (Steindorff)] Mr. Cronshaw estimated that ProPlus's use of a 25% contingency meant there would be a 95 percent chance that the actual cost of the project would exceed ProPlus's final cost estimate. [Id. at 2999-3000 (Cronshaw)]

361. The differences between the contingencies adopted by Mustang and ProPlus reflect their assumptions about the level of project definition and engineering. Mustang assumed that the project had little or no uncertainty due to it being an estimate to build a replacement for TAPS as of a fixed date in the past. Mustang concluded that because much was known about TAPS today due to it already having been constructed, there was minimal uncertainty in the cost of obtaining such items as permits for construction and a 9% contingency was appropriate. Mr. Yost testified that "[i]t all had to do with the level of risk and the confidence we had that number, knowing that 10 percent is the number that we always shoot for in a due diligence or an RCN-type project." [Tr. 4739-40 (Yost)] Yet, in the original TAPS build, the real cost of delays related to obtaining permits and notices to proceed, as well as work-arounds, resulted in an actual cost nearly ten times the amount of the original estimate. [Id. at 3039-40 (Cronshaw)] Mustang's 9% contingency is more in keeping with a well-defined project

with firm bids already in place and few cost uncertainties, and reflects neither the paucity in Mustang's actual design and engineering nor the risks of a major Arctic pipeline construction project (even one with firm bids and ready to proceed to construction).

362. Two TAPS-related cost estimates performed for the Owners support the Court's conclusion that a 25% contingency is the minimum appropriate contingency to achieve a proper assessed valuation of TAPS.

363. As part of discovery, the Owners provided certain authorizations for expenditure ("AFE") related to the Owners' budgetary approval of SR of TAPS. In March 2004, the Owners authorized SR in the amount of $233 million (after $10 million had already been spent on engineering). [Tr. 3039-40 (Cronshaw)] In 2007, Alyeska prepared supplemental AFEs seeking approval of additional expenditures that raised the cost of completing SR to over $600 million, or about a 250% cost overrun. [Id.; Exs. MUN-533 to MUN-536][37] In these supplemental AFEs, Alyeska used a 17% to 18.5% contingency to complete the SR – after much of the SR had already been completed and substantial cost overruns already incurred. As Mr. Cronshaw explained in unrebutted testimony discussing the 2007 supplemental AFE: "what I noted was the [2007 supplemental] AFE asserted at that point that Pump Station 3 construction was 75 percent complete at that time, and they were still including a 17 or 18-and-a-half percent contingency." [Tr. 3041 (Cronshaw); see also Ex. MUN-533]

[37] In their proposed findings, the Municipalities assert that these exhibits support a finding that the total SR cost would be $731 million. It was unclear to this Court how that amount was derived from these exhibits. Instead, this Court is relying upon the testimony of Mr. Greeley that estimated the total SR cost at over $600 million. [Tr. 1396 (Greeley)]

364. A summary from a 2006 update of a 2005 Fluor cost study prepared for the Owners for FERC ratemaking proceedings estimated the cost for a dismantlement project of TAPS before contingency at $1.5796 billion. Fluor then added a contingency of exactly 25%, or $.394901 billion, to its estimate for that work. [Ex. MUN-474; Tr. 5883-87 (Karlik)]

365. At the trial de novo, the Owners' witnesses did not address or contest either the 2007 AFE or the Fluor study – evidence which directly refuted their contention that a contingency in the range of 5 to 10% would be appropriate for the RCN of TAPS.

366. In 2009, SARB articulated why it had concluded that a 25% contingency should be adopted, and applied to the ProPlus RCN cost study:

> The Board found that these risks [the risks included in the contingency] were not otherwise accounted for in other cost elements in the study. For example, the Board found that the Municipalities met their burden of proof to show that the cost associated with contractors' risk in the Pro Plus cost study did not include the cost of risks covered by the 25% contingency factor. The Owners failed to refute this evidence. Instead, the Owners provided evidence that the contractors contacted during the preparation of the Mustang study had indicated they would be unwilling to bid on anything other than a cost plus contract for an Alaska TAPS project. The Board found that this evidence indicated that relevant leaders in oil pipeline construction industry believe that there would be a great deal of risk in a TAPS replacement project that they would be unwilling to attempt to quantify and assume.

[Ex. SOA-37 at 19-20] The substance of the ProPlus cost study before SARB in 2009 is the same as that before this Court at the trial de novo for 2006, with the costs adjusted for the different year. This Court concurs with the SARB's 2009 analysis and finds that based upon the evidence presented at trial de novo, a contingency less than 25% would result in an improper valuation of TAPS for the 2006 tax year.

3. Reality Checks of the Replacement Cost New.

367. Both ProPlus and Mustang conducted a "reality check" of their RCN estimate by comparing their estimates to other major pipeline project estimates. [Ex. MUN-7 at 35-36; Ex. TO-25; Tr. 2373-78 (Ellwood); Tr. 4781-87 (Yost)]

368. Mr. Yost testified that Mustang "looked at major megaprojects in North America" to check Mustang's cost estimate. [Tr. 4781 (Yost)] In addition, Mr. Yost testified that Mustang's experts agreed "that a multiplier of 1.5 to 2 times construction costs seemed reasonable in looking at the Lower 48 numbers versus the Alaska construction costs. Understanding construction is only 30 percent of the total project, doesn't really add up to much, so what we did was just take the total installed cost for the Lower 48 and multiply it [by two] to get a nice conservative number." [Id.]

369. Mustang also conducted cost-per-inch diameter comparisons. [Ex. TO-25] Mustang computed ProPlus's RCN at a cost-per-inch diameter to be $410,378. [Id. at 4] Mustang's report indicated that other pipelines all cost considerably less, even with an Alaska construction cost multiplier of 2 was applied. [Id. at 6] However, it was not clear from the evidence the extent to which any of these other pipeline projects included pumps, VSMs, marine terminals, and above ground pipe over the tundra. Mustang computed the cost-per-inch diameter mile of TAPS at $200,216 using its RCN. [Id. at 3]

370. At his deposition in June 2009, Mr. Yost indicated that he was unable to talk about the pipeline projects that the Mustang report had compared with TAPS because of confidentiality agreements. But at trial he testified that he had subsequently received permission from each of the necessary entities to bring this information forth. [Tr. 4871, 4950-51] The Owners first informed the other parties of their intent to have

Mr. Yost provide new, detailed information about these other pipeline construction projects by including this new data in a demonstrative exhibited provided to the other parties shortly before Mr. Yost's testimony. [Tr. 4951; Ex. TO-247 at 7-8] Because this late disclosure of new data constituted a direct violation of this Court's pretrial (and during trial) orders with prejudicial impact on all the other parties, and because this data is peripheral to the issues at hand with regard to TAPS, this Court has accorded minimal weight to Mr. Yost's newly presented data.[38]

371. The ProPlus team believes that it developed a reasonable estimate of the cost to replace TAPS that it described as the "thinner" end of the range. [Tr. 2380 (Ellwood)] To check its estimate, ProPlus compared its estimate to the estimates for the Mackenzie Valley pipeline and the two Alaska Gasline Inducement Act proposals that were developed by TransCanada and the Port Authority. [Tr. 2373-76 (Ellwood); Ex. MUN-7 at 36]]

372. ProPlus stated in its report, "[a]lthough the three projects analyzed and compared with the RCN are all natural gas rather than oil projects and would not require above-ground construction (above-ground construction is significantly more costly than buried construction), they are all long, large-diameter, cold-region pipelines. They require large amounts of steel; they will traverse difficult terrain and will need several construction contractors working simultaneously." [Ex. MUN-7 at 36] However, ProPlus believes "that the cost of a gas pipeline relative to TAPS would be less." [Tr. 2953 (Steindorff)]

[38] As an aside, this Court notes that in its report, Mustang estimated the cost of the Alaskan Gas Pipeline at $10.3 billion to arrive at an estimated cost per diameter-inch/mile for that project of $292,717 [Ex. TO-25 at 4] However, recent estimates from TransCanada for that gas pipeline project have ranged from $20 billion to over $40 billion – which would result in a cost far in excess of ProPlus's RCN for TAPS. [See Ex. MUN-52 at 64]

373. The total capital cost per diameter-inch/mile is used as the basis for comparison. [Ex. MUN-7 at 36] For TAPS, ProPlus computed the cost at $390,000. (ProPlus's report mistakenly expressed that the cost per diameter-inch/mile for its TAPS RCN is $490,000; but corrected this on record to $390,000). [Tr. 2374, 2398 (Ellwood); id. at 2953 (Steindorff)] This amount was only used for ProPlus's "reality check;" this typographical error did not change ProPlus's cost estimate. In comparison, ProPlus's estimated cost for each of the other three projects per diameter-inch/mile ranged from $272,000 to $389,000 per diameter-inch mile. [Ex. MUN-7 at 36]

374. Mr. Phillips testified that "you have to be extremely cautious when you do comparables," because pipelines are unique. [Tr. 2460] Mr. Phillips and Mr. Steindorff testified that they disagree with Mustang's use of a Lower 48 standard and applying a multiplier to it to compare to the cost to build TAPS. [Id.; id. at 2951 (Steindorff)] Mr. Steindorff testified that he would not give any weight to Exhibit TO-25, because "it's comparing our estimate and Mustang's estimate to pipelines … in the Lower 48, some in Canada, that are gas pipelines and are buried." [Id. at 2951] ProPlus witness Mr. Steindorff persuasively testified that buried gas pipelines buried are less expensive to construct per dollar-per-inch mile than TAPS. [Id.]

375. This Court finds that because TAPS is a unique pipeline, neither Mustang's nor ProPlus's "reality check" provides a particularly helpful comparison.

4. Conclusion of the RCN of TAPS.

376. The ProPlus RCN that was presented at the trial de novo represents a careful studied analysis of the cost of replacing TAPS.

377. Based upon the foregoing analysis, and with the benefit of the extensive additional evidence that has been presented to the Court at the trial de novo, this Court finds that SARB's determination of the RCN for 2006 in this amount of $8,781,159,747 is an improper valuation and not in accordance with the standards set out in AS 43.56. Instead, this Court adopts ProPlus's 2006 RCN cost estimate in its entirety and finds that the RCN of TAPS is $18,712,247,300[39] for 2006.

C. Depreciation.

378. Once the RCN is determined, the appraisal analysis requires a calculation of the amount of depreciation that should be applied to that amount. The three types of depreciation traditionally recognized by appraisers are physical deterioration, functional obsolescence and economic obsolescence. The traditional definitions of these terms are:

> *Physical deterioration* is the loss in value or usefulness of a property due to the using up or expiration of its useful life caused by wear and tear, deterioration, exposure to various elements, physical stresses, and similar factors.
>
> *Functional obsolescence* is the loss in value or usefulness of a property caused by inefficiencies or inadequacies of the property itself, when compared to a more efficient or less costly replacement property that new technology has developed. Symptoms suggesting the presence of functional obsolescence are excess operating cost, excess construction (excess capital cost), over-capacity, inadequacy, lack of utility, or similar conditions.
>
> *Economic obsolescence* (sometimes called "external obsolescence") is the loss in value of a property caused by factors external to the property. These may include such things as the economics of the industry; availability of financing; loss of material and/or labor sources; passage of new legislation; changes in ordinances; increased cost of raw materials, labor, or utilities (without an offsetting increase in product price); reduced

[39] This includes a minor downward adjustment due to a mathematical error noted in June 2009. [Ex. MUN-7 at 552-555; Ex. MUN-561; Ex. TO-236]

> demand for the product; increased competition; inflation or high interest rates; or similar factors.

Valuing Machinery and Equipment at 67 (2nd ed. 2005)

379. In its 2006 Decision, SARB found that "the [Department] properly accounted for obsolescence in its 2006 RCNLD valuation of the TAPS." [R. 0025] The Board also found that the Department correctly rejected the Owners' position that an additional deduction for economic obsolescence should have been accorded, finding that the Owners' proposed deduction would "effectively lower the [Department's] RCNLD valuation in order to bring the value closer to tariff income stream projections." [Id.]

380. One accepted method for recognizing depreciation is to consider the ratio between the effective age of the property to its remaining economic life using the following formula:

[Effective Age / Total Economic Life] x Total Cost = Depreciation

The Appraisal of Real Estate at 420 (13th ed.)

381. The economic age-life method is different from the age-life method, which only determines physical deterioration, and is based upon the ratio of the effective age of a property to its projected physical life. Valuing Machinery and Equipment explains:

> It is essential that the appraisers understand that some of the definitions given above [like economic useful life], if substituted in the age/life equation, will measure more than just physical deterioration. Measuring more than physical deterioration is often appropriate, as long as appraisers are aware of what they are doing.

Valuing Machinery and Equipment at 75. [See also Tr. 3897 (Podwalny) ("age/life analysis using the effective age and economic life, you do recognize all forms of depreciation: physical, functional, economic obsolescence, if they exist.")]

382. In the TAPS 2006 assessment, both Mr. Hoffbeck and Ms. Spletter used the economic age-life method based on the projected economic life of TAPS, but then each erroneously found that they had measured only the physical depreciation under this method. [Tr. 745-51, 771-76 (Hoffbeck); Ex. TO-3 at ST000436-39] Mr. Clarkson's appraisal report also used an economic age-life method that his report described as capturing only physical depreciation, but which he indicated in his testimony at the trial de novo actually captured depreciation from all sources. [Tr. 3532]

383. In determining depreciation, this Court also considered the reasonableness of the total depreciation for all sources advocated by the different parties. The appraiser for the Owners determined that, as of 2006, TAPS was already 88 percent depreciated even though it was built in 1977 and the Owners expected TAPS' economic life to extend until 2034. [Tr. 6154 (Spletter)] Another expert for the Owners determined that TAPS would have only 2.9 years of remaining life in 2006, based on the approximate 90 percent depreciation that expert determined had been taken to date. [Id. at 4174-75 (Lennhoff)] And yet the record reflects that TAPS has a physical life that could meet or exceed 100 years. [Ex. MUN-736 at 5; Tr. 749 (Hoffbeck)] The record also demonstrates that the proven reserves present on the North Slope as of the tax lien date are at least 7 billion barrels of oil and have a far greater economic value than the value of the proven reserves when TAPS began operation in 1977. [Id. at 523-24 (Hoffbeck); see also Ex. SOA-3 at 39; Ex. MUN-15 at 4] The record also reflects that, with minimal investment in heaters, TAPS will be able to operate at least until 2047. See Section C(1)(b)(4) below. Under these

circumstances, there is no rational basis to support a finding that TAPS was 88 or 90 percent depreciated as of 2006.

1. Physical Deterioration.

a. Economic Age-Life Depreciation.

384. Alyeska has recognized that "TAPS' physical life is considered virtually unlimited given the execution of appropriate surveillance, maintenance, repair, and replacement programs." [Ex. MUN-736 at 5] That is because with proper maintenance and repairs, a pipeline's age can be extended indefinitely.

385. It is also well recognized that TAPS is one of the best maintained pipelines in the world. For instance, Alyeska has won an American Petroleum Institute's award for safe operations in North America. [Tom Stokes Dep. at 159-60]

386. By employing an age-life calculation using the projected economic life of the pipeline and not the projected physical life of the assets, only a portion of the depreciation calculated reflects the actual physical deterioration of TAPS. The Court finds the Department and the Board used an improper valuation method to the extent they characterized economic age-life depreciation as capturing only physical depreciation. [R. 384]

b. Life of the Line.

387. In order to establish the period over which TAPS should be depreciated, the economic life of TAPS should be determined. SARB determined that the proven reserves would allow transportation of ANS crude through TAPS until 2042, based upon a Department production forecast and an assumption that the minimum throughput would be 200,000 bbl/d delivered to Pump Station 1. The 200,000 bbl/d minimum

throughput assumption corresponds to the evidence in this record that upon the completion of the current SR project, TAPS will be configured to allow flow rates down to 200,000 bbl/d with minimum adjustments.[40]

388. The Owners presented evidence at the trial de novo that the current configuration allows TAPS to function down to 200,000 bbl/d, but that in order to do so, the Owners will have to install heaters. The Municipalities presented some evidence that 200,000 bbl/d was an arbitrary stopping point, and have asserted that TAPS can transport oil to at least 150,000 bbl/d. Further, all parties presented evidence as to the amount of proven reserves. Each of these issues is addressed below.

(1) Minimum Mechanical Throughput.

389. In 2006, the Department initially set the life of TAPS at 2034, and assumed the pipeline could operate down to a minimum flow rate of 300,000 bbl/d. However, based upon publicly available reports, including Alyeska statements provided to the Assessor by the Municipalities, the Assessor later determined that the minimum mechanical throughput of TAPS was at least as low as 200,000 bbl/d delivered to Pump Station 1 and extended the economic life of TAPS to 2042. [Tr. 456 (Hoffbeck)] The Board adopted that determination in its 2006 Decision. [R. 0025]

390. The Municipalities presented the testimony of Dr. Modisette[41] to support their position that TAPS could operate down to a throughput of 150,000 bbl/d. While the

[40] See Tom Stokes Dep. at 85 (not aware of any reason that would keep TAPS from operating at 200,000 bbl/d).

[41] Dr. Jerry L. Modisette is a scientist and engineer with over 50 years in government, academia, and industry. Dr. Modisette was Chief of NASA's Space Physics Division. He has extensive experience with pipeline modeling and is currently a member of the executive committee of the Pipeline Simulation Interest Group. Dr. Modisette conducted several low-flow studies for TAPS and testified concerning the mechanical ability of TAPS to operate under low-flow conditions. [Tr. 3356-73 (Modisette)] He also

Municipalities did demonstrate that the oil can continue to flow in a steady continuous slow when throughputs are 150,000 bbl/day or less, they did not persuasively demonstrate that TAPS as currently configured, including its post-SR pumps and all other components of the equipment and machinery which together comprise TAPS, has the mechanical ability to operate below 200,000 bbl/d. The Department and SARB's determination in 2006 to use 200,000 bbl/d as the lowest mechanical throughput capability of TAPS is upheld.

391. The Owners' Mustang study concluded TAPS would need heaters at flows below 500,000 bbl/d [Tr. 4802-03 (Yost)] and disagreed with Dr. Modisette about the amount and cost of heat required at different low-flow levels. However, the Owners did not refute Dr. Modisette's conclusions that TAPS could operate at 38 degrees Fahrenheit with some amount of heat added. The Court finds that TAPS as currently configured can operate at least down to 200,000 bbl/d, although heaters will be necessary at some point before that as throughput decreases. [See Ex. MUN-586 at 12-13; Tr. 3391, 3424-38 (Modisette)] The extent to which heaters are needed before throughput falls below 200,000 bbl/d is not relevant to the economic life of the pipeline but could be an issue related to the extent of the pipeline's functional obsolescence.

392. No viable evidence was offered to suggest that as throughput drops below 200,000 bbl/d, oil would be taken off the ANS by a means other than TAPS. To the contrary, the 2006 Securities and Exchange Commission ("SEC") 10-K filed by BP Prudhoe Bay Royalty Trust ("Royalty Trust") states, "The Trans-Alaska Pipeline System connects the North Slope oil fields to the southern point of Valdez, almost 800 miles

---

commented on the low-flow study performed by Mustang. [Ex. MUN-21] Dr. Modisette was qualified as an expert in pipeline hydraulic modeling and simulations. [Tr. 3371]

away. It is the only way that oil can be transported from the North Slope to market." [Ex. MUN-459 at 16]

(2) North Slope Reserves.

393. The physical life of TAPS is virtually unlimited if properly maintained. [R. 0941-0943, 0969-0970, 2884-2920] The economic life of TAPS depends on ANS crude oil and gas liquids being available for economic shipment down the pipeline. The North Slope basin, composed of over 150,000 square miles of onshore and offshore acreage, contains billions of barrels of undiscovered and unrecovered potential oil resources. [Tr. 3138-43 (Hite[42])] Dr. David Hite, in his expert report, cites to a number of sources that estimate large quantities of technically and economically recoverable oil on the North Slope, including a federal evaluation and assessment of oil resources in Arctic Alaska that estimates there are 29.85 billion barrels of economically recoverable oil available for shipment down TAPS. [Ex. MUN-14 at n.1, 6]

394. AS 43.56.060(e)(2) states that TAPS is to be assessed "with due regard to the economic value of the property based on the estimated life of the proven reserves of gas or unrefined oil then technically, economically, and legally deliverable into the transportation facility." The regulation is more restrictive with respect to the consideration to be accorded to proven reserves, as it provides:

> Except as provided in (d) of this section, the full and true value of pipeline property in operation is its economic value based upon the estimated life of proven reserves of the gas or oil then technically, economically and legally deliverable into the transportation facility. Economic value is determined by the use of standard appraisal methods such as replacement cost less depreciation, capitalization of estimated future net

[42] Dr. David M. Hite is a research/exploration geologist with over 40 years experience regarding the exploration and development of oil from the Alaska North Slope. [Tr. 3134-37] Dr. Hite was qualified as an expert oil and gas geologist. [Id. at 3137]

> income, analysis of sales, or other acceptable methods. The valuation may include any item contributing to value including capitalized interest.

15 AAC 56.110(c). Together, these provisions encompass the applicable "Reserves Law." Thus, in determining the economic life of TAPS, the assessor must only consider the proven reserves technically, economically, and legally deliverable to TAPS as of the lien date, and must disregard barrels of oil that might one day be shipped down TAPS but that do not, as of the lien date, meet the statutory requirements. Since many barrels of oil will be shipped down TAPS that do not meet that limitation, including oil considered in studies cited by Dr. Hite, such as oil from fields not yet discovered, the Reserves Law contains a jurisdictional exception that requires the assessor of TAPS to assume an artificially shortened life. See generally USPAP at U-3.

395. Numerous definitions of the term "proven reserves" have been examined by the parties and the Court during the course of these proceedings. [See Ex. TO-6 at GA000001-31; Ex. MUN-15] There are many different definitions of that term and definitions have varied both between organizations and over time.

396. The Court finds that no one industry, regulatory, or other definition of "proven reserves" need be adopted and read into the Reserves Law for purposes of the 2006 ad valorem assessment of TAPS. The Court finds it meaningful that the Legislature did not incorporate into AS 43.56 a particular confidence level – such as "more likely than not" or "reasonable certainty" – as used in some modern proved reserves definitions. [Tr. 3228-29] The Legislature did not do so even though contemporary definitions of proved reserves near the time of enactment of AS 43.56 contained such terms. [Id. at 3346-47 (Van Dyke)]

397. Since the Reserves Law does not articulate a particular confidence level, the Court finds that the Department was not required to adopt a "reasonable certainty" confidence level as urged by the Owners. Moreover, as discussed below, based on the record before this Court, even if "reasonable certainty" were required of "proven reserves," the evidence in the record amply demonstrates that there are sufficient proven reserves as of the lien date for TAPS to continue to operate until at least 2047.

(3) The Department's End-of-Life Calculation.

398. Each year, the Department's consultant, Dudley Platt, prepares an ANS production forecast in conjunction with the Department's publication of the Fall Revenue Sources Book. Based upon the evidence presented during the trial de novo, the Court finds the Department has made every reasonable effort to ensure its projections are as accurate as possible based upon the information provided from the ANS producers. [See, e.g., Tr. 3213-17 (Van Dyke)] This includes the Department's performance of an economic check to insure that all oil included in the Department's forecast would not just be technically deliverable, but that over the projected life of TAPS it could be economically delivered as well. [Id. at 449-50 (Hoffbeck)]

399. The Owners' reserves expert, Ms. Wall, opined that historic ANS production suggests most of the North Slope fields are experiencing exponential declines in production. [See, e.g., EX. TO-6 at GA000052] In her opinion, this means that TAPS will reach 200,000 bbl/d in approximately 2034. [Id.] But the evidence presented at the trial de novo persuasively demonstrated that Mr. Platt was reasonable in projecting production to decline in most North Slope fields at a hyperbolic, as opposed to exponential, rate. [R. 0980-0981] In this regard, the Court also considered

the testimony of Mr. Van Dyke. [Tr. 3219] And this Court considered Alyeska's description in its 2001 federal right-of-way renewal application that the oil fields servicing TAPS have long, predictable production tails. [Ex. MUN-736 at 7] In sum, this Court found Ms. Wall's testimony that the large oil fields are experiencing exponential decline to be not credible, and her assertion in this regard caused this Court to question the reasonableness of all her other conclusions.[43]

400. The Owners have asserted that certain production contained in the Department's 2005 fall forecast was not, as of the January 1, 2006 lien date, "proven reserves … then technically, economically, and legal deliverable"[44] into TAPS and, therefore, should not be included when determining the life of TAPS. They advanced two reasons in this regard.

401. First, the Owners asserted that oil in the ground cannot be a proven reserve if the field does not have pipeline or production facilities operational as of the lien date. However, many definitions such as those employed by the SEC and the Society of Petroleum Engineers distinguish between proved developed reserves and proved undeveloped reserves (or in the case of Energy Information Association "proved producing" and "proved nonproducing" reserves). [Tr. 3232-34 (Van Dyke)] One of the differences in these two types of proved reserves is whether the proved reserves have necessary infrastructure in place to allow production at the time in question. [Id. at 3144 (Hite)] Given that distinction, the Court finds that existing pipeline and production facilities to a particular field as of the lien date is not a prerequisite for the reserves to be considered "proven" under the Reserves Law, so long as there is the legal ability to

[43] See Ak. Civil Pattern Jury Instr. 2.08.

[44] AS 43.56.060(e)(2).

deliver the oil at that time, it is economically viable to do so, and the technology then exists to make the oil deliverable to the pipeline. [Id. at 3236 (Van Dyke)] This conclusion is supported by the fact that the Owners' affiliated producers indicated on their books that the Prudhoe Bay reserves were "proven" in the early 1970s – several years before the construction of TAPS was completed. [Id. at 3189-90 (Hite); Ex. MUN-449, Ex. MUN-452]

402. Second, the Owners argued that reserves in fields the Department categorizes as "under exploration" should be excluded from "proven reserves." As explained in the Fall 2005 Revenue Sources Book, the Department projects reserves in three categories: under development, under production, and under evaluation. [Tr. 3231 (Van Dyke)] Mr. Hoffbeck testified that the Department considered projected production from all three categories as proven reserves for purposes of determining the life of TAPS. [Id. at 451 (Hoffbeck)] The Owners elected to rely solely on reserves information in the public domain to support their assertion. And yet the limited confidential reserves information that was provided in discovery demonstrated that the Owners and their affiliated producers have treated reserves that have been categorized as "under evaluation" by the Department as proven reserves. [See, e.g. Ex. MUN-465 at 15, 61-63; Ex. MUN-459 at 7] This Court finds that so long as the oil in each of the three categories of production was proven to exist and was economically, technically, and legally deliverable to TAPS as of the lien date, it should be included when estimating the economic life of TAPS. [See id. at 3234-35 (Van Dyke)]

403. In 2006, the Department used its production forecast to estimate the last year TAPS would operate using an assumption that the minimum throughput was

200,000 bbl/d. Initially Mr. Hoffbeck only had Mr. Platt's data through 2040 and, based on that data, Mr. Hoffbeck performed his own extrapolation of production and determined that TAPS would reach a 200,000 bbl/d minimum mechanical throughput in 2042. [Ex. MUN-15 at 61 (Confidential); Tr. 445 (Hoffbeck)] However, after the informal conference decision issued but before the 2006 SARB hearing, Mr. Hoffbeck received the balance of Mr. Platt's analysis. "At that point in time, I saw that it actually didn't hit 200,000 barrels until 2045 … I was not going to make any recommendation to the SARB to adjust it to 2045, and I left it at 2042." [Tr. 446 (Hoffbeck)] SARB adopted 2042 as the end of the economic life of TAPS. [R. 22]

404. The Department did not call Mr. Platt to testify at the trial de novo, and did not present any other expert witness or report on proven reserves.

(4) The Life of TAPS is at Least 2047.

405 The Municipalities called Mr. Van Dyke, who testified persuasively that using all the same assumptions relied on by Mr. Hoffbeck, including considering all three categories of production, the official forecast of proven reserves will fall below 200,000 bbl/d in 2047 – and not in 2045 as Mr. Hoffbeck incorrectly testified at the trial de novo. [Ex. MUN-15 at 34; Tr. 3245-46 (Van Dyke)] Based on the evidence before this Court at the trial de novo, the Department and SARB should have employed an end of life to no sooner than January 1, 2047. The Municipalities did demonstrate that there will be a considerable amount of oil remaining on the North Slope in 2047, and their assertion that the affiliated producers would be highly unlikely to abandon this oil is logical. But as discussed above, the Municipalities failed to establish by a preponderance of the evidence that TAPS as currently configured will be a technically

and economically viable mode to transport that oil when production falls below 200,000 bbl/d.

406. In the August 2009 trial de novo for the 2006 assessment, the Owners asserted that the end of life for TAPS should be 2034. However, in the 2009 SARB proceeding held in May 2009, the Owners concurred with the Department's 2042 end of life calculations. [Ex. MUN-34 at 40-41][45]

407. The fact that TAPS will be in operation at least until 2047 is independently confirmed by BP's reporting of Prudhoe Bay proven reserves prepared for SEC reporting and for use by the Royalty Trust. BP Exploration (Alaska) Inc., an affiliated company of one of the taxpayers in this case, BP Pipelines (Alaska) Inc., provides SEC reserves information on the Prudhoe Bay field to the Royalty Trust – information that is independently audited for the Royalty Trust. [Tr. 3250-51 (Van Dyke)] The Royalty Trust stated in its 2006 SEC 10-K filing that "BP Alaska projects continued economic production [from Prudhoe Bay] at a declining rate until the year 2065 …." [Ex. MUN-459 at 7] The prior year's filing, the 2005 Royalty Trust SEC 10-K, has a similar statement that indicated BP Exploration (Alaska) Inc. expected economic production from Prudhoe Bay through 2050. [Ex. MUN-1047 at 4] The report indicates no other viable means to achieve economic production of that oil other than by the use of TAPS.

408. In addition, the confidential proposed findings of the Municipalities reference portions of the record that further support their assertion that proven reserves will exceed 200,000 bbl/d production until at least 2047. Specifically, the Municipalities'

[45] To the extent that the Owners are maintaining that the expiration of the Right of Way in 2034 defines the economic life of TAPS, that argument is rejected. There is no basis in the record to support a finding that the Right of Way would not be extended when its current 30 year term expires. See R. 384.

proposed confidential findings ¶¶ 491, 503-505 are incorporated herein by reference and adopted by this Court as if fully set forth herein.

409. SARB has commented on the limited information on ANS reserves that the Owners have elected to put forward in these proceedings:

> The Board also found that the Owners failed to take advantage of the opportunity to provide the Division with persuasive data to challenge the reserves estimates or throughput projects used by the Division if the Owners have such data. The Board found that the Owners chose not to the [sic] share information that the Owners and their parent companies possess regarding throughput and proven reserves with the Division or the Board and instead chose to present evidence and testimony from outside experts who did not have access to the information the Owners possess that was not already in the public record, and who lacked adequate direct experience with, or expertise about, the TAPS or the Alaska North Slope reserves. The Board found that when compared to the evidence presented by Owners' experts, the Division's future throughput projections were based on much more complete data from the individual Alaska North Slope oil fields, used more sophisticated methodology, and were therefore more reliable than the throughput projections offered by the Owners.

[Ex. SOA-35 at 15]

410. This Court's observations are similar. Rather than bringing forward Owner-affiliated employees, or providing access to reserves information in the control of the Owners or their affiliates to third party experts, the Owners' primary reserves witness, Ms. Wall – as she had in prior proceedings before SARB – relied almost exclusively on publicly available information because proprietary information was not made available to her. [Tr. 4530-33 (Wall)]

411. The determination of the amount of proven reserves should be assessed in light of the evidence available to, and presented by each of the parties. [See Order (Mar. 30, 2009); Ak. Civil Pattern Jury Instruction 02.23] The Owners did not offer witnesses to testify about non-publicly available ANS reserves information, including

any witness to rebut the statements contained in the BP Royalty Trust filings and confidential reserves information produced in discovery. The evidence that has been produced at the trial de novo persuasively demonstrated that as of the lien date, the proven reserves that were then technically, legally, and economically deliverable to TAPS were sufficient to keep TAPS in operation through at least until 2047 with a minimum assumed throughput of 200,000 bbl/d. The Department and SARB's use of 2042 was improper and inconsistent with the requirements of AS 43.56.

c. Economic Age-Life Depreciation Calculation.

412. Based on the foregoing, the economic age-life depreciation percentage for TAPS is 39.57% as of the January 1, 2006 lien date. This is based on the fraction 27.5/69.5 and assumes: (i) an original operation date of 1977.5; (ii) a 27.5 year effective age as of the lien date (which is one year less than actual age to account for system replacements, in particular SR);[46] and (iii) an end of economic life of January 1, 2047.

2. Functional Obsolescence.

a. General.

413. Functional obsolescence includes the loss in value or usefulness of a property due to inefficiencies or inadequacies internal to the property. [Ex. MUN-60 at 45] Functional obsolescence is also defined as obsolescence "caused by a flaw in the structure, materials, or design of the improvement when compared with the highest and best use and most cost-effective functional design requirements at the time of appraisal." The Appraisal of Real Estate at 434 (13th ed.)

[46] Ms. Spletter, the Owners' appraiser, made a similar adjustment. [Ex. TO-3 at ST000438]

414. The use of an economic age-life calculation based on the economic life, rather than the effective useful life of the property, takes into consideration some forms of functional obsolescence because the economic life of TAPS is shaped by the functional obsolescence that is present. [Tr. 3542-43 (Clarkson); id. at 3893-94 (Podwalny)] Thus, TAPS as currently configured will run on throughputs down to at least 200,000 barrels per day.

415. By using an end of life based on a 200,000 bbl/d minimum, a portion of TAPS' functional obsolescence has been captured because this Court finds it is considerably more likely than not that TAPS will continue to operate below 200,000 bbl/d, albeit with the potential need for additional strategic reconfiguration.

416. If present, functional obsolescence may also arise because less capital could have been used to obtain a more economical new property with the equivalent utility as the subject property. In this case, because the ProPlus study estimated the cost of a modern facility to replace TAPS rather than the cost to reproduce TAPS as initially configured, much of this functional obsolescence has been addressed. The Appraisal of Real Estate at 437 (13th ed. 2008).

b. Scaling.

417. Scaling factors can be applied to take account of the differences in the functional design and build of an existing, but outdated facility. Examples include buildings with too high ceilings compared to the current building standards. This concept is also known as "superadequacy." [Ex. MUN-24 at 40] The Owners and the Department both maintain that because TAPS is currently operating below its projected maximum throughput capacity, it contains a "superadequacy" that is a type of functional

obsolescence. [Tr. 475-76 (Hoffbeck)] This Court finds a functional obsolescence adjustment for this under utilization of TAPS to be improper for several reasons.

418. The replacement cost new estimate anticipates replacing the "current utility" of TAPS based upon modern and current construction techniques and technology. [Tr. 5435-36 (Spletter)] Much of the current utility of TAPS after SR is in its flexibility to adjust to a wide range of potential throughputs. [Id. at 2688-89 (Riordan)] TAPS is the only viable means of transportation for an entire oil region that includes vast proven reserves. [Id. at 820 (Hoffbeck)] Maintaining TAPS' ability to operate in a broad range of throughputs enhances the value of the pipeline.

419. The utility of maintaining such flexibility in throughput capacity is demonstrated by the Owners' own actions. The Owners are in the process of spending over $600 million to strategically reconfigure TAPS to maintain the flexibility to efficiently operate at throughputs between 200,000 bbl/d and 1.14 million bbl/d, with the ability to handle additional throughput. [Ex. MUN-1034 at 19; Tr. 2622 (Riordan); id. at 5303 (Spletter); id. at 1395 (Greeley)]

420. In addition, this Court finds that the Owners are required to maintain a nominating capacity of 1.1 million bbl/d through the end of 2011 under the Amended Capacity Settlement Agreement. [Ex. MUN-24 at 784] That agreement assured the State of a certain level of excess capacity to optimize the development of its natural resources. [Ex. MUN-1029 at 14-16] That Agreement was approved by the FERC and cannot be changed without FERC's approval. [Ex. MUN-24 at 831-839] This Court rejects the Owners' assertion that they are only obligated to maintain a nominating capacity at 1.1 million bbl/d but are not required to maintain physical capacity at that

level. Even if the Owners could agree otherwise among themselves, this Court finds that their agreement with the State requires the Owners to maintain a physical capacity of 1.1 million bbl/d capacity. [Id. at 784, 793-94]

421. This Court also finds that the Owners' witness, Carl Yingling, largely supported the Municipalities' position on this point. Mr. Yingling acknowledged that the Owners had a right to transport up to 1.1 million bbl/d under the Amended Capacity Settlement Agreement and that the right to transport "isn't a right unless you have the capacity to transport 1.1 million barrels." [Tr. 5197 (Yingling)] He also acknowledged that the Amended Capacity Settlement Agreement and Exhibit C to that agreement referred to actual barrels of throughput, not nominations, delivered to Pump Station 1 [id. at 5183-87] Also instructive to this Court were the Owners' own representations as to the meaning of the Amended Capacity Settlement Agreement to the RCA when seeking to abandon pump stations as part of their SR efforts and sought to assure the RCA that they would continue to meet the capacity obligation of their Certificates of Public Convenience and Necessity:

> Finally, the Discontinued Facilities at Pump Stations 2, 6, 7, 8, 10 and 12 will have no impact upon the stipulated capacity requirements for each of the TAPS Carriers provided by the Amended Capacity Settlement Agreement ("ACSA"). The ACSA provides a stipulated aggregate capacity of 1.1 million barrels per day for the years 2004 forward. Nothing in this Application changes that.

[Ex. MUN-1034 at 20]

422. Additionally, this Court is persuaded that AS 42.06.290(a) requires the Owners to legally maintain existing throughput capacity unless and until that capacity is specifically abandoned by the Owners after a finding by the RCA that the abandonment is in the public interest. [Ex. MUN-1039 at 3-4] This issue was addressed and resolved

by the RCA and was not appealed by the Owners. [Id.] In that process, the Owners represented to the RCA that:

> After completion of [SR], TAPS will be able to transport up to 1.14 million barrels per day. Moreover, should there be any additional oil fields brought on line that would cause throughput to exceed the 1.14 million barrels per day figure, the design of the remaining TAPS pump stations will be modular and will allow current and increased throughput capability within 36 months by the addition of modular units ….

[Ex. MUN-1034 at 19]

423. The RCN design used by both Mustang and ProPlus was for a 48-inch pipeline. Mustang's original cost study from 2005 was based upon a 1.0 million bbl/day maximum throughput. [Ex. TO-4 at MU00006-7] In 2006, Mustang did not perform a new cost study. Instead, the Department adjusted the 2005 study both by "trending" the 2005 costs to account for one-year's inflation and applying a scaling factor to shrink the design basis of 1.0 million bbl/d to reflect that projected TAPS throughput had fallen from 2005 to 2006. [R. 1209, 1211] Notably, in its 2006 decision, the Department did not employ scaling to reduce the size of the original pipeline to 2006 throughput, but to shrink Mustang's 2005 design basis to the perceived necessary design basis in 2006. [R. 380-86]

424. The 2006 RCNs sponsored to this Court by Mustang and ProPlus each assume that a 48" pipe would be used for a replacement TAPS. Mustang has continued to use a 1.0 million bbl/d design basis in its revised study presented to the Court, while the ProPlus team used a 1.1 million bbl/d design basis. [Ex. MUN-7 at 9; Ex. TO-4 at MU00006-7] There is little reason to do an extensive RCN and then assume it did not adjust properly for most forms of functional obsolescence.

425. This Court concludes that the Department and SARB erred by applying a scaling factor as a form of functional obsolescence because TAPS is capable of carrying throughput anywhere from 200,000 to 1.14 million bbl/d and the Owners are legally obligated to maintain a physical capacity of up to 1.1 million bbl/d. However, as discussed below, the fact that external economic factors, and specifically the decreased availability of North Slope oil, may preclude the full use of TAPS' capacity, does form a basis for a scaling adjustment based on economic obsolescence.

c. Excess Operating Costs and Capital Expenses Due to Pipeline SR.

426. Functional obsolescence may also arise from the need to expend excess operating and capital expenses for the subject property compared with the most economical new property that has the equivalent utility. [Ex. MUN-24 at 44]

427. As of 2006, TAPS was being strategically reconfigured under a modernization project designed to create a more efficient pipeline system and lower operating costs. The pipeline SR includes upgrades to replace the 30-year-old pump and control systems with modern pump modules and/or automated control systems that are easier and less expensive to operate and maintain. [Tr. 5301-04 (Spletter)] The original cost estimate for pipeline SR was $250 million. However, that cost estimate has risen to over $600 million even while the Owners assert TAPS has a value of only $850 million -- a fact which itself challenges the Owners' position in this case. [Id. at 1395 (Greeley)]

428. The 2006 RCN cost studies each propose a replacement pipeline that is very similar to what TAPS is likely to look like when the pipeline SR is complete. Therefore, the Department and SARB reasonably relied on the projected costs in the

Owners' pipeline SR plan to determine the necessary capital expenditures as well as excess operating costs to measure and calculate the current functional obsolescence. [Tr. 462 (Hoffbeck); Ex. SOA-3 at 34-35]

429. These projected estimated costs were tax adjusted at 58.9%, and discounted to arrive at the estimated present value of the functional obsolescence associated with pipeline SR that totals $367,384,329. [Ex. SOA-3 at 34-35][47] This Court finds that no party has demonstrated by a preponderance of the evidence that this functional obsolescence adjustment is improper or runs counter to AS 43.56. [Ex. SOA-3 at 40][48]

d. The Owners' Proposed Additional Adjustments.

430. The Owners assert that a number of additional adjustments for functional obsolescence (for curable and incurable excess operating costs) should be made to account for inefficiencies in the pipeline and VMT as of the lien date. [See Ex. TO-4 at ST000441-452]

431. No adjustment for functional obsolescence was included for the VMT by the Department or SARB. [Tr. 491 (Hoffbeck)] Although VMT reconfiguration was a part of the TAPS 2005 Long Range Plan ("LRP"), it was removed from the 2006 LRP. [Tr.

[47] This amount is slightly different from the figure in Ex. SOA-3 at 35 due to math corrections made by Mr. Hoffbeck on record at the trial de novo. [See Hoffbeck Demonstrative at 29 and corresponding testimony at Tr. 464-66]

[48] The Municipalities' valuation report proposed two adjustments to this figure: (1) adjusting the SR capital cost by a presumed value of the original pumps being replaced and (2) applying an income tax adjustment to excess operating expenses. [Compare Hoffbeck PowerPoint at 29 to MUN-24 at 99] With respect to the first adjustment, Mr. Clarkson indicated that his selected value for the 30-year old used pumps was admittedly arbitrary – the Municipalities did not present any evidence that the value they selected was any better than the $0 value ascribed to the old pumps by the State Assessor. With respect to the income tax adjustment on excess operating expenses, this Court could find no evidence to explain or support that adjustment.

491-92 (Hoffbeck)] Without specific documentation relative to the need for reconfiguration of the VMT, the existence of functional obsolescence was uncertain, and the Assessor reasonably concluded that the lack of information showing the need to cure inefficiencies confirmed that the VMT was efficient in its current configuration and justified not giving any further adjustment for functional obsolescence. Ms. Spletter testified that even though the Owners removed references to VMT SR issues from the 2006 LRP, a possible investor could have accounted for it in formulating a value. However, the Department reasonably concluded that the Owners' affirmative, contemporaneous removal of the VMT SR component was far better evidence of future costs than speculating about a purchaser's possible consideration. During a 2007 VMT site inspection, Alyeska personnel indicated to the State Assessor that they were not interested in reconfiguring the VMT and no plans to do so. [Tr. 1391-93 (Greeley)]

432. The Owners have also asserted that the valuation of TAPS should include a number of functional obsolescence adjustments related to the projected future declines in throughput (low-flow solutions). [Ex. TO-4 at ST000443-445] In a presentation to various TAPS' stakeholders, the Owners described these low flow issues as "post 2030 issues." [Ex. SOA-9 at 21] This Court finds that the Department and SARB correctly determined that appraisal theory does not support an adjustment for functional obsolescence to a property that is efficiently designed as of the lien date based on the assumption that it may be inefficient sometime in the future, particularly where, as here, this Court has adopted SARB's use of an abbreviated economic life based on a minimum throughput of 200,000 bbl/d. The Owners, even as late as

October 2008, had only started to study and investigate options of mitigating the effect of the predicted future low flow through TAPS. [Tr. at 1506-10 (McAleb); Ex. SOA-9]

433. This Court finds persuasive the Board's determination on this issue in 2007, when the Owners first put forward a list of proposed adjustments for functional obsolescence they sought due to alleged inefficiencies in TAPS. In rejecting those adjustments, the Board held:

> The Board concluded that, as of the assessment date, the timing and need for changes to the TAPS that form the basis for the Owners' claims for the need to account for additional obsolescence due to low flow conditions and other factors are too speculative to require an additional downward adjustment to the TAPS value. The further that possible impacts on value of the TAPS are pushed out into the future, the less these future contingencies, such as adding additional reserves to future throughput or incurring additional costs, are likely to impact current value. The Board agreed with the Municipalities and the Division that an assessor should generally wait at least until a property owner has definite plans to incur specific costs before the assessor gives those projected costs much weight in making an estimate of value.

[Ex. SOA-35 at 19-20]

434. Unlike the pipeline SR, the Owners did not demonstrate definite plans to incur the specific costs associated with the proffered projects. Additionally, the Owners did not carry their burden to demonstrate current functional obsolescence in TAPS associated with the problems those theoretical projects are offered to cure. The Owners failed to meet their burden of persuasion that additional functional obsolescence deductions are necessary.

435. Based on the foregoing, this Court finds that apart from the scaling adjustment, neither the Owners nor the Municipalities have demonstrated that the amount of the Board's functional obsolescence adjustment resulted in an assessment that was "unequal, excessive, or improper valuation or valuation not determined in

accordance with the standards set out in [AS 43.56]." Accordingly, this Court adopts SARB's finding of functional obsolescence based on pipeline SR in the amount of $367,384,329. With respect to SARB's determination that scaling was also warranted as a form of functional obsolescence, this Court has found that a functional obsolescence adjustment for diminished throughout is not proper. Instead, for the reasons expressed below, the fact that there is currently less oil delivered to Pump Station 1 than the pipeline has the capacity to transport is more properly characterized as a form of economic obsolescence.[49]

3. Economic Obsolescence.

a. Scaling.

436. Economic obsolescence is the loss in value or usefulness due to factors external to the property. "Whenever the operating level of a plant or an asset is significantly less than its rated or design capability, and the condition is expected to exist for some time, the asset is less valuable than it would otherwise be. Such a penalty for inutility can be a measure of the loss in value from this form of economic obsolescence." Valuing Machinery and Equipment at 97. "If a plant is not operating at capacity for economic reasons, the inutility is caused by economic obsolescence. If there is an imbalance in the productive capacity (e.g., a production bottleneck), the inutility is caused by functional obsolescence." Id. at 98. Here, TAPS has a mandated design capability of 1.1 million bbl/d, but it is transporting considerably less oil than that, not because of any problem with TAPS itself, but because considerably less than 1.1 million bbl//d is being delivered to Pump Station 1.

[49] See Tr. 755 (Hoffbeck).

437. An example on page 99 of Valuing Equipment and Machinery applies a scale factor to determine the degree of economic obsolescence in these circumstances.

438. In this case, the Department used a .45 scale factor [Ex. SOA-3 at 131] to determine the degree of obsolescence caused by the underutilization of TAPS. The Municipalities asserted that no scaling was warranted. [See Ex. MUN-24 at 435 (Appendix 13)] The Owners asserted that a scale factor of .72 was warranted for TAPS. [See Ex. TO-3, Appendix M]

439. This Court rejects the Municipalities' assertion that no scaling is warranted. While TAPS is required to have a design capacity of at least 1.1 million bbl/d, the fact that capacity is not all being used to transport affiliated oil reduces the utility and value of TAPS as of the lien date.

440. The Owners' asserted scale factor is based on the premise that a smaller pipeline, 30-inch replacement pipeline should have been constructed in light of the lower capacity. But as set forth above, this Court disagrees with the Owners' position that would permit a pipeline to have been constructed with a capacity of less than 1.1 million bbl/day. Because that assumption underlies the higher scale factor advocated by the Owners, their proposed scale factor would not be a proper amount to apply to address the current underutilization of TAPS.

441. The .45 exponent has been used by the Department as a scaling factor for all pipelines in Alaska for a number of years. It was provided by engineers within the Alaska oil and gas industry. [Tr. 475-76 (Hoffbeck)] In addition, the Department did a study of the implied scaling factor extracted from the actual construction of the Alpine

pipeline as well as the estimated cost of the Kuparek pipeline supplied by Mustang engineering. [Id.] Those calculations confirmed the .45 exponent as reasonable.

442. In short, neither the Municipalities nor the Owners have demonstrated that the Department and SARB's use of a .45 scaling factor to address underutilization of TAPS resulted in an assessed valuation of TAPS that was "unequal, excessive, or improper or valuation not determined in accordance with the standards set out in [AS 43.56]."

443. This Court does find some adjustment necessary with regard to the application of the scaling factor. The factor should be applied to a denominator with a capacity of 1.1 million bbl/d, or 401,500,000 bbl/year, consistent with this Court's analysis of TAPS' functional obsolescence based on its legally required capacity. The appropriate numerator as of the lien date is the 2005 total production of 324,745,938 barrels.[50]

444. With that adjustment, the appropriate scaling factor to use to measure TAPS' economic obsolescence due to underutilization is computed using the formula set out by Mr. Hoffbeck in Ex. SOA-3 at page 34:[51]

$$1 - (324{,}745{,}938 / 401{,}500{,}000)^{.45} = 9.1\%$$

b. Additional Economic Obsolescence.

[50] See Ex. SOA-3 at 33.

[51] See also Valuing Machinery and Equipment at 99.

445. The Owners assert that a significant additional economic obsolescence adjustment is warranted because TAPS is a regulated pipeline, and the effects of that regulation lower the pipeline's value.[52]

446. The evidence persuasively demonstrated that TAPS was profitable as of the lien date, and that it would be reproduced if it did not presently exist. There were over 7 billion barrels of proven reserves remaining on the North Slope as of January 1, 2006 – an amount comparable to the estimated 9.6 billion barrels of proven reserves when TAPS began operation in 1977. [Ex. SOA-3 at 39; Tr. 523 (Hoffbeck); Ex. MUN-15 at 4]] Moreover, the value of the reserves in 2006 had increased at least five fold since 1977, when oil was selling at $10 per barrel. [Tr. 523] And there are no properties with which to compare TAPS, given its unique aspects of size, length, location, and integration with its affiliated producers, and because it is the only economical way to get a highly profitable product from a remote location to market. [Id. at 1092-95 (Goodwin)]

447. In determining that a tariff-based deduction for economic obsolescence was not warranted, Mr. Hoffbeck's report referred to Matter of Tenneco, Inc. – Tennessee Gas Pipeline Division, in which the New York Supreme Court, Appellate Division, held, "[w]hile an allowance for economic obsolescence may be made when the property is not worth the reproduction cost, depending upon the earning capacity after reproduction, it cannot be made in these circumstances where petitioner is profitable and the property would be reproduced. That petitioner is a regulated [pipeline] utility does not alter this conclusion." 104 A.D.2d at 514. [Ex. SOA-3 at 35-36]

[52] See Owners' Proposed Findings of Fact at 43-45.

448. Other jurisdictions have found that the determination of the existence and extent of economic obsolescence in the context of regulated pipelines is a question of appraisal judgment. For example, the North Carolina Supreme Court held that "deductions for 'economic obsolescence' are indeed matters of appraisal judgment about which reasonable appraisers may differ." In re the Appeal of Colonial Pipeline Co., 347 S.E.2d 382, 389 (N.C. 1986); see also Midwest Processing Co. v. McHenry County, 467 N.W. 2d 895, 900 (N.D. 1991) ("Issues of economic obsolescence involve elements of appraisal judgment which may result in differing results by reasonable appraisers."); Tenn. Gas Pipeline Co., 766 A.2d at 676 ("we have 'recognized the relevance of economic depreciation, but ha[ve] never attempted to tie the fact finder's hands with a rigid fair market value formula in the absence of legislative directive.'").

449. The State Assessor, Mr. Hoffbeck, gave due consideration to the three classic approaches in determining whether a deduction should be made for economic obsolescence. Mr. Hoffbeck also considered four additional factors, which this Court finds did not violate any standard appraisal principles, but rather constitutes an example of Mr. Hoffbeck's diligent work in estimating the "full and true value" of TAPS. [Ex. SOA-3 at 35-39]

450. Additional tests for economic obsolescence are set forth in The Appraisal of Real Estate are all market-based and rely upon a market response – thus, they can not be effectively applied to this special, limited use property. [Tr. 501-02, 971 (Hoffbeck)] There are no other properties that are comparable to TAPS to permit application of these tests.

c. Income Shortfall Method.

451. The Owners' appraisal expert, Ms. Spletter of Stancil, used what was termed an income shortfall method in an effort to calculate the percentage return differential between a projected regulated tariff rate and a hypothetical unregulated rate, which was then discounted to present value. Using this approach, she concluded that "the income shortfall due to a buyer's inability to reset the rate base and collect a higher return … is $1.303 billion."[53] Terming that amount to constitute economic obsolescence, she concluded that the value of TAPS under the RCNLD approach was $1 billion.[54]

452. In applying the income shortfall method, Ms. Spletter testified that she used a procedure similar to the "capitalization of income loss," but that she looked toward a hypothetical property instead of the market. [See Tr. 5476 (Spletter)] She stated, "[w]e've looked towards the income that would be allowed in our hypothetical property versus the income that is actually available in our subject property. And so we've compared those two, and then capitalized that difference as our income loss." [Id. at 5476-77] But Ms. Spletter acknowledged that where there is no market, the capitalization income loss analysis should not apply. [See id. at 5912]

453. Here, the evidence persuasively demonstrated there is no market for the sale of TAPS as a stand-alone investment for its tariff income. TAPS' highest and best use is not as a stand-alone investment property, but as an essential component of the integrated production and transportation system from the Alaska North Slope. The evidence has persuasively demonstrated that TAPS' value lies in that use – a use which is distinct from whatever tariff revenue TAPS may generate. As such, there is no

[53] Ex. TO-3 at ST000456.

[54] Id. at ST000458.

additional economic obsolescence caused by the fact that TAPS is a regulated pipeline. The Owners failed to establish that SARB and the Department's refusal to adjust TAPS' value to the net present value of the regulated tariff income stream projections in its 2006 valuation constituted an "unequal, excessive, or improper valuation or valuation not determined in accordance with the standards set out in [AS 43.56]."

454. The Municipalities oppose the application of the income shortfall method as improper under standard appraisal principles. In addition, they assert that Stancil's projected future net income for TAPS is too low. Ms. Spletter testified that her income stream was based on her assumptions regarding the future life of TAPS, Order 154(b) and Opinion 502,[55] the Owners' capital expenditures, and the timing of those expenditures. [Tr. 5324-25, 5391-95 (Spletter)] The Municipalities' opposition to those assumptions is discussed further in section VII.

455. In addition, Stancil incorrectly compares the existing TAPS to a hypothetical "substitute" property that is not comparable to TAPS. [See Tr. 3780-83 (Eyre)[56]; Tr. 5908-13 (Spletter)] For unlike TAPS, Stancil's hypothetical property has an undepreciated rate base, thereby resulting in a different earning capability. There is no undepreciated TAPS presently in existence, and if such a property existed it would not be comparable to TAPS. Given the comparison property that was selected, an "income shortfall" will always be demonstrated, but it does not constitute a valid measure of

[55] BP Pipelines, (Alaska) Inc., 123 F.E.R.C. ¶ 61,287 (2008) (Commission decision) ("Opinion 502").

[56] Brent Eyre is an expert appraiser with a specialized expertise in unitary tax issues. Mr. Eyre is an accredited Senior Appraiser (ASA), American Society of Appraisers and Machinery & Tech. Specialties. He has taught appraisal courses, given presentations, and testified extensively as an expert on unitary tax issues. [Ex. MUN-5 at 30-37; Tr. 3747-51 (Eyre)] Mr. Eyre testified as to the use of an integrated income approach for determining the full and true value of TAPS. Mr. Eyre was qualified as an expert in the area of unitary appraisals.

economic obsolescence because the method is not comparing what TAPS earns as an integrated component of an oil production and transportation system compared to similar properties. [Ex. MUN-60 at 54-68]; The Appraisal of Real Estate at 442-44 (13th ed. 2008). Rather, Stancil's income shortfall method is based on the erroneous assumption that there would be a willing buyer and a willing seller of TAPS based solely on its tariff income.

456. This Court also finds that the income shortfall method as applied by Stancil is circular. [Tr. 2179-83 (Grasso)] Mr. Hoffbeck stated that the income shortfall method that Stancil applied effectively provides that "everything between the cost approach after physical and functional [obsolescence] and your income approach is external obsolescence." [Id. at 502] Stancil's value determination for the cost approach and the income approach differed by approximately $150 million, but this Court found persuasive the testimony that asserted that this difference was due to discrepancies in the data entry between the two approaches. Specifically, this Court agrees with Mr. Hoffbeck's observation that if the exact same data were used, "[y]ou can put my Social Security number in there, and you would still get about the same answer after income shortfall; and so it's really a circular process." [Id. at 503; see also id. at 1182-83 (Goodwin); id. at 3544-46 (Clarkson); id. at 3779-82 (Eyre); id. at 3908 (Podwalny)]

457. This Court finds that the determinations by the Department and SARB regarding the income shortfall method are consistent with appraisal literature. For example, the Western States Association of Tax Administrators (WSATA) Appraisal Handbook rejects the income shortfall method:

> A few appraisers attempt to measure obsolescence by comparing the company's actual earnings with the theoretical earnings that should have

> been achieved by the company with the assets on hand if they were earning a fair return on cost. This method is an improper variation of a method often used for individual properties, where it can be demonstrated that the subject property is not technologically capable of producing as much operating income (cash flow) as new replacement property. When used to compare company earnings with theoretical company earnings, the method simply forces the cost approach to agree with the capitalized earnings approach.

WSATA Appraisal Handbook at 31 (Aug. 1989).

458. Several appellate courts have also recognized that the income shortfall method is circular. See United Tel. Co. of Nw., Inc. v. Dep't of Revenue, 770 P.2d 43, 51 (Or. 1989) ("[a]djusting one approach to make it rely on the result or the same indication of value as another approach effectively eliminates a relevant perspective from consideration."); Delta Air Lines, Inc. v. Dep't of Revenue, 984 P.2d 836, 849 (Or. 1999); Tenneco, 104 A.D.2d at 514 ("It appears then that [the taxpayer's expert's] concept of economic obsolescence is nothing more than an attempt to convert the RCNLD approach into an income capitalization approach. This is not permissible."); see also Tenn. Gas Pipeline Co., 766 A.2d at 675-76; Transcon. Gas Pipe Line Co., 545 A.2d at 763.

459. As the New Jersey Supreme Court explained in Transcontinental Gas Pipe Line Corp. v. Bernards Township, a depreciated regulated pipeline has a value distinct from its tariff income that derives from its use:

> Under the cost approach as it applies to special purchase property, the costs of a third person in acquiring the property is not the relevant inquiry; the very reason the cost approach is being utilized is that the property is so uniquely suited to its current use and user that a market sale to a third person is not an accurate indication of its value. Rather, the determination made in applying the cost approach is how much would a prudent person pay to replace the property. Since the people with the greatest interest in replacing special purchase property are the people for whom it was designed and built, and, in addition, are the people who must assume the

> cost of property taxation, the relevant question to ask in applying the cost approach to utility property is how much the ratepayers would pay to replace the property.

Transcon. Gas Pipe Line, 545 A.2d at 758 (citations omitted).

460. In that case, the New Jersey Supreme Court also held:

> The purposes of FERC regulation and ad valorem property taxation are drastically different: FERC is primarily concerned with ensuring that investors receive an adequate return on the property that has been invested. For such purposes, the original value of the property invested is an appropriate measure of value. For property tax purposes, however, it is necessary to determine the present cost of replacing the property. Under the cost approach, this is assumed to be the value of the property to the ratepayers, reflecting increases in construction costs, the current demand of consumers, availability and cost of alternate energy sources, and other factors. FERC's regulatory system reflects these factors only as of the time an asset enters the rate base; it makes no attempt to update them until an asset's functional lifespan is reached and it is eventually replaced at current costs. Since depreciated original cost fails to reflect the value of all of the interests in utility property and undervalues those it does recognize, we decline to accept it as a true measure of a utility property's worth.

Transcon. Gas Pipe Line, 545 A.2d at 760 (citations omitted).[57]

461. The TAPS Owners attempted to differentiate the above-cited cases in their proposed Findings of Fact and Conclusions of Law by claiming a difference between the historic cost less depreciation ("HCLD" or "OCLD") valuation method and the RCNLD method.[58] But the TAPS Owners failed to support that assertion through expert testimony or citation to appraisal or legal authority. Intuitively, the amount of

[57] See also Tenn. Gas Pipeline Co., 766 A.2d at 675-76; Appeal of Pub. Serv. Co. of N.H., 471 A.2d at 1185-86 (rejecting the taxpayer's argument that evidence demanded a finding that net book value was an appropriate measure of market value for the utility's property); Pub. Serv. Co. of N.H., 377 A.2d at 125-26 (holding that even though net book value provides the "rate base" upon which the plaintiff's rate of return is calculated, the value of the property for tax purposes and the value for ratemaking purposes need not be the same).

[58] TAPS Owners' Proposed Conclusions of Law at 75.

obsolescence could be impacted by the different approaches, but not the circularity to the income approach.

462. The cases cited by the Owners in their proposed Conclusions of Law do not sanction the use of a capitalized income shortfall method in which the subject property is compared to a hypothetical property to determine economic obsolescence. See Owners' Proposed Conclusions of Law at 21-23.

463. The Owners have identified two appraisal texts that specifically address the income shortfall method. The first text, The Valuation of Railroad and Utility Property, is not an authoritative text, because it is unpublished, not peer-reviewed, and not widely relied upon by appraisal experts. [See Tr. 3796 (Eyre)] Thus, this Court will give it no weight. The second text, the 3rd edition of The Valuation of Real Estate, was published in 1986 and has been superseded by 10 subsequent editions that do not include any discussion of the income shortfall method. Rather, the most recent edition of The Appraisal of Real Estate discusses the need for an actual comparison property to apply to the determination of this form of economic obsolescence. See The Appraisal of Real Estate at 442-44 (13th ed. 2008). Hence, this Court will not accord any weight to that early edition of this treatise.

464. Based on the foregoing, this Court finds that the Owners failed to establish that the Department and SARB erred in refusing to apply the income shortfall method to determine economic obsolescence. Rather, if the income shortfall method was applied based on tariff income, the RCNLD valuation would no longer reflect the "full and true" economic value of TAPS as a critical component of the integrated ANS production and transportation system.

D. RCNLD Conclusion of Value.

465. Based on the foregoing analysis, this Court finds the replacement cost new estimate of value for TAPS in 2006 is $18,712,247,300. From this amount, the value of land and the rights of way should be deducted. The Municipalities presented persuasive evidence at the trial de novo that the proper amount for these items is $170,907,600. [See Ex. MUN-24 at 29][59] In addition, salvage of camps at $54,200,000 and supplemental legal and PR of $20,000,000 should be deducted from the RCN because they are non taxable assets. SARB made these deductions in its 2006 RCNLD analysis, and no other party established by a preponderance of the evidence that these deductions were improper or otherwise inconsistent with AS 43.56. [See Ex. SOA-3 at 29; R. 375-388; Tr. 435-37] From there, economic life depreciation of 39.57% is applied. The value of the VMT office building is then subtracted because it is separately assessed by the City of Valdez. Then functional obsolescence related to SR as determined by SARB is deducted in the amount of $367,384,329. Finally, economic obsolescence in the form of an 9.1% scaling adjustment is made, and the value of the land and rights of way added back. The result is a total RCNLD of $9.977934 billion. The Court's calculations are at the conclusion of this decision.

VII. INCOME APPROACH

A. The Court's Concerns with the Owners' Case.

[59] See Dash v. State, 491 P.2d 1069, 1077 (Alaska 1971) (upholding the reliance on comparable sale fifteen months after valuation date in eminent domain proceeding).

466. E-mail correspondence introduced at the trial de novo from 2004, 2005, and 2006 demonstrated that the Owners' affiliated producers made considerable efforts to dictate the approach and manner of the preparation of the Stancil appraisal, particularly at the inception of Stancil's work in these proceedings.[60] For example, an e-mail from Ms. Spletter to the Owners' counsel and the affiliated producers stated:

> FYI, Wayne [Mr. Lewoczko of ExxonMobil] called us back shortly after getting off of the call this afternoon to let us know that ExxonMobil's position is that the probability matrix could not stand with the Order 151 cases as they were defined based on publicly available information. He was trying to arrange a call for us with Jane to help define what variables were off of the table, but that has not occurred yet. We decided we could not talk to John [at the Alaska Department of Revenue] and try to explore his range of variables until we knew what the limits were on our work. It is also likely that we will need to change the model to eliminate some of the options that have been built into it; although we are not certain that this is the case. It may be okay to leave the options in the model, just not use them in the range of potential outcomes as defined by limiting the conditions placed on our appraisal.

[Ex. MUN-1265 at 2]

467. In an e-mail to counsel for the Owners dated March 21, 2005, Ms. Spletter recognized the difficulty of applying an income approach to value for a pipeline that was integrated with a refinery:

> Also, I need to correct my statement on the Tesoro pipeline. We tried to use the income approach, but were not comfortable with it because the operation is integrated with the refinery, and has lower operating costs as a result. We actually relied upon a cost approach due to the fact that Tesoro was the only shipper on the line, and the tariff was viewed as an "internal transfer" of funds within the company.

[Ex. MUN-1276 at 1].

[60] See, e.g., Tr. 5781-99 and Ex. Mun-1218; Tr. 5798-99 and Ex.MUN-1280; Tr. 5832-39 and Ex. MUN-1281; and Ex. MUN-1318.

468. In other e-mail correspondence, Stancil is requested by counsel to work toward a $3 billion "settleable" figure [Ex. MUN-1309 at 1; Tr. 5615-16], displeasure is shown with a $5 billion value figure [Ex. SOA-100], the request is made not to "show" a $9.4 billion value estimate [Ex. MUN-1404], and the clients share their concerns with Stancil about potential Stancil changes. [Ex. MUN-1318] The e-mails also demonstrate that Stancil has been involved in litigation planning and advocacy before SARB [Ex. SOA-107; Ex. MUN-914; Ex. MUN-1271, including correspondence from the Owners' counsel regarding the reasonability of the New Jersey Transcontinental case] and commented that as of February 2006, Alyeska had not undertaken any formal study of TAPS' engineering capacity for end of life. [Ex. SOA-113] The Stancil appraisal appears to have made adjustments proposed by counsel and the clients. [See e-mail strings and related inquiries of Ms. Spletter at Tr. 5553-5649, 5757-59: re Ex. MUN-1271]

469. The evidence presented at the trial de novo demonstrated that Ms. Spletter did not serve in the role of an independent expert appraiser, but served more in the role of an advocate on behalf of the Owners. This undermines the Court's confidence in the Stancil & Co. appraisal and the income approach it relies upon. While this Court does not question the personal integrity of Ms. Spletter, her active participation in the Owners' litigation and settlement strategy discussions, her acceptance of an extraordinary degree of guidance from the Owners, their affiliates, and their counsel, and her advocacy role on behalf of the Owners in the administrative proceedings have impacted to the weight that this Court has accorded to Stancil's valuation analysis.

470. This Court also notes the degree to which the affiliated producers of the Owners have had an active role in the administrative proceedings regarding the value of TAPS. [See, e.g., Ex. MUN-1218 (e-mail from ConocoPhillips employee Louise Kari to Ms. Spletter, counsel, and ExxonMobil staff tax agent); Ex. MUN-1242 (e-mail from ConocoPhillips employee Louise Kari to Ms. Spletter, counsel, and others); Ex. MUN-1246 (retention letter from Ms. Spletter to ExxonMobil staff tax agent Wayne Lewoczko); Ex. MUN-1251 (e-mail from Paul Dubey of ConocoPhillips to counsel, approving of Mustang's retention for the RCN, copied to ExxonMobil and Ms. Spletter); Ex. MUN-1259 (e-mail from Paul Dubey of ConocoPhillips to Ms. Spletter, counsel, and ExxonMobil's Mr. Lewoczko)] This level of involvement by the affiliated producers provides further indication of the value of TAPS as a critical component of the ANS production and transportation system.

B. Tariff Income Does Not Capture the Full or Even the Primary Economic Value of TAPS.

471. As SARB has held, and as this Court has previously discussed in these findings, TAPS was built and is operated to monetize the vast ANS reserves of the producer oil companies by bringing those reserves to market. It was not constructed, and is not maintained, in order to realize tariff income. [Ex. MUN-5 at 7; R. 0023]

472. In 1972, the Chairman of the Board and President of Standard Oil Company of Ohio testified before the Alaska Legislature:

> [T]here's only one reason why we want to build a pipeline and have a part in it, and that's to get that oil out of there to get it to market. I don't think I'm mistaken. I've been in the business for over 35 years, and we've never built a pipeline in order to make money on a pipeline per se. The basic reason has been to get the oil to market and with the best margin possible, so that our stockholders will benefit from it. It's a necessary thing to do.

[Ex. MUN-1005 at 282]; see also Ex. MUN-211 (article re: Sohio financing of TAPS); Tr. 1705-06 (Cicchetti: "But the main reason I'm relying on this article is the notion that the company, the entire integrated company was essentially put at risk for its own financial continuity, its existence, a literally bet-the-company situation in order to construct the Trans Alaska Pipeline, and it would not be possible, in my mind, for such a decision to have been made that -- it would [not] have been rational for such a decision to be made simply to have earned a tariff on the Trans Alaska Pipeline. This was a decision that was made to get access to the oil.")]

473. The income approach is distinct from the tariff income approach. The income approach may be applied to a part of an integrated economic enterprise based on the entire income produced by the integrated economic enterprise with a portion of that income allocated to the part of the enterprise for which a value is to be determined. [Tr. 3752-70 (Eyre); R. 0030] Mr. Eyre concluded that "the tariff income that is being generated would not be a proper economic income stream in order to determine the full and true value of [TAPS]." [Tr. 3763] Instead, he applied the income approach to TAPS and the integrated ANS production operations. But while Mr. Eyre's approach starts with the proper unit by including ANS production operations, the integrated income approach was not relied upon by any party due to the inexactness of data available for the allocation and the extreme sensitivity of the approach to variations in the price of oil. Accordingly, the value calculated by Mr. Eyre based on the income approach is not relied upon by this Court. [See generally Ex. MUN-5; Corrected Eyre Report]

474. In contrast to Mr. Eyre's approach which considered the income from the entire integrated economic enterprise, the Owners assume that the tariff income from

TAPS, and only that income, is the appropriate proxy to capture the entire economic value of TAPS.

475. The Owners' reliance upon the tariff income fails to recognize that TAPS was built, is operated, and would be replaced at an estimated cost of over $18 billion if it were not in existence not because of a desire to realize tariff income – but because of the overwhelming economic value arising from its highly integrated use for transporting ANS production from affiliated producers. [Ex. MUN-5 at 7; Tr. 704-06 (Hoffbeck); Tr. 1852-53 (Cicchetti); Tr. 3878-79 (Podwalny – "[TAPS] is an integrated property and it was originally designed and built to transport affiliated oil from the North Slope to market not with the intent that the pipeline itself would be the vehicle to generate revenues.")]

476. The Owners' position that the tariff income is a primary driver of the economic value of TAPS is also at odds with the extensive system of crude oil pipelines that are fully integrated with North Slope production but have no tariff income associated with their operation. [Tr. 721-22 (Hoffbeck)] To give one recent example: there are two, 24-mile-long transit lines from the Prudhoe Bay field to Pump Station 1 that were recently replaced at a cost in excess of $600 million. These lines have no tariff and no tariff income. They would have no value as a stand-alone investment. Instead, like TAPS, the economic value of these substantial upstream crude oil pipelines is in their value transporting oil closer to market – the value of which may be reliably determined under the cost approach without reference to tariff income.

477. For decades, the Department has determined the economic value of nearly all other pipelines in Alaska for ad valorem tax purposes as required by AS 43.56 – both regulated and non-regulated – by applying the cost approach. With respect to

TAPS, the Department applied the cost approach without any reliance on the tariff income from 1977 for several years, then beginning again in 2005 to date.

478. The unique ownership structure of TAPS, the almost complete dependency of TAPS Owners on their affiliated and parent companies to build, operate, and improve TAPS, the use of TAPS as part of a vertically integrated enterprise, and the history of ownership interest in TAPS all indicate that tariff income is not determinative of the economic value of TAPS. [Tr. 1206-07 (Goodwin)] The sheer magnitude of the economic value realizable from the use of TAPS to monetize ANS reserves makes it far more likely than not that TAPS would continue to operate much as it does today or in 2006 even if there was no tariff income at all. [Id. at 705-06 (Hoffbeck); id. at 1219-20 (Goodwin); id. at 1467-68 (Greeley); id. at 1753, 1773-74 (Cicchetti)][61]

479. Dr. Cicchetti persuasively testified, when comparing the proposed natural gas pipeline to TAPS:

> [I]t's showing history is repeating itself, and not just because of coincidence, but because of financial and economic and even pure common-sense logic, that people don't build $9 billion projects in the 1970's or 30-some-odd-billion-dollar project in the aughts, whatever we're in now, the new century. They don't do those things simply to get tariff income. Those kinds of investments are made on an integrated basis, and at least from an economic perspective, I think we have to think about the decision that's made and the businesses that the companies are involved in to try to come up with at least the notion of an economic value of the Trans Alaska Pipeline.

[Tr. 1707; see also Ex. MUN-4 at 13; R. 0023]

[61] It is this lack of correlation between TAPS' tariff income and its economic value that best explains Mr. Hoffbeck's testimony that the amount of the tariff does not affect the pipeline's value under AS 43.56. See Tr. 988 (Hoffbeck).

480. The tariff income approach wrongly assumes that there would be a hypothetical buyer interested solely in the tariff income of TAPS to whom the TAPS Owners would agree to sell their interests. But the sales of ownership interests in TAPS have been to buyers that subsequently used TAPS as part of their integrated operations. [Ex. MUN-1 at 7; Tr. 720 (Hoffbeck)] There is no evidence that there has ever been a crude oil pipeline in Alaska that has been built or operated as a stand-alone pipeline with owners solely interested in tariff income [Tr. 720 (Hoffbeck)] Rather, the record demonstrates that crude oil pipelines in Alaska are built and operated by affiliated companies for the primary purpose of transporting affiliated crude oil production to the marketplace. [Ex. MUN-2 at 3; Tr. 1853 (Cicchetti)] This is not unexpected considering the economic realities of developing isolated crude oil fields in Alaska.

481. This Court finds that the tariff income approach proposed by the Owners is based on a fundamentally wrong premise of value, as it assumes that there is a willing buyer and a willing seller of TAPS based solely on its tariff income as a stand-alone investment.

482. As several witnesses noted, tariff income is a regulatory, not an economic construct that has little place in determining the economic value of a pipeline used primarily for affiliated transportation. ["The final bottom-line, end-of-the-day conclusion, is tariff income today does not reflect economic value today." Tr. 1687-88, 1695, 1764, 1768-80 (Cicchetti); "There's no consideration of value in the calculations that are performed under traditional rate-making." Id. at 1887 (Sullivan); "Q: Did you agree or disagree with [Mr. Sullivan's] opinion that cost-of-service just and reasonable rates do

not reflect or capture economic value? A: That's correct. It's simply a calculation of costs associated with a pipeline." Id. at 1981 (Brown); "Q: In your judgment, does cost-of-service rate-making reflect the cost of providing service or the economic benefit of the service? A: It's the cost of providing the service." Id. at 2080 (Grasso); "Q: [T]he economic value of TAPS doesn't change if it has a tariff and a rate or doesn't have a tariff and a rate? A: I would agree with that." Id. at 1227 (Goodwin)]

483. Dr. Baumol is a prominent economist that was retained by the Owners in their most recent rate proceeding before FERC. His testimony there acknowledged that tariff rates are a regulatory construct unrelated to the underlying economics of pipeline transportation. [Ex. MUN-713 at 25-26; Tr. 2019-20 (Brown)]

484. Several other courts have recognized the distinction between ratemaking and the determination of a property's value for ad valorem taxation purposes, both with respect to pipeline properties[62] as well as other types of properties.[63]

---

[62] See Questar Pipeline v. Utah State Tax Comm'n, 850 P.2d 1175, 1178 (Utah 1993) (property tax appraisers of gas pipelines were within their rights when, after taking the consequences of FERC rate regulation into consideration, they did not alter their final opinions when adopting a method of valuation inconsistent with the FERC rate base value); Transcon. Gas Pipe Line Corp., 545 A.2d at 758 ("Courts in other states have long recognized a definite distinction between the valuation of public utility property for ratemaking purposes, determined pursuant to statutes applicable thereto, and the valuation of the same property pursuant to different statutes for ad valorem tax purposes.") (internal quotations omitted); Mich. Wis. Pipe Line Co. v. Iowa State Bd. of Tax Rev., 368 N.W.2d 187, 191-92 (Iowa 1985) (board of tax review did not err in failing to set property tax of gas pipeline in a manner consistent with its FERC rate base even when evidence was offered that FERC rate base determined value for sales of comparable pipelines); Mobil Pipeline Co. v. Rohmiller, 522 P.2d 923, 936-37 (Kan. 1974) ("This issue, the regulation of earnings computed on a 'rate base', was the major thrust of the public utility in attacking the assessment of its Kansas property in Northern Natural Gas Co. v. Dwyer, [492 P.2d 147 (Kan. 1971)]. The Court there recognized a definite distinction between the valuation of public utility property for rate making purposes, determined pursuant to statutes applicable thereto, and the valuation of the same property pursuant to different statutes for ad valorem tax purposes.").

[63] Matter of Long Island Lighting Co. v. Assessor for Town of Brookhaven, 246 A.D.2d 156, 165 (N.Y. App. Div. 1998) ("[W]e note that we have previously held that a utility's rate base is an

485. This Court has given careful consideration to the fact that TAPS is regulated by both FERC and the RCA, and has concluded that the Owners have failed to demonstrate that the value of TAPS for purposes of ad valorem property taxation under AS 43.56 bears any meaningful relationship to the property's current or projected future tariff income.

C. The Tariff Income Approach Has Not Been Demonstrated to be Reliable.

486. Even if this Court were to assume that the tariff income could capture a significant portion of the economic value of TAPS, the evidence demonstrated that the reliability of such an approach would be poor.

487. Dr. James Smith testified at the trial de novo that income forecasts with a volatility of 50 percent or greater were unreasonably large to be used in an income approach. [Tr. 4556-58 (Smith)] The Owners' own forecasts of tariff income do not fall with that range of volatility. [See also Ex. MUN-713 at 38 (Baumol – "Q: You can't do a net present value analysis on rates that haven't been established yet or filed; right? A:

---

inappropriate factor to consider in the assessment of specialty property."); S. Bell Tel. & Tel. v. Markham, 632 So.2d 272 (Fla. Dist. Ct. App. 1994) (appraiser must consider effects of government regulation, i.e., the rate base that controls earnings, under the controlling statute, but such regulation need not be determinative of property tax value); Cent. Me. Power v. Town of Moscow, 649 A.2d 320, 325 (Me. 1994) (The limit on return that an owner of dam utility property may earn on its investment because of its rate base is a factor that should be taken into account in valuation but is "emphatically not automatically determinative of the facility's just valuation" for property tax purposes.); Consumers Power Co. v. Big Prairie Twp., 265 N.W.2d 182 (Mich. Ct. App. 1978) (the ad valorem assessing tax tribunal did not err in utilizing the adjusted depreciated reconstruction cost method in assessing a dam rather than using the depreciated net cost value used by the FPC for rate making purposes), superseded by statute; Pub. Serv. Co. of N.H., 377 A.2d at 125-26 ("[E]ven though net book value (original cost less depreciation) provides the rate base upon which plaintiff's rate of return is calculated, the value of the plant for tax purposes and the value for rate-making purposes need not be the same.") (internal quotations omitted); Town of Barnet v. New England Power Co., 296 A.2d 228 (Vt. 1972) ("Fair market value should not rely upon one criterion and the values shown by the various methods of valuation should be weighed and not averaged by the board. The bases of valuation for taxation purposes and for rate-making have been uniformly recognized as different.") (citations omitted).

Yes; of course."); Tr. 1849 (Cicchetti – "Q: Dr. Cicchetti, you'd indicated in testimony that tariffs going forward would be hard to estimate; is that correct? A: Yes, I'd say they would be difficult to estimate … The methodology that would be contemplated is known, what the numbers would be, what the inputs would be, and some of those orders, particularly 502, is under appeal, so it's still up in the air in terms of even the methodology. The broad outlines we know, but they could be changed."); Tr. 1963 (Sullivan – "Q: There was no known certainty, was there, in tariff structure on January 1st, 2006? A: When those rates were filed, no, the Commission had not made a determination which eventually came out as Opinion 502.")]

488. The Owners did not present any witnesses at the trial de novo who had ever been in a rate proceeding before either FERC or the RCA. Nor did they present any witness that was qualified by this Court as an expert in regulatory matters or in ratemaking. This lack of any rate or regulatory expert substantially undermines the credibility of the Owners' tariff income assumptions. The rate and regulatory experts that did testify at the trial de novo agreed that the Owners' appraiser's tariff income approach was circular, could not properly be used to project tariff income decades into the future, and did not reflect the economic reality that TAPS rates have been and are likely to be based upon settlements at rates far higher than those projected by the models that the Owners used. [Tr. 1986-88, 1993-95 (Brown); Tr. 1899-1904 (Sullivan); Tr. 2179-83 (Grasso); see also Ex. MUN-22 at 3]

489. These concerns were validated when the projected tariff rates used in Ms. Spletter's income approach were compared with the known tariff rates for those same years. From 2006 to 2008, Ms. Spletter's projected tariff rates were understated by

from 75 percent to 105 percent of the actual tariffs in each year. [Tr. 6144-46 (Spletter)] Ms. Spletter's responded that her failure to accurately project revenue should be offset by her failure to also accurately project costs, such that only the net result should be considered.[64] This argument was not persuasive. Moreover, over the course of these proceedings, Ms. Spletter and the Owners have shifted the basis upon which they have chosen to predict future rates several times. [Tr. 2081-98, 2267 (Grasso)] The evidence at trial demonstrated that the rate models used by Ms. Spletter are not a reliable predictor of future income.

490. TAPS was originally regulated at the federal level by the Interstate Commerce Commission ("ICC"). [Ex. MUN-3 at 3] After the rate authority was transferred to FERC, there was extensive litigation in the early 1980's among the financially interested parties, with the State of Alaska alone spending $35 million in its efforts to resolve the regulatory issues. [Ex. MUN-3 at 3, 31]

491. This Court also notes that historically, regulatory disputes concerning TAPS' tariffs have most often been resolved by settlement among the parties rather than by a substantive determination by FERC, the RCA, or their predecessors. [Ex. MUN-3 at 3] Often these settlements are uniquely adapted to the parties and by their nature unpredictable in result. [Tr. 1990-98 (Brown); Ex. MUN-3 at 12-14] The primary settlement that has governed TAPS' tariff rates has been the TSA (Tariff Settlement Agreement). [Ex. MUN-3 at 11-12] The TSA contains a complex and unique rate methodology referred to as the TSM (Tariff Settlement Methodology). [Ex. MUN-3 at

[64] As of the lien date, an estimated 80 to 85% of the TAPS tariff constituted recovery of operating expenses, and not any type of return on investment. [Tr. 5379 (Spletter)]

12-14; Ex. MUN-22 at 2 (Grasso); Tr. 1990-98 (Brown)] With the expiration of the TSA and its TSM methodology, future tariff unpredictability should be expected to increase.

492. The Owners have tried to predict future tariffs for the next several decades in order to determine the net present value of that tariff income stream. But this Court finds that the evidence presented at the trial de novo persuasively demonstrated that the future tariffs for TAPS cannot reasonably be predicted. [See Tr. 1993-95, 2003-04 (Brown); id. at 1850 (Cicchetti); id. at 1903-11, 1963 (Sullivan) (filed rates after period covered by FERC Opinion 502 (2005-06), including the current filed rates, are unjust and unreasonable and have been protested; the Owners have submitted pancake filings so that increased filed rates are collected while lengthy rate proceedings take place on multiple rate filings)]

493. Given the considerable litigation expenses, the complexity of the underlying rate issues, and the history of TAPS' rates set by settlement, this Court finds it is considerably more likely that most if not all of the future tariff rates on TAPS will be established under settlements, rather than fully litigated. [Tr. 1901-02 (Sullivan); Tr. 2275 (Grasso)]. The Owners' assumption to the contrary, which underlies their tariff income based valuation, is simply not supported by the record.

494. This Court also notes that the Owners' position before this Court with respect to the amount of the FERC-regulated tariffs is directly at odds with their position taken on this same issue in proceedings before FERC. [Tr. 2000-01, 2017 (Brown) (Owners at FERC submitted Stand Alone Cost (SAC) case in support of continuing the TSM rates); id. at 2095-98, 2203-05 (Grasso); Ex. MUN-703 (Baumol's prepared testimony before FERC); Ex. MUN-708 (Klick testimony filed with FERC on behalf of the

Owners in support of a SAC case)] Before FERC, the Owners are advocating several rate theories that would result in tariffs far above the amounts that they are projecting in this case. The Owners are continuing to litigate these positions before the D.C. Circuit Court and are appealing the same ratemaking orders that they assert to this Court should be applied in projecting future rates.

495. For all of the foregoing reasons, and consistent with the determinations made by many other courts, this Court finds that the Owners have failed to demonstrate that the Department and SARB's use of the RCNLD approach, and its rejection of a tariff-based income approach, was unreasonable or unsupported by the record. Instead, the record clearly demonstrates that the use of the RCNLD methodology to value TAPS was a fundamentally sound valuation determination.

VIII. COMPARABLE SALES APPROACH

496. The third approach to value is comparable sales. "In the sales comparison approach, the appraiser develops an opinion of value by analyzing closed sales, listings, or pending sales or properties that are similar to the subject property." The Appraisal of Real Estate at 277 (13th ed. 2008).

497. TAPS is a unique, limited-market and special-purpose property**.** The comparable sales approach is rarely used to value properties of that nature because sales transactions of properties comparable to the subject property are not available. As explained by the Minnesota Supreme Court:

> Because the [property] is specially adapted to a unique use and will not readily be sold to another user, the very nature of special purpose property is such that market value cannot readily be determined by the existence of an actual market, and therefore other methods of valuation, such as reproduction cost, must be resorted to. … Usually … comparable sales are not available for a [property] that is a special use property. Nor

> is the income approach always directly relevant. Thus, where the owner is less interested in the income the property will generate than in occupying a [property] uniquely suited for the owner's special type of business, the reproduction cost minus depreciation method has been held to be appropriate for determining the market value of a [property], rather than an income approach.

Fed. Reserve Bank of Minneapolis v. State, 313 N.W.2d 619, 622-624 (Minn. 1981) (quotations omitted).

498. The absence of comparable sales and a meaningful income stream typically result in the use of the cost approach for limited-use and special-purpose property. See Brooklyn Union Gas Co. v. State Bd. of Equalization, 482 N.E.2d 77, 83 (N.Y. 1985); Guild Wineries & Distilleries v. County of Fresno, 51 Cal. App.3d 182, 187-88 (Ca. Ct. App. 1975); First Wis. Bankshares Corp. v. United States, 369 F. Supp. 1034, 1039 (E.D. Wis. 1973). As noted by the New Jersey Supreme Court in Transcontinental Gas Pipe Line Corp. v. Bernards Township, the cost approach, and not the comparable sales approach, has been applied to value pipelines across America – assets which, by their nature, tend to be special-purpose properties. Transcon. Gas Pipe Line, 545 A.2d at 763.

499. Both the Department and SARB considered and rejected the sales comparison approach. [See R. at 9-10; Tr. 560 (Hoffbeck); id. at 1085 (Goodwin)] At the trial de novo, Mr. Hoffbeck explained:

> [I]f you really look at the special purpose of TAPS and the design issues and everything else, we didn't feel there was really a comparable sale of pipeline in the Lower 48 either. The pipeline running 800 miles across Nebraska isn't the same as a pipeline running through the Arctic for 800 miles, running through three mountain ranges across rivers, realizing the special engineering that had to occur for TAPS.
>
> We also, in analyzing the sales that were presented in 2005, found that they very likely were suffering from the same issues of whether the tariff

> rate base income stream was capturing the totality of the value of the pipelines or whether the purchases were only reflecting what the investors buying the income stream without real relevance to the underlying assets.
>
> ****
>
> We also looked at, really, what is the market for TAPS. And, historically, the market for TAPS has been purchasers with production that would buy a piece of TAPS effectively in a ratio similar to their production – the affiliated production.

[Tr. 560-561 (Hoffbeck)]

500. Mr. Clarkson, on behalf of the Municipalities, also concluded that the comparable sales approach is unreliable for valuing TAPS. [Tr. 3520] He explained:

> It's a unique property, … [and] it's characterized by affiliated dominance of ownership in decision-making throughout the big horizontal oil well. … It's a large integrated enterprise. There are no comparables in the first place. I could not find any. And if there were, adjustments that would have to be made to the comparables to match TAPS would be just too significant to rely on.
>
> *****
>
> The nature of TAPS being a limited-market lets the appraiser know that the difficulties in finding comparables to match to the TAPS will be difficult. A special-purpose property lets the appraiser know that the sales comparable approach traditionally is not the approach that the appraiser's going to use. Simply, again, because of the lack of comparable sales.

[Id. at 3520-21 (Clarkson)]

501. Ms. Spletter, on behalf of the Owners, also considered comparable sales. [Tr. 5397-98 (Spletter)] Ms. Spletter looked at a number of North American pipeline sales. She used an earnings multiples analysis ("EBITDA"). The sales that she used in her analysis were "limited to Market Value sales that represent willing buyer, willing seller, value-in-exchange transactions." [Ex. TO-3 at ST000419]

502. In an e-mail that Ms. Spletter wrote to counsel for the Owners in preparation for the SARB 2006 hearing, Ms. Spletter made the following suggestion about another Owners' witness's proposed testimony:

> [O]n slide 9, can we tone down trashing the EDITDA [sic] multiple? I agree that it is not the best indicator, but it is useful, and it points to the fact that the Muni's value is out of the ballpark. It is a clean way of making that point, and if PA says it doesn't work, it hurts our ability to "reality check" with it.

[Ex. MUN-1365 at 1]

503. Ms. Spletter asserts that TAPS has less value, and should have a lower earnings multiple, because its production is declining. [Ex. TO-3 at ST000422] But a regulated pipeline's allowed earnings reflect the revenue requirement and are not dependent on throughput. That is, the revenue requirement is divided by the projected throughput to arrive at the allowed tariff. Thus, as throughput decreases, the tariff is simply adjusted upward to generate the additional needed revenue. [Tr. 6122-23 (Spletter)]

504. Although several small interests in TAPS have changed hands in the past ten years as part of integrated transactions, the parties all agree that the small fractional integrated sales do not provide a reliable basis to value the whole of TAPS. [See Tr. 1095-96 (Goodwin); id. at 3520 (Clarkson); Ex. TO-3 at ST000420 (Spletter)]

505. This Court finds that the Owners failed to established that the Department and SARB's decision not to rely upon the comparable sales approach led to an improper valuation of TAPS.

IX. RECONCILIATION

506. USPAP does not require reliance upon any particular method of appraisal. Instead, it provides as follows:

> In developing a real property appraisal, an appraiser must reconcile the quality and quantity of data available and analyzed within the approaches used, and reconcile the applicability or suitability of the approaches used to arrive at the conclusion(s).

USPAP Standard 1-6.

507. The record before this Court reflects that SARB and the Department carefully considered each of the three major approaches to value, as well as the fact that TAPS is a regulated pipeline. No party has demonstrated that the Department and SARB's reliance on the cost approach was improper, or unsupported by the record, or constituted a "clear adoption of a fundamentally wrong principle of valuation."[65]

508. The Municipalities did prove by a preponderance of the evidence at the trial de novo that certain adjustments should be made to SARB's 2006 valuation of TAPS. This Court has had the benefit of considerably more evidence than was presented to either the Department or SARB, including vigorous cross-examination of all of the experts and other witnesses by counsel, and has concluded that the Municipalities have demonstrated that in certain respects, SARB's 2006 valuation of TAPS resulted in an improper valuation of TAPS, particularly with regard to the amount of the RCN. And the evidence presented has also persuaded this Court that the scaling adjustment should be higher than was utilized by SARB and the Department, and is more properly characterized as external and not functional obsolescence. Also, the Municipalities persuasively demonstrated that the economic life of TAPS as currently configured and based on its proven reserves as of the lien date is at least until 2047.

[65] N. Star Alaska Hous. v. Bd. of Equal., 778 P.2d 1140, 1144 n.7 (Alaska 1989).

509. Based on the foregoing, the following is a summary of this Court's determination of the assessed value for TAPS as of January 1, 2006:

$18,712,247,300	Replacement Cost New (RCN)
($170,907,600)	Less Land & ROW
($74,200,000)	Less Non Taxable Asset Deductions
$18,467,139,700	RCN Less Land & ROW and Non Taxable Assets
($7,307,447,179)	Less Economic Life Depreciation at 39.57%
$11,159,692,521	RCN Less Economic Life Depreciation
($3,500,000)	Less Valdez Terminal Office (VTO) Building
$11,156,192,521	RCN Less Physical Depreciation and VTO
($367,384,329)	Functional Obsolescence based on SR
$10,788,808,192	RCN Less Economic Life Depreciation, VTO, and SR Functional Obsolescence
($981,781,545)	Less Economic Obsolescence based on Scaling at 9.1%
9,807,026,647	RCN
$170,907,600	Plus Land & ROW
$9,977,934,247	TOTAL RCNLD (U.S. $)
$9.977934 billion	**2006 TAPS Assessed Value (Rounded)**

X. CONCLUSION

510. This matter concerns the assessed valuation of the Trans Alaska Pipeline System ("TAPS") as of January 1, 2006. It is before the Superior Court pursuant to a specific statute that accords to taxpayers and affected municipalities the right to trial before the Superior Court of an administrative determination of the value of pipeline property. AS 43.56.130(i). Pursuant to that statute, this Court conducted a non-jury trial lasting over five weeks in the fall of 2009. For the reasons expressed herein, this Court finds that as of January 1, 2006, the "full and true value" of the Trans Alaska Pipeline System, "with due regard to the economic value of the property based on the estimated life of the proven reserves of gas or unrefined oil then technically, economically, and legally deliverable into the transportation facility,"[66] is $9.977934 billion.

511. The construction of TAPS in the 1970's cost the equivalent of $24 billion in 2006 dollars. The evidence at trial demonstrated that as of January 1, 2006, the value of the remaining proven reserves on the North Slope was approximately $350 billion. The value of those proven reserves cannot be realized without TAPS, as it constitutes the only viable means of transporting ANS product to market. Clearly, TAPS would be replaced to realize the value of those proven reserves if necessary. The Owners have asserted that TAPS' economic value derives primarily from its tariff income stream, and that TAPS was worth just $850 million as of the January 1, 2006 lien date. That proposed value for TAPS is less than 1/4th of one percent of the approximate $350 billion value of the remaining proven reserves on the North Slope as of the lien date. This Court has concluded that the assessed value of TAPS is far greater than $850 million. Applying the Replacement Cost New Less Deprecation (RCNLD) valuation

[66] AS 43.56.060(e)(2).

approach, consistent with the Department of Revenue and the State Assessment Review Board's determination on that issue, and in reliance on the extensive expert testimony and other evidence presented to this Court as to the application of that methodology, this Court has adopted ProPlus's RCN cost estimate that it would cost approximately $18.7 billion to replace TAPS today. Then, after consideration of the extensive expert testimony and reports on depreciation that were presented at the trial de novo, this Court has valued TAPS as of 2006 as currently configured at approximately $9.977 billion – or just over 50% of its estimated replacement cost. This matter will be remanded to SARB for the issuance of an amended Certificate of Determination consistent with this decision.[67]

ENTERED at Anchorage, Alaska this 24th day of June 2010.

Signed
SHARON L. GLEASON
Superior Court Judge

I certify that on 5-24-10 a copy of the
above was mailed to the parties at their address of record:
AG-Diemer/DeVries, Long/Dillon, Palumbo, O'Neall,
Garatoni, Broker, Seedorf, Richards/Walker, Johnson,
Mahoney/Bajwa, Brena/Clarkson
Signed
Amasneri, judicial assistant

[This document has been modified to conform to technical standards for publication.]

[67] This Court will retain jurisdiction pending further order of this Court. The parties are accorded 30 days from the date of this order's distribution within which to file motions to reconsider.