



US Army Corps
of Engineers

Pebble Project EIS

Final Environmental Impact Statement

July 2020

www.PebbleProjectEIS.com

Section 508 of the Rehabilitation Act of 1973 requires that the electronic version of this Final Environmental Impact Statement (EIS) is accessible to persons with disabilities. The Section 508 standards discourage the use of color alone to convey information, but the Final EIS contains complex figures and maps that use color to convey the geographical extent of resources and other information owing to the amount of information conveyed. Additionally, several of the appendices were prepared by the Applicant and may not be fully compliant. Any individual that experiences difficulty accessing the data or information presented in this Final EIS may obtain alternative means of access that allows the individual to use the information and data by contacting the Pebble Project EIS program manager at: 907-753-2715.

PEBBLE PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT

VOLUME 1: CHAPTERS 1 AND 2

JULY 2020

US Army Corps of Engineers

Alaska District

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www.PebbleProjectEIS.com



DEPARTMENT OF THE ARMY
ALASKA DISTRICT, US ARMY CORPS OF ENGINEERS
REGULATORY DIVISION
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Regulatory Division
POA-2017-271

Re: Release of the Pebble Project Final Environmental Impact Statement

Dear Reader:

Enclosed is the Pebble Project Final Environmental Impact Statement (FEIS). The United States Army Corps of Engineers (USACE) received a permit application (POA-2017-271) from Pebble Limited Partnership (the Applicant), on December 22, 2017, for the placement of fill in waters of the US and work in navigable waters of the US for developing the Pebble deposit, pursuant to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act.

The Applicant proposes to develop the Pebble copper-gold-molybdenum porphyry deposit (Pebble deposit) as a surface mine in Southwest Alaska near Iliamna Lake, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The closest communities are the villages of Iliamna, Newhalen, and Nondalton, each approximately 17 miles from the Pebble deposit. The project would include development of the open pit mine, with associated infrastructure to include a 270-megawatt power generating plant. A natural gas pipeline from the Kenai Peninsula across Cook Inlet to the mine site is proposed as the energy source for the mine. The transportation corridor includes mine and port access roads and a port facility on the western shore of Cook Inlet.

The FEIS describes the proposed Pebble Project, as detailed in the permit application and subsequent Applicant-provided information. It also describes the regulatory processes that guide the project review by USACE and cooperating agencies. The FEIS describes the project scoping process and the key issues that were raised by interested parties, as well as the project's purpose and need. A range of reasonable alternatives was developed based on the purpose and need and input from the scoping process; the alternatives development process is discussed in the FEIS. The document provides information on environmental resources in the EIS analysis area, and an evaluation of the potential environmental effects of all project alternatives. The FEIS also presents the Applicant's proposed mitigative measures, which have been incorporated into the project design.

On July 24, 2020 a Notice of Availability for the FEIS was published in the Federal Register. The FEIS provides agency decision makers with the scientific basis for their permitting decisions.

Where and How to Access the Document

You may access the document on the internet at:

<https://pebbleprojecteis.com>.

Requests for an electronic copy of the FEIS can be made to:

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P.O. Box 6898
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An electronic version of the FEIS document may also be viewed at the following public libraries:

- Alaska Resources Library and Information Services, Anchorage
- Bristol Bay Borough Libraries (serving King Salmon, Naknek, and South Naknek)
- Dillingham Public Library, Dillingham
- Georgetown University, Washington, DC
- Homer Public Library, Homer
- Kenai Community Library, Kenai
- Soldotna Public Library, Soldotna
- University of Alaska/Alaska Pacific University Consortium Library, Anchorage
- Z.J. Loussac Public Library, Anchorage

For further information, contact:

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LIST OF APPENDICES

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Appendix M	Mitigation
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	M3.0: Restoration Plan
	M4.0: Reclamation and Closure Plan
Appendix N	Project Description

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LIST OF ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
µeq/l	micro-equivalent per liter
µg	microgram
µm	micrometer
µg/m ²	micrograms per square meter
µg/m ² /y	micrograms per square meter per year
µN/m ²	microNewtons per square meter
µPa	microPascals
µS	microSiemens
AAAQS	Alaska Ambient Air Quality Standards
AAC	Alaska Administrative Code
AAQS	Alaska Ambient Air Quality Standards
ABA	acid base accounting
ACCS	Alaska Center for Conservation Science
ACS	American Community Survey
ADCCED	Alaska Department of Commerce, Community and Economic Development
ADCP	acoustic Doppler current profiler
ADEC	Alaska Department of Environmental Conservation
ADEED	Alaska Department of Education and Early Development
ADF&G	Alaska Department of Fish and Game
ADHSS	Alaska Department of Health and Social Services
ADNR	Alaska Department of Natural Resources
ADOL	Alaska Department of Labor and Workforce Development
ADOT&PF	Alaska Department of Transportation and Public Facilities
ADPS	Alaska Department of Public Safety
ADSP	Alaska Dam Safety Program
AEIC	Alaska Earthquake Information Center
AFBT	Alaska Fisheries Business Tax
AKEPIC	Alaska Exotic Plant Information Clearinghouse
AMHS	Alaska Marine Highway System
amsl	above mean sea level
ANCSA	Alaska Native Claims Settlement Act

ANFO	ammonium nitrate and fuel oil
ANILCA	Alaska National Interest Lands Conservation Act
ANTHC	Alaska Native Tribal Health Consortium
AP	acid-generating potential
APD&T	Alaska Petroleum Distributors and Transporters
APDES	Alaska Pollutant Discharge Elimination System
APE	area of potential effects
APF	Alaska Permanent Fund
AQRV	air quality related value
AQS	air quality system
AR	Administrative Record
ARD	acid rock drainage
ARMP	Aquatic Resources Monitoring Plan
AS	Alaska Statute
ASCE	American Society of Civil Engineers
ASCI	Alaska Stream Condition Index
ASHSC	Alaska Seismic Hazards Safety Commission
AST	aboveground storage tank
ATSDR	Agency for Toxic Substances and Disease Registry
ATV	all-terrain vehicle
AVCP	Association of Village Council Presidents
AVO	Alaska Volcano Observatory
AWAC	acoustic wave profiler
AWC	Anadromous Waters Catalog
BA	Biological Assessment
BACT	best available control technology
BAFs	bioaccumulation factors
BATF	Bureau of Alcohol, Tobacco, and Firearms
BBEDC	Bristol Bay Economic Development Corporation
BBS	breeding bird survey
bbl	barrel(s)
BBNC	Bristol Bay Native Corporation
BCR	bird conservation region
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management

BMI	benthic macroinvertebrate
BMP	best management practice
BSCF	billion standard cubic feet
BSEE	Bureau of Safety and Environmental Enforcement
ca.	circa
CAA	Clean Air Act
Caltrans	California Department of Transportation
CASA	Community and System Analysis
CASTNet	Clean Air Status and Trends Network
CBJ	City and Borough of Juneau
CEQ	Council on Environmental Quality
CFEC	Commercial Fisheries Entry Commission
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGP	construction general permit
CH ₄	methane
CIBS	Cook Inlet Beluga Whale Stock
CIRI	Cook Inlet Region, Inc.
cm	centimeter
CMP	Compensatory Mitigation Plan
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ -e	equivalence to CO ₂ , CO ₂ equivalent
COPCs	chemicals of potential concern
CRMP	Cultural Resources Management Plan
C _s	speed constants
CTI	Community Tolerance Index
CWA	Clean Water Act
CWD	contact water dam
CY	cubic yards
D	dominant
DA	Department of the Army
dB	decibels
dBA	A-weighted decibel
DD	doubling of distance

DEIS	Draft Environmental Impact Statement
DEM	digital elevation model
DO	dissolved oxygen
DPS	distinct population segment
DST	dry stack tailings
dv	deciviews
DWPA	Drinking Water Protection Area
EBD	Environmental Baseline Document
ECIBSA	Expanded Cook Inlet Baseline Study Area
EFH	essential fish habitat
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERA	ecological risk assessment
ESA	Endangered Species Act
ESCP	erosion and sediment control plan
ESS	Exploratory Soil Survey of Alaska
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FDCP	Fugitive Dust Control Plan
FEIS	Final Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
FLPMA	Federal Land Policy and Management Act
FMEA	failure mode effects analysis
FMP	Fishery Management Plan
FoS	Factor of Safety
FPPA	Farmland Protection Policy Act
FR	Federal Register
FRP	Facility Response Plan
ft	foot/feet
ft ³	cubic feet
ft/yr	feet per year
FTA	Federal Transit Administration
FWD	fresh water dam
FWDD	fresh water diversion dam
g	gravity

gpd	gallons per day
G2G	government-to-government
GCMs	global circulation models
GHG	greenhouse gas
GIS	Geographic Information System
GMU	game management unit
gpd	gallons per day
gpm	gallons per minute
GPS	global positioning system
HAP	hazardous air pollutant
HDD	horizontal directional drilling
HDPE	high-density polyethylene
HEC	health effects category
HFCs	hydrofluorocarbons
Hg	mercury
Hg ⁰	elemental mercury vapor
Hg ^{II}	gaseous divalent mercury
HGM	hydrogeomorphic
Hg _P	particulate-bound mercury
HgS	cinnabar
HIA	Health Impact Assessment
HIRL	high-intensity runway lighting
HQ _{LOAEL}	hazard quotients low adverse effect level
HQ _{NOAEL}	hazard quotient no observable adverse effect level
HQs	hazard quotients
HUC	hydrologic unit code
Hz	hertz
IBA	important bird area
IDF	inflow design flood
ILF	in-lieu fee
ILS	Iliamna Lake Study
IMPROVE	Interagency Monitoring of Protected Environment
IPCC	Intergovernmental Panel on Climate Change
ISO	International Standards Organization
IWMP	Integrated Waste Management Permit

JROD	Joint Record of Decision
K	hydraulic conductivity
KC	Kaskanak Creek
kg	kilogram
kg/ha	kilograms per hectare
kgN/ha/yr	kilograms of nitrogen per hectare per year
kHz	kilohertz
km	kilometer
km ²	kilometer
KOP	key observation point
kPa	kilopascal
KPB	Kenai Peninsula Borough
kV	kilovolt
lb	pound(s)
LCI	Lower Cook Inlet
L _{DN}	day-night sound level
LEDPA	least environmentally damaging practicable alternative
LEO Network	Local Environmental Observer Network
L _{EQ}	equivalent sound level
LiDAR	Light Detection and Ranging
LLC	limited liability corporation
L _{max}	maximum L _{EQ}
LMPT	large mine permitting team
LNG	liquefied natural gas
long ton	a unit of weight equal to 2,240 pounds
LPB	Lake and Peninsula Borough
L _v	vibration level
m/s	meters per second
M	magnitude
m	meter
m ²	square meter
m ³	cubic meter
MAAT	mean annual air temperature
MBTA	Migratory Bird Treaty Act
MCE	maximum credible earthquake

MCL	maximum containment levels
MCO	mineral closing orders
MDE	Maximum Design Earthquake
MDN	marine-derived nutrients
MeHg	methylmercury
mg/kg	milligrams per kilogram
mg/m ²	milligrams per square meter
Mgal	million gallons
MHHW	mean high higher water level
MHW	mean high water
mi	miles
mi ²	square mile
MIRL	medium-intensity runway lighting
ML	Metal Leaching
MLA	Mineral Leasing Act
MLLW	mean lower low water
MLV	mainline valves
mm	millimeter
MMBtu/hr	million British thermal units per hour
MMPA	Marine Mammals Protection Act
MMT	million metric tons (1,000,000 tonnes)
MOA	memorandum of agreement
MODIS	moderate resolution imaging spectroradiometer
MP	milepost
mph	miles per hour
MS	Material Site
MSDS	Material Data Safety Sheet
MSFCM	Magnuson-Stevens Fishery Conservation and Management Act
MSHA	Mine Safety and Health Administration
MSL	mean sea level
MT	metric tonne (unit of weight equal to 1,000 kg (2,204.6 lb); see also tonne
MW	megawatt
MWh	megawatts per hour
N ₂ O	nitrous oxide
NA	not applicable

n/a	not available
NAAQS	National Ambient Air Quality Standards
NADP	National Atmospheric Deposition Program
NAG	non-acid generating
NASA	National Aeronautics and Space Administration
ND	not detected
NDM	Northern Dynasty Minerals, Ltd.
NEPA	National Environmental Policy Act
NERR	National Estuarine Research Reserve
NFK	North Fork Koktuli River
ng/g	nanograms per gram
ng/L	nanograms per liter
ng/m ³	nanograms per cubic meter
ng/scm	nanograms per standard cubic meter
NH ₃	ammonia
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service (also referred to as NOAA-Fisheries)
NO	nitric oxide
NO ₂	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOC	naturally occurring constituents
NOI	Notice of Intent
NO _x	oxides of nitrogen
NP	neutralization potential
NPAG	non-potentially acid generating
NPDES	National Pollution Discharge Elimination System
NPP	National Park and Preserve
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NRMS	normalized root mean square
NS	non-salmonoid fish species
NSR	Noise-sensitive receptor
NTU	Nephelometric Turbidity Units
NURE	National Uranium Resource Evaluation

NVE	not visually evident
NWI	National Wetlands Inventory
NWIS	National Water Information System
NWR	National Wildlife Refuge
NWS	National Weather Service
NWUS	navigable waters of the US
O ₃	ozone
OBE	Operating Basis Earthquake
ODPCP	Oil Discharge and Prevention Contingency Plan
OEG	optimal escapement goals
OHV	off-highway vehicle
OHW	ordinary high water
ORV	off-road vehicle
OSHA	Occupational Safety & Health Administration
PA	Programmatic Agreement
PAG	potentially acid generating
Pb	lead
PBF	physical or biological features
PCB	polychlorinated biphenyls
PCE	primary constituent elements
PCP	Project Communications Plan
PDO	Pacific Decadal Oscillation
PEL	probable effects level
pg/m ³	picograms per cubic meter
pga	peak ground acceleration
PILT	payment in lieu of taxes
PJD	Preliminary Jurisdictional Determination
PLP	Pebble Limited Partnership
PLSS	Public Land Survey System
PM	particulate matter
PM ₁₀	PM with an aerodynamic diameter less than or equal to 10 µm
PM _{2.5}	PM with an aerodynamic diameter less than or equal to 2.5 µm
PMF	probable maximum flood
PMP	probable maximum precipitation
POA	Port of Anchorage

POD	Plan of Development
POX	pressure oxidation
ppb	parts per billion
ppm	parts per million
PPV	peak particle velocity
PRM	permittee-responsible mitigation
PSD	Prevention of Significant Deterioration
psi	pounds per square inch
PSY	pipe and equipment storage yards
QA/QC	quality assurance/quality control
R.S.	Revised Statute
RCP	Reclamation and Closure Plan
Refuge	McNeil River State Game Refuge
RFFA	Reasonably Foreseeable Future Actions
RFI	Request for Information
RHA	Rivers and Harbors Act
RMR	rock mass rating
RMS	root mean square
ROD	Record of Decision
ROW	right-of-way
RS	resident salmonoids
RSL	regional screening levels
RSW	refrigerate seawater
SAG	semi-autogenous grinding
Sanctuary	McNeil River State Game Sanctuary
SCP	seepage collection pond
SDH	social determinants of health
SDI	Shannon's Diversity Index
SDWA	Safe Drinking Water Act
SEL	sound exposure level
sf	square feet
SF ₆	sulfur hexafluoride
SFK	South Fork Koktuli River
short ton	unit of weight equal to 2,000 lb
SHPO	State Historical Preservation Office

SNAP	Scenarios Network for Alaska + Arctic Planning
SO ₂	sulfur dioxide
SPCC	spill prevention control and countermeasure
SPCS	State Pipeline Coordinator's Section
SPL	sound pressure level
sq. km	square kilometer(s)
sq. m	square meter(s)
sq. mi	square mile(s)
SQGs	sediment quality guidelines
SQRU	scenic quality rating unit
SRB&A	Stephen R. Braund and Associates
SRRP	stabilization, rehabilitation, and reclamation plan
SRS	seepage recovery system
STATSGO	State Soil Geographic dataset
SWAN	simulating waves nearshore
SWAP	source water assessment and protection
SWHS	Statewide Harvest Survey
SWIP	shallow water ice profile
SWPPP	stormwater pollution prevention plan
t	ton; also called short ton (both mean 2,000 lb)
TCP	Traditional Cultural Property
TDML	total maximum daily load
TDS	total dissolved solids
TEK	traditional ecological knowledge
TEL	thresholds effects level
TES	Threatened and Endangered Species
TOC	total organic carbon
tonne	unit of weight equal to 1,000 kg (2,204.6 lb); see also metric tonne
tpd	tons per day
tpy	tons per year
TSF	Tailings Storage Facility
TSS	total suspended solids
TUP	Temporary Use Permit
TWUA	Temporary Water Use Authorization
UAA	University of Alaska Anchorage

UCI	Upper Cook Inlet
UCRC	Ursus Cove and Rocky Cove
US	United States
USACE	US Army Corps of Engineers
USC	US Code
USCG	US Coast Guard
USDA	US Department of Agriculture
USDOl	US Department of Interior
USDOT	US Department of Transportation
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
USPS	US Postal Service
UTC	Upper Talarik Creek
UTM	Universal Transverse Mercator
VE	visually evident
VdB	vibration decibels
VOC	volatile organic compound
VPSO	Village Public Safety Officer
VS	visually subordinate
WBM	water balance model
WELTS	well log tracking system
WMP	water management pond
WMRP	water resource management plan
WQS	water quality standards
WRF	Waste Rock Facility
WTP	water treatment plant
yd ³	cubic yards

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1.0 PURPOSE AND NEED

1.1 INTRODUCTION

The United States (US) Army Corps of Engineers (USACE), Alaska District, Regulatory Division is examining the potential environmental impacts associated with Pebble Limited Partnership's (PLP) proposed project, as described in PLP's Department of the Army (DA) Permit application (POA-2017-271). In its application, PLP has asked for authorization to discharge fill material into waters of the US (WOUS) and for work in and the placement of structures in navigable waters of the US (NWUS) for the purpose of developing a copper-gold-molybdenum porphyry deposit (Pebble deposit). PLP's proposed mine location is in southwest Alaska, near Iliamna Lake, approximately 200 miles southwest of Anchorage and 60 miles west of Cook Inlet. The mine site and a majority of the proposed supporting infrastructure would be located in the Lake and Peninsula Borough (LPB), with the remainder of supporting infrastructure located in the Kenai Peninsula Borough.

1.2 APPLICATION DESCRIPTION

PLP has applied for authorization to discharge dredged and fill material into WOUS as part of its proposed development of the Pebble deposit. DA authorization for the discharge of dredged and fill material into WOUS is required by Section 404 of the Clean Water Act (CWA) (33 US Code [USC] 1344). PLP has also applied for authorization to work in and to place structures in NWUS. DA authorization for work and placement of structures in, over, or under NWUS is required by Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403). The application submitted by PLP on December 22, 2017, was determined complete in compliance with USACE regulations at 33 Code of Federal Regulations (CFR) Part 325.1(d). PLP has continued to identify opportunities that would reduce impacts to aquatic resources and to incorporate these avoidance and minimization measures into the project design.

PLP proposes discharges into WOUS and work in and placement of structures in NWUS in order to develop and operate an open-pit mine and associated ore processing facilities for the purpose of producing copper, gold, molybdenum, and other commodities for sale. Additional elements necessary for this purpose, identified in the application include: the construction of an 82-mile road from the mine site to a port facility; a port facility near Diamond Point; a lightering location in Iniskin Bay; a 164-mile natural gas pipeline originating on the Kenai Peninsula and extending across Cook Inlet to the port facility, following the transportation corridor, and terminating at the mine site; a 164-mile fiber optic cable paralleling the natural gas pipeline; concentrate and return water pipelines that follow the transportation corridor between the mine site and the port facility; and power generation facilities located at the mine and the port site. PLP states that the operating life of the resultant surface mine would be 20 years, that mine closure would last 20 years, and that post-closure monitoring activities would extend for many years thereafter. A more detailed summary of PLP's proposed project is provided in Chapter 2, Alternatives; the project description is provided in Appendix N.

1.3 FEDERAL DECISIONS TO BE MADE

DA authorization is required for the proposed permanent discharges of dredged or fill material into 2,231 acres and temporary discharge of fill into 773 acres of WOUS associated with construction of the mine and associated roads, port, concentrate and return water pipelines, fiber optic cable, and natural gas pipeline in wetlands and other WOUS under Section 404 of the CWA. DA authorization is also required for the work and structures associated with construction of the

marine facilities at the port, segments of the transportation corridor access road near the port, a lightering location, fiber optic cable, and the natural gas pipeline, as well as dredging at the port facility, in NWUS. The USACE has set forth implementing regulations in 33 CFR Parts 320-332.

Through review of the application, USACE identified two additional federal decision-makers that would use the Environmental Impact Statement (EIS) to inform their decisions; the US Coast Guard (USCG), and the Department of the Interior's Bureau of Safety and Environmental Enforcement (BSEE). The USCG has authority under the General Bridge Act of 1946, as amended, 33 USC 525 to review and approve locations and navigational clearances of bridges and causeways in or over NWUS; USCG authorization is required for proposed bridges over the Newhalen River and the Iliamna River. The USCG has set forth implementing regulations in 33 CFR Parts 114-118. The BSEE oversees safety, environmental protection, and conservation of resources related to the exploration for and development of offshore resources on the Outer Continental Shelf; BSEE authorization is required for the right-of-way (ROW) encompassing the natural gas pipeline between the Kenai Peninsula and the proposed port facility, but only that portion of the ROW that would lie on the Outer Continental Shelf of Cook Inlet. This authority derives from the Outer Continental Shelf Lands Act, as implemented by BSEE regulations at 30 CFR Part 250, Subpart J.

The decisions to be made by the three federal agencies, if those decisions are to grant applicable permits, would not fully authorize mining of the Pebble deposit because a number of activities proposed to be part of the project do not fall under federal authority. The State of Alaska has authority over many activities including, but not limited to: approval to construct the dams required for the tailings storage facilities and other impoundments, air and water discharges, Plan of Operations, Reclamation and Closure Plan, and the Waste Management Plan. For proposed roads and natural gas pipelines on state lands, PLP must also apply for and receive ROW leases from the State of Alaska. PLP must apply for and receive a number of additional federal, state, and local permits and approvals. Permit decisions by federal, state, and local governments are usually made independently of each other. In general, permit decisions are not dependent on another permit in order to be issued. One exception is that USACE may not issue a permit under Section 404 of the CWA if the State of Alaska denies a water quality certification for the proposed project. A list of permits, approvals, and consultations required for development and operation of the proposed project is provided in Appendix E.

1.4 ENVIRONMENTAL ANALYSIS

The USACE has determined that the proposed discharge of fill material into WOUS and/or work in and placement of structures in NWUS associated with PLP's application is a major federal action that could significantly affect the quality of the human and natural environment. Based on this determination, this EIS has been prepared under Section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969 (42 USC 4321 et seq.) and its implementing regulations promulgated by the Council on Environmental Quality (CEQ) (40 CFR Parts 1500-1508), and USACE regulations found at 33 CFR Part 325 Appendix B, NEPA Implementation Procedures for the Regulatory Program. NEPA procedures are designed to ensure that federal agencies identify and assess the reasonable alternatives to proposed actions, along with the environmental consequences of a proposed action and reasonable range of alternatives, in order to avoid or minimize the adverse effects of those actions upon the quality of the human environment. NEPA requires analysis and disclosure of potential impacts of the entire proposed project, including construction, operations, closure, and post-closure phases of the mine, transportation corridor, port, and natural gas pipeline. However, not all activities or potential impacts described in this EIS are within federal authority.

Information gathered as part of the NEPA process will be used to inform USACE's public interest review determination, required by 33 CFR Part 320.4. Information will also be used by USACE to make a determination of the least environmentally damaging practicable alternative (LEDPA) under the CWA's Section 404(b)(1) Guidelines and any appropriate required compensatory mitigation for unavoidable impacts to WOUS. No discharges of dredged or fill materials are permitted to be authorized by USACE under the CWA if there is a practicable alternative that would have less adverse impact on the aquatic ecosystem, as long as the alternative does not have other significant adverse environmental consequences.

An EIS is used to inform the public and agency decision-makers, but it is not a decision document. A joint Record of Decision (ROD) by the USACE and USCG, issued at the conclusion of the NEPA process, will record each appropriate federal agency's decision(s), identify the alternatives considered in reaching those decision(s), and identify practicable means to avoid or minimize environmental harm (if required).

As the lead federal agency under NEPA, USACE issued a Notice of Intent (NOI) to prepare an EIS and a Notice of Scoping for the Pebble Project was published in the Federal Register (FR) on March 29, 2018 (83 FR 13483; page 13483-13484). The scoping comment period was extended by 60 days to continue through June 29, 2018. Nine public meetings were held during the scoping period. A total of 174,889 submissions were received through June 29, 2018. Details on the scoping process can be found in the Scoping Report (Appendix A).

The Notice of Availability (NOA) of the Draft EIS was published in the FR on March 1, 2019 (84 FR 41; page 7049). The comment period was extended to continue through July 1, 2019. Nine public hearings were held during the comment period. Dates and locations of the public hearings are listed in Chapter 6, Consultation and Coordination. A total of 311,885 submissions were received during the comment period. A summary of comments received on the Draft EIS and responses to comments can be found in the Comment Analysis Report (Appendix D).

The USACE coordinated this EIS with multiple cooperating agencies, which are defined as those agencies with jurisdiction by law or special expertise with respect to any environmental impact involved in a proposed project or its reasonable alternatives. Cooperating agencies may include state or local agencies and Tribal governments. The USACE invited USCG, BSEE, and other federal and state agencies, local governments, and federally recognized tribes to become cooperating agencies based on their special expertise and/or jurisdiction by law. The USCG, BSEE, the Advisory Council on Historic Preservation, the US Fish and Wildlife Service (USFWS), the US Environmental Protection Agency (EPA), the US Department of Interior National Park Service (NPS), the US Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA), the State of Alaska, the LPB, the Curyung Tribal Council, and the Nondalton Tribal Council accepted invitations to become cooperating agencies. A summary of consultation and coordination with agencies can be found in Chapter 6, Consultation and Coordination.

1.5 PURPOSE AND NEED

A permit applicant's stated purpose and need is used as part of the NEPA process to inform the reasonable alternatives to a proposed action that are evaluated in an EIS. PLP is wholly owned by Northern Dynasty Mineral Ltd. and was established to design, permit, construct, and operate a mine at the Pebble deposit. PLP's stated purpose is to produce commodities, including copper, gold, and molybdenum, from the Pebble deposit in a manner that is commercially viable, using proven technologies that are suitable for the project's remote location. This purpose addresses PLP's stated need "to meet the increasing global demand for commodities such as copper, gold, and molybdenum." According to PLP, because the area PLP has leased for mineral development

is not served by existing infrastructure, achieving the project purpose requires the construction of facilities for the mining and processing of mineral-bearing rock, as well as construction of support and access infrastructure. The stated purpose of the natural gas pipeline from the Kenai Peninsula is to provide a long-term stable supply of natural gas to meet the energy needs of the project by connecting to the existing regional gas supply network.

Separate from the analysis in the EIS, USACE evaluates an applicant's stated purpose and need to consider a proposed project from the public's perspective (under the public interest review criteria). The public interest review evaluation is being developed with information contained in the EIS and will be appended to the ROD. Although USACE generally focuses on an applicant's statement, USACE, in all cases, exercises independent judgment in defining the purpose and need from both the applicant's and public's perspective.

From the broad, macroeconomic scale, the stated project need is reflected in the demand for copper, gold, and molybdenum. In 2019, the US consumed an estimated 2,039,276 tons of refined copper (USGS 2020c). Worldwide copper usage has tripled over the last 50 years and growth in the worldwide demand for copper is projected to continue (ICSG 2019). Copper is used in a variety of products and industries, including electrical and electronic products, industrial equipment, building construction, automobiles, and appliances.

Gold is used for the production of jewelry, electronics, and electrical components, official coins, and other uses (USGS 2005). In 2019, the United States consumed an estimated 165 tons of gold. (USGS 2020d). Worldwide, 412 tons of gold were consumed in 2016 (USGS 2019). Worldwide consumption of gold grew by almost 8 percent per year between 1980 and 1999, and by an average of 2.8 percent per year between 1992 and 2002 (USGS 2005).

The most common use of molybdenum is the production of alloy steels and superalloys, enhancing hardness, strength, and resistance to corrosion. Examples of uses of these alloys include in food handling equipment, in automobile parts, in construction equipment, and in heavy construction (USGS 2010). The average reported amount of molybdenum used in the United States between 2015 and 2018 was 18,602 tons. In 2019, the United States used an estimated 18,739 tons of molybdenum (USGS 2020e).

The USACE has determined that PLP's stated purpose is made too narrow by limiting the proposed development to the Pebble deposit. The public's interest in commodities such as copper, gold, and molybdenum does not dictate a particular source of these commodities and the public has also expressed interest in protecting the state's natural resources, such as fisheries. Additionally, although PLP has identified a need for these minerals and USACE assumes that a private applicant has completed appropriate economic evaluations and proposed a project that is needed in the marketplace, the primary minerals—copper, gold, and molybdenum—are not mineral commodities considered to be critical to the economic or national security of the United States as reflected in the national policy, "A Federal Strategy to Ensure a Reliable Supply of Critical Minerals." However, the public also has an interest in improving the economy of the state, in the creation of jobs in the state, and in the extraction of natural resources for the benefit of the state. This is demonstrated by scoping comments, which indicated a desire to bring economic opportunity and jobs to the region, as well as by policy language in the Alaska State Constitution and Alaska Statutes encouraging development of the state's mineral resources consistent with the public interest.

After evaluating an applicant's stated purpose and need from both the applicant's and the public's perspective, the USACE determines a proposed project's basic and overall purposes solely for evaluation of the project under the CWA 404(b)(1) Guidelines. A basic project purpose (typically general in scope) is used to determine if a project is water dependent. The USACE has determined that the basic project purpose is to mine mineral ore. An overall project purpose is

used to help identify practicable alternatives (i.e., those that are available and capable of being done after taking into consideration cost, existing technology, and logistics) for evaluation under the CWA 404(b)(1) Guidelines. The USACE has determined that the overall project purpose is to develop and operate a copper, gold, and molybdenum mine in Alaska to meet current and future demand.

In many instances, for actions subject to NEPA (such as USACE's evaluation of PLP's permit application), the analysis of alternatives in an EIS provides the information used by USACE for evaluation of alternatives under the CWA 404(b)(1) Guidelines. In review of PLP's permit application, USACE has determined that the construction of facilities and other infrastructure to support the proposed project is more appropriately evaluated as part of the alternatives and does not require specific inclusion in the basic or overall project purposes. Sometimes, an EIS may address a broader range of alternatives than required to be analyzed under the CWA 404(b)(1) Guidelines. The CWA 404(b)(1) Guidelines analysis is being developed with information contained in this EIS and will be included as an attachment to the ROD.