

Project Name: Pebble Project EIS
Date: November 18, 2019
Time: 8:30am-5pm
Location: The Megan Room, 6591 A Street, Anchorage
Subject: Cooperating Agency Technical Meetings, Day 1
Introduction: Safety, housekeeping, Opening remarks Ground rules Review of change from DEIS to FEIS

Attendees and Affiliation:	
AECOM and subcontractors	Bill Craig, Elizabeth Bella, Jessica Evans, Jon Isaacs, Allison Payne, Sasha Forland, Nancy Darigo, Cara Wright, Lindsey Flagstad, Arika Mercer, Cecil Ulrich, Tara Bellion
ACHP	John Eddins
BSEE	John McCall
Curyung Tribal Council	No attendees
EPA	Molly Vaughan, Matt LaCroix, Barbara Butler, Betsy McCracken, Cindi Godsey, Palmer Hough, Michael Kravitz, Don Clabaugh, Kate Scofield, Joe Ebersole, Tim Maley
LPB (Jade North)	Bob Loeffler
Nondalton Tribal Council (represented by NARF)	Wesley Furlong
NPS	Sharon Kim, Susanne Fleek Green, Kerensa King, Dan Young, Buck Mangipane, Kelsey Griffin, Mark Sturm
State of Alaska (SoA)	Kyle Moselle, Cathe Heroy, Ron Benkert, Gary Mendivil, Kate Harper, Ted Otis, Robin Dublin, Bernie Nowicki, Allan Nakanishi, John Clark, Brock Tabor, Jim Curtis, Lee McKinley, Travis Elison, Tom Barret, Ori Miller, Allan Mack
USACE	Shane McCoy, Katie McCafferty, Sheila Newman, Heather Markway, Melanie Collyer, Jennifer Moyer, William James, Mary Romero, Lt. Colonell Blodel
USCG	David Seris
USFWS	Douglass Cooper, Catherine Yeargan, Veronica Varela, Angela Matz
PHMSA	Robert Guisinger

Agenda/Discussion:

Day 1 Agenda

Opening remarks, clarification of regulatory authority (USACE, BSEE, USCG)

DOT PHIMSA – responsible for review of pipeline design

EPA 404q elevation process – 3A letter to USACE has been sent, EPA has asked for an extension of time to send a 3B letter due February 28, letter would declare that the project may significantly affect aquatic resources

USFWS 404q elevation process - USFWS has submitted both a 3A and 3B letter declaring significant impact to aquatic resources, allows additional discussion outside of NEPA process, to add mitigation

Goals for the week:

- Goal 1: what additional work/analysis needs to be done to produce a FEIS
- Goal 2: shared understanding of scope of analyses
- USACE is targeting Dec 13 for issuance of a revised schedule – noting that PEIS will not be ready Dec 2 as originally proposed; PFEIS will resemble FEIS as much as possible

Review of summary of changes from DEIS to PFEIS:

- RFI 71b alternative to original application – icebreaking ferry to Eagle Bay, elimination of spur road to Iliamna, landing of pipeline to between Iliamna and Newhalen
- additional cultural resource survey in 2019 field season
- additional wetland mapping in 2019 field season
- new groundwater modeling based on USGS source code
- new air quality modeling using MOVES model
- additional analysis of fugitive dust – conceptual fugitive dust control plan prepared, Technical Memo regarding additive effects of dust deposition being prepared by AECOM, intent to be done end of week
- additional specificity for navigable waters crossings per USCG permitting
- caisson fill dock, minimal dredging and pile driving to minimize impact to aquatic resources and species
- natural gas pipeline alignment realigned through Cook Inlet to avoid wooden shipwreck
- crossing of Newhalen River moved to south to avoid cultural resources
- additional mine site optimizations to avoid and minimize impacts
- additional text to address cultural resources
- intent of USACE to release Section 106 Programmatic Agreement concurrent with PEIS
- dewatering models run to approximate groundwater drawdown at the mine site

USCG federal authority includes:

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- bridge permit over jurisdictional waters (at this time identified as the Newhalen and Gibraltar Rivers)
- enforcement of regulations involving vessel construction and design (e.g. ferry), vessel oil spill response plan; clarifying that these are nondiscretionary functions that would not trigger the NEPA process
- spill response in tidally influenced water and waters of interstate commerce

Explaining CA Matrix and SOC and draft response:

- in response to SoA, USACE explained that ideal feedback from the cooperators is the provision of clarity as to if USACE has properly addressed agency comments
- in response to EPA question regarding 'outside scope of authority' in USACE direction, specifically those that are connected to an SOC that appeared to address the comment (i.e. the USACE direction appears to contradict the SOC), USACE suggested that these situations be discussed on a case-by-case over the next few days.
- AECOM explaining how week will proceed – Subject Matter Expert will address 'starter topics', representing general areas of concern, SME will present feedback from CA, changes made to the PFEIS (or not), and rationale for change (or inaction)

General discussion of ground rules for forthcoming discussion: any agency can participate, however technical deference will be given to those agencies with direct authority; clarification of USACE decision making process, NEPA process initiated by discharge of fill to waters of the UOS, if direct or indirect effect cannot be tied to the discharge of fill, then USACE authority is stretched. Necessary for USACE to tie authority to regulatory action.

BSEE will receive feedback to BOEM as part of ROW process

ADEC – notes spills are low probability, high consequence events, further that NEPA case law does not require the analysis of worst-case scenario

Worst case scenarios

SOC: Spill Risk – Tailings Dam Failures - Full Tailings Dam Breach Analysis

(row 589) – evaluation of full breach of tailings dam requested however worst-case scenario analysis not required by NEPA, referred instead to Dam Failure Workshop, which identified most probable dam failure scenarios, full breach eliminated as a probable scenario bulk TSF, pyritic TSF, main water management pond

- USACE clarified that the Dam Failure workshop was an EIS phase FMEA
- EPA and ADEC request revision of row 589 SOC response to include explanatory text that while scenarios are not worst case, three scenarios are representative and conservative (i.e. close to worst case)
- EPA – voices concern that most dam failures are due to human factors rather than design, and that it was unclear from workshop summary what the uncertainty was around various designs, especially without design of proposed dams, also unclear why worst-case scenario was

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dismissed, and for these reasons, EPA requests a full breach scenario analysis. Also cites USFS decision on Resolution Copper to conduct a full breach analysis based on public concern. If USACE is not going to perform a full breach scenario, then need to fully defend that decision.

- USACE asked about level of effort required to produce full breach analysis; AECOM estimates several months.
- LPB - could existing models be used for worst case scenario? Also notes that public has limited understanding of the different types of dams involved
- ADEC – notes that perhaps agencies could do a better job of educating the public
- AECOM – individual models would be needed for each dam, also notes that thickened tailings expected to flow 1/12th the distance of slurry tailings
- SoA – cites grave public concern regarding full breach scenario as rationale for conducting worst case scenario; perhaps sufficient to discuss a full breach qualitatively (i.e. without modeling); concerned about deferral of spill responsibility to SoA Dam Permitting Process where an inundation analysis would occur but a full breach analysis will not be conducted
- EPA – analysis of full breach could be helpful in identification of additional mitigation measures; rationale for worst case scenario analysis – addresses uncertainty surrounding earthquake risk
- AECOM – 1. difficult to describe worst case scenario without modeling 2. RFI 139 Lake Clark Fault refines seismic risk associated with splays of Lake Clark Fault. PLP currently evaluates four earthshaking scenarios – interslab scenario produces greatest earthshaking 3. Dam safety guidelines 4. Worst case determined from a priori probability thresholds 5. human error has been discussed, difficult/impossible to incorporate
- EPA – will EIS discuss difference in impact between thickened and slurry tails, specifically in terms of travel distance under a release scenario? AECOM – yes, EIS includes discussion of fate and behavior of thickened tailings on land and also as a slurry in flowing water.
- USFWS – wanted to confirm that worst case scenario is defined as ‘very low probability’, not necessarily highest impact
- EPA recommends checking in with SoA regarding state regulations

Additional SOC's Discussed

(row 576) Tailing Dam Failures – Blasting Agents – revised SoC response to address blasting agent residues

(row 588) Tailings Dam Failures FMEA – address uncertainty

(row 598) Tailings Dam Failures – Main WMP Probability of Release – low probability and low failure rates are stated – how do you get to probability with such limited information, and if you can evaluate spill for tailings dams why not for the water management pond? AECOM – unable to evaluate failure of

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WMP as there are no comparable for a lined WMP of this size, AECOM offered that similarly sized yet unlined systems could be described as analogues. Qualitative text will be added to SOC to explain how professional judgement was employed to determine probability of failure.

EPA – (row 609) Tailings Dam Failures SOC regarding Emergency Action Plan – would like to see reasonable detail provided in advance of plan development; provision of a plan outline suggested. SoA would review any draft plans submitted; however, clarifies that draft documents would have no bearing on state's final approval of plans; also concerned that draft documents could present new information that might require a supplemental EIS. Suggestion to revise EIS to better identify emergency action procedures and clarify what the applicant has committed to; USACE to consider requesting an EAP outline from PLP that could include applicant commitments.

Dept. of Dam Safety ADNR – Emergency Action Plan would be developed at same time as state review, prior to construction.

(row 159) Earthquakes or seismic concerns – Foundation Conditions

EPA – 1. wants EIS to describe actual foundation conditions, AECOM directs to RFI 14b, discloses that description is conceptual level pending additional geotechnical survey 2. EPA concerned that two WMPs are constructed on overburden; AECOM explains that the large WMP has been redesigned to construct on bedrock and small WMP has been moved to avoid potential buried glaciolacustrine deposits

(row 187) Earthquakes and State Dam Safety Guidelines

EPA - given size and location of facilities, are Alaska State regulations, which state a minimum standard of care, sufficient? Do they represent best management practices?

Materials evaluated/not evaluated in detail

SOC: Spill Risk (Fuel/Natural Gas/Concentrate/Reagents) - Concentrate Transport

SOC: Spill Risk -Fuel/Natural Gas/Concentrate/Reagents - Concentrate Spills Impact Analysis/Modeling

(row 500) Spill Risk (Fuel/Natural Gas/Concentrate/Reagents) Concentrate Spills Impacts Analysis Modeling – concentrate pipeline leak in line under Lake Iliamna citing 5 min to shut off valves on either side of the lake; this response time was applied to all valves along the pipeline. General consensus in room that this time drastically under estimated for unmanned valve locations. AECOM to discuss response time with PLP.

EPA – potential risk of concentrate spill is downplayed in EIS. AECOM presented two concentrate spill scenarios assuming trailer concentrate capacity of 80,000 lbs and less than full capacity (two of three trailers) spilled from truck to: 1. ground (easy to recover), 2. standing water (easy to recover), and 3. flowing water (not practicable to recover)

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ADFG – notes contradictory text between spill and fish impacts discussion in Section 4.27; spills discussion states that release of concentrate to flowing water would be impracticable to recover however fish impacts discussion states that no adverse impacts to fish and aquatic resources if concentrate is recovered. Request to clarify that volume of concentrate likely to enter flowing water would be dispersed and diluted to levels not expected to cause adverse impact to fish.

ADFG notes that EIS lacks fish tissue trace element baseline information the freshwater and marine environment (added to parking lot for fish technical discussion)

ADFG takes issue with statement that: smothering of eggs upstream will not have any downstream fish harvest effects. AECOM explains that impacts would be small-scale, localized and due to the size and resiliency of stock.

(row 502) Spill Risk (Fuel/Natural Gas/Concentrate/Reagents) Concentrate Transport – concern regarding generation of fugitive dust during loading of concentrate; text has been clarified to explain that containers would not be allowed to fall more than 10 feet during transfer of concentrate shipping containers; see RFI 009c

ADFG – voiced concern regarding lack of meteorological data and the appropriateness of locations for the activity

USCG – no threshold limits (e.g. swell height) for lightering operations, accepted to be the responsibility of vessel operator

AECOM – coastal and shoreline engineering analysis were requested for both Lake Iliamna and Cook Inlet; added to Appendix M.

expand (row 502) Spill Risk (Fuel/Natural Gas/Concentrate/Reagents) Concentrate Transport SOC response to reference the SOC that addresses meteorological data

(row 501) Spill Risk (Fuel/Natural Gas/Concentrate/Reagents) Concentrate Spills in Kamishak Bay: ADFG requests removal of last sentence stating that ADFG has been known to close fisheries in the event of spills that threaten seafood quality. Consider discussing initiation of Natural Resource Damage Assessment process in a different SoC as the procedures are more crafted for spills.

Additional scenarios

SOC: Spill Risk – Fuel/Natural Gas/Concentrate/Reagents - Diesel spill scenarios

(row 510) Spill Risk – Fuel/Natural Gas/Concentrate/Reagents - Diesel spill scenarios – response: impossible to analyze for all spill types, amounts and receiving environments – picked a 300,000 gal. diesel spill to the marine environment

USFWS – what is the purpose of the diesel spills section? AECOM – to standardize comparison of alternatives. USFWS brought up concept of acute large volume (e.g. ship wreck) vs chronic low volume (e.g. repeated tank overfilling) spills; 1. recommends considering other, more probable spill scenarios (i.e. tank overfill outside of secondary containment and from handysize cargo ships). Also recommends

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2. placing 300,000 gal diesel spill in a location appropriate to Alternatives 2 and 3 (to stay consistent with analysis for Alternative 1)

USFWS suggests considering adding additional, more probable spill scenarios (i.e. tank overfill outside of secondary containment and from handy size cargo ships) and placing 300,000 gal diesel spill in locations appropriate to Alternatives 2 and 3 (to stay consistent with analysis for Alternative 1)

USFWS – has entrainment of diesel under ice been addressed? – AECOM, Yes

ADFG – concerned that response to spills to ice was anemic in EIS, AECOM responded that this has been addressed in PFEIS

SoA permitting requires applicant to identify conditions under which spill response would not be possible and to estimate the time period for which response would not be possible

BIN (row 507) has a citation been added to support the statement that fish avoid diesel spills?

USFWS – have impacts of diesel released from truck to the marine environment been addressed? (also to ensure that impacts analyzed in a standard way among alternatives) – AECOM, Yes

SOC: Spill Risk – Fuel/Natural Gas/Concentrate/Reagents - Spills from ferry

(row 526) Spill Risk – Fuel/Natural Gas/Concentrate/Reagents - Spills from ferry

EPA – why is ferry more regulated than barge? AECOM – because ferry is purpose built and operated by a sole entity opposed to barges that are designed for multiple purposes and operated by diverse entities; supporting language has been added to the PFEIS

SoA – are there ferries operating that would be analogous to the type proposed by PLP? AECOM – yes, several in Canada - operation of these other icebreaking vessels were reviewed

BSEE has jurisdiction over releases from pipeline on the outer continental shelf, requests impacts to T&E species, impacts from anchor strike regarding 1. mitigation to avoid damage from small and large vessel anchoring 2. clarification as to what the proposed mitigation if there is a release, specifically how notifications would occur, e.g. would the National Release center be notified?

USACE and BSEE to flesh out RFI to applicant to clarify BSEE requirements for the right of way

ADNR - has jurisdiction over shoreline portions of pipeline; recently permitted, similar pipeline required 700 ft from shore, 4 ft cover minimum, notes SoA jurisdiction is 3 miles offshore

Additional SOC's Discussed

(row 520) Spill Risk – Fuel/Natural Gas/Concentrate/Reagents NaHs

EPA - SOC does not address Cu. Allison - typo revised, added text that reagent can breakdown to H2S under acidic conditions, which is highly toxic to fish, however impact analysis was not altered

(row 494) Spill Risk – Fuel/Natural Gas/Concentrate/Reagents Concentrate Pipeline –

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EPA – SOC does not address copper, AECOM explained that reference to correct SoC response is provided in response to row 520 SoC

(row 497) Spill Risk – Fuel/Natural Gas/Concentrate/Reagents Concentrate spill downstream impacts

EPA – does the term ‘enclosed waterbody’ include wetlands? Suggestion to clarify text to clarify if wetlands are included an enclosed waterbody

(row 521) Spill Risk – Fuel/Natural Gas/Concentrate/Reagents Concentrate Natural Gas Release – AECOM explains Hilcorp pipeline was old, repurposed oil pipeline to carry gas whereas applicants proposed pipeline will be new, deigned for gas, equipped with pressure detection and automatic shutoff valves

AECOM to clarify with the applicant that pipeline would be designed to current industry standards (i.e. equipped with automatic shutoff valves).

BIN: USFWS – (row 616) Steller’s Eider impacts what was done with statement that 300,000 gal diesel spill would not have significant impact to Steller’s Eider due in part to seabird recovery and rehabilitation

(row 493) Spill Risk – Fuel/Natural Gas/Concentrate/Reagents Red Dog Mine data

EPA – what is rationale for variably using full or partial spill volume from spill database, why is methodology different between diesel and concentrate spills?

AECOM to explain rationale for variably using full or partial spill volume from spill database, alternatively use consistent methodology (i.e. use full volume for all scenarios or partial volume for all scenarios)

ADNR – if Alternative moving slurry through a pipeline is selected, requests that PLP provide mitigation for closure of pipeline under freezing conditions.

USFWS – If the rationale for using variable volumes for spill scenarios, perhaps it is enough to explain that there is more data available for oil spills relative to concentrate spills; also, low probability should not be equated with worst case, important to separate concepts of consequence and probability with regard to worst case spill scenario.

NPS reiterates request to not dismiss worst case scenario and to carefully explain and support thought processes throughout document

USACE solicited feedback from group on how day went

Action Items:

Topic	Actions
Spill Risk – Tailings	SOC: Spill Risk – Tailings Dam Failures - Full Tailings Dam Breach Analysis: Delete reference to State statues from the last sentence of the SOC response.
Spill Risk - Tailings	SOC: Spill Risk – Tailings Dam Failures - Full Tailings Dam Breach Analysis: Clarify in the SOC response that the FMEA was an EIS phase FMEA.

Spill Risk - Tailings	Section 4.27: Clarify the relation between very low probability events and the worse case scenario events. Separate probability vs. consequence.
Spill Risk - Tailings	SOC: Spill Risk – Tailings Dam Failures - Full Tailings Dam Breach Analysis: USACE to further discuss inclusion of a full tailing dam breach in the FEIS. If a full tailings dam breach analysis is not considered for the FEIS, revisit response to make it more defensible (e.g., define what worse case is, bring in information from RFI 008 series, address human error, discuss/disclose confidence levels)
Spill Risk - Tailings	SOC Spill Risk – Tailings Dam Failures – Main WMP Probability of Release: Revise response to address if a change will be made to the FEIS. Response will be augmented to address changes being made.
Spill Risk - Tailings	SOC Tailings Dam Failures - Spill Response: USACE to consider requesting an EAP outline which could include applicant commitments made to date. Alternately consider clarifying and adding citations for statements in Section 4.27 regarding emergency response actions.
Spill Risk - Concentrate	SOC Spill Risk (Fuel/Natural Gas/Concentrate/Reagents) - Concentrate Spills Impacts Analysis/Modeling. Concern that the 5 min response time is not realistic. Request additional information from PLP to support this response time.
Spill Risk - Concentrate	SOC Spill Risk (Fuel/Natural Gas/Concentrate/Reagents) - Concentrate Spills Impacts Analysis/Modeling. Clarify discussion in 4.27 about impacts to fish from concentrate spills in flowing waters. Clarify discussion regarding impacts associated with ability to respond/clean up vs. small volume likely to enter flowing waters and dilution levels.
Spill Risk - Concentrate	SOC Spill Risk (Fuel/Natural Gas/Concentrate/Reagents) – Concentrate Transport: Expand response to refer to separate SOC for additional meteorological data.
Spill Risk - Concentrate	SOC Spill Risk (Fuel/Natural Gas/Concentrate/Reagents) – Concentrate Spills in Kamishak Bay. Revisit the response to this SOC, particularly the last sentence of this SOC response (closure of fisheries by ADFG).
Spill Risk - Diesel	Section 4.27: Consider addressing: 1) Overfilling of tanks that result in release outside of secondary containment and 2) Cargo ship (handy size) spill (increased probability)
Spill Risk - Diesel	Section 4.27: Expand discussion of spill scenarios for all alternatives. For example: Address 300k gal spill for alternate port location.
Spill Risk – Spills OCS (BSEE)	USACE and BSEE to flesh out RFI to applicant to make sure it addresses BSEE requirements for the pipeline ROW in the OCS.
Spill Risk - Concentrate	SOC Spill Risk (Fuel/Natural Gas/Concentrate/Reagents) - Concentrate spill downstream impacts: Clarify if enclosed waterbody includes wetlands.
Spills Risk – Natural Gas	SOC Spill Risk (Fuel/Natural Gas/Concentrate/Reagents) - Natural Gas Release: Clarify in response and in EIS if the shutoff valves would be manual or automatic. Edit the last sentence to say “pipeline designed to current industry standards” instead of “new” pipeline.
Spill Risk - Concentrate	SOC Spill Risk (Fuel/Natural Gas/Concentrate/Reagents) - Concentrate - Red Dog Mine data: Explain basis for spill sizes used in spill scenarios (i.e., using maximum spill size for the diesel spill vs. using other than the maximum spill size for the concentrate scenario).

Additional Notes	
Parking Lot Items:	
<ul style="list-style-type: none"> Fish Meeting – Tissue analysis, trace elements, baseline data, diesel spill impacts, citation for statement that fish avoid diesel spills. TES – Steller's eiders – Spills (Row 616) 	

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Agenda/Discussion:
<p>Morning Session – Air Quality</p> <p>USACE – review of yesterday's notes; discussion of whether to evaluate a larger dam failure (e.g. Lynker study)</p> <p>Mine site and port area impacts SOC: <i>Air Quality – Ambient Air Boundary (Row 11)</i> Summary of comment: location of ambient air boundary was arbitrary. AECOM – explained that ambient air boundary set at limit of public access (i.e. mine site safety zone) and as this first point of public exposure, it is considered an appropriate location at which to monitor air quality EPA – recommend that the mine site safety zone be better defined in the EIS; how established and enforced; receptor boundary is in correct spot and matches what the company will be able to enforce. Action Item: Define how the mine site safety zone was established and how it will be enforced in Chapter 2 of the EIS. Include figure showing the boundary. Description and figure included in RFI 58. May need follow-up RFI with PLP to clarify enforcement.</p> <p>SOC: <i>Air Quality – Source Emissions and Impacts not Described (Row 21)</i> Summary of comment: that certain air emissions were not analyzed. AECOM explained that the emissions cited were analyzed, but perhaps not easy to find in the document. Action Item: AECOM to review PDEIS with eye toward making sure air emission RFIs and air emissions analyzed are clearly referenced and identified in the EIS.</p> <p>Modeling/emissions inventories SOC: <i>Air Quality – Air Emissions not Quantified (Row 8)</i> Summary of comment: suggestion to include more types and sources of greenhouse gasses.</p>

AECOM - while direct emissions of greenhouse gasses from mine operation and closure were included, it is not possible, reasonable, or useful to include everything (example – non-project ship traffic distant from the project). Noted also that some of greenhouse gasses were analyzed under cumulative impacts and thus are not listed under the individual alternatives. No change has been made to the EIS in response to this SOC

SOC: Air Quality – Air Emissions Updates (Row 9)

AECOM – per request in the comment, emissions inventory has been updated in accordance with MOVES model, emissions went down as a result of this update.

SOC: Air Quality – CAA Title I Only Modeling (Row 14)

Summary of comment: how was level of modeling selected, concern that modeling was not granular enough. AECOM explained that level of model selected in consideration of baseline ambient air conditions, applicable regulations, and ability to meet standards; feel that modeling meets need, no changes made to EIS in response to this comment.

ADEC – concerned that assertions about modeled emissions were misrepresented as below standard, when in fact many of these emission sources (e.g. mobile emissions) are not required to be monitored.

EPA – questioned if it is appropriate to use state monitoring requirements as a screening tool for types of emissions to be monitored. Specific concern regarding high annual NOx modeled at port components.

EPA – noted that it is not valid to screen out emission sources when conducting a cumulative analysis; appreciated the inclusion of fugitive emissions. Also cautioned against considering project component emissions as the only emission sources in local airsheds when conducting a cumulative analysis. Explained that while SoA can require NOx monitoring under certain conditions, and with high annual NOx modeled, it would be appropriate to model 1-hour NOx emissions at the ports.

AECOM – responded that they felt comfortable with screening criteria employed, and the separation of project components in cumulative effects of emissions. Regarding modeling of NOx, model is not sensitive enough to detect 1-hour emissions, would essentially violate model assumptions, thereby requiring new modeling parameters and considerably more iterations of model runs.

ADEC – noted that the request to monitor 1-hour NOx is unusual and typically evaluated on a case-by-case basis, thus cannot at this point say whether monitoring would be required.

BSEE – as pipe laying would require vessel support, recommended considering modeling air quality for vessels operating on the outer continental shelf (OCS) during construction

USACE – would probably be a stretch to require for USACE's public interest review. Anything else in the conversation to consider?

EPA – clarified that their primary concern behind NOx modeling was idling of vessels while in port, which could possibly be mitigated.

USACE – could this be addressed through mitigation rather than additional modeling?

EPA - Yes

Action Item – check which mitigation measures PLP has committed to regarding air quality at the ports.

SOC: Air Quality – Modeling Methodology (Row 20)

Summary of comment: that models were not conservative enough.

AECOM feels that additional conservancy would decrease model representation.

EPA – corrected that comment is directed towards on the assumptions made for EPA's open pit modeling of emissions at mine site rather than the conservatism of those assumptions. Concerned that current approach could underestimate impacts; suggestion would be to apply a more realistic approach to simulate actual conditions.

EPA – overarching comment on EIS is that when models are used it is important for the public to understand the accuracy/certainties.

Action Item – describing what the basic modeling assumptions are and add general statement explaining uncertainty and accuracy associated with EPA open pit model, making reference to the document that contains the evaluation of the model (air mod implementation guide).

AQRV impacts to sensitive areas including Tuxedni Wilderness Area

SOC: Air Quality – AQRVs at Tuxedni Wilderness Area (Row 12)

Summary of comment: concern was that analysis was not sufficient for Tuxedni and Denali Wilderness areas.

AECOM explained that emission levels (informed by Q/D screening approach) at those distances did not merit

further analysis of impacts.

SOC: Air Quality – Class I Area Impacts (Row 15)

Summary of comment: concern was that Class I increment impacts not predicted for Tuxedni Wilderness area.

AECOM explained that again, Q/D screening approach informed decision not to analyze for Class 1 impacts.

EPA – commented that it was not clear how much of text made it in to EIS to clarify the use of the Q/D screening approach

AECOM – realized there was some confusion regarding distances applied; only revised language to clarify distances being used. Q/D approach is addressed in RFI 009 and some details incorporated into the EIS Appendix K.

EPA – noted Appendix K included more detail for Denali than it did for Tuxedni; recommendation to pull information on Tuxedni into the Appendix to balance discussions

AECOM – More about the fact that there are numbers to compare at Denali vs data available for Tuxedni.

Action Item: Clarify in EIS that disparate level of analysis between Denali and Tuxedni relates to the greater availability of air quality monitoring data at Denali relative to Tuxedni.

USFWS is responsible for Air Quality at Tuxedni, and as such would support the suggested clarification in EIS

ADEC – Are emission sources outside of project area considered in assessment of air quality at Tuxedni?

AECOM – does not believe that individual sources in Cook Inlet could aggregate to cause significant direct or cumulative impacts.

EPA – suggested identifying which emissions were present before and after the collection of baseline air quality data.

AECOM – voiced concern regarding the difficulty in capturing incremental sources accurately

Action Item: For the PFEIS, summarize why a cumulative Class I increment analysis was not conducted at Tuxedni and update the SOC response as appropriate; keep the discussion at a level that is value added to the public.

AQ impacts of alternative and variants

SOC: Air Quality – Alternatives Modeling (Row 10)

Summary of comment: request to apply air quality modeling to each Alternative.

AECOM explained that there is no major difference expected among alternatives with respect to emissions. For this reason, modeling was not applied outside of Alternative 1; discussion of differences among alternatives has been augmented to address differences in meteorology and topography among port locations.

EPA – main outstanding question is the ports and whether or not the modeling done for Amakdedori is representative of Diamond port?

AECOM – Modeling has been completed and the differences between the sites is enough to conclude that impacts at Diamond Point would be higher. Not able to say how much higher but the project would be required to comply with standards.

SOC: Air Quality – BBNC Issues with the Analysis Approach (Row 13)

Summary of comment: requests efforts to make the document more readable, questions the use of proxies for modeling of air impacts, questions the use of state requirements as a mechanism to screen out types of emissions analyzed.

Consensus that issues have been properly addressed.

Fugitive Dust and Dust Deposition

EPA – agency appreciates and is aware of conceptual FDCP but has not had a chance to review

SOC: Soils – Copper in Dust (Row 483)

Summary of comment: concern that Cu was not included in original deposition modeling.

AECOM explained that Cu has now been included in the analysis

SOC: Soils – Dispersion Model for Deposition (Row 484)

Summary of comment: request to provide additional explanation on selection of particle size and mass distribution.

AECOM explained that this data gap was satisfied by RFIs 009b and 141.

EPA – not clear how much information from the RFIs been incorporated into the EIS

Action Item – AECOM to check that the selection of particle size and mass distribution are supported by reference to RFIs 009b and 141 in Appendix K.

SOC: Water and Sediment Quality – Fugitive Dust Impacts (Row 666)

Summary of comment: concerns the additive effects of fugitive dust deposition and effluent discharges to surface water.

AECOM explained that they have modeled the mixing of fugitive dust and mine effluent using Frying Pan Lake as a proxy, information will be applied to other surface water bodies in the analysis area. Technical memo expected to be available sometime next week.

EPA – appreciates additional analysis and it interested in looking at analysis and the assumptions made about it.

SOC: Water and Sediment Quality – Fugitive Dust Mitigation and Planning (row 667)

USACE – requested an overview of Fugitive Dust Control Plan (FDCP)

AECOM – largely includes best management practices such as vehicle washing, low travel speeds, cleaning containers at port prior to transport back to mine site, etc. The most substantive mitigation is that vehicles will be dedicated to mine site, transportation corridor or ports (i.e. no tracking of mud from mine site on the transportation corridor).

EPA – did the plan talk about tailings management?

AECOM – yes; referred group to RFI 134.

NPS – does FDCP include measures to help mitigation potential dust into the benthic environment into the inlet; associated with loading concentrate containers.

AECOM – directed video provided in RFI 009c showing the proposed loading operations. USACE also sent link to meeting attendees from Day 1.

SOC: Vegetation – Fugitive Dust (Row 641)

Summary of comment: comment requests justification of the use of a 330-foot buffer distance

AECOM – explained that the distance is informed by literature (Prudhoe Bay Haul Road, Red Dog) which showed logarithmic decrease in volume of dust deposition with distance from the road – for Prudhoe not detectable past 330 ft; heavy metal deposition detected in moss 42 km away from road at Red Dog, however due to dust mitigation measures adopted by PLP, contaminant dust not expected to be an issue outside of mine site.

EPA – how was buffer applied around Mine Site? A figure showing how the buffer is being applied and how the model is being used would be helpful.

Action Item: Confirm that the buffer applied for dust at the Mine Site is clearly articulated in EIS; consider including a figure that illustrates the relative extents of the buffer and modeled extents of dust deposition.

EPA – directed group to Ambler Road EIS for application of buffers for dust.

SOA – Ambler Road DEIS coming out on Friday

Afternoon Session – General Topics

Cumulative Effects Analysis

SOC: Cumulative Effects Analysis – RFFAs (Row 144)

Summary of comment: – to include additional reasonable foreseeable future actions (RFFA)

AECOM – explained that more detail and explanation relating to the expanded mine site scenario has been provided by reviewing: documents applicable to the NEPA process, court cases relevant to project, identification of existing mine holdings in area, review of large projects nearing completion of permitting; also evaluated if infrastructure would facilitate expansion or follow on mining projects.

Action Item – AECOM to list changes made regarding expanded mine scenario in SoC response

SOC: Cumulative Effects Analysis – Expanded Mine Scenario Description (Row 112)

Summary of comment: request for addition of detail on the expanded mine development scenario such that impacts can be evaluated.

AECOM – explained that this data gap satisfied in part by RFIs, effort made to make discussion as quantitative as possible, revised use of spatiotemporal terms.

USFWS – what percentage was used for expansion?

AECOM – scenario based on developing 55% of the known mineral resource over 78-year period; assumes same expansion scenario regardless of final selection of EIS alternative.

SOC: Cumulative Effects Analysis – Contradicts Past Conclusions (Row 101)

Summary of comment: agencies should avoid contradicting past agency findings, avoid implication that project is permissible.

AECOM - explained that cumulative effects are based on RFI 62

NTC – issue alluded to in comment is moot now that 404c proposed determination of impact to special aquatic resource, has been withdrawn, notes the drastically different conclusions drawn from EPA (Bristol Bay Watershed Assessment) and USACE (EIS, evaluation of impacts to the environment); also, that response to SoC is explanatory but is unlikely to appease public concern.

EPA – watershed assessment was a risk assessment of a hypothetical project, whereas NEPA process evaluates a specific project; EPA has not reached a determination if this is a project they would elevate on the 404 side. Previous watershed assessment has no bearing on EPA's current permit decision making process. EPA – voiced general concern that the assumptions and analytical framework is different in watershed assessment and the EIS. Suggest identifying specific areas where BBWA addresses something different than the EIS and point that out. Address why there appears to be difference in each subject area (i.e., cumulative effects). Not always different facts but different assumptions.

Action Item: Revisit response to SOC Cumulative Effects Analysis – Contradicts Past Conclusions; USACE to work with EPA on specific language to use.

SOA – applicant involved in an iterative process, currently proposed project now differs from that previously evaluated.

SOC: Cumulative Effects Analysis – Compounding Factors Not Considered (Row 99)

Summary of comment: fails to evaluate compounding effect of individual stressors, effects not extrapolated to ecosystem processes or the landscape scale.

AECOM – explained that these were evaluated in various sections of EIS and also as cumulative effects.

NPS – concerned that is no treatment of the accumulation of toxins in surface water over time, noting that this a system with low gradient streams and abundant wetlands, thus ripe for the accumulation of contaminants

AECOM – looked at likelihood and magnitude of contaminants that enter the human environment and implications to other resources such as human health. Was this a comment on the DEIS? Trying to understand specific comment and what quantification is being requested.

Action Item: Contaminants in system. Need to take a closer look at this and the specific comments regarding contaminant loads on the DEIS prior to responding.

ADEC – cautions analyzing merely because data is available, noted the importance of comparing modeled levels to the maximum levels/concentrations the EPA and State set for water quality criteria for the protection of human health

EPA – was there any discrete effort to model the chronic effect of exposure to toxins or the bioaccumulation of toxins?

LPB – highlighted long-term biomonitoring efforts at Red Dog, Greens Creek, Pogo as reference, might help determine whether this sort of analysis would be helpful for Pebble

ADFG – offered that the state has four years of water quality, fish, macroinvertebrate monitoring data available for Pebble. At Greens Creek, Pogo Mine, and Red Dog biomonitoring has been occurring since 1989 in benthic environment and for fish. Good to look at the existing data; available on ADNR website.

SOC Climate Change – Cumulative Effects (row 57)

NPS – question on how treatment of climate change has changed between DEIS and PFEIS

AECOM – plans to clarify language in climate change SOC responses to reflect current guidance

SOC: Cumulative Effects Analysis – Impact Metrics and Details (Row 115)

Summary of comment: suggests a more quantitative approach to cumulative effects.

AECOM – explained that this is being done to the extent possible, specifically by the inclusion of GIS analysis and definition, consistent use of terminology such as temporary, permanent, secondary etc.

USFWS – recommends quantifying cumulative effect through a table presenting various development scenarios by affected resource summarized by affected acreage

Action Item – consider a subsequent work session on appropriate ways to quantify cumulative effects by ecosystem process and at landscape level.

NPS – suggests expansion of invasive species discussion to all taxa, specifically inclusion of monitoring and rapid response

AECOM – discussion has been expanded, satisfied by Invasive Species Management Plan, RFI 133

USACE - Roundtable for any other concerns or questions on cumulative effects

Alternatives

SOC: Proposed Action and Alternatives – Reasonable Range of Alternatives (Row 395)

AECOM – explained that alternatives have been presented and screened in Appendix B; RFI 121 addressed the practicality of combining the southern section of Alternative 1 with the northern portion of Alternative 2, which became the applicants preferred alternative

LPB – did statements by landowners for other alternatives make those alternatives not reasonable for the EIS?

USACE – does not address property rights issues, and although alternatives 2 and 3 could be considered non-practicable due to land ownership issues, these alternatives have been retained in the range of alternatives.

EPA – brought up previous comments about liner under the bulk TSF being evaluated as an alternative; lack of seepage collection system details made it difficult to confirm complete containment; realize this is addressed in RFI 109 series but need more time to review RFI responses. As they could not confirm 100% capture of groundwater, not prepared to decide on need of liner to contain contaminants; discussion deferred to tomorrow
EPA – requested discussion of mine site optimization in EIS, specifically what has driven the optimization proposed by the applicant?

AECOM – rationale for mine site optimization will be addressed in Chapter 5, mitigation, which is the applicant's demonstration of avoidance and minimization of adverse impact; response from RFI regarding Main WMP siting will be incorporated into Appendix B of the EIS.

SOC: Proposed Action and Alternatives – EIS Appendix B (Row 384)

Summary of comment: requests evaluation of additional transportation corridors

AECOM – explained that these are presented in Appendix B, discussion of concentrate pipeline necessary at Iniskin Bay to negotiate the steep topography that is prohibitive for heavy trucks.

EPA – concerned that the record does not reflect full consideration and dismissal of alternatives, requested additional discussion in the EIS. Seemed like there were contradictions between App B for proposed project and expanded scenario. Rationale in Appendix B is limited; record didn't demonstrate that there aren't additional alternatives for some components (example alternatives for Main WMP)

EPA – noted the efficiency of using existing infrastructure under an expanded mine site development scenario.

USACE – noted that the applicant would be subject to a separate NEPA process under the expanded mine scenario.

LPB – did letter from Pedro Bay apply to 78 year scenario?

AECOM – No change to 78 year scenario based on Pedro Bay letter

SOC: Proposed Action and Alternatives – Failure to address mine as proposed (ROW 386)

AECOM – noted that it is a natural for the applicant's project to change in response to operational and environmental optimization through the course of NEPA process

SOC: Proposed Action and Alternatives – Concentrate Container Wash Water (ROW 379)

SOC: Proposed Action and Alternatives – Concentrate Pipeline Water Discharge (ROW 380)

AECOM – explained that more information has been provided, however preference is to deal with the discharge of concentrate wash water during the State permitting process, PLP has committed to trucking water back to mine site for treatment if necessary.

EPA – Trying to point out that because this is processed water it cannot be discharged; if you cannot legally discharge the water then why is it being considered?

USACE: noted that this is directly in the SOA's authority and would like to hear from them on this.

EPA has seen RFIs on this and disputes them.

BIN: agreed to postpone discussion of concentrate wash water discharge until state representatives can weigh in

NEPA document versus ROD, LEDPA, special conditions/mitigation

SOC: Clean Water Act Compliance – USACE Has Not Determined Water Dependency (ROW 51)

Summary of comment: that EIS failed to make a determination of water dependency for the activity proposed

(CWA 404b1 guidance).

USACE – explained that it is their preference is to address this in the Record of Decision (ROD) as it is a confusing subject for the public.

ADEC – cites several recent oil and gas EISs that dispense with water dependency in a short paragraph under purpose and need, recommends doing so for Pebble

USACE: This is not a water dependent activity. What is the value of having this discussion upfront in the EIS when general population is not concerned about this determination? Can add the statement but it doesn't have context. What does it mean to the general public?

EPA – If the draft 404(b)(1) will be an appendix to the FEIS then that seems like the best place for it.

SOC: Clean Water Act Compliance – USACE Did Not Determine LEDPA in DEIS (row 50)

Summary of comment: the EIS failed to identify the LEDPA in the EIS,

USACE – explained that the LEDPA must be identified in the ROD, has added clarifying language

LPB – suggests that identification of LEDPA in the EIS lends transparency to the process, providing this information sooner is invariably better

EPA – suggests that explaining the regulatory framework of the analysis in the EIS could lend clarity.

ADEC – specifically requested inclusion of LEDPA and water dependency in PFEIS

USACE – Ultimately the LEDPA decision needs to be included in the ROD. Caveat: just because there is a LEDPA doesn't mean it is permissible.

EPA – water dependency is typically discussed in relation to alternatives; regarding LEDPA – what is the harm in explaining to the public the regulatory process?

USACE: Can add discussion of water dependency but also describe when the decision is timely

SOA: advocates for putting water dependency and LEDPA determinations in the PFEIS. Including the state in those discussions can add value.

SOC: Clean Water Act Compliance – DEIS Did not Address Significant Degradation (Row 43)

USACE – explained that this is another requirement of 404(b)(1) guidance. Issue of when this conversation is appropriate.

EPA: Some EISs have too much of this information for the public but more recent EIS have appendices with a page or two with information on federal regulatory processes, which provides better balance.

EPA: Statements like 'an EIS is not a decision document' are misleading; RODs rely on EIS analyses and evaluation of alternatives. Deferral of determination of water dependency and LEDPA to ROD could be misinterpreted as a dismissal of public process

EPA: Do we need this information for the PIR or the 404(b)(1) guidelines?

EPA suggested a short explanation of regulatory framework be included as an appendix and referenced in Purpose and Need

Bonding

SOC: Bonding or Financial Assurance – Financial Surety Estimate Needed (ROW 33)

AECOM - at this time there is no intent to ask applicant for an estimate of the financial assurance amount.

USACE – explained that this falls under state purview. ADEC statutory requirements for a public notice. Matter of policy DNR jointly notices the reclamation plan as part of DEC's public notice process. ADEC solicits comments as part of the public notice and has the option of holding a public hearing.

LPB – would like to hear from ADEC

AECOM – noted that SoC responses on bonding were sent to SoA for review; directs group to SoA factsheet for large mine permitting

BSEE – contributed that BOEM would require applicant to set fee bonding (\$300K) prior to the ROW issuance from BSEE.

EPA – explained that bonding information is often included in EISs especially those with long-term water treatment obligations, this helps evaluation of closure and monitoring in addition to promoting public understanding, EPA does not feel that their concerns have been met. Offered to provide example text for a bonding agreement.

USACE: reiterated that the response does not address EPA's concerns. The regulatory framework is not enough.

SOA: state's position is that NEPA does not require disclosure of a cost estimate and that state's process allows strong confidence that bonding would be appropriate.

ADEC – reiterated the points made yesterday relating deferral to state authority: 1. this runs the risk of setting an expectation for public and other stakeholders 2. as well as holding the state to a federal decision. Notes that this project differs from other, recent large mining projects in the absence of a federal land management agency that would have financial assurance requirements. Confirmed that a public notice including cost estimates would be required for a reclamation plan. Cost estimation can but is not required to follow state guidance. Comments would be solicited during the public notice period. Notes that submission of bonding in the EIS stage is often driven by the applicant to better defend feasibility of the project.

Action Item – Bonding SOC slated for further discussion

Mitigation and Monitoring

SOC: Mitigation or Monitoring Measures – Compensatory Mitigation (Row 318)

USACE explained that they are required to identify the LEDPA, noted that compensatory mitigation would only be provided for a permissible project and that LEDPA is not necessarily permissible. USACE is expecting more opportunities for compensatory mitigation to be recommended by the applicant before the end of the year.

USFWS – how can impact be evaluated without a CMP?

USACE – while mitigation is part of the NEPA process, compensatory mitigation is external to the NEPA process; as further clarification, avoidance and minimization of adverse impact falls under NEPA, however compensatory mitigation addresses unavoidable adverse impact outside of NEPA

AECOM – noted adopted and suggested mitigation measures are provided in Ch 5 and Appendix M, respectively; Would BSEE or USCG require compensatory mitigation?

USCG does not require compensatory mitigation

BSEE – would need to check

EPA – will there be public notice and opportunity for comment on a future CMP? Notes that this would be a good mechanism to be responsive to the comment

USACE all options are on the table, but specific path forward has not been determined; will consider the suggestion.

Action Item – EPA and USFWS both request further discussion with USACE on Compensatory Mitigation

SOC: Mitigation or Monitoring Measures – Compensatory Mitigation Approach (Row 319)

LPB – interested in out-of-kind mitigation involving water quality improvements in villages (e.g., improvements to existing sewer lagoons)

USACE – what is meaningful compensatory mitigation for a project like this is still being discussed. Specifically, out of kind compensatory mitigation is being considered in accordance with the 2018 Memorandum of Agreement (MOA) between the EPA and Army (that provides guidance regarding flexibilities that exist in the mitigation requirements for Clean Water Act Section 404 permits, which among other flexibilities would allow out-of-kind compensatory mitigation).

USACE – has LPB put their comment regarding preference for out of kind compensatory mitigation in writing? noted that Nondalton is not interested in out-of-kind compensatory mitigation.

LPB – would need to check their comments

USACE - lots of things need to happen before we can have an intelligent conversation on mitigation.

EPA – What additional information is necessary to have a meaningful conversation about compensatory mitigation?

USACE – corrected that discussion of compensatory mitigation would be putting the cart before the horse. Things need to happen in context and sequence

EPA – explained that as they need to remain focused on both NEPA and subsequent 404 permitting, they would appreciate a schedule for future discussion of compensatory mitigation. Common concern from agencies is when 404 processes will happen and when agencies will be engaged.

USACE – Nondalton recently asked for overarching schedule; may be a useful tool

Action Item – USACE will provide an overarching schedule that includes the steps in the 404 process; targeting mid-December.

General topic - Mitigation and Monitoring Methods

SOC: Mitigation or Monitoring Measures – Request for proposed management plans (Row 327)

EPA) – requests to see a draft of the Monitoring and Adaptive Management Plan (RFI 135) as they cannot determine if adaptive management and monitoring referred to throughout the EIS would be effective without a written plan (e.g., fish section).
AECOM – noted that the AMMP has not been received from the applicant
USFWS – Reclamation and Closure Plan addressed monitoring, but is limited to vegetation, USFWS has requested 21 plans most of which have not yet been developed
AECOM – noted list of plans at end of SOC response, and that the revised CMP and Monitoring and Adaptive Management Plan have been requested but not yet received.
Action Item: USACE to check and see what RFIs for management plans are still pending and when responses are expected.
ADEC – would have liked to see more detail in directional drilling plan
ADFG – do we have sufficient information to evaluate impact so that we can design appropriate mitigation?
USCG – notes that Vessel Management Plan and other plans would be required, enforced by inspection.
NPS – looking forward to reviewing RFI 135 Monitoring and Adaptive Management Plan to see if it addresses their comments regarding monitoring
General sentiment that it is difficult for agencies to evaluate impact of the actions without considering mitigation.
BSEE – looking into whether or not they would require compensatory mitigation of the applicant when do they need to get back to USACE?
USACE - by end of week would be good.
EPA – appreciative of inclusion of independent tailings dam review board in applicant-committed mitigation

Listening session and close

Action Items	
Topic	Actions
Air – Ambient Air Boundary	Define, in Chapter 2 of the EIS, how the mine site safety zone was established and how access will be enforced. Include figure showing the boundary. Description and figure included in RFI 58. May need to request a follow-up RFI to clarify enforcement.
Air Quality – Source Emissions	AECOM to review PDEIS to ensure air emission RFIs and air emissions analyzed for are clearly identified.
SOC: Air Quality – Modeling	Follow-up on specific measures adopted by the applicant to address air quality concerns associated with idling of vessels at the port in-lieu of additional modeling.
Air Quality – Modeling Methodology	Make sure EIS discloses basic modeling assumptions; add a general statement describing the uncertainty and accuracy associated with the EPA open pit air quality model, with reference made to the air modeling implementation guide.
Air Quality – Class I Area Impacts	Clarify in EIS that disparate level of analysis between Denali and Tuxedni relates to the greater availability of air quality monitoring data at Denali relative to Tuxedni.
Air Quality – Class I Area Impacts	For the PFEIS, summarize why a cumulative Class I increment analysis was not conducted for the Tuxedni Wilderness area and update the SOC response as appropriate. Keep the discussion at a level that is value added to the public.
Soils – Dispersion Model for Deposition	Confirm that specific references to the RFIs 141 and 009b have been incorporated into the EIS to support the selection of particle size and mass distribution used for dispersion modeling (Appendix K).
Vegetation – Fugitive Dust	Confirm that the buffer applied for the indirect effects of dust deposition at the Mine Site is clearly articulated in EIS; consider including a figure that illustrates the relative extents of the buffer and modeled extents of dust deposition.
Cumulative Effects Analysis – RFFAs	SOC Cumulative Effects Analysis – RFFAs: discuss changes made to EIS in the SOC response.
Cumulative Effects Analysis – Contradicts Past Conclusions	Revisit response to SOC; USACE to work with EPA on specific language to use.
Cumulative Effects – Ecosystem Level	Consider a subsequent work session on appropriate ways to quantify cumulative effects by ecosystem process and at the landscape level.

Cumulative effects – invasive species	Verify that the EIS has been expanded to include discussion of all taxa for invasive species and that information from PLP's ISMP has been incorporated to address concerns on monitoring and EDRR.
Bonding	Further discussion regarding a bonding estimate is needed.
Compensatory Mitigation	Further discussion on compensatory mitigation is needed.
Mitigation	USACE will provide an overarching schedule that includes the steps in the 404 process; targeting mid-December.
Mitigation	USACE to check and see what RFIs for management plans are still pending and when responses are expected.

Additional Notes

Parking Lot Items:

- Contaminants in system (cumulative effects)
- APDES – Concentrate container wash water

Project Name: Pebble Project EIS
Date: November 20, 2019
Time: 8:30am-5pm
Location: The Megan Room, 6591 A Street, Anchorage
Subject: Cooperating Agency Technical Meetings, Day 3
Introduction: Safety, housekeeping, opening remarks

Attendees and Affiliation:	
AECOM and subcontractors	Bill Craig, Elizabeth Bella, Dan Delaney, Sasha Forland, Nancy Darigo, Cara Wright, Lindsey Flagstad, Arika Mercer, Jim Munter, Jim Aldrich, Mark Allen, Tim White, Tara Bellion, Mike Gray
ACHP	No attendees
BSEE	John McCall
Curyung Tribal Council	No attendees
EPA	Molly Vaughan, Patty McGrath, Matt LaCroix, Barbara Butler, Betsy McCracken, Cindi Godsey, Palmer Hough, Chris Eckley, Don Clabaugh, Tim Maley, Muche Muluken, Joe Ebersole, Kate Schofield
LPB (Jade North)	Bob Loeffler
Nondalton Tribal Council (represented by NARF)	Meghan Condon
NPS	Sharon Kim, Kerensa King, Paul Berger, Kelsey Griffin
State of Alaska (SoA)	Gary Mendivil, Kate Harper, Allan Nakanishi, John Clark, Josh Brekken, Brock Tabor, Lee McKinley, Ron Benkert, Tom Barrett
USACE	Shane McCoy, Katie McCafferty, Sheila Newman, William James, Jennifer Moyer, Josh Moffi, Heather Markway, Ryan Winn
USCG	David Seris
USFWS	Douglass Cooper, Catherine Yeargan, Melissa Burns, Angela Matz
PHMSA	Robert Guisinger

Agenda/Discussion:
<p>Morning Session – Water Topics</p> <p><u>Groundwater Hydrology</u></p> <p>AECOM – introduced topic</p> <p>AECOM – introduced new groundwater model, employs USGS code, key issue is groundwater flow into pit after closure, confidence intervals now incorporated and plan to be added to all predictive components to address concern over uncertainty associated with model.</p> <p>No substantial changes to document.</p> <ul style="list-style-type: none"> Summary of Model Differences from DEIS, Set Up, Uncertainties SOC: Groundwater Hydrology – Effects of groundwater model uncertainties on EIS (row 255) Drawdown SOC: Groundwater Hydrology – Groundwater model pit capture zones (row) SOC: Groundwater Hydrology – Groundwater permanent sink (row)

Agenda/Discussion:

AECOM – addressed SOC's collectively, began by showing figure of modeled groundwater drawdown and mounding; defined zone of influence for group = area of measurable drawdown of groundwater; explained that useful resolution of model is 3 ft.

Moved to new zone of influence figure showing K (permeability) at 10 times the base case scenario. Explained that K value is uniformly applied to bedrock and sediments as model is calibrated to recharge to system (instead of hydraulic conductivity) as key issue is maintenance of base flow to downgradient aquatic resources. Showed table of model sensitivities, highlighting variables with greatest effect on rate of groundwater extraction from open pit.

Showed new figure of particle tracking at K=10, to demonstrate the containment of groundwater at the Bulk TSF. Noted that future geotechnical work can and should be used to refine the model.

EPA – asked for an explanation of the seepage collection system

ADEC – asked for clarification on particle tracking model with respect to full containment.

AECOM – moved to figure showing generalized groundwater flow conditions for bulk TSF cross-section

ADEC – asked for clarification on the distribution of the underdrains

AECOM – directed group to project description. Discussion deferred to upcoming SOC

EPA – what is driving the differential particle size of the tailings?

AECOM – some variation in tailings particle size will result from processing, will find out more during State Permitting process for the dam; main goal in tailings management is to keep phreatic surface away from dams. Expected for finer material to fall out closer to the spigot.

NPS - Since we haven't seen the actual model yet. I was wondering under the high K scenario why there was only dramatic expansion of drawdown to the west and not the east. Is there some kind of boundary condition set on the eastern side of the model?

AECOM – explained that at the mine site to the west there is steeper terrain, thus more exaggerated groundwater flow.

ADEC – explained 'treatment works' term used in state permitting process, groundwater would be required to be contained within the treatment works – it will be key to demonstrate containment for the purposes of permitting.

AECOM – noted that figure shows groundwater flow opposed to contamination, conceded that potentially contaminated groundwater is molded to flow through fractured bedrock below the bulk TSF

EPA – expecting clarification of percent containment of groundwater in the document

ADEC – explained that their involvement is twofold – to provide technical expertise as well as to prepare the applicant for permitting — applicant would be required to develop an integrated waste management plan, within the boundary of a treatment works, water quality standards are exempt allowing the treatment works to be permitted under state solid waste regulations.

Action Item – ADEC to provide regulatory framework to cooperators.

Agenda/Discussion:

AECOM – moved to figure showing particle tracking results in groundwater under base case that shows full containment. Prediction is difficult especially when it is about the future, however this is the best representation of containment.

NPS - can the model take into account major faults, and average earthquake movement?

AECOM – yes, faults can be incorporated, however seismic activity cannot. Noted that bedrock is old and already highly fractured thus earthquakes not expected to produce much movement along existing faults and fractures. Moved to figure showing simulated open pit catchments at the end of mining. Defined capture zone as area within which groundwater would be returned to the open pit. Talked about the groundwater flow equation, specifically how hydraulic conductivity influences flow; also discussed zone of stagnation, which can be conceptualized as a subsurface groundwater divide. We do not have this exact information for Pebble. Moved to a figure showing schematic of groundwater flow for Pebble under open pit. Highlighted the need to know if groundwater return will flow through tailings returned to the open pit at the end of mining.

AECOM – asked about monitoring at the end of mining, how would containment be documented?

ADEC – explained that pit waters would be tested as well as groundwater monitoring wells.

AECOM – showed how faults and water level in the open pit, post closure change the containment scenario. Discussed the importance of maintain water levels via pumping to preserve hydraulic containment. Noted that assuming a 50 ft rise in lake level (without pumping) annually, there would be about a year window before catchment is breached.

EPA – asked how the 50 ft/yr rate of rise was estimated.

AECOM – not sure, will check but feels that estimate is reasonable

AECOM – directed group to Closure Water Management Plan, figures in 4.18, RFI 19c(?)

AECOM – explained that this information is not revised from the DEIS

- Drawdown

SOC: Water and Sediment Quality – Pit Lake Management in Closure (row 682)

BIN ask Richard Henry about SOC row 682, discussion of liners

EPA – noted that this comment has contradicting direction from USACE (i.e. no change), versus response to SOC (i.e. change proposed)

USACE – contradiction has to do with scope and also that the SOC's are designed to address multiple comments.

- Seepage

SOC: Groundwater Hydrology – Bulk TSF Filter/Transition Zone (row 250)

AECOM – felt that the SOC had been addressed.

AECOM – added that the filter transition zone design is not complete, but functional goal is to both depress the phreatic surface (aka a chimney drain) and also to prevent internal erosion that could compromise the stability of the dam.

AECOM – explained that the filter transition zone will be placed adjacent to coarse tailings.

Agenda/Discussion:

EPA – asked about the availability of material on site to construct both filter transition and core zone. See RFI 129 – applicant expects to use material extracted from the pit. See also Appendix K 4.15 for summary of dam design.

SOC: Groundwater Hydrology – Underdrains

AECOM – felt that the SOC had been addressed.

(Break 10:45am-11:00am)

USACE – in the interest of time solicited concern from group regarding groundwater

EPA – asked where to find the calibration for the root mean square for streamflow, commended the work done on new model. Explained that he is trying to forecast ambient water quality criteria, and water temperature for habitat, both are related to stream flow, so uncertainty associated with streamflow could be translated to these forecasts.

AECOM – Calibration for the root mean square for streamflow can be found in section 6.2 of BGC groundwater model report. Clarified that there are two different models for seepage, one preferred and will be used moving forward. Not modeling water quality and temperature, however, groundflow is certainly related to streamflow. Showed figure of gaining and losing streams, specifically how groundwater drawdown would affect streamflow.

ADFG – asked how drawdown would affect streams at end of mining and closure

AECOM – showed figure of modeled net change in stream baseflow as a result of drawdown during operations, noting that outputs are also available for end of mining and closure, all for various K values.

EPA – asked if figures were absolute values

AECOM – clarified that all values represent net reductions in baseflow. Moved to a figure showing gaining stream segments (as determined by field survey, suggesting groundwater baseflows), and losing stream segments (also determined by field survey). Highlighted difficulty of capturing hyporheic flow and that this is an important interaction of ground and surface water. Noted that salmon preferentially use areas of groundwater return for redds.

ADFG - Noted that downwelling areas are also important to salmon.

USFWS – do we have modeling to support identification of fish habitat?

USACE – BIN deferred discussion of fish habitat to tomorrow.

USFWS – also interested to know how groundwater modeling could be used to evaluate fish impacts.

- Liner under Bulk TSF Covered under earlier discussion

SOC: Groundwater Hydrology – Groundwater leakage from TSFs and WMPs

SOC: Proposed Action and Alternatives – Reasonable Range of Alternatives

SOC: Groundwater Hydrology – Bulk TSF Seepage Analysis

- Groundwater/surface water interaction – covered under earlier discussion

SOC: Groundwater Hydrology – GW/SW Interactions Details

SOC: Groundwater Hydrology – Stream stage effects on groundwater

SOC: Groundwater Hydrology – Liners and core zones (row 286)

see earlier discussion for row 286

Surface Water Hydrology

Agenda/Discussion:

- Watershed Model – Summary

AECOM – began with summary of surface water model. Three models are: 1. groundwater, 2. watershed (surface water), 3. mine site water balance model. Noted that an integrated model is not possible if data to calibrate the model is not available, thus the individual models are considered sufficient. Showed a figure of model domains; moved to a flow chart schematic showing relationships among the three models. Scaled precipitation is used as numerical input to groundwater and mine water balance models, groundwater flow is used as input to watershed and mine water balance models, surface water flow is used as input to groundwater and mine site. Showed figures of subwatershed and elevation band boundaries used in model, explained that precipitation and temperature were input for each elevation band; directed group to explanation in RFI 109q. Watershed model was calibrated with groundwater discharge data. Validated model with three years of baseline surface water data. Noted independence of calibration and validation datasets decreases model uncertainty and increases model accuracy/predictive power. Model run at 10, 50, 90% flow (i.e. low, mean and high flow conditions) to capture historical variability across a 78-year period.

EPA – asked if flow was generated from mean monthly flows

AECOM – Yes, monthly time step employed, r2 shows this is adequate.

Afternoon Session – Water Topics (continued)

EPA – asked if the SOC response row 566 will be incorporated to related SOC

USACE - explained that the revisions will take place in the SOC

EPA - incorporate climate change in the watershed modeling.

AECOM – climate change is discussed quantitatively with respect to historical precipitation record, not explicitly modeled

USFWS – thankful for modeling that has been done, appreciates their complexities, encourages continued evaluation of downstream effects on fish.

SOC: Surface Water Hydrology – Modeling

- Streamflow

SOC: Surface Water Hydrology – Streamflow reduction

- Mine Site Water Balance Model

SOC: Surface Water Hydrology – Water Management Plan

- SW/GW Interchange – Connection of watershed model and groundwater model

SOC: Surface Water Hydrology – SW/GW Interchange

Water Quality and Sediment Quality

AECOM – introduced topic

- Water Quality

SOC: Water and Sediment Quality – Combined PWZ + PEZ Dataset (row 654)

Agenda/Discussion:

SOC: Water and Sediment Quality – Sensitivity Analysis (row 688)

Summary of comments: was it appropriate to combine the east and west data set for geochemical characterization of the mine site? Is the dataset representative of geochemical conditions at the mine site?

AECOM – defended use of the 95% for the combined dataset, explaining that it is considered representative of geochemical data in developing water quality model source terms as these source terms are conservative inputs for water quality models; the combined dataset is more conservative than using the west dataset alone.

AECOM – returned to BIN item on row 682, what is the depth of water needed to prevent oxidization of PAG?

AECOM – confirmed that this has been addressed.

AECOM – introduced concern in row 692

AECOM – directed group to RFI 21f,g, summarized concerns that water quality model lacked sensitivity analysis, model assumptions not disclosed, and that rerunning of groundwater and watershed model should prompt rerun of water quality model with those new inputs. AECOM is waiting on data from PLP subcontractors and is in the process of addressing these concerns.

SOC: Water and Sediment Quality – Water Quality Model (row 653)

SOC: Water and Sediment Quality – Baseline Water Quality (row 657)

SOC: Water and Sediment Quality – Data and Process

SOC: Water and Sediment Quality – Sample Representativeness

AECOM - summary of comment: limitations of data quality and processes related to baseline environmental water quality were not adequately described. AECOM has added description of outlier analysis, data collection procedures, statistical measures (e.g. median, max, min and standard deviation, frequency of detection) for water quality samples, did not make changes with respect to temporal trends in data pertaining to seasonality. Cyanide sources have been updated with respect to relevant sources.

EPA – stressed the importance of acknowledging the breadth of spatial and seasonal variability as well as acknowledging that this variability is averaged for the purposes of modeling. While variability may not be important to meeting water quality standards, it is important to the understanding of impacts to the environment from unexpected events. Appreciative of the addition of the data quality assessment; requested addition of frequency of detections for elements (currently in the Appendix). Asked if low and high detects be linked to flow regimes?

AECOM – explained that we added the full range of detects, and standard deviation to disclose range of variability. Noted that the frequency of detection was added to the appendix. Level of detection has not been linked to flow regime, suggested that this was not necessary for the purposes of NEPA.

- Water Treatment Process

Agenda/Discussion:

AECOM – gave an overview of the water treatment process based on information provided in RFI 21e, received last week. RFI provides explanation on the operation of water treatment plant, also mass balances for individual treatment blocks. Effectiveness of treatment process is predicted to meet water quality standards; next step is to validate this assertion. Operational configuration is still unclear. Treatment largely follows accepted standards of practice, some innovations introduced due to scale of operation, this needs investigating. RFI 21e provides a good base document. Influent and effluent traveling through water treatment blocks. Salt is either trapped in tailings or discharged in effluent – difficult to validate this statement. Generally, need to clarify assumptions underlying treatment projections. Selenium use of a reductive model to transform selenium to a solid state and thus trapped in tailings – explained that this is very novel approach has not been demonstrated in industry, does not use industry standard of the biological approach. Voiced some concern that this could be accomplished on scale proposed. We have more information than was available for the DEIS but we need more to validate assumptions.

LPB – questioned selenium levels, what are the consequences of 5 ppb concentration in discharge.

AECOM – consequence of 5 or more ppb is that salt balance will fail, decreasing effectiveness of treatment. Further explained other options for dealing with salt balance if proposed selenium treatment is not effective.

ADEC – also had concerns with the transfer of ‘salts’ back to tailings pit – what is the potential for remobilization of these salts?

AECOM) – regarding this diffusion area issue – typically there is a more active effort to remove selenium from the system specifically because of the danger of remobilization.

USFWS – Selenium is a big deal for fish.

AECOM – agreed, selenium saturation can be significant should not be dismissed. Treatment at the mine needs to be robust. We need to validate their assumptions and challenge their propositions if we disagree.

AECOM - Asked if ADEC weights in on treatment system or more concerned with discharge meeting standards for water quality.

ADEC – would look at the proposed treatment system design with an eye towards that system meeting water quality standards.

Surface Water Quality

EPA – (row 654) had many comments on combination of east and west geotechnical datasets – had several comments on this – happy with the resolution. Otherwise response does not address original comment. Regarding datasets used to generate the predictive models, using air temperature to model ground temperature is not appropriate, not at all conservative, is dramatic and may overestimate sub surface water temperature.

Agenda/Discussion:

EPA – (row 697) water quality model presented dissolved water concentrations
AECOM – onus on user to convert to whole water concentrations
EPA row 698 – commended disclosure in document of pH as assumed and not specifically modeled, however presented as conservative due to buffering capacity of native waters, however waters presented in other sections as acidic, pH level needs better support
AECOM – explained that pH is somewhat addressed in RFI 21f, committed to addition of support in document.
EPA – wanted to make group aware of protocols for sediment sampling/monitoring developed in Puget Sound, has been applied in Alaska (e.g. Kensington Mine)
ADEC – (rows 698, 694), regarding pH, 70% of soil in project area is strongly acidic, need tighter discussion of soil pH and the relatively high pH assumed for modeling.
ADEC - (row 678) use of Nevada's NP/AP ratio 1.4 is too liberal as Alaska's environment is much wetter; (row 657) water quality should be measured in totals to totals
AECOM – NP/AP number is site specific, development addressed in RFIs 21f, 110
ADEC – state may look at a more conservative ratio for NP/AP for permitting
EPA – do we need to sort this ratio out now?
ADEC – determination of NP/AP ratio would be made in coordination with other state agencies.
AECOM – NP/AP values above 3 is considered to represent nonacid generating conditions, for values below 3 (more specifically the 1-2 range) development of a site-specific value is merited to determine potential for acid generation.
EPA – concerned about the ratio, voiced some dissatisfaction with how the value was generated, can a single site-wide value be representative of a varied system, suggests presenting information more clearly.
Action Item – present development of NP/AP site specific value more clearly in document.

Water Treatment

EPA – Action Item - Clarify that residuals from water treatment will be combined with tailings, and the potential for those residuals to be released under dam failure scenario back into the environment.
EPA – Action Item – requests follow-up meeting on water treatment, and buildup of selenium and salts after review of RFI 021e. Responses to SOC's (rows 705, 706, 708) pending review and discussion.
EPA – (row 674, 675) regarding Hg at water treatment facility. Action Item would like to see discussion of role of sulfate release in methyl mercury production in EIS. Important as fish uptake of Hg relate to both Hg presence, and activity of methylating bacteria (which is stimulated by sulfate addition).
NPS – Noted that although Hg amounts would be small, risk for methylation is elevated by presence of 176 k metric tons of sulfate. ties back to yesterdays discussion of the accumulation of toxins in the environment.

Agenda/Discussion:

Response to RFI 021e received November 11 – General updates and overview

SOC: Water and Sediment Quality – Water Treatment Plant Operations

SOC: Water and Sediment Quality – Water Treatment – Selenium/Salt Buildup

SOC: Water and Sediment Quality – Selenium

SOC: Water and Sediment Quality – Water Treatment in Closure/Post-Closure

USACE – revisited binned items.

1. Accumulation of toxins in environment, both biotic and abiotic fates – Action Item - slated for discussion among SMEs.
2. Concentrate Pipeline Water Discharge – EPA believes that the discharge is not allowable, as there is no water to comingle process water with at point of discharge. PLP claims a net precipitation loop hole, that EPA does not see as valid. As an alternative, PLP proposes to truck process water back for treatment, or build a return pipeline, depending on alternative chosen. Note, EPA has overview of Alaska Pollutant Discharge Elimination System Program (APDES) state permitting system, thus not pertinent to defer this issue to state permitting phase. Cindi noted that volume of wash water is likely too large to truck back to the mine site. Bill noted that a return pipeline for wash water is included as an option to a variant on Alternative 3. Action Item – EPA and ADEC will collaborate and provide input to inform the SOC response.
3. Steller's Eiders – assertion that impacted animals would be captured, rehabilitated and released. Angela – this is not a mitigation measure we should be relying on as successful rate of such rehabilitation is low (most often ends in mortality) – discussion was postponed until tomorrow.

BSEE – following up on question regarding compensatory mitigation requirements from yesterday – BSEE would not require compensatory mitigation. However, there is a chance that BOEM would require mitigation (avoidance and minimization), as a condition of permit approval. Explained that BOEM has responsibility over leasing and plans, whereas BSEE deals more with enforcement and inspection.

ADEC – regarding Monday's discussion of release of concentrate to flowing water – contingency needs to be developed for the point source and the downstream mixing zone (i.e. plume). ADEC SPAR would need to know contaminant levels, particle size. Action Item – acknowledge risk of spill in EIS, describe likely response to such a spill.

EPA – asked for an explanation of habitat conditioning with respect to water treatment.

AECOM – habitat conditioning typically involves the readjustment of salinity and pH and temperature of water discharged from water treatment plant. Action Item – clarify what PLP considers habitat conditioning through supplement to RFI 21e.

USACE – talked about mitigation, that there are many pathways by which mitigation may be incorporated into an EIS.

EPA – suggested that potential jurisdiction be evaluated in the EIS.

Agenda/Discussion:	
AECOM – explained difference between suggested mitigation measures (Appendix M) and voluntary mitigation (Table 5-2) that the applicant has committed to.	
Action Item – revisit potential jurisdiction and effectiveness in Table 5-2 of EIS, similar to what is done in Appendix M.	
EPA – reiterated the value of discussing mitigation as it influences agencies evaluation of impacts.	
Noted that out-of-kind compensatory mitigation does not reduce severity of impacts.	
ADEC – asked for an explanation as to how the LEDPA is determined.	
USACE – explained that avoidance and minimization is considered in determination of a LEDPA.	
USFWS – brought up worst case scenarios of dam failure, large marine spill, urged analysis of smaller, more probable spills in the spills section. Requested clear separation of probability vs consequence.	
USACE – is considering how to best deal with this issue. Worst case is not a requirement of NEPA.	
Using existing scenarios (i.e. the Lynker study) is not appropriate.	
AECOM – Action Item – ensure that we have addressed potential impacts of smaller spills where appropriate.	
EPA – brought up the example of Resolution Copper Mine (section 3.10), they used an empirical approach for dam release instead of models because they did not have the appropriate data inputs required for modeling.	
Listening session and close	

Action Items	
Topic	Actions
Groundwater Hydrology	ADEC to provide written information about their regulatory framework for large mine projects in Alaska.
Water Quality	SOC 654 and 697: Responses do not adequately address the original comment. Revisit SOC responses – may require further discussion with PLP/SRK on RFI 021f
Water Quality	SOC 698: revisit response and provide further support for assumption of Ph being a conservative approach.
Water Quality	Revisit Section 4.18 to verify that there is an adequate discussion of the relationship between soils and pH fluctuation with soil disturbance (e.g., overburden and dredging)
Water Quality	Revisit EIS discussion of how the NP/AP site-specific ratio was derived to make sure that it is clearly articulated.
Water Treatment	Clarify that residuals from water treatment will be combined with tailings, and the potential for those residuals to be released under dam failure scenario back into the environment.
Water Treatment	USACE to schedule a followup meeting/discussion with EPA and other interested cooperating agencies to discuss responses to SOC's (rows 705, 706, 708), regarding water treatment, and buildup of Selenium and salts, after review of RFI 021e. . Note: RFI 021e is now available on the project website.
Water Treatment	Consider sulfate released into system and how it would affect methyl mercury production.

Proposed Action/Alternatives	EPA and ADEC to collaborate on permitting of concentrate pipeline water discharge and concentrate container wash water (SOCs 379 and 380) and provided feedback to USACE regarding whether or not the discharge of process water would be permissible.
Proposed Action/Alternatives	SOC 380 (Concentrate Pipeline Water Discharge): AECOM to revise response to discuss option for a return pipeline; disclose issue/ disagreement in EIS; address increased truck traffic for trucking back process water if not permissible to discharge.
Spills	Section 4.27: revisit spill scenario for concentrate truck spills into flowing waters to make sure that the point source issues such as toxicity, plum, grain size, dissolution rates and potential effects are adequately addressed. Consider scale
Water Treatment	Followup RFI (021e) to PLP to request clarification of statement regarding Habitat Conditioning. Need clarification on specific habitat conditioning measures other than meeting discharge limits.
Mitigation	Revisit applicant's proposed mitigation in Table 5-2 to evaluate potential jurisdiction and effectiveness, similar to what is done for App M (Table M-1) measures. See SOC 326.
Spills	Verify that smaller more likely spills are evaluated in the EIS and that it are clearly linked in the spills section (Section 4.27)
Spills – Contaminants in System	USACE and AECOM to evaluate if contaminant loading and bioaccumulation is adequately addressed in the EIS.

Additional Notes	
Parking Lot Items:	
<ul style="list-style-type: none"> Discuss SOC Water and Sediment Quality (Row 682) with Richard Henry. Note: this was addressed later in the Day 3 meeting. Defer discussion of fish habitat simulation to Day 4 technical meeting with fish SMEs present (related to RFI 147) 	

Project Name: Pebble Project EIS
Date: November 21, 2019
Time: 10am-5pm
Location: The Megan Room, 6591 A Street, Anchorage
Subject: Cooperating Agency Technical Meetings, Day 4
Introduction: Safety, housekeeping, Opening remarks Ground rules

Attendees and Affiliation:	
AECOM and subcontractors	Bill Craig, Elizabeth Bella, Jessica Evans, Jon Isaacs, Sasha Forland, Wes Cornelison, Cara Wright, Lindsey Flagstad, Arika Mercer, Jonathan King, Mark Allen, Tara Bellion, Jim Munter, Kirk Ranzetta
ACHP	John Eddins
BSEE	John McCall
Curyung Tribal Council	No attendees
EPA	Molly Vaughan, Matt LaCroix, Betsy McCracken, Running Grass, Palmer Hough, Don Clabaugh, Joe Ebersole, Kate Schofield, Patty McGrath, Sue Detwiler, Mike Kravitz, Michelle Davis
LPB (Jade North)	Bob Loeffler
Nondalton Tribal Council (represented by NARF)	Wesley Furlong, Monty Rogers
NPS	Sharon Kim, Susanne Fleek Green, James Lawler, Rachel Mason, Kerensa King, Amy Miller, Krista Bartz, Dan Young, Liza Rupp, Kelsey Griffin, Rachel Mason
State of Alaska (SoA)	Kyle Moselle, Ron Benkert, Kate Harper, Ted Otis, Robin Dublin, Brock Tabor, Lee McKinley, John Evans, Travis Elison, Judy Bittner, Lisa Olson
USACE	Shane McCoy, Katie McCafferty, Sheila Newman, Heather Markway, Brandee Ketchum, Jennifer Moyer, William James, Ryan Winn, Kendall Campbell, Lt. Colonel Bloedel
USCG	David Seris
USFWS	Douglass Cooper, Catherine Yeargan, Melissa Burns, Angela Matz,
USDOJ	Steven Wackowski
PHMSA	Robert Guisinger

Agenda/Discussion

Agenda/Discussion

Day 4 Agenda

10am: Room open, coffee and tea provided

USACE – proposed change to agenda extending fish discussion after lunch to 13:45. Notified group of RFIs pending and expected dates of availability. Notes from Monday and Tuesday available, will remain in draft.

10am-12pm: Morning Session – Fish Topics

AECOM – explained process of evaluating fish impacts, turned discussion to Lake Iliamna

- Iliamna Lake

SOC: Fish – Impacts Smolt-Iliamna Lake (row 224)

SOC: Fish – Iliamna Lake-Zooplankton (row 229)

AECOM – discussed changes made in section 3.24, increased discussion of fish species, fish habitat and ecology in Lake Iliamna, specifically smolt, juvenile, and adult sockeye, and rainbow trout. For adult salmon: discussion added on annual abundance trends, described migratory behavior, added information on spawning distribution, better described physical habitat with respect to spawning (e.g. substrate, slope, water currents), included PLP site-specific studies at proposed ferry terminal locations, and genetic composition of lake spawning stock. For juvenile salmon: information added on periodicity (i.e. rearing year-round versus passing through from upstream sources), abundance, distribution and migration patterns, feeding requirements (i.e. zooplankton), vertical distribution in water column. For rainbow trout, radio-telemetry study now included. Changes made to 3.24 were propagated as appropriate to 4.24.

USFWS – Thanked AECOM/USACE for these inclusions.

ADFG – was field work completed at the proposed ferry terminals?

AECOM – Yes, helicopter survey, physical environment characterization, seining data, etc.

LPB – asked about information available for the distribution of juvenile salmon under ice. LPB is concerned about increased predation and mortality due to greater boat traffic. LPB has experienced that boats/wakes stun juveniles, which are then eaten by gulls. Noted that this gull behavior could also be attributed to churning of benthos by propellers.

AECOM – yes, winter data is available. Existing research shows very little feeding in winter, looked at Chignik and Black Lakes, both support spawning populations of salmon. Catches low in locations with high DO and cool water, Juvenile avoid light during winter (low temperatures), stay at depth during the day, and are more active, come to shallows in the dark. An ice-free channel could disturb these patterns. Stickleback are abundant and thus a likely prey species for gulls.

LPB – reiterated that two concerns are stunning by propwash, mortality from prop strikes.

AECOM – noted that mitigation for stunning by propwash, mortality from prop strikes have been incorporated in

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App M, Mitigation.

LPB – asked if there are numbers for mortality for prop strikes. If so, requests incorporation of these data.

AECOM – yes, also for beaching due to wakes, could increase information on link between fish size and mortality, however the information reviewed does not indicate that the ferry would adversely impact smolt.

ADFG – Action Item - requested a more complete evaluation of the Gibraltar River with respect to salmon and spawning habitat, as potentially impacted by the proposed crossing of the Gibraltar River.

AECOM – noted that information is included for species presence and abundance in Gibraltar and tributaries.

NPS – requested an explanation of changes made to section 4.24 with respect to fish impacts

AECOM – no major impacts to spawning or habitat due to ferry terminals.

NPS – asked about resident fish species, specifically requested that the lack of data be clearly stated in the document.

AECOM – explained that information on rainbow trout, and stickleback is included, and that resident species are listed but distribution data is not available for all species.

Action Item – explicitly list data gaps for resident fish species in the document

AECOM – moved conversation to zooplankton, explained that information reviewed does not indicate that changes in zooplankton abundance and distribution would have greater food web implications.

USCG Action Item – please include in document the impacts of construction activities related to the bridges and mitigation that other agencies will impose.

- Fish Distribution and Abundance

SOC: Fish – Impacts-Resident Fish (row 222)

AECOM – Discussed resident and anadromous fish additions to the document. For spawning salmon: increased description of annual changes, expanded to tributaries and main stem reaches for high spawning years. For spatiotemporal variability of juveniles: included index sites from R2 for (NFK, SFK and UTC) density data for all fish with greater than 1 fish per m², annual variability in density. Compared densities in main stem and optional habitats. Increased description of spatiotemporal abundances. Also added information on winter sampling. Talked about the effect of groundwater on fish; mapped areas of groundwater influence, added discussion of spawning in relation to groundwater influence.

USFWS – Thanked AECOM/USACE for their work. Voiced concern regarding mercury (Hg) accumulation in fish downstream of mine sites (BIN item from yesterday). Noted that sulfate and an anoxic environment required for the methylation of Hg, further that this bacterial-mediated reaction can occur in waters meeting water quality standards. Action Item - Encouraged inclusion of this potential downstream impact related to bioaccumulation of Hg in the document, especially as Hg is the only contaminant with consumption guidance in Alaska.

EPA – Noted response to SOC, asked how additional potential impacts to resident fish would be handled

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AECOM – explained that they are evaluating life history traits with respect to project impacts (sedimentation, vibration from blasting, changes in flow) and that fish habitat modeling included resident species (habitat modeling for adults was not performed, this has been amended).

EPA – noted that EFH did not address bioaccumulation of methylmercury based on life history traits of anadromous and resident fish species.

USACE – asked ADFG their opinion on what analysis is necessary from their point of view

ADFG – SoA would require additional information (i.e. additional fish survey to document presence, species and abundance) for permitting purposes, specifically at temporary and permanent bridge locations as well as any new road crossings of streams and rivers. Stressed the importance that survey efforts are repeated to capture the temporal use of habitat by fish species. Noted that this level of information is not needed for NEPA but will be required for State permitting.

ADFG – has provided comments on impacts on sedimentation and turbidity, unsure based on SOC response if additional information would be included in next version of the document.

ADFG – noted that warm water from effluent discharge has been ascertained in the document to enhance EFH, Action Item – add discussion of how higher temps could have negative effects on juvenile fish.

NPS – NPS has developed protocol to monitor Hg content in fish for resident fish species – employed in Katmai, can provide dataset. Action Item – NPS to share monitoring protocol and related dataset for methylmercury in resident lake fish species.

SOC: Fish – Habitat Characterization (row 207)

AECOM – discussed the augmented characterization of physical habitat, connection of main stem flows to optional habitat, effort to link habitat characteristics to fish densities

EPA – asked what the source of new habitat data is

AECOM – explained that it is tied to fish sampling sites on the main stem, mesohabitat types ground truthed and mapped with aerial imagery. Data came from the environmental baseline documents (EBD). Noted inclusion of methodology for all studies would be overwhelming in the body of the EIS, and that they have tried to reference the EBDs unless understanding methodology is integral to discussion in the EIS.

Action Item – revisit methodology used to characterize EFH at the mine site

AECOM – discussed optional habitat, areas of groundwater influence indicated by survey of open water in winter.

EPA – asked if habitat types were quantified and how groundwater was related to fish distribution. Regarding information provided in RFI 147, can groundwater be used in EFH modeling? How were physical habitat modeling (PHABSIM) transects located? Asked about including incubation (in addition to spawning) in the periodicity table, noted the importance of considering incubation phase (i.e. egg survival) in fish impacts.

AECOM – answered that yes, we described at what flow levels optional habitat would be available and what the surface area of that optional habitat would be. Characterized relationship between adult spawning and areas of groundwater influence. Explained that groundwater influence is input to surface water modeling, which informed habitat modeling; that transects were located based on physical habitat characteristics and that a footnote has been added to the periodicity table to address incubation.

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USACE – Noted that updated RFI 147 is scheduled for delivery tomorrow.

AECOM – directed group to RFI 48 for explanation of physical habitat modeling process.

AECOM – noted that a technical appendix has been developed to clarify habitat characterization methodology.

Also noted that a much greater effort has been made to explain the relationship between fish density and habitat type.

EPA – Action Item - requested that a statement of assumption and uncertainties that are made for and inherent to all models be included in the EIS.

USFWS – Thanked AECOM/USACE for the inclusions of information, looks forward to reviewing the revised section 4.24.

USDOl (representing NPS and USFWS) – DOIs policy regarding jurisdiction for post ANILCA national parks and refuges is not yet clear.

AECOM – Upwelling has been considered, do we also need to be considering downwelling in groundwater section?

USACE – deferred discussion until after lunch.

12pm-12:30pm: Lunch provided on site

SOC: Fish – Habitat Characterization (row 207) – continued discussion

ADFG – encouraged looking at both upwelling and downwelling of groundwater, noted that PHABSIM accounts for upwelling only. Appreciates the site-specific parameters incorporated to the habitat suitability curves, did not realize that habitat suitability models accounted for groundwater, needs time to review the RFI 147 and will provide feedback.

Action Item – ADFG to provide feedback on RFIs 48 and 147, schedule meeting if necessary.

ADFG – reiterated importance of groundwater up and downwelling

EPA – commented on fish passage, specifically that DEIS stated that free passage of anadromous and resident fish may be temporarily halted during construction but would be reinstated during operation. Wants to know how this will be addressed in FEIS, also how will fish passage be preserved after closure of the mine.

AECOM – culverting and fish passage would meet state standards, discussion has been bolstered by multiple references to scientific literature showing that fish passage is preserved through culverts.

AECOM - to look into how culverts will be maintained after mine closure

ADFG - state recommends bridge construction (preferable to placement of culverts) whenever possible.

Regarding temporary blockages of fish passage – these are expected to be temporary – water would be rerouted during construction. From state perspective impacts to fish passage are expected to be *de minimis*. Noted incorrect link to stream bank restoration webpage provided in DEIS.

SOC: Fish – Marine Derived Nutrients (row 230)

AECOM – discussed impacts to marine derived nutrients at the mine site noting that the upper regions of NFK, SFK, and UTC are headwater systems with little woody debris (to trap salmon carcasses). These reaches already have low levels of nutrients therefore not much change in marine derived nutrients is

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expected.

EPA – raised the issue that change in marine derived nutrients was not addressed as additive with effects on downstream systems. Also noted the temporal difference in the contribution of nutrients from spawning depends on river.

ADFG – not aware of studies on marine derived nutrients in SW Alaska

NPS – Affirmed that there are several studies from Wood Tikchik State Park, Iliamna etc.

Action Item – NPS to provide references on marine derived nutrients for SW Alaska.

SOC: Fish – Portfolio Effect (row 220)

AECOM – explained that more information has been added on the portfolio effect, does not appear that impacts associated with project would have synchronous effect on the larger Bristol Bay watershed.

EPA – spoke to general approach on evaluation of impacts – suggested analytical framework should be: 1. is there an impact, 2. what are the environmental consequences? 3. what are the additive effects? Felt that permanent impacts were dismissed in DEIS. Also noted that diversity will be reduced, thus not valid to say that portfolio effect will compensate for this loss.

Action Item – AECOM/USACE to consider how to best discuss additive effects in the EIS, the expansion of additive effects analysis to the project area (i.e. not restricted to the mine site) and how to present additive effects in relation to portfolio effects.

EPA – noted that there is no natural mechanism to correct for the loss of anadromous fish habitat, and that it is disingenuous to conclude no impact on the basis of ecosystem resilience.

ADFG – noted that it feels premature to draw conclusions without consideration of additional data, forthcoming mitigation.

EPA – noted that disruption to groundwater pathways could reduce resiliency provided by portfolio effects

ADFG – urged consideration of impacts of culverts could also reduce resiliency provided by portfolio effects

ADFG – need to also consider spills scenarios in consideration of additive and portfolio effects.

12:30pm-4pm: Afternoon Session

- Commercial Fisheries

SOC: Commercial Fisheries – Lower Cook Inlet (row 80)

AECOM – thanked ADFG – Homer for good comments. Noted that some project area fisheries closed due to low abundance and furthermore that it is hard to calculate impacts in face of uncertainty regarding fishery reopening, and future market values.

ADFG – noted that the Weathervane scallop fishery reopened in 2015 and was active for 3 years. Regarding Salmon fishery in Iliamna Bay, felt that the activity is not fully captured. Noted that habitat is pristine, and stock is expected to recover, especially during the life of the mine, furthermore the average value of the sack row herring fishery is 3 million dollars, notably a value that should not be discounted.

AECOM – explained that the activity of the Weathervane (Scallop) and Cottonwood Creek (purse seine Chum fishery) fisheries have been revised. Voiced concern over the estimation of fishery value without accurate forecast

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of fishery takes from biologists.

Action Item – ensure fishery activity, take, and value is accurately captured in EIS especially the report of no harvest for Diamond Port Subdistrict, coordinate with ADFG as necessary.

ADFG – regarding attention paid to the Diamond Port and approach corridor in DEIS, this is a shallow approach that would potentially require dredging and thus incur greater impact.

USACE – asked about the mention of crab, is this a fishery we should be addressing?

Action Item – ensure that tanner crab fishery in Cook Inlet is discussed, even if it is a historical, inactive fishery, habitat is pristine with potential to recover.

Discussion of the following SOC's was postponed to a later date:

- Commercial Fisheries

SOC: Commercial Fisheries – EPA-Update to 2018 information (row)

- Recreational Fisheries

SOC: Recreational Fisheries – Data and Process (row)

SOC: Recreational Fisheries – Recreation Setting Impacts (row)

(Break 1:40pm-2:00pm)

- Tribes/cultural

SOC: Historic Properties – Identification (row 296)

AECOM – summarized changes, specifically the incorporation of surveys at Amakdedori Port, aerial studies, ferry terminals and river crossings at Gibraltar and Newhalen, review of the Alaska Heritage Resource Survey (AHRs), sites identified through interviews. Also noted that NARF has supplied documents that supported original native land selections that are currently under review by PLP and SRB&A.

SHPO – voiced concern over narrow focus towards single property associated with a transportation project, noted that this is an undersurveyed area, further that the summary in document of what is known and what we lack needs improvement. Requested more detail on the types and significance of sites so that impact can be better evaluated. Requested an evaluation of eligibility of known sites for listing. Recommended combining Cultural Resources and Historical Property sections.

Action Item – revisit how cultural resources and historical properties are evaluated and presented.

ACHP – also voiced concern that only one eligible historical property was identified, especially at this (late) stage in the NEPA process

NARF – felt that surveys have been biased towards archeological sites at the expense of the 12,000 ethnographic sites identified. Noted that attention has been too focused on the 43 sites listed in the AHRs. Results give an incomplete picture of cultural heritage.

AECOM – place names now included in document

NARF – would like to see greater effort to connect physical sites (archeologic and historic sites) and places of use (ethnographic), indigenous place names (i.e. all types of cultural resources) to allow a more precise analysis of impacts, notes that historic properties are a type of cultural resource, reiterated that the section split is unusual.

NARF – would like to see a more holistic approach to cultural resources, feels that the individual evaluation of sites is not appropriate. Looks forward to seeing what will be incorporated in the PFEIS.

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Noted that AHRS provides a good starting point but notes that these are not necessarily eligible properties, thus effort should be expanded. Response to SOC could be clarified for those not familiar with NEPA and Section 106 processes. SOC response does not adequately respond to the bias towards archeological sites. Notes that it is often difficult to separate historic properties and cultural resources, combination allows flexibility in analysis and could lend efficiency in the evaluation of impacts.

Action Item – AECOM/USACE to clarify relationship between NEPA and section 106 processes, to provide a more holistic treatment of cultural resources (i.e. ethnographic, archeological, place names) clarification on regulatory timeframe and process (Appendix C, 800 regulations and NEPA), and to consider combining the Cultural Resources and Historical Property sections.

SHPO – noted that a combination of sections would provide a more efficient delivery of information (i.e. reduced cross-referencing) and that NEPA is designed to allow a broad (opposed to compartmentalized) evaluation of cultural resources, stressing that the chance to take a holistic look is now. Approach will invariably be narrowed as project moves to permitting. Also noted that it is difficult to understand which resources will be subject to what regulations.

USACE – agreed that presentation of applicable regulations is confusing.

BSEE – speaking on behalf of their cultural resource specialists, assured group that any sites found in conjunction with placement of the pipeline would be properly treated and reported.

USACE – the programmatic agreement has procedures in place for inadvertent discoveries.

Action Item – USACE and BSEE to coordinate on the programmatic agreement to make sure it addresses ROW notification requirements for incidental finds associated with pipe installation on the outer continental (OCS).

NPS – reminded the group that the 'Respect the Land' document produced by NPS provides good reference for the type of broader analysis being suggested here.

SOC: Cultural Resources – General Impacts (row 90)

AECOM – explained the process for evaluating impacts to cultural resources.

NARF – reiterated that the treatment of cultural resources was cursory, encouraged extending analysis to sacred sites, human remains, subsistence use areas, areas used for teaching of songs, dancing, hunting.

LPB – commented that by such metrics, all of Alaska could be considered a cultural resource also noting that is not a bad thing.

SHPO – reiterated that NEPA provides an excellent opportunity to capture the cultural resources of an area that are known at the time and that this sort of broad assessment should not be deferred to the Section 106 process.

AECOM – welcomed the idea of a diagram (Action Item - to be supplied by NARF – taken from article by Tom King 2002 'what should be the cultural resource element in an EIA')

USACE – noted difficulty in capturing tribal culture and resources in western language. Native Alaskans consider these 'resources' as part of themselves. Admitted that we need help in describing these

NARF – cited Boraas and Nott volume 3 noting that the authors did a good job of translating these ideas.

ACHP – regarding how to articulate the sites within their living landscape, suggested capturing the connections between place and use. Feels that it is a federal agency responsibility to facilitate the communication of these

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ideas and connections.

AECOM – looks forward to refining process for addressing cultural resources.

SHPO – cautioned mixing terms with regard to areas used for analysis of direct, indirect and cumulative effects (referenced court case in VA).

(Break 3:25pm-3:40pm)

- Subsistence

SOC: Subsistence – Baseline Data (row 535)

AECOM – explained that more recent research has been added to the subsistence section, these studies often include traditional ecological knowledge (TEK) in their methodology (e.g. Burns et al. 2016 re: Iliamna Seals; Van Lanen et al. 2018 re: caribou)

EPA – asked if the studies included harvest levels

ADFG – believes that harvest data is in both studies, noted that ideally, we would have baseline followed by monitoring, however state lacks funding

NARF – noted that it is difficult to meet high-quality NEPA data standards with 15-year-old subsistence data.

NPS – notes that the Mulchatna caribou herd is fairly dynamic in its movement, knowing where caribou are currently harvested could help clarify temporal variability habitat use of caribou

NARF – relayed anecdotal report of shift in caribou, moose and bear in the last 5 years from Nondalton

ADFG – urged use of data and reporting on Mulchatna herd available from state

EPA – reiterated that harvest is dynamic and that harvest data from 2004 should not be applied to describe the current condition or to evaluate impact.

NPS – asked if treatment of mercury in fish and wildlife will be propagated to subsistence

AECOM – yes

SOC: Subsistence – Sharing and Social Networks (row 547)

AECOM – explained that qualitative discussion on sharing and social networks has been added but there has been no change to disclosure of impacts

NARF – in 2011 lack of analysis on subsistence networks was known, voiced disappointment that this knowledge gap has not been closed, noting that tabular data does not adequately capture this data. Feels that subsistence analysis is incomplete without such a study.

ADFG – notified the group that the state is working on a sharing network study for Bristol Bay that is expected to be available in January or early February.

Action Item – AECOM/USACE to rework SOC response to row 547 and include ADFG sharing network study when available.

NPS – noted prior concern over contaminated food, asked how this perception would affect subsistence networks?

NARF – cited changes to Kivalina sharing network as a result of Red Dog Mine development

USFWS – asked how the perception of subsistence resource contamination was addressed

AECOM – explained that they have revised the document to better tell that story, however difficult to find relevant

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literature.

USACE – mentioned Nuiqsut as a village to look to for published literature.

USFWS – see Northway in Upper Tanana Technical Paper 421 harvest and use of subsistence resources 2014.

ADFG – see research conducted Silver Bay in Sitka

EPA – suggested looking for resources outside of Alaska

NPS – asked if the transfer of traditional ecological knowledge and subsistence resources in and out of urban areas is addressed in forthcoming State study.

ADFG – transfer of subsistence resources is addressed, TEK is not

Action Item – revisit text on transfer of traditional ecological knowledge and subsistence goods in and out of urban areas

Action Item NPS to provide a list of TEK resources via email

EPA – Action Item - requested a figure showing overlay of subsistence use areas to identify areas of high ecological, cultural and heritage value.

AECOM – noted that this type of mapping is provided in the document; whereas individual maps are provided in the Appendix

NPS – regarding SOC (row 539), requested clarification on prohibition of subsistence harvest activities while on job, if this refers to the two weeks on shift, then please state that in the text.

EPA – requested that the replacement cost to villages due to loss of subsistence resources, be included

AECOM – noted that NEPA requires the disclosure of impact, also that the valuation of replacement costs is difficult.

Jon Isaacs (AECOM) – noted importance of avoiding speculation in NEPA process, citing other efforts that have failed

ADFG – notified the group that the state is working on a white paper on the replacement costs of food in Alaska and Canada, a 7-year effort.

Action Item – ADFG to send white paper on food security

NARF – mentioned the Subsistence harvest study done in Little Diomed by USACE

NPS – noted that the store in Nondalton is now closed, so replacement costs need to include freight and expedition.

SOC: Subsistence – TEK (row 549)

NARF – Why is TEK not included in sections outside of Subsistence?

AECOM)– Appendix K 3-1 is used as a source for all SMEs to reference and incorporate TEK into their individual sections.

Action Item – more explicit incorporation of TEK in resource sections.

NARF – asked for clarification on the term of subsistence use areas, encouraged inclusion of subsistence use areas as cultural resources

AECOM – have moved to the concept of traditional use areas, which is more inclusive (?).

Action Item – consider including subsistence use areas under discussion of cultural resources.

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NARF – response to SOC (row 549) what does propriety information mean? Intent is to keep ethnographic sources anonymous.

Action Item – AECOM/USACE will check on SRB&A proprietary citation.

Action Item - NPS recommends tying in socioeconomics with subsistence

AECOM – explained that discussion of socioeconomics has been augmented and a new section has been added.

- Transportation and Navigation

SOC: Transportation – Vessel Traffic (row 640)

EPA – asked if vessel traffic addressed the winter ice breaking ferry

USACE – needs to look into the question.

BSEE – noted that dredging requirements for pipe laying are not currently known, but will be the subject of future meetings

USCG – noted that ferry traffic is not expected to be an issue in ports.

USACE – announced that discussion on remaining SOC's will need to be rescheduled. These include:

- Public Health

SOC: Public Health – Baseline Health Disparities (row)

SOC: Public Health – Potential Impacts to Children (row)

SOC: Public Health – Protection of Public Safety (row)

SOC: Public Health – Increase in Crime and Drug Use (row)

SOC: Public Health – Food security (row)

- Aesthetics

SOC: Aesthetics or Visual Concerns – Lighting (row)

SOC: Aesthetics or Visual Concerns – Flight Paths (row)

SOC: Aesthetics or Visual Concerns – KOPs (row)

4:45pm-5pm: Listening session and close

Action Items

Topic	Actions
Fish – Iliamna Lake	Revisit discussion of baseline and environmental impacts of Gibraltar River crossing.
Fish – Iliamna Lake	Revisit discussion of resident fish in Iliamna Lake and identify where data on species is lacking.
Fish – Gibraltar River	Verify that construction-related impacts associated with bridges over navigable waters under USCG's jurisdiction (Newhalen and Gibraltar rivers) are documented in the EIS. Include a mitigation measure in Appendix M associated with in water construction windows.
Fish/Subsistence	Revisit analysis on methyl mercury to see if bioaccumulation in resident fish and downstream effects are addressed.
Fish - Mercury	NPS to share dataset and sampling protocol for monitoring methyl mercury in resident lake fish.
Fish – Habitat	Verify equal treatment of positive and negative effects of warmer temperature from WTP effluent discharge on juvenile fish.
Fish – Habitat	Revisit the methodology to characterize habitat data in Section 4.24 to make sure it is described, where appropriate, to support data being used in the EIS.
Fish - Habitat	Consider including information on critical model assumptions and uncertainties in the body of Section 4.24 rather than the technical appendix to help the reader understand the

	level of confidence associated the PHABSIM modeling. This applies to all models used to support the EIS.
Fish - Habitat	ADF&G to review RFI 48 and RFI 147 response and provide feedback to team; schedule followup discussion as needed.
Fish - Freshwater	Revisit EIS to verify that impacts associated with culvert blockage in post-closure are adequately addressed.
Fish – Marine Derived Nutrients	NPS to provide references on marine derived nutrients from studies in the Wood-Tikchik State Park and Iliamna.
Fish – Portfolio Effect	Take closer look at impacts analysis in Section 4.24 to make sure additive impacts to natural ecosystem are being considered for the project (all project components; culverts were mentioned), and how those additive effects might change the portfolio effect. Revisit SOC response 220. Coordinate with Spills SME on portfolio effect for spill scenarios in Section 4.27.
Commercial Fisheries	<p>AECOM to coordinate with ADFG (Homer office) to make sure their concerns regarding recovery of fisheries is addressed.</p> <ul style="list-style-type: none"> • Recent activity in the weather vane scallop fishery (using most current data) • Iliamna Bay/Cottonwood Creek chum salmon fishery (document harvest) • Pacific herring fishery (stock depleted but habitat is intact and would support productivity) • Diamond point subdistrict fishery (reporting no harvest – verify accuracy) • Tanner crab fishery (stock depleted but habitat is intact and would support productivity)
Cultural Resources	Revisit the context of cultural vs. historic resources and the separation of these sections. Need to verify there is adequate information on the natural or cultural time periods to help understand the significance of the sites.
Cultural Resources	Revisit how place names, AHRs sites, IICRs are addressed in the EIS to make sure the effects analysis is holistic.
Cultural Resource	Revisit comment #8 on pg 6 of Tech Memo 2 submitted by Nondalton: Regarding point locations of indigenous place names (frying pan lake and Groundhog mountain).
Cultural Resources	Revisit responses to all historic prop SOC's to make it clear to the general public what the different processes are and how they relate (e.g., Section 106, NHPA, and NEPA). It was also noted that the response does not respond to the particular point about the focus of surveys on archaeological sites rather than ethnographic sites
Cultural Resources	Clarification of regulatory processes/framework in the EIS (Appendix C 800 regs and NEPA)
Cultural Resources	USACE and BSEE to coordinate to make sure the PA addresses BSEE ROW notification requirements for potential inadvertent finds associated with pipeline installation in the OCS.
Cultural Resources	Nondalton will send article that contains the cultural resources ven diagram: Thomas King, <i>What Should be the "Cultural Resources" Element of an EIA</i> , which contains the cultural resources ven diagram. Note: sent during the meeting
Subsistence	Look back at reference material to apply a better qualitative analysis of the social sharing network.
Subsistence	When available review ADF&G sharing network study for Bristol Bay; expected to be available in January or early February 2020.
Subsistence	Rework response to SOC 547 regarding sharing and social networks
Subsistence	Revisit text on transfer of TEK and subsistence goods in and out of urban areas (between Anchorage and rural villages); the Bristol Bay study addresses sharing of TEK of elders.
Subsistence	Address perception of the quality of food and how it relates to subsistence sharing network. Look into published information/studies references for Red Dog Mine and Kivalina; Nuiqsut; published information on upper Tanana (Northway); Sitka (Silver Bay); could extend research reach outside of Alaska. TECHNICAL PAPER 421, NORTHWAY 2014
Subsistence	NPS to re-send list of documents for TEK.
Subsistence	Consider overlaying subsistence harvest maps to identify key areas of high ecological,

	cultural, and traditional value.
Subsistence	ADF&G to share white paper on food security and effort to identify replacement costs for traditional subsistence foods.
TEK	Take a look at explicitly calling out TEK throughout all resource sections.
TEK	Consider including subsistence use areas under the discussion of cultural resources
TEK	SOC response 549: check citation for SRB&K, Proprietary
TEK	Tie in socioeconomics with subsistence

Additional Notes

Parking Lot:

- Commercial Fisheries

SOC: Commercial Fisheries – EPA-Update to 2018 information

- Recreational Fisheries

SOC: Recreational Fisheries – Data and Process

SOC: Recreational Fisheries – Recreation Setting Impacts

- Public Health

SOC: Public Health – Baseline Health Disparities

SOC: Public Health – Potential Impacts to Children

SOC: Public Health – Protection of Public Safety

SOC: Public Health – Increase in Crime and Drug Use

SOC: Public Health – Food security

- Aesthetics

SOC: Aesthetics or Visual Concerns – Lighting

SOC: Aesthetics or Visual Concerns – Flight Paths

SOC: Aesthetics or Visual Concerns – KOPs

Project Name: Pebble Project EIS
Date: November 22, 2019
Time: 8:30am-12pm
Location: The Megan Room, 6591 A Street, Anchorage
Subject: Cooperating Agency Technical Meetings, Day 5
Introduction: Safety, housekeeping, opening remarks

Attendees and Affiliation:	
AECOM and subcontractors	Bill Craig, Elizabeth Bella, Jessica Evans, Jon Isaacs, Sasha Forland, Wes Cornelison, Nancy Darigo, Lindsey Flagstad, Arika Mercer, Keely Craig
ACHP	No attendees
BSEE	John McCall
Curyung Tribal Council	No attendees
EPA	Molly Vaughan, Matt LaCroix, Betsy McCracken, Palmer Hough, Patty McGrath, Kate Scofield, Michael Kravitz, Tim Maley, Joe Ebersole
LPB (Jade North)	No attendees
Nondalton Tribal Council (represented by NARF)	Wesley Furlong
NPS	Sharon Kim, Kerensa King, Buck Mangipane, Amy Miller, Kelsey Griffin
State of Alaska (SoA)	Kate Harper, Todd Rinaldi, Lee McKinley, Dick Shideler, Lisa Olson
USACE	Shane McCoy, Katie McCafferty, Sheila Newman, Heather Markway, William James, Jennifer Moyer, Jason Brewer
USCG	David Seris
USFWS	Douglass Cooper, Catherine Yeargan, Angela Matz
PHMSA	Robert Guisinger, Dustin Hubbard

Agenda/Discussion
<p>Day 5 Agenda</p> <p>AECOM – Safety Moment</p> <p>USACE – Introduction, asked about timeframe for revisiting SOC topics not covered in the Day 4 meeting</p> <p>USACE to reschedule discussion on commercial and recreational fisheries and aesthetics and public health.</p> <p>EPA – asked about delaying water quality/treatment discussion until RFIs 21 e, f and g (water treatment) can be reviewed.</p> <p>USACE – suggested second week in January. Asked USCG to provide availability for a follow-up meeting.</p> <p>EPA – asked if EPA could participate in future fish discussion</p> <p>USACE – yes</p> <p>Morning Session – Wildlife and Wetlands</p> <ul style="list-style-type: none"> Barriers to movement <p>SOC: <i>Wildlife – Bears - Baseline Data Limitations (row 734)</i></p> <p>AECOM – introduced topic, noted concerns on timing of bear surveys, specifically the low snow conditions during den survey</p> <p>ADFG – asked if the USACE will require additional denning survey. Voiced concern that den sites are not fully captured, hoped that this deficiency could be addressed during state permitting.</p> <p>NPS – noted timing of surveys, that 30-40% of bears will move large distances (approx. 60 miles) within the season, stressed importance of disclosing that the short period of observation time may underestimate bear abundance and activity.</p> <p>ADFG – requested that underestimates be noted in the document</p> <p>EPA – asked how data limitations were translated to impact analysis</p> <p>AECOM – explained that section 4.24 has been revised.</p> <p>Action Item – AECOM/USACE to add additional bear den survey prior to construction as a suggested mitigation measure to Appendix M.</p>

Agenda/Discussion

SOC: Wildlife – Bears - Impacts – General (row 722)

AECOM – solicited feedback on big concerns regarding brown bear impacts

NPS – concerned that geographic scale of analysis is too restricted to capture the range of bear movement across the landscape, would like to see more data and predictions on bear-human interactions.

Action Item – AECOM/USACE to revisit size of analysis area to ensure that is defensible for mobile species.

ADFG – stressed the importance of mitigation measures (e.g. bear feeding, waste management) so that problem bears are not created. Importance of a wildlife interaction plans, but more important is company policy, enforcement and attitude towards wildlife.

AECOM – requested wildlife interaction plan examples

Action Item – ADFG to provide examples of successful wildlife interaction plans.

ADFG – reiterated the potential for bears to become habituated due to human error

AECOM – asked what the appropriate analysis area size is

NPS – noted that bears have been shown to range over 100 miles, gave recent Lake Clark NP 4-year study as an example. Also noted that some individuals moved less than 8 miles.

NPS – asked what pathways bears would be expected to be used within the project area.

NPS – noted that bears in Lake Clark basin often moved up river corridors, movement patterns are plastic to conserve energy and avoid confrontation; 30-40% of population moved approximately 60 miles. Wolf and bear tend to follow trails and roads. Noted that study was not designed to capture bear movement.

NPS – asked for an explanation on study areas around Amakdedori, and what the data limitations mean for the long-term project.

AECOM – reiterated the importance of disclosing data limitations.

- Exposure to human activities

SOC: Wildlife – Bears - McNeil River State Game Sanctuary (row 721)

AECOM – considers the biggest issue at McNeil River to be the potential to alter the bear/human relation and subsequently the wildlife viewing experience.

NPS – noted that this is a valid concern, noting that bears experiencing a negative interaction with human(s) outside of McNeil River could carry that into the sanctuary.

ADFG – noted that two staff run the entire McNeil River sanctuary – point being that they are not staffed to deal with problematic bears. Also noted that the mission of McNeil River game sanctuary was not fully captured in the EIS

Action Item – AECOM/USACE to check that the language regarding the mission of the sanctuary has been updated

NPS – noted that both bears and humans expect certain behavior of each other

ADFG – noted that the key is not to allow conditioning to human food, this is a greater concern than a bear that has been hazed. Bears on the North Slope that have been hazed typically avoid facilities but do not entirely leave the area, they adjust well to new situations. New bears at McNeil are initially wary of human presence, become habituated through the course of the season.

NPS – noted that bears are also attracted to petroleum products (antifreeze) plastics, camping gear, important to address this in any wildlife interaction plan.

ADFG – followed on with: bears are curious, as it is how they make their living

USACE – asked for the agencies to give specific comments on the applicant's Wildlife Interaction Plan

ADFG – asked about ADNRP permitting

ADFG – could not think of anything specific to bears, however that waste management permits would address bear interactions;

SPO - any lease of state land for pipeline construction would require a wildlife interaction plan

ADFG – also noted that wildlife interaction plans typically require a zone of no activity around den sites

SOC: Wildlife – Wildlife Interaction Plan (row 749)

AECOM – noted RFI 122 is not the full plan but the document outlines some wildlife interaction measures and commits to the future development of a wildlife interaction plan

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Action Item – AECOM/USACE to revise reference to the plan in the SOC response.

USCG – brought up bear/human interactions along the Greens Creek Mine road, noting a current proposal to restrict traffic along road and access within a wider mine buffer, see 5 AAC 92.5106

EPA – noted a general reliance in the DEIS on the future plans for minimization of the potential adverse impact, without an assessment of a plan's likely effectiveness, it is difficult to draw conclusions on impact.

ADFG – noted that it was unclear from SOC responses how concerns have been addressed, reiterated that while hazing of bears is appropriate in some situations, it may not be appropriate for Pebble due to the risk of that altered bear/human relationship being carried over to wildlife viewing stations. Stressed that it is absolutely important to keep camps clean and free of attractants. Also noted general inadequacy of bear data.

USACE – asked about bear baseline data – are there already opportunities for bears to have negative interactions with humans?

ADFG – noted that it is unclear if hazing takes place in surrounding communities, hazing does not happen at McNeil

NPS – explained that hazing is rare in the national parks, agreed that it is hard to know what the bears have experienced, exceptions are coastal bears, which largely travel in protected areas.

EPA – noted that bear-human interactions are additive

ADFG – regarding Mulchatna Caribou Herd (rows 544, 724), concerned that interpretation of radio collar data was not appropriate in the DEIS

AECOM – noted that the intent of the radio collar data has been disclosed in the document

Action Item noted that construction of transportation corridors could increase subsistence harvest of caribou

NPS – asked about the new alternative at Eagle Bay, which is a shallower freshwater environment and thus more susceptible to the establishment of invasive species

Action Item – AECOM/USACE to ensure that impact analysis addressed the greater potential for invasive species (freshwater aquatic nonnative species) establishment at Eagle Bay

- Wetlands

SOC: *Wetlands – Wetlands-Downstream-Indirect Effects (row 715)*

AECOM – introduced topic, explained that field-verified mapping is now available for entire analysis area, and that indirect impacts from fugitive dust, fragmentation, and dewatering are now evaluated

EPA – asked how indirect effects are being characterized, is it purely by acreage or are you able to capture the level of functional impairment

AECOM – explained that there isn't a functional assessment as there is no accepted methodology for this ecoregion of Alaska, as an alternative the acreage of hydrogeomorphic type has been quantified, impacts also presented by relative abundance of wetland type within the watershed

AECOM – explained that indirect impact to wetland function was evaluated through the intersection between indirect footprints and wetland type, which allows a semi-quantitative evaluation in so far that we can talk about wetland type and hydrogeomorphic (HGM) class and area and then tie the intersection of wetland type and HGM to function and the relative abundance of wetland type within a watershed. In this way we can talk about the percent of functional decrease on the watershed scale

EPA – asked about dust, how dust impacts were being evaluated, asked specifically if the amount of dust deposition being measured

AECOM – explained that literature sources provided by the NPS and others have been incorporated into the document; explained that area of dust deposition is defined but not the amount of dust deposited within that zone. Gave further explanation on how indirect impacts due to dust deposition are being evaluated, specifically noting plant community shifts being greater in acidic plant communities and non-vascular species being more susceptible to dust.

Action Item – EPA to provide dust references to AECOM/USACE

EPA – regarding (row 717), asked how the nature and degree of these indirect impacts to wetlands have been characterized, are all indirect impacts treated as equal?

AECOM – explained that the nature of impact is captured by wetland type, and that the degree of impact is captured in areas of impact, suggested that the SOC response should be revised.

Action Item – AECOM/USACE to revise SOC response (row 717) from 'magnitude' to 'extent'

NPS – asked if the impact of concentrate dust is evaluated

AECOM – yes, but at the mine site only because of proposed mitigation for concentrate hauling on the

Agenda/Discussion

transportation corridor

ADFG – asked why a wetland functional assessment is not being performed when one was conducted at (nearby) Chuitna

USACE – explained the relative usefulness of functional assessments in the context of compensatory mitigation, if required. Noted that the lack of a functional assessment could potentially increase the compensatory mitigation imposed on the applicant.

USFWS – asked if impacts to wetlands at the mine site will be separated from impacts along the transportation corridor

AECOM – yes.

Afternoon Session – Parking Lot and Wrap Up

- Parking lot and wrap up

EPA – would like to see more time spent on SOC in (rows 705-708); and would like to request a meeting to discuss RFI 21e, RFI 21g water quality model, RFI 109f, RFI 145, and the AECOM technical memo (to be delivered next Wednesday)

USACE and EPA to figure out when RFIs will be delivered, how much time needed to review, and when folks are available to discuss.

EPA – asked if notes will stay in draft form, noted interest in the Monitoring and Adaptive Management Plan (RFI 135), thanked the group for respectful discussion, and for the work done thus far

USACE – yes, notes will stay in draft as they are meant to be used as working group notes, seconded EPA's appreciation for group effort

NPS – voiced concern about ferry passing shallow island areas in Lake Iliamna and potential for the ferry to spread any future infestation of freshwater aquatic invasive species

Action Item – AECOM/USACE to address potential for nonnative species spread by ferry within Lake Iliamna, noting the greater susceptibility of shallow lake environment at Eagle Bay and around islands at the north east end of the lake

- Closing statement

Action Items

Topic	Actions
Wildlife - Bears	AECOM/USACE to add suggested mitigation measure to Appendix M (Table M-1) for updated denning surveys prior to construction.
Wildlife - Bears	AECOM/USACE to revisit analysis area for wildlife to make sure it is appropriate for mobile species.
Wildlife - Bears	ADF&G to provide example(s) of successful wildlife interaction plan to EIS team.
Wildlife – Bears – McNeil River State Game Sanctuary	AECOM/USACE to verify that the SoA's DEIS comment regarding a statement in EIS about why the McNeil River State Game Sanctuary was developed has been addressed. Specific language to clarify establishment was previously provided.
Wildlife – Wildlife Interaction Plan	AECOM/USACE to revise response to SOC 749 to clarify that RFI 122 is not a written Wildlife Interaction Plan. The RFI response outlines some measures in the response and a commitment to prepare a written plan in the future.
Wildlife - General	AECOM/USACE to verify discussion on impacts from the transportation corridor resulting in potential increase in caribou harvest.
Wildlife – Invasive Species	Address susceptibility of shallow areas in Iliamna lake (Eagle Bay and Island archipelago at the NE end of the lake) to the establishment of freshwater aquatic invasive species and the potential for their spread by ferry traffic.
Wetlands	Revisit response to SOC row 717 to clarify how the degree of impact to wetlands functions is being characterized in the EIS, explain the consequences for compensatory mitigation due to the lack of a functional assessment.
Wetlands	EPA to provide additional dust references to EIS team

Additional Notes

Reschedule discussion with cooperating agencies on the topics of commercial and recreational fisheries, public health, and aesthetics; target the 3rd week of December.

USACE and EPA to work together to identify list of topics from the parking lot and outstanding RFIs and schedule a follow-up discussion (target date TBD). Other cooperating agencies to be invited to the discussion/meeting when scheduled.

DRAFT