Pebble Project

NORTHERN DYNASTY MINES INC.

# PEBBLE PROJECT

## Application for Groundwater Right

## Unnamed Tributary (NK1.190)

## *North Fork Koktuli River*

**SEPTEMBER 21, 2006**

Pebble Project

NORTHERN DYNASTY MINES INC.

**3201 C Street, Suite 604**
**Anchorage, AK**
**USA 99503**

**Tel (907) 339-2600**
**Fax (907) 339-2601**
**Toll Free 1 (877) 450-2600**
**http://www.northerndynasty.com**

September 21, 2006

Mr. Thomas Crafford
Large Mine Coordinator
Alaska Department of Natural Resources
Water Resources Section
550 West 7th Avenue, Suite 920
Anchorage, AK 99501-3562

Re: *Unnamed Tributary (NK1.190) North Fork Koktuli River* Groundwater Right Application

Dear Mr. Crafford:

On July 7, 2006, Northern Dynasty Mines Inc. (NDM) submitted an application for water right for the Unnamed Tributary (NK1.190) North Fork Koktuli River to the Department of Natural Resources (DNR). On July 26, 2006, following an application completeness analysis, DNR requested additional information. DNR provided a list of regulatory provisions to be addressed by NDM in a supplemental submission, with explanatory information related to these provisions.

With respect to 11 AAC 93.040(c)(7), DNR explained that NDM must submit separate applications for groundwater and surface water rights in a given drainage. The department then determined that it considers NDM's July 7, 2006 application for water right in the South Fork Koktuli River to be a surface water right application. Thus, the purpose of this letter is to transmit a separate groundwater right application for the Unnamed Tributary (NK1.190) North Fork Koktuli River, for that portion of the water that will be diverted as groundwater from the Unnamed Tributary (NK1.190) North Fork Koktuli River.

The enclosed application for a groundwater right is submitted jointly by Northern Dynasty Mines Inc. and Northern Dynasty Holdings Inc. The mining claims that constitute the Pebble Project are held either by Northern Dynasty Holdings Inc. or its sister corporation, Northern Dynasty Mines Inc. These two Alaska corporations are submitting this application to secure rights to the supply of water needed for the beneficial mining uses described in this application for the Pebble Project northwest of the community of Iliamna.

Northern Dynasty Mines Inc. is and will continue to be the entity that will carry out exploration, development and administrative work relating to the Pebble Project, including ingress and egress as necessary to withdraw, impound, divert and transport water of the State of Alaska. Therefore, NDMI and NDHI are referred to, collectively, for purposes of this application, as "Northern Dynasty Mines Inc." Each of the two entities accepts any and all responsibility and liability arising out of applying for, acquiring and holding the water right associated with this application.

Submitted with this application is a Coastal Project Questionnaire (CPQ) and an evaluation of how the proposed project is consistent with the state and district standards of the ACMP. Based on DNR's July 26, 2006, application completeness analysis at 11 AAC 93.040(c)(15), the CPQ and consistency evaluation address only the water right applications (Phase I) of the Pebble Project.

We understand that the fee required under Alaska law for this application is to be set by negotiation. With this application, NDMI submits a check in the amount of $900 as a deposit to be applied to the fee that will be negotiated for processing this application. We are prepared to work with you to develop a fee schedule for mining projects as you determine the reasonable fee for this project, specifically.

This groundwater right application is being submitted simultaneously with two other groundwater right applications. These three water rights are needed for a supply of water for the beneficial mining uses described in these applications.

Please contact me in the Anchorage office of NDMI, 339-2606 if you have any questions with regard to this application.

Your continued efforts in adjudicating this application are very much appreciated.

Sincerely,

Northern Dynasty Mines Inc.

Michael C. T. Smith

Michael C. T. Smith
NEPA and Permitting Manager

Northern Dynasty Holdings Inc.

Bruce W. Jenkins
Authorized Officer

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

**Application for *Groundwater* Right**

***Unnamed Tributary (NK1.190)***
***North Fork Koktuli River***

**CONTENTS**


Cover letter

Contents

Items requested by ADNR form: Application for Water Right:

| Tab | Document |
|---|---|
| 1. | Completed Application |
| 2. | Possessory Interest Document |
| 3. | Legal Access Document |
| 4. | Driller's Well Log |
| 5. | Project Description |
| 6. | Map |
| 7. | ADEC Wastewater System Certificate |
| 8. | ADNR Fish Habitat Permit |
| 9. | Statement of Beneficial Use |

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

**Application for *Groundwater* Right**

***Unnamed Tributary (NK1.190)***
***North Fork Koktuli River***

## APPLICATION BINDER INTRODUCTION

This binder contains a stand alone application for a groundwater right for the Unnamed Tributary (NK1.190) North Fork Koktuli River. It is one of three groundwater applications being simultaneously submitted by Northern Dynasty Mines Inc. for its Pebble Project.

This binder is organized based on the formal Department of Natural Resources four-page "Application for Water Right." The instructions on page 1 of the application list 11 items that are to be submitted in support of the application. Thus, this binder contains 11 major numbered tabs that correspond to each specific numbered instruction. Three of these tabs are followed by supporting tabs that contain information (e.g., attachments) specifically required for that tab.

Therefore, to understand the overall structure of this binder, and the order of the documents it contains, the reader should continually refer to the numbered instructions on page 1 of the formal DNR application.

**INSTRUCTION #1** – *Complete one application for each water source*

See DNR four-page application following this page.

DIVISION OF MINING, LAND AND WATER

# WATER RESOURCES SECTION

www.dnr.state.ak.us/mlw/water/index.htm

Alaska Department of NATURAL RESOURCES

| Anchorage Office<br>550 West 7th Avenue, Suite 1020<br>Anchorage, AK 99501-3562<br>(907) 269-8600<br>Fax: (907) 269-8947 | Juneau Office<br>PO Box 111020<br>400 Willoughby Avenue<br>Juneau, AK 99811-1020<br>(907) 465-3400<br>Fax: (907) 586-2954 | Fairbanks Office<br>3700 Airport Way<br>Fairbanks, AK 99709<br>(907) 451-2790<br>Fax: (907) 451-2703 | ***For ADNR Use Only***<br>***Date/Time Stamp*** |
|---|---|---|---|
| ***For ADNR Use Only***<br>***LAS #*** | ***For ADNR Use Only***<br>***CID #***<br>***CID #*** | ***For ADNR Use Only***<br>***Receipt Type WR*** | |

# APPLICATION FOR WATER RIGHT

*INSTRUCTIONS*

1. Complete one application for each water source (incomplete applications will not be accepted).
2. Attach copy of executed deed, lease agreement, or other possessory interest document for property where water will be used (applicant must own, lease, or obtain written authorization to use water on property).
3. Attach copy of legal access document (e.g. right-of-way, easement, permit) or application for legal access to water withdrawal point and transport route, if applicable, or copy of request or application for legal access to water withdrawal point.
4. Attach driller's well log for drilled wells (if already drilled and available).
5. Attach sketch, photos, plans of water system, or project description (if applicable).
6. Attach legible map that includes meridian, township, range, and section lines such as a subdivision plat, USGS topographical quadrangle, or borough tax map. Indicate location of water withdrawal, route of water transmission, water use area boundary, points of water use within boundary, and point of water return flow (if applicable).
7. Attach copy of approved ADEC water and wastewater system certificate (if applicable).
8. Attach copy of ADNR fish habitat permit (if applicable).
9. Attach notarized Statement of Beneficial Use of Water form and associated fee, if water system and water use are fully developed, and total water use does not exceed 500 gallons of water per day.
10. Attach completed Coastal Project Questionnaire (if applicable - see page 4).
11. Submit non-refundable fee (see page 4).

*APPLICANT INFORMATION*

Northern Dynasty Mines Inc.
Organization Name (if applicable)

Agent or Consultant Name (if applicable)

Individual Applicant Name (if applicable)

Individual Co-applicant Name (if applicable)

3201 C Street, Suite 604
Mailing Address

Anchorage
City

AK
State

99503
Zip Code

(907) 339-2600
Daytime Phone Number

Alternate Phone Number (optional)

(907) 339-2601
Fax Number (if available)

E-Mail Address (optional)

*PROPERTY DESCRIPTIONS*

**Location of Water Use**

| Subdivision Name or Survey Number | Lot, Block, or Tract | Meridian | Township | Range | Section | Quarter Sections | |
|---|---|---|---|---|---|---|---|
| See Attached | | | | | | ¼ | ¼ |

**Location of Water Source**

| Subdivision Name or Survey Number | Lot, Block, or Tract | Meridian | Township | Range | Section | Quarter Sections | |
|---|---|---|---|---|---|---|---|
| See Attached | | | | | | ¼ | ¼ |

**Location of Water Return Flow or Discharge (if applicable)**

| Geographic Name of Water Body or Well Depth | Meridian | Township | Range | Section | Quarter Sections | |
|---|---|---|---|---|---|---|
| Not Applicable | | | | | ¼ | ¼ |

*WATER SOURCE*

**Ground Water**

| Type (e.g. drilled, dug) | Total Depth (in feet) | Static Water Level (in feet) | Date Completed | Well Production Capacity |
|---|---|---|---|---|
| See Attached | | | | |

**Surface Water**

| Type (e.g. stream, lake, spring) | Geographic Name (if named) |
|---|---|
| | Unnamed Tributary (NK1.190) North Fork Koktuli River |

*METHOD OF TAKING WATER (IF KNOWN)*

**Pump** Pump Intake See Inches Hours Working See Attached Hours/Day
Pump Output Attached GPM Length of Pipe See Attached Feet (from pump to point of use)

**Gravity** Pipe Diameter See Inches Length of Pipe See Attached Feet (take point to point of use)
Head Attached Feet

**Ditch** L See H Attached W _____ Feet Diversion Rate See Attached ☐GPM or ☐CFS

**Reservoir** L See q H Attached W _____ Feet Water Storage See Attached AF

**Dam** L See H Attached W _____ Feet Water Storage See Attached AF

*AMOUNT OF WATER*

**Common Water Uses and Standard Amounts**

| Type of Use | How Many | | Standard Amounts | | Total Amount Requested | Months of Use | |
|---|---|---|---|---|---|---|---|
| | | | | | | Begin | End |
| Fully Plumbed Single-family Home (includes irrigation of 10,000 sq. ft.) | #_____Homes | X | 500 GPD | = | | | |
| Partially Plumbed Single-family Home (no hot water heater) | #_____Homes | X | 250 GPD | = | | | |
| Unplumbed Single-family Home (hand carry water) | #_____Homes | X | 75 GPD | = | | | |
| Duplex or Triplex | #_____Bldgs. | X | 1000 GPD | = | | | |
| Four-plex and Larger Housing | #_____Units | X | 250 GPD | = | | | |
| Motel or Resort | #_____Rooms | X | 150 GPD | = | | | |
| Work Camps | #_____People | X | 50 GPD | = | | | |
| Domestic Irrigation | #_____Sq. ft. | X | 250 GPD per 10,000 Sq. ft. | = | | | |
| Non-domestic Irrigation | #_____Acres | X | 0.5 AFY | = | | | |

**Other Water Uses**

| Type of Use | How Many | | Amount | | Total Amount Requested | Months of Use | |
|---|---|---|---|---|---|---|---|
| | | | | | | Begin | End |
| | | X | | = | | | |
| | | X | | = | | | |

| Type of Use | Total Amount Requested | Months of Use | |
|---|---|---|---|
| | | Begin | End |
| See Attached | 0.1 cfs | | |
| | | | |

Expected date for water system and water use to be fully developed ***or*** date when existing use started See Attached.
Note: Pursuant to AS 46.15.180(a)(1). Crimes, a person may not construct works for an appropriation, or divert, impound, withdraw, or use a significant amount of water from any source without a permit, certificate of appropriation, or authorization issued under this chapter.

11 AAC 93.040 sets out the required information on an application for a water right. 11 AAC 93.050 authorizes the commissioner to decide what additional information is needed to process an application for a water right. This information is made a part of the state public water records and becomes public information under AS 40.25.110 and 40.25.120. Public information is open to inspection by you or any member of the public. A person who is the subject of the information may challenge its accuracy or completeness under AS 44.99.310, by giving a written description of the challenged information, the changes needed to correct it, and a name and address where the person can be reached. False statements made in an application for a benefit are punishable under AS 11.56.210.

*SIGNATURE*

The information presented in this application is true and correct to the best of my knowledge. I understand that per 11 AAC 93.040 and 11 AAC 93.050 additional information may be required by the department to adjudicate this application. Failure to provide requested information could result in this file being closed.

| | |
|---|---|
| Signature | 8 Sept 06<br>Date |
| Bruce W. Jenkins<br>Name (please print) | Chief Operating Officer<br>Title (if applicable) |

*REFERENCES*

**Measurement Units**

GPD = gallons per day
CFS = cubic feet per second
GPM = gallons per minute
AF = acre-feet
AFY = acre-feet per year (325,851 gallons/year)
AFD = acre-feet per day (325,851 gallons/day)
MGD = million gallons per day

**Conversion Table**

| 5,000 GPD= | 30,000 GPD= | 100,000 GPD= | 500,000 GPD= | 1,000,000 GPD= |
|---|---|---|---|---|
| 0.01 CFS | 0.05 CFS | 0.2 CFS | 0.8 CFS | 1.5 CFS |
| 3.47 GPM | 20.83 GPM | 69.4 GPM | 347. 2 GPM | 694.4 GPM |
| 5.60 AFY | 33.60 AFY | 112.0 AFY | 560.1 AFY | 1120.1 AFY |
| 0.2 AFD | 0.09 AFD | 0.3 AFD | 1.5 AFD | 3.1 AFD |
| 0.01 MGD | 0.03 MGD | 0.1 MGD | 0.5 MGD | 1.0 MGD |

**Fees required by regulation 11 AAC 05.010(a)(8)**

- **$100** for one single-family residence or duplex, or for water use associated with one single-family residence or duplex
- **$1,200** for activities related to oil and gas and associated substances
- **Fee varies** for activities related to locatable minerals, unless the application is filed under 11 AAC 05.010(a)(9)(E)(i) or (9)(F)(i) - *contact Water Resources Section for pre-application meeting*
- **Fee varies** for hydroelectric power generation - *contact Water Resources Section for pre-application meeting*
- **Fee varies** for water removal out of a hydrologic unit under AS 46.15.035 or 46.15.037 - *contact Water Resources Section for pre-application meeting*
- **$200** for 5,000 GPD or less for a use not listed above
- **$450** for greater than 5,000 GPD and no more than 30,000 GPD for a use not listed above
- **$550** for greater than 30,000 GPD and no more than 100,000 GPD for a use not listed above
- **$900** for greater than 100,000 GPD for a use not listed above

Make checks payable to "Department of Natural Resources."

**Coastal Zone**

If this appropriation is within the Coastal Zone, and you are planning to use more than 1,000 GPD from a surface water source or 5,000 GPD from a subsurface water source, you need to submit a completed Coastal Project Questionnaire with this application. For more information on the Coastal Zone, contact the Office of Project Management and Permitting; Anchorage 269-7470, Juneau 465-3562, www.dnr.state.ak.us/acmp/.

# NORTHERN DYNASTY MINES INC.
# PEBBLE PROJECT

## Application for Groundwater Right

## ***Unnamed Tributary (NK1.190)***
## ***North Fork Koktuli River***

## ATTACHMENTS

### PROPERTY DESCRIPTIONS

The proposed mine site is located 17 miles northwest of the community of Iliamna, on the north side of Lake Iliamna. The Pebble mining claims constitute the entirety of the property which is both the location of water use, and the location of water source. At this time no return flow or discharge of water is anticipated during construction or operations.

These claims are listed at Tab 2 (Possessory Interest Document) of this application binder. The location of the claims block, showing the township and section designations, is presented on the figure titled “Schedule ‘A’ – Pebble Property.”

More specifically, the location of water use, and the location of groundwater resources, are within the Seward Meridian as follows:

T3S, R36W

Sections: 13-15, 22-27 and 34

The location of water use and source is identified on Figure NK1.190-1.

### WATER SOURCE

There would be one source of groundwater:

GEP-4 Tailings storage facility (TSF) seepage cutoff walls

This location is shown on Figure NK1.190-1, and is described in greater detail behind Tab #5 “Project Description” of this application.

### METHOD OF TAKING WATER

The dam structure for the TSF at Site G will be constructed such that it will extend into bed rock or other substantially impermeable layer and will intercept all groundwater flowing down the valley. Precipitation falling into the reservoir also will be captured.

### AMOUNT OF WATER

The estimated volume to groundwater to be extracted at GEP-4 is approximately 0.1 cfs

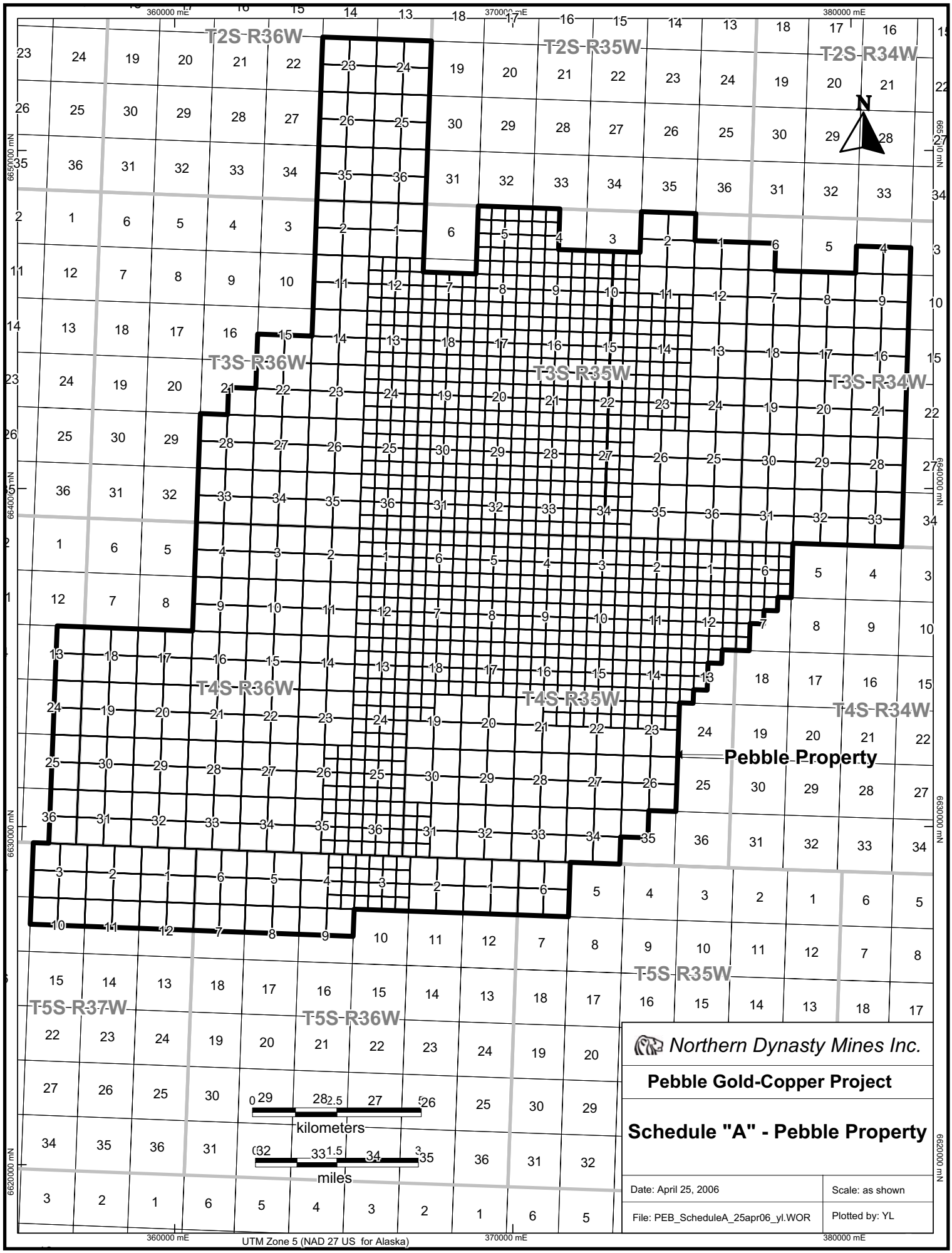
The basis for this volume of groundwater is discussed below in this “Attachments” tab section in the document titled Flow Estimates in Support of Groundwater Rights Application for Unnamed Tributary (NK1.190) North Fork Koktuli River. This 0.1 cfs volume figure will be better refined as NDM continues to gather data.

## TYPE OF USE

The nature (type) of water use is described in the document titled: Beneficial Uses for Appropriating Water that is located on the last page of this “Attachments” tab section. This information is also included behind Tab 5 “Project Description.” The water would be used all year (365 days).

## DATE OF USE

Based on the present project development schedule, the expected date for water use to begin is approximately June 2010. The expected date for water use to be fully developed (maximum amount) is approximately November 2012.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T2S-R34W
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T4S-R34W
T5S-R37W
T5S-R36W
T5S-R35W
Pebble Property
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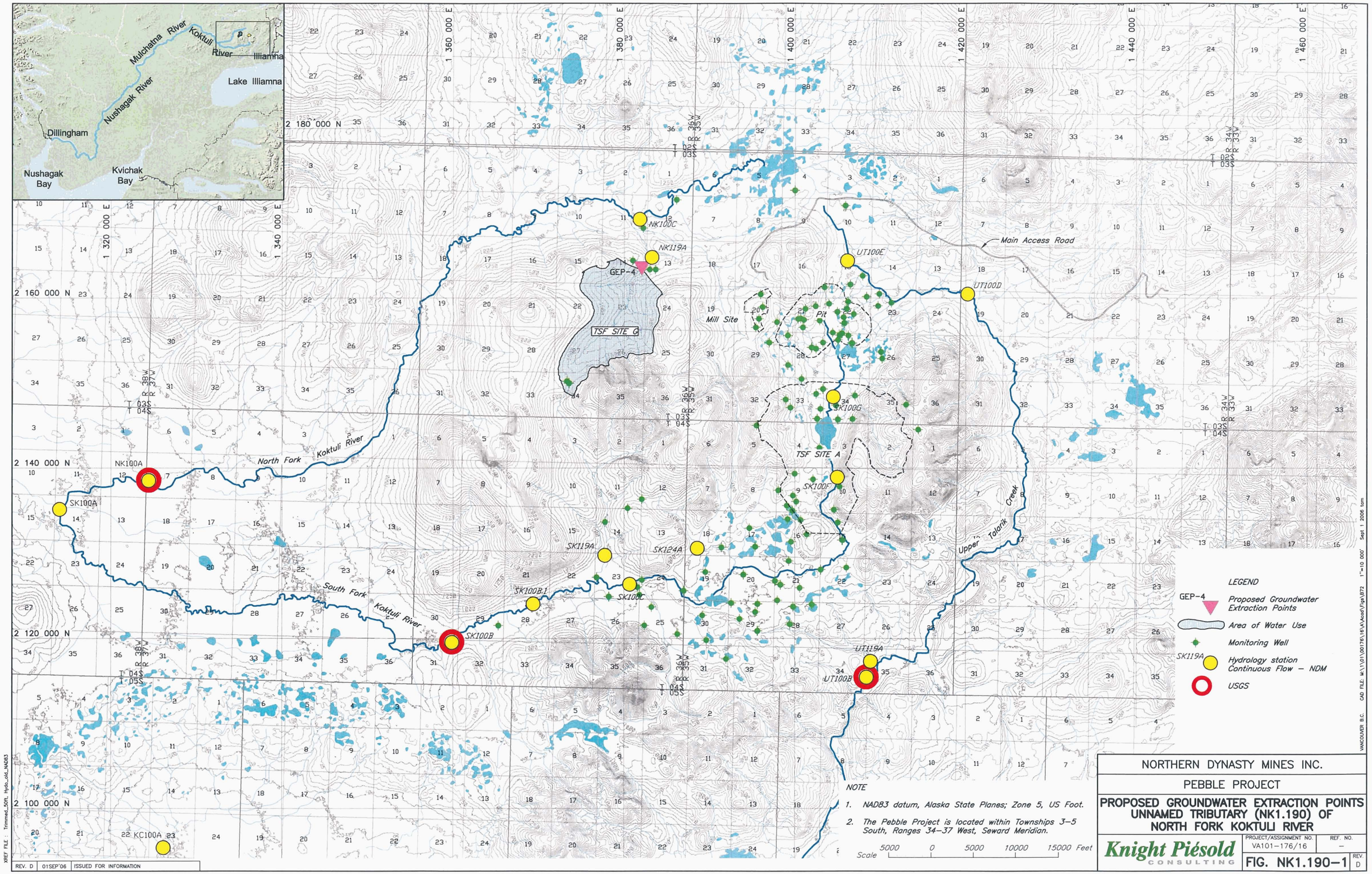
370000 mE
380000 mE
6650000 mN
6640000 mN
6630000 mN
6620000 mN
kilometers
miles
UTM Zone 5 (NAD 27 US for Alaska)
Northern Dynasty Mines Inc.
Pebble Gold-Copper Project
Schedule "A" - Pebble Property
Date: April 25, 2006
Scale: as shown
File: PEB_ScheduleA_25apr06_yl.WOR
Plotted by: YL


Mulchatna River
Koktuli River
Illiamna
Lake Illiamna
Nushagak River
Dillingham
Nushagak Bay
Kvichak Bay
2 180 000 N
2 160 000 N
2 140 000 N
2 120 000 N
2 100 000 N
1 320 000 E
1 340 000 E
1 360 000 E
1 380 000 E
1 400 000 E
1 420 000 E
1 440 000 E
1 460 000 E
NK100C
NK119A
GEP-4
TSF SITE G
Mill Site
Pit
UT100E
UT100D
Main Access Road
NK100G
TSF SITE A
SK100F
NK100A
SK100A
North Fork Koktuli River
South Fork Koktuli River
Upper Talarik Creek
SK119A
SK124A
SK100B.1
SK100C
SK100B
UT119A
UT100B
22 KC100A
LEGEND
GEP-4
Proposed Groundwater Extraction Points
Area of Water Use
Monitoring Well
SK119A
Hydrology station Continuous Flow – NDM
USGS
NOTE
1. NAD83 datum, Alaska State Planes; Zone 5, US Foot.
2. The Pebble Project is located within Townships 3–5 South, Ranges 34–37 West, Seward Meridian.
Scale 5000 0 5000 10000 15000 Feet
NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT
PROPOSED GROUNDWATER EXTRACTION POINTS UNNAMED TRIBUTARY (NK1.190) OF NORTH FORK KOKTULI RIVER
Knight Piésold CONSULTING
PROJECT/ASSIGNMENT NO. VA101-176/16
REF. NO. –
FIG. NK1.190-1
REV. D
REV. D 01SEP'06 ISSUED FOR INFORMATION
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VANCOUVER B.C.
CAD FILE: M:\1\01\00176\16\A\Acad\Figs\B72
1"=10 000'
Sept 1 2006 tom

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

**FLOW ESTIMATE IN SUPPORT OF**
***GROUNDWATER* RIGHTS APPLICATION**

***UNNAMED TRIBUTARY (NK1.190)***
***NORTH FORK KOKTULI RIVER***

Northern Dynasty Mines Inc. (NDM) has installed more than 150 groundwater level monitoring wells in the Pebble Project mine site area since 2004, as shown on Figure NK1.190-1. The data from these wells, in conjunction with the surface water information presented in NDM's corresponding Unnamed Tributary (NK1.190) North Fork Koktuli River surface water rights application, comprise a considerable surface water and groundwater data base for the area. These data have been used to develop a conceptual understanding of the groundwater flow regime for the North Fork Koktuli River area. Conventional groundwater flow equations have also been used to generate an estimate of the rate of groundwater flow at point GEP-4 in an unnamed tributary of the North Fork Koktuli River, as indicated on Figure NK1.190-1. The unnamed tributary has been labeled as NK1.190 for the purpose of this application.

Construction of a dam for TSF G will include seepage cutoff measures that will divert groundwater at GEP-4 into the TSF pond. These measures will be situated along the northeastern perimeter of TSF G to intercept seepage pathways. This water will not actually be extracted at a single point, but rather will be intercepted all along the northeastern extent of TSF G as it crosses the valley of Tributary NK1.190.

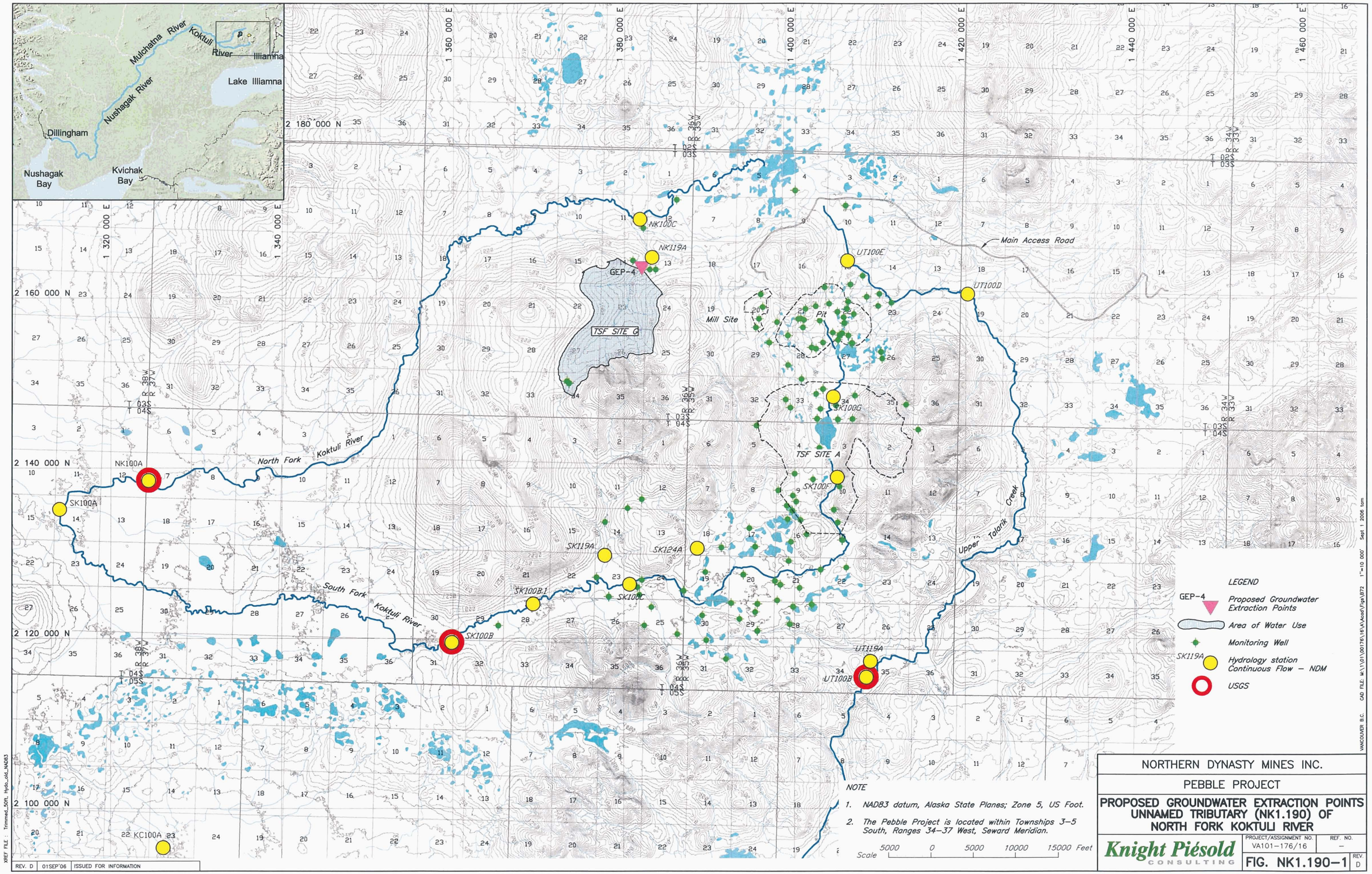
Seismic refraction data and drillhole results indicate the overburden is thin near GEP-4, and that bedrock permeability is relatively low. Poorly graded gravel with silt and cobbles was logged over bedrock to a depth of 36 ft. Based on the results of a pump test near GEP-4, the hydraulic conductivity of the material is likely in the order of $5x10^{-4}$ ft/s. Using Darcy's law, an average saturated thickness estimated to be 20 ft, a width of 200 ft, and a hydraulic gradient of 0.02, the groundwater flow at GEP-4 is estimated to be approximately 0.04 cfs.

The total estimated groundwater extraction rate for the Unnamed Tributary (NK1.190) North Fork Koktuli is shown below.

| Source | GEP | Rate (cfs) |
|---|---|---|
| Tailings storage facility | 4 | 0.04 |
| Total | | 0.04 |

Figure NK1.190-1 shows the locations of all continuous surface water flow and groundwater level monitoring sites in the Pebble Project mine site area. Although the exact period of prospective data collection is undetermined at this time, to better understand the groundwater/surface water interrelationship and more thoroughly understand the quantity of groundwater needed for the project, NDM expects to continue monitoring these stations until a minimum of 5 years of data has been collected.

Table NK1.190-1 and Table NK1.190-2 describe the allocation of groundwater appropriated for beneficial uses and the quantities of groundwater required for mine processes at start-up of the Site G facility, respectively. Additional details on the beneficial uses of the groundwater are presented in Section 5 of this application.


Mulchatna River
Koktuli River
Illiamna
Lake Illiamna
Nushagak River
Dillingham
Nushagak Bay
Kvichak Bay
2 180 000 N
2 160 000 N
2 140 000 N
2 120 000 N
2 100 000 N
1 320 000 E
1 340 000 E
1 360 000 E
1 380 000 E
1 400 000 E
1 420 000 E
1 440 000 E
1 460 000 E
NK100C
NK119A
GEP-4
TSF SITE G
Mill Site
Pit
UT100E
UT100D
Main Access Road
NK100G
TSF SITE A
SK100F
NK100A
SK100A
North Fork Koktuli River
South Fork Koktuli River
Upper Talarik Creek
SK119A
SK124A
SK100B.1
SK100C
SK100B
UT119A
UT100B
22 KC100A
LEGEND
GEP-4
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NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT
PROPOSED GROUNDWATER EXTRACTION POINTS UNNAMED TRIBUTARY (NK1.190) OF NORTH FORK KOKTULI RIVER
Knight Piésold CONSULTING
PROJECT/ASSIGNMENT NO. VA101-176/16
REF. NO. –
FIG. NK1.190-1
REV. D
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VANCOUVER B.C.
CAD FILE: M:\1\01\00176\16\A\Acad\Figs\B72
1"=10 000'
Sept 1 2006 tom

**TABLE NK1.190-1**

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

**GROUNDWATER TO BE USED BENEFICIALLY BY ACTIVITY**
**UNNAMED TRIBUTARY (NK1.190) NORTH FORK KOKTULI RIVER DRAINAGE**

Rev'd Aug/24/06

| Beneficial Use | Estimate Flow Rate[7] | | |
|---|---|---|---|
| | cfs | gpd | AFY |
| Potable Water for Camp Supply[1] | N/A | N/A | N/A |
| Mill Processing[2] | N/A | N/A | N/A |
| Management of the TSF: Water Permanently Retained in the Voids (i.e., submerged tailings voids and waste rock voids)[3] | N/A | N/A | N/A |
| Management of the TSF: Protection of Downstream Aquatic Resources - Water Stored in the TSF due to Seepage Cutoff Measures[4] | 0.04 | 100,000 | 100 |
| Dust Suppression on Haul Roads in the Water Extraction Area[5] | N/A | N/A | N/A |
| Concentrate Slurry Pipeline to Marine Terminal[6] | N/A | N/A | N/A |
| **TOTAL ESTIMATED RATE OF GROUNDWATER TO BE BENEFICIALLY USED** | **0.04** | **100,000** | **100** |

**Note:**

1. The source of water for the camp supply will be groundwater within the water extraction limits of the South Fork Koktuli River drainage. Refer to SFK groundwater rights application.

2. Water used for mill processing will be withdrawn from the TSF at Site A only at mill start-up, which will occur prior to 2. Water used for mill processing will be withdrawn from the TSF at Site A only at mill start-up, which will occur prior to development of the TSF at Site G in NK1.190. Fresh make-up water for mill processing will be extracted from the open pit dewatering system. Refer to SFK groundwater rights application.

3. Refer to 11 AAC 93.040 (c)(13) in application response document for surface water rights for Unnamed Tributary (NK1.190) North Fork Koktuli River.

4. Refer to Section 5.0 of this application for the beneficial uses of groundwater for TSF management.

5. Water for dust suppression will all be supplied by surface water. Refer to Table 2 in section 11 AAC 93.040 (c)(13) in application response document for surface water rights for Unnamed Tributary (NK1.190) North Fork Koktuli River.

6. Water for the concentrate slurry pipeline will be withdrawn from the TSF at Site A only to prime the system at start-up, which will occur prior to development of the TSF at Site G.

7. The number of significant figures is not intended to imply a high level of accuracy but to show relative proportions.

**TABLE NK1.190-2**

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

**GROUNDWATER REQUIRED FOR TSF SITE G AT START-UP**
**UNNAMED TRIBUTARY (NK1.190) NORTH FORK KOKTULI RIVER DRAINAGE**

Rev'd Aug/24/06

| Beneficial Use | Estimated Volume[5] | | |
|---|---|---|---|
| | ($ft^3$) | (gallons) | (acre-ft) |
| Mill Process and Equipment Cooling[1] | N/A | N/A | N/A |
| Tailings Slurry Pipelines from the Mill to the TSF[2] | 250,000 | 1,872,000 | 5.7 |
| Reclaim Pipelines from the TSF to the Mill[3] | 50,894 | 382,000 | 1.2 |
| Concentrate Slurry Pipeline to the Port Site[4] | N/A | N/A | N/A |
| Reclaim Pipeline from the Port Site to the Mill[4] | N/A | N/A | N/A |
| **TOTAL ESTIMATED VOLUME OF GROUNDWATER TO BE BENEFICIALLY USED** | **300,894** | **2,254,000** | **6.9** |

**Notes:**

1. Fresh water used for mill processing will be withdrawn from the TSF at Site A only at mill start-up, which will occur prior to development of the TSF at Site G in NK1.190. Fresh make-up water for mill processing will be extracted from the open pit dewatering system. Refer to SFK application response document for groundwater rights. All other water requirements for mill processing will be recycled from the TSF at Site G to the mill by the reclaim pipeline and discharged into the TSF from the mill by the tailings slurry pipelines, in a continuous loop.

2. Total water needed at TSF Site G for start-up = 28.7 acre-ft (9,360,000 gallons). 80% attributed to surface water, 20% to groundwater. 9,360,000 gallons x 20% = 1,872,000 gallons. Assumed two bulk tailings and one pyritic tailings pipelines, flowing at full capacity with water to charge the system. Pipe length = 78,000 ft, pipe diameter = 54 inches. During operations, the mill process water will circulate amongst the mill site, the tailings slurry pipelines and the reclaim pipeline.

3. Total water needed at TSF Site G for start-up =5.8 acre-ft (1,910,000 gallons). 80% attributed to surface water, 20% to groundwater. 1,910,000 gallons x 20% = 382,000 gallons. Assumed one reclaim pipeline, flowing at full capacity with water to charge the system. Pipe length = 16,000 ft, pipe diameter = 54 inches. During operations, water will be supplied from the TSF supernatant pond at Site G as part of the recycle system.

4. Water use for the concentrate slurry pipeline will be withdrawn from the TSF at Site A only to prime the system at mill start-up. Refer to Table 3 in 11 AAC 93.040(c)(13) of the application completeness response for the South Fork Koktuli River. During operations, the mill process water will circulate between the TSF G, the mill, the concentrate slurry pipeline, and the reclaim pipeline from the port site to the TSF.

5. The number of significant figures is not intended to imply a high level of accuracy but to show relative proportions.

# NORTHERN DYNASTY MINES INC.
# PEBBLE PROJECT

## Application for Groundwater Right

***UNNAMED TRIBUTARY (NK1.190)***
***NORTH FORK KOKTULI RIVER***

### BENEFICIAL USES FOR APPROPRIATING WATER

The Pebble Project property is centred at approximately latitude 59°53'54" and longitude 155°17'44", and is 201 miles southwest of Anchorage and 17 miles northwest of the Village of Iliamna.

Development of the Pebble Project will require extraction of groundwater flows at groundwater extraction point GEP-4 as shown on Figure NK1.190-1. The groundwater appropriated from this point will be used for the following beneficial mining uses:

To protect the downstream aquatic resources by:

- Submerging the potentially reactive waste materials deposited in the tailings storage facility (TSF) to prevent the potential development of acid drainage.
- Promoting the saturation and/or flooding of tailings solids to prevent dust generation.
- Controlling sediment.
- Capturing and re-using process water that comes into contact with mineralized rock to ensure that the quality of the water for downstream fish and aquatic habitat is not adversely impacted by the mining operations.

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

## Application for Groundwater Right

***UNNAMED TRIBUTARY (NK1.190)***
***NORTH FORK KOKTULI RIVER***

**POSSESSORY INTEREST**

**INSTRUCTION #2** – *Attach copy of executed deed, lease agreement, or other possessory interest document for property where water will be used.*

The following figure (Schedule "A" – Pebble Property) and list of claims demonstrate that the applicants have legal access to the property for mining and, thus, the water rights and use. The property consists of 1335 mining claims (the "Property") of which 918 are held of record by Northern Dynasty Holdings Inc., an Alaska corporation, and 417 of the claims are held of record by its sister corporation, Northern Dynasty Mines Inc., also an Alaska corporation. Accordingly the two corporations are the recorded owners of 100% of the Property claims. Attached are the two Quitclaim Deeds whereby Northern Dynasty Holdings Inc. received its 918 Property claims from the previous owner, Teck Cominco American Inc. Also attached are copies of the records showing that Northern Dynasty Mines Inc is the original staker and recorded owner of the balance of the property Claims. As holders of record of the mining claims, Northern Dynasty Mines Inc. and Northern Dynasty Holdings Inc. are exclusively authorized and responsible to carry out exploration, development and administrative work relating to the Pebble Project, including ingress and egress as necessary to withdraw, impound, divert and transport water of the State of Alaska. Northern Dynasty Mines Inc. is and will continue to be the entity that will carry out exploration, development and administrative work relating to the Pebble Project, including ingress and egress as necessary to withdraw, impound, divert and transport water of the State of Alaska. Therefore, NDMI and NDHI are referred to, collectively, for purposes of this application, as "Northern Dynasty Mines Inc."

After recording return to:
L. Brommeland
Hunter Dickinson Inc.
1020-800 West Pender St.
Vancouver, B.C. V6C 2V6

2006-000249-0
Recording Dist: 320 - Iliamna
6/21/2006 2:04 PM Pages: 1 of 3

A L A S K A

# QUITCLAIM DEED

The Grantor, Teck Cominco American Incorporated, formerly Cominco American Incorporated, a Washington corporation, of 15918 E. Euclid Avenue, Spokane Valley, Washington 99216 for and in consideration of Ten Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, conveys and quitclaims to Northern Dynasty Holdings Inc., an Alaska corporation, of Suite 604, 3201 C Street, Anchorage, Alaska 99503 all interest which it may have, if any, in the unpatented mining claims described on Exhibit A to this Quitclaim Deed and located in the Iliamna Recording District, State of Alaska.

CC

In Witness Whereof, the Grantor has caused this indenture to be signed this 1st day of June 2006.

TECK COMINCO AMERICAN INCORPORATED, GRANTOR

C. Bruce DiLuzio
Vice President, Law & Administration

STATE OF WASHINGTON )
: ss.
COUNTY OF SPOKANE )

On this 1st day of June, 2006, before me personally appeared C. Bruce DiLuzio, to me known to be the Vice President, Law & Administration, of Teck Cominco American Incorporated, the corporation that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act of said corporation, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute the said instrument on behalf of said corporation.

Given under my hand and official seal the day and year in this certificate first above written.

Deborah A. Frost
Notary Public in and for the State of Washington
residing at Spokane.

My Commission Expires: 5/11/07

DEBORAH A. FROST
COMMISSION EXPIRES
NOTARY
PUBLIC
5-11-07
STATE OF WASHINGTON

After recording return to:
L. Brommeland
Hunter Dickinson Inc.
1020-800 West Pender St.
Vancouver, B.C. V6C 2V6

2006-000250-0
Recording Dist: 320 - Iliamna
6/21/2006 2:06 PM Pages: 1 of 34

ALASKA

CC

# QUITCLAIM DEED

The Grantor, Teck Cominco American Incorporated, formerly Cominco American Incorporated, a Washington corporation, of 15918 E. Euclid Avenue, Spokane Valley, Washington 99216 for and in consideration of Ten Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, conveys and quitclaims to Northern Dynasty Holdings Inc., an Alaska corporation, of Suite 604, 3201 C Street, Anchorage, Alaska 99503 all interest which it may have, if any, in the unpatented mining claims described on Exhibit A to this Quitclaim Deed and located in the Iliamna Recording District, State of Alaska.

Reserving unto Grantor a four percent (4%) advance royalty prior to payback of capital costs of constructing a mine on the Exhibit A claims, such royalty described in Exhibit B hereto; and

Further Reserving unto Grantor a five percent (5%) Net Profits Royalty after payback of capital costs of constructing a mine on the Exhibit A claims, such royalty described in Exhibit C hereto.

In Witness Whereof, the Grantor has caused this indenture to be signed this 15th day of June 2006.

TECK COMINCO AMERICAN INCORPORATED, GRANTOR

C. Bruce DiLuzio
Vice President, Law & Administration

STATE OF WASHINGTON )
: ss.
COUNTY OF SPOKANE )

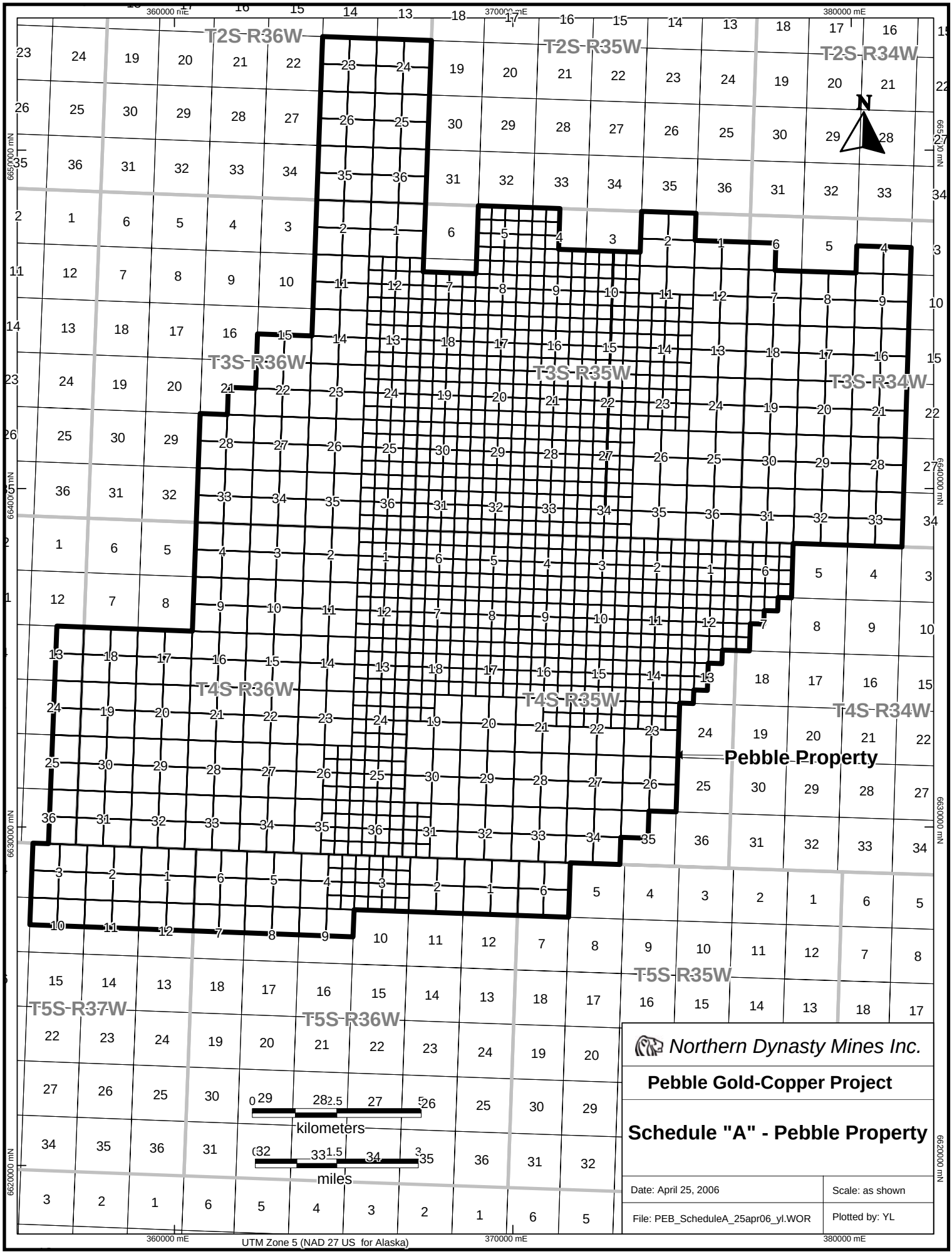
On this 1st day of June, 2006, before me personally appeared C. Bruce DiLuzio, to me known to be the Vice President, Law & Administration, of Teck Cominco American Incorporated, the corporation that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act of said corporation, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute the said instrument on behalf of said corporation.

Given under my hand and official seal the day and year in this certificate first above written.

Deborah A. Frost
Notary Public in and for the State of Washington
residing at Spokane.

My Commission Expires: 5/11/07

DEBORAH A. FROST
COMMISSION EXPIRES
NOTARY
PUBLIC
5-11-07
STATE OF WASHINGTON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T2S-R35W
T2S-R34W
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T3S-R35W
T3S-R34W
T4S-R36W
T4S-R35W
T4S-R34W
T5S-R37W
T5S-R36W
T5S-R35W
Pebble Property
N
360000 mE
370000 mE
380000 mE
6650000 mN
6640000 mN
6630000 mN
6620000 mN
0 2.5 5
kilometers
0 1.5 3
miles
UTM Zone 5 (NAD 27 US for Alaska)
Northern Dynasty Mines Inc.
Pebble Gold-Copper Project
Schedule "A" - Pebble Property
Date: April 25, 2006
Scale: as shown
File: PEB_ScheduleA_25apr06_yl.WOR
Plotted by: YL

**EXHIBIT A**

The name and address of the claim owner for the 918 claims (all 40 acres in size) listed below is:

Northern Dynasty Holdings Inc.
Suite 604, 3201 C Street
Anchorage, Alaska 99503

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 516769 | Sill 5951 | 4S | 35W | SE12 |
| 516770 | Sill 5952 | 4S | 35W | SE12 |
| 516779 | Sill 6051 | 4S | 35W | SE12 |
| 516780 | Sill 6052 | 4S | 35W | SE12 |
| 516789 | Sill 6151 | 4S | 35W | NE12 |
| 516790 | Sill 6152 | 4S | 35W | NE12 |
| 516797 | Sill 6247 | 4S | 35W | NE11 |
| 516798 | Sill 6248 | 4S | 35W | NE11 |
| 516799 | Sill 6249 | 4S | 35W | NW12 |
| 516800 | Sill 6250 | 4S | 35W | NW12 |
| 516801 | Sill 6251 | 4S | 35W | NE12 |
| 516802 | Sill 6252 | 4S | 35W | NE12 |
| 516806 | Pebble Beach 5448 | 3S | 35W | SE20 |
| 516807 | Pebble Beach 5449 | 3S | 35W | SE20 |
| 516808 | Pebble Beach 5450 | 3S | 35W | SW21 |
| 516809 | Pebble Beach 5451 | 3S | 35W | SW21 |
| 516810 | Pebble Beach 5452 | 3S | 35W | SE21 |
| 516811 | Pebble Beach 5453 | 3S | 35W | SE21 |
| 516812 | Pebble Beach 5454 | 3S | 35W | SW22 |
| 516813 | Pebble Beach 5548 | 3S | 35W | SE20 |
| 516814 | Pebble Beach 5549 | 3S | 35W | SE20 |
| 516815 | Pebble Beach 5550 | 3S | 35W | SW21 |
| 516816 | Pebble Beach 5551 | 3S | 35W | SW21 |
| 516817 | Pebble Beach 5552 | 3S | 35W | SE21 |
| 516818 | Pebble Beach 5553 | 3S | 35W | SE21 |
| 516819 | Pebble Beach 5554 | 3S | 35W | SW22 |
| 516820 | Pebble Beach 5651 | 3S | 35W | NW21 |
| 516821 | Pebble Beach 5652 | 3S | 35W | NE21 |
| 516822 | Pebble Beach 5653 | 3S | 35W | NE21 |
| 516823 | Pebble Beach 5654 | 3S | 35W | NW22 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 516824 | Pebble Beach 5751 | 3S | 35W | NW21 |
| 516825 | Pebble Beach 5752 | 3S | 35W | NE21 |
| 516826 | Pebble Beach 5753 | 3S | 35W | NE21 |
| 516827 | Pebble Beach 5754 | 3S | 35W | NW22 |
| 516828 | Pebble Beach 5852 | 3S | 35W | SE16 |
| 516829 | Pebble Beach 5853 | 3S | 35W | SE16 |
| 516830 | Pebble Beach 5854 | 3S | 35W | SW15 |
| 516831 | Pebble Beach 5952 | 3S | 35W | SE16 |
| 516832 | Pebble Beach 5953 | 3S | 35W | SE16 |
| 516833 | Pebble Beach 5954 | 3S | 35W | SW15 |
| 516834 | Pebble Beach 6052 | 3S | 35W | NE16 |
| 516835 | Pebble Beach 6053 | 3S | 35W | NE16 |
| 516836 | Pebble Beach 6054 | 3S | 35W | NW15 |
| 516837 | Pebble Beach 6153 | 3S | 35W | NE16 |
| 516838 | Pebble Beach 6154 | 3S | 35W | NW15 |
| 516839 | Pebble Beach 4651 | 3S | 35W | SW33 |
| 516840 | Pebble Beach 4652 | 3S | 35W | SE33 |
| 516841 | Pebble Beach 4653 | 3S | 35W | SE33 |
| 516842 | Pebble Beach 4751 | 3S | 35W | SW33 |
| 516843 | Pebble Beach 4752 | 3S | 35W | SE33 |
| 516844 | Pebble Beach 4753 | 3S | 35W | SE33 |
| 516845 | Pebble Beach 4851 | 3S | 35W | NW33 |
| 516846 | Pebble Beach 4852 | 3S | 35W | NE33 |
| 516847 | Pebble Beach 4853 | 3S | 35W | NE33 |
| 516848 | Pebble Beach 4951 | 3S | 35W | NW33 |
| 516849 | Pebble Beach 4952 | 3S | 35W | NE33 |
| 516850 | Pebble Beach 4953 | 3S | 35W | NE33 |
| 516851 | Pebble Beach 5048 | 3S | 35W | SE29 |
| 516852 | Pebble Beach 5049 | 3S | 35W | SE29 |
| 516853 | Pebble Beach 5050 | 3S | 35W | SW28 |
| 516854 | Pebble Beach 5051 | 3S | 35W | SW28 |
| 516855 | Pebble Beach 5052 | 3S | 35W | SE28 |
| 516856 | Pebble Beach 5053 | 3S | 35W | SE28 |
| 516857 | Pebble Beach 5148 | 3S | 35W | SE29 |
| 516858 | Pebble Beach 5149 | 3S | 35W | SE29 |
| 516859 | Pebble Beach 5150 | 3S | 35W | SW28 |
| 516860 | Pebble Beach 5151 | 3S | 35W | SW28 |
| 516861 | Pebble Beach 5152 | 3S | 35W | SE28 |
| 516862 | Pebble Beach 5153 | 3S | 35W | SE28 |
| 516863 | Pebble Beach 5248 | 3S | 35W | NE29 |
| 516864 | Pebble Beach 5249 | 3S | 35W | NE29 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 516865 | Pebble Beach 5250 | 3S | 35W | NW28 |
| 516866 | Pebble Beach 5251 | 3S | 35W | NW28 |
| 516867 | Pebble Beach 5252 | 3S | 35W | NE28 |
| 516868 | Pebble Beach 5253 | 3S | 35W | NE28 |
| 516869 | Pebble Beach 5348 | 3S | 35W | NE29 |
| 516870 | Pebble Beach 5349 | 3S | 35W | NE29 |
| 516871 | Pebble Beach 5350 | 3S | 35W | NW28 |
| 516872 | Pebble Beach 5351 | 3S | 35W | NW28 |
| 516873 | Pebble Beach 5352 | 3S | 35W | NE28 |
| 516874 | Pebble Beach 5353 | 3S | 35W | NE28 |
| 516879 | Sill 6351 | 4S | 35W | SE1 |
| 516880 | Sill 6352 | 4S | 35W | SE1 |
| 516888 | Sill 6451 | 4S | 35W | SE1 |
| 516889 | Sill 6452 | 4S | 35W | SE1 |
| 516948 | Pebble Beach 3850 | 4S | 35W | SW9 |
| 516949 | Pebble Beach 3851 | 4S | 35W | SW9 |
| 516950 | Pebble Beach 3852 | 4S | 35W | SE9 |
| 516951 | Pebble Beach 3950 | 4S | 35W | SW9 |
| 516952 | Pebble Beach 3951 | 4S | 35W | SW9 |
| 516953 | Pebble Beach 3952 | 4S | 35W | SE9 |
| 516954 | Pebble Beach 4050 | 4S | 35W | NW9 |
| 516955 | Pebble Beach 4051 | 4S | 35W | NW9 |
| 516956 | Pebble Beach 4052 | 4S | 35W | NE9 |
| 516957 | Pebble Beach 4150 | 4S | 35W | NW9 |
| 516958 | Pebble Beach 4151 | 4S | 35W | NW9 |
| 516959 | Pebble Beach 4152 | 4S | 35W | NE9 |
| 516960 | Pebble Beach 4250 | 4S | 35W | SW4 |
| 516961 | Pebble Beach 4251 | 4S | 35W | SW4 |
| 516962 | Pebble Beach 4252 | 4S | 35W | SE4 |
| 516963 | Pebble Beach 4253 | 4S | 35W | SE4 |
| 516964 | Pebble Beach 4254 | 4S | 35W | SW3 |
| 516965 | Pebble Beach 4350 | 4S | 35W | SW4 |
| 516966 | Pebble Beach 4351 | 4S | 35W | SW4 |
| 516967 | Pebble Beach 4352 | 4S | 35W | SE4 |
| 516968 | Pebble Beach 4353 | 4S | 35W | SE4 |
| 516969 | Pebble Beach 4354 | 4S | 35W | SW3 |
| 516970 | Pebble Beach 4451 | 4S | 35W | NW4 |
| 516971 | Pebble Beach 4452 | 4S | 35W | NE4 |
| 516972 | Pebble Beach 4453 | 4S | 35W | NE4 |
| 516973 | Pebble Beach 4551 | 4S | 35W | NW4 |
| 516974 | Pebble Beach 4552 | 4S | 35W | NE4 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 516975 | Pebble Beach 4553 | 4S | 35W | NE4 |
| 524511 | Sill 5543 | 4S | 35W | SE15 |
| 524512 | Sill 5544 | 4S | 35W | SE15 |
| 524515 | Sill 5643 | 4S | 35W | SE15 |
| 524516 | Sill 5644 | 4S | 35W | SE15 |
| 524519 | Sill 5743 | 4S | 35W | NE15 |
| 524520 | Sill 5744 | 4S | 35W | NE15 |
| 524523 | Sill 5843 | 4S | 35W | NE15 |
| 524524 | Sill 5844 | 4S | 35W | NE15 |
| 524527 | Sill 5943 | 4S | 35W | SE10 |
| 524528 | Sill 5944 | 4S | 35W | SE10 |
| 524531 | Sill 6043 | 4S | 35W | SE10 |
| 524532 | Sill 6044 | 4S | 35W | SE10 |
| 524535 | Sill 6143 | 4S | 35W | NE10 |
| 524536 | Sill 6144 | 4S | 35W | NE10 |
| 524539 | Sill 6243 | 4S | 35W | NE10 |
| 524540 | Sill 6244 | 4S | 35W | NE10 |
| 524541 | Sill 6245 | 4S | 35W | NW11 |
| 524542 | Sill 6246 | 4S | 35W | NW11 |
| 524543 | Sill 6343 | 4S | 35W | SE3 |
| 524544 | Sill 6344 | 4S | 35W | SE3 |
| 524550 | Sill 6443 | 4S | 35W | SE3 |
| 524551 | Sill 6444 | 4S | 35W | SE3 |
| 524557 | Sill 6543 | 4S | 35W | NE3 |
| 524558 | Sill 6544 | 4S | 35W | NE3 |
| 524568 | Sill 6643 | 4S | 35W | NE3 |
| 524569 | Sill 6644 | 4S | 35W | NE3 |
| 524579 | Sill 6743 | 3S | 35W | SE34 |
| 524580 | Sill 6744 | 3S | 35W | SE34 |
| 524595 | Sill 6843 | 3S | 35W | SE34 |
| 524596 | Sill 6844 | 3S | 35W | SE34 |
| 524611 | Sill 6943 | 3S | 35W | NE34 |
| 524612 | Sill 6944 | 3S | 35W | NE34 |
| 524630 | Sill 7043 | 3S | 35W | NE34 |
| 524631 | Sill 7044 | 3S | 35W | NE34 |
| 524649 | Sill 7143 | 3S | 35W | SE27 |
| 524650 | Sill 7144 | 3S | 35W | SE27 |
| 524668 | Sill 7243 | 3S | 35W | SE27 |
| 524669 | Sill 7244 | 3S | 35W | SE27 |
| 524684 | Sill 7343 | 3S | 35W | NE27 |
| 524685 | Sill 7344 | 3S | 35W | NE27 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 524698 | Sill 7443 | 3S | 35W | NE27 |
| 524699 | Sill 7444 | 3S | 35W | NE27 |
| 524712 | Sill 7543 | 3S | 35W | SE22 |
| 524713 | Sill 7544 | 3S | 35W | SE22 |
| 524714 | Sill 7545 | 3S | 35W | SW23 |
| 524715 | Sill 7546 | 3S | 35W | SW23 |
| 524716 | Sill 7547 | 3S | 35W | SE23 |
| 524717 | Sill 7548 | 3S | 35W | SE23 |
| 524748 | Pebble Beach 3452 | 4S | 35W | SE16 |
| 524749 | Pebble Beach 3453 | 4S | 35W | SE16 |
| 524750 | Pebble Beach 3454 | 4S | 35W | SW15 |
| 524751 | Pebble Beach 3455 | 4S | 35W | SW15 |
| 524752 | Pebble Beach 3552 | 4S | 35W | SE16 |
| 524753 | Pebble Beach 3553 | 4S | 35W | SE16 |
| 524754 | Pebble Beach 3554 | 4S | 35W | SW15 |
| 524755 | Pebble Beach 3555 | 4S | 35W | SW15 |
| 524756 | Pebble Beach 3652 | 4S | 35W | NE16 |
| 524757 | Pebble Beach 3653 | 4S | 35W | NE16 |
| 524758 | Pebble Beach 3654 | 4S | 35W | NW15 |
| 524759 | Pebble Beach 3655 | 4S | 35W | NW15 |
| 524760 | Pebble Beach 3752 | 4S | 35W | NE16 |
| 524761 | Pebble Beach 3753 | 4S | 35W | NE16 |
| 524762 | Pebble Beach 3754 | 4S | 35W | NW15 |
| 524763 | Pebble Beach 3755 | 4S | 35W | NW15 |
| 524764 | Pebble Beach 3848 | 4S | 35W | SE8 |
| 524765 | Pebble Beach 3849 | 4S | 35W | SE8 |
| 524766 | Pebble Beach 3853 | 4S | 35W | SE9 |
| 524767 | Pebble Beach 3854 | 4S | 35W | SW10 |
| 524768 | Pebble Beach 3855 | 4S | 35W | SW10 |
| 524769 | Pebble Beach 3948 | 4S | 35W | SE8 |
| 524770 | Pebble Beach 3949 | 4S | 35W | SE8 |
| 524771 | Pebble Beach 3953 | 4S | 35W | SE9 |
| 524772 | Pebble Beach 3954 | 4S | 35W | SW10 |
| 524773 | Pebble Beach 3955 | 4S | 35W | SW10 |
| 524774 | Pebble Beach 4048 | 4S | 35W | NE8 |
| 524775 | Pebble Beach 4049 | 4S | 35W | NE8 |
| 524776 | Pebble Beach 4053 | 4S | 35W | NE9 |
| 524777 | Pebble Beach 4054 | 4S | 35W | NW10 |
| 524778 | Pebble Beach 4055 | 4S | 35W | NW10 |
| 524779 | Pebble Beach 4148 | 4S | 35W | NE8 |
| 524780 | Pebble Beach 4149 | 4S | 35W | NE8 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 524781 | Pebble Beach 4153 | 4S | 35W | NE9 |
| 524782 | Pebble Beach 4154 | 4S | 35W | NW10 |
| 524783 | Pebble Beach 4155 | 4S | 35W | NW10 |
| 524784 | Pebble Beach 4248 | 4S | 35W | SE5 |
| 524785 | Pebble Beach 4249 | 4S | 35W | SE5 |
| 524786 | Pebble Beach 4255 | 4S | 35W | SW3 |
| 524787 | Pebble Beach 4348 | 4S | 35W | SE5 |
| 524788 | Pebble Beach 4349 | 4S | 35W | SE5 |
| 524789 | Pebble Beach 4355 | 4S | 35W | SW3 |
| 524790 | Pebble Beach 4448 | 4S | 35W | NE5 |
| 524791 | Pebble Beach 4449 | 4S | 35W | NE5 |
| 524792 | Pebble Beach 4450 | 4S | 35W | NW4 |
| 524793 | Pebble Beach 4454 | 4S | 35W | NW3 |
| 524794 | Pebble Beach 4455 | 4S | 35W | NW3 |
| 524795 | Pebble Beach 4548 | 4S | 35W | NE5 |
| 524796 | Pebble Beach 4549 | 4S | 35W | NE5 |
| 524797 | Pebble Beach 4550 | 4S | 35W | NW4 |
| 524798 | Pebble Beach 4554 | 4S | 35W | NW3 |
| 524799 | Pebble Beach 4555 | 4S | 35W | NW3 |
| 524800 | Pebble Beach 4648 | 3S | 35W | SE32 |
| 524801 | Pebble Beach 4649 | 3S | 35W | SE32 |
| 524802 | Pebble Beach 4650 | 3S | 35W | SW33 |
| 524803 | Pebble Beach 4654 | 3S | 35W | SW34 |
| 524804 | Pebble Beach 4655 | 3S | 35W | SW34 |
| 524805 | Pebble Beach 4748 | 3S | 35W | SE32 |
| 524806 | Pebble Beach 4749 | 3S | 35W | SE32 |
| 524807 | Pebble Beach 4750 | 3S | 35W | SW33 |
| 524808 | Pebble Beach 4754 | 3S | 35W | SW34 |
| 524809 | Pebble Beach 4755 | 3S | 35W | SW34 |
| 524810 | Pebble Beach 4848 | 3S | 35W | NE32 |
| 524811 | Pebble Beach 4849 | 3S | 35W | NE32 |
| 524812 | Pebble Beach 4850 | 3S | 35W | NW33 |
| 524813 | Pebble Beach 4854 | 3S | 35W | NW34 |
| 524814 | Pebble Beach 4855 | 3S | 35W | NW34 |
| 524815 | Pebble Beach 4948 | 3S | 35W | NE32 |
| 524816 | Pebble Beach 4949 | 3S | 35W | NE32 |
| 524817 | Pebble Beach 4950 | 3S | 35W | NW33 |
| 524818 | Pebble Beach 4954 | 3S | 35W | NW34 |
| 524819 | Pebble Beach 4955 | 3S | 35W | NW34 |
| 524820 | Pebble Beach 5054 | 3S | 35W | SW27 |
| 524821 | Pebble Beach 5055 | 3S | 35W | SW27 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 524822 | Pebble Beach 5154 | 3S | 35W | SW27 |
| 524823 | Pebble Beach 5155 | 3S | 35W | SW27 |
| 524824 | Pebble Beach 5254 | 3S | 35W | NW27 |
| 524825 | Pebble Beach 5255 | 3S | 35W | NW27 |
| 524826 | Pebble Beach 5354 | 3S | 35W | NW27 |
| 524827 | Pebble Beach 5355 | 3S | 35W | NW27 |
| 524828 | Pebble Beach 5455 | 3S | 35W | SW22 |
| 524829 | Pebble Beach 5648 | 3S | 35W | NE20 |
| 524830 | Pebble Beach 5649 | 3S | 35W | NE20 |
| 524831 | Pebble Beach 5650 | 3S | 35W | NW21 |
| 524832 | Pebble Beach 5748 | 3S | 35W | NE20 |
| 524833 | Pebble Beach 5749 | 3S | 35W | NE20 |
| 524834 | Pebble Beach 5750 | 3S | 35W | NW21 |
| 524835 | Pebble Beach 5848 | 3S | 35W | SE17 |
| 524836 | Pebble Beach 5849 | 3S | 35W | SE17 |
| 524837 | Pebble Beach 5850 | 3S | 35W | SW16 |
| 524838 | Pebble Beach 5851 | 3S | 35W | SW16 |
| 524839 | Pebble Beach 5948 | 3S | 35W | SE17 |
| 524840 | Pebble Beach 5949 | 3S | 35W | SE17 |
| 524841 | Pebble Beach 5950 | 3S | 35W | SW16 |
| 524842 | Pebble Beach 5951 | 3S | 35W | SW16 |
| 524843 | Pebble Beach 6048 | 3S | 35W | NE17 |
| 524844 | Pebble Beach 6049 | 3S | 35W | NE17 |
| 524845 | Pebble Beach 6050 | 3S | 35W | NW16 |
| 524846 | Pebble Beach 6051 | 3S | 35W | NW16 |
| 524847 | Pebble Beach 6148 | 3S | 35W | NE17 |
| 524848 | Pebble Beach 6149 | 3S | 35W | NE17 |
| 524849 | Pebble Beach 6150 | 3S | 35W | NW16 |
| 524850 | Pebble Beach 6151 | 3S | 35W | NW16 |
| 524851 | Pebble Beach 6248 | 3S | 35W | SE8 |
| 524852 | Pebble Beach 6249 | 3S | 35W | SE8 |
| 524853 | Pebble Beach 6250 | 3S | 35W | SW9 |
| 524854 | Pebble Beach 6251 | 3S | 35W | SW9 |
| 524855 | Pebble Beach 6252 | 3S | 35W | SE9 |
| 524856 | Pebble Beach 6253 | 3S | 35W | SE9 |
| 524857 | Pebble Beach 6254 | 3S | 35W | SW10 |
| 524858 | Pebble Beach 6348 | 3S | 35W | SE8 |
| 524859 | Pebble Beach 6349 | 3S | 35W | SE8 |
| 524860 | Pebble Beach 6350 | 3S | 35W | SW9 |
| 524861 | Pebble Beach 6351 | 3S | 35W | SW9 |
| 524862 | Pebble Beach 6352 | 3S | 35W | SE9 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 524863 | Pebble Beach 6353 | 3S | 35W | SE9 |
| 524864 | Pebble Beach 6354 | 3S | 35W | SW10 |
| 525849 | Pebble Beach 6152 | 3S | 35W | NE16 |
| 531355 | Pebble Beach 3642 | 4S | 35W | NW18 |
| 531356 | Pebble Beach 3643 | 4S | 35W | NW18 |
| 531357 | Pebble Beach 3644 | 4S | 35W | NE18 |
| 531358 | Pebble Beach 3645 | 4S | 35W | NE18 |
| 531359 | Pebble Beach 3742 | 4S | 35W | NW18 |
| 531360 | Pebble Beach 3743 | 4S | 35W | NW18 |
| 531361 | Pebble Beach 3744 | 4S | 35W | NE18 |
| 531362 | Pebble Beach 3745 | 4S | 35W | NE18 |
| 531363 | Pebble Beach 3842 | 4S | 35W | SW7 |
| 531364 | Pebble Beach 3843 | 4S | 35W | SW7 |
| 531365 | Pebble Beach 3844 | 4S | 35W | SE7 |
| 531366 | Pebble Beach 3845 | 4S | 35W | SE7 |
| 531367 | Pebble Beach 3846 | 4S | 35W | SW8 |
| 531368 | Pebble Beach 3847 | 4S | 35W | SW8 |
| 531369 | Pebble Beach 3942 | 4S | 35W | SW7 |
| 531370 | Pebble Beach 3943 | 4S | 35W | SW7 |
| 531371 | Pebble Beach 3944 | 4S | 35W | SE7 |
| 531372 | Pebble Beach 3945 | 4S | 35W | SE7 |
| 531373 | Pebble Beach 3946 | 4S | 35W | SW8 |
| 531374 | Pebble Beach 3947 | 4S | 35W | SW8 |
| 531375 | Pebble Beach 4042 | 4S | 35W | NW7 |
| 531376 | Pebble Beach 4043 | 4S | 35W | NW7 |
| 531377 | Pebble Beach 4044 | 4S | 35W | NE7 |
| 531378 | Pebble Beach 4045 | 4S | 35W | NE7 |
| 531379 | Pebble Beach 4046 | 4S | 35W | NW8 |
| 531380 | Pebble Beach 4047 | 4S | 35W | NW8 |
| 531381 | Pebble Beach 4142 | 4S | 35W | NW7 |
| 531382 | Pebble Beach 4143 | 4S | 35W | NW7 |
| 531383 | Pebble Beach 4144 | 4S | 35W | NE7 |
| 531384 | Pebble Beach 4145 | 4S | 35W | NE7 |
| 531385 | Pebble Beach 4146 | 4S | 35W | NW8 |
| 531386 | Pebble Beach 4147 | 4S | 35W | NW8 |
| 531387 | Pebble Beach 4244 | 4S | 35W | SE6 |
| 531388 | Pebble Beach 4245 | 4S | 35W | SE6 |
| 531389 | Pebble Beach 4246 | 4S | 35W | SW5 |
| 531390 | Pebble Beach 4247 | 4S | 35W | SW5 |
| 531391 | Pebble Beach 4344 | 4S | 35W | SE6 |
| 531392 | Pebble Beach 4345 | 4S | 35W | SE6 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 531393 | Pebble Beach 4346 | 4S | 35W | SW5 |
| 531394 | Pebble Beach 4347 | 4S | 35W | SW5 |
| 531395 | Pebble Beach 4444 | 4S | 35W | NE6 |
| 531396 | Pebble Beach 4445 | 4S | 35W | NE6 |
| 531397 | Pebble Beach 4446 | 4S | 35W | NW5 |
| 531398 | Pebble Beach 4447 | 4S | 35W | NW5 |
| 531399 | Pebble Beach 4544 | 4S | 35W | NE6 |
| 531400 | Pebble Beach 4547 | 4S | 35W | NW5 |
| 531401 | Pebble Beach 4644 | 3S | 35W | SE31 |
| 531402 | Pebble Beach 4645 | 3S | 35W | SE31 |
| 531403 | Pebble Beach 4646 | 3S | 35W | SW32 |
| 531404 | Pebble Beach 4647 | 3S | 35W | SW32 |
| 531405 | Pebble Beach 4744 | 3S | 35W | SE31 |
| 531406 | Pebble Beach 4745 | 3S | 35W | SE31 |
| 531407 | Pebble Beach 4746 | 3S | 35W | SW32 |
| 531408 | Pebble Beach 4747 | 3S | 35W | SW32 |
| 531409 | Pebble Beach 4844 | 3S | 35W | NE31 |
| 531410 | Pebble Beach 4845 | 3S | 35W | NE31 |
| 531411 | Pebble Beach 4846 | 3S | 35W | NW32 |
| 531412 | Pebble Beach 4847 | 3S | 35W | NW32 |
| 531413 | Pebble Beach 4944 | 3S | 35W | NE31 |
| 531414 | Pebble Beach 4945 | 3S | 35W | NE31 |
| 531415 | Pebble Beach 4946 | 3S | 35W | NW32 |
| 531416 | Pebble Beach 4947 | 3S | 35W | NW32 |
| 531417 | Pebble Beach 5044 | 3S | 35W | SE30 |
| 531418 | Pebble Beach 5045 | 3S | 35W | SE30 |
| 531419 | Pebble Beach 5046 | 3S | 35W | SW29 |
| 531420 | Pebble Beach 5047 | 3S | 35W | SW29 |
| 531421 | Pebble Beach 5144 | 3S | 35W | SE30 |
| 531422 | Pebble Beach 5145 | 3S | 35W | SE30 |
| 531423 | Pebble Beach 5146 | 3S | 35W | SW29 |
| 531424 | Pebble Beach 5147 | 3S | 35W | SW29 |
| 531425 | Pebble Beach 5244 | 3S | 35W | NE30 |
| 531426 | Pebble Beach 5245 | 3S | 35W | NE30 |
| 531427 | Pebble Beach 5246 | 3S | 35W | NW29 |
| 531428 | Pebble Beach 5247 | 3S | 35W | NW29 |
| 531429 | Pebble Beach 5344 | 3S | 35W | NE30 |
| 531430 | Pebble Beach 5345 | 3S | 35W | NE30 |
| 531431 | Pebble Beach 5346 | 3S | 35W | NW29 |
| 531432 | Pebble Beach 5347 | 3S | 35W | NW29 |
| 531433 | Pebble Beach 5444 | 3S | 35W | SE19 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 531434 | Pebble Beach 5445 | 3S | 35W | SE19 |
| 531435 | Pebble Beach 5446 | 3S | 35W | SW20 |
| 531436 | Pebble Beach 5447 | 3S | 35W | SW20 |
| 531437 | Pebble Beach 5544 | 3S | 35W | SE19 |
| 531438 | Pebble Beach 5545 | 3S | 35W | SE19 |
| 531439 | Pebble Beach 5546 | 3S | 35W | SW20 |
| 531440 | Pebble Beach 5547 | 3S | 35W | SW20 |
| 531441 | Pebble Beach 5644 | 3S | 35W | NE19 |
| 531442 | Pebble Beach 5645 | 3S | 35W | NE19 |
| 531443 | Pebble Beach 5646 | 3S | 35W | NW20 |
| 531444 | Pebble Beach 5647 | 3S | 35W | NW20 |
| 531445 | Pebble Beach 5744 | 3S | 35W | NE19 |
| 531446 | Pebble Beach 5745 | 3S | 35W | NE19 |
| 531447 | Pebble Beach 5746 | 3S | 35W | NW20 |
| 531448 | Pebble Beach 5747 | 3S | 35W | NW20 |
| 531449 | Pebble Beach 5844 | 3S | 35W | SE18 |
| 531450 | Pebble Beach 5845 | 3S | 35W | SE18 |
| 531451 | Pebble Beach 5846 | 3S | 35W | SW17 |
| 531452 | Pebble Beach 5847 | 3S | 35W | SW17 |
| 531453 | Pebble Beach 5944 | 3S | 35W | SE18 |
| 531454 | Pebble Beach 5945 | 3S | 35W | SE18 |
| 531455 | Pebble Beach 5946 | 3S | 35W | SW17 |
| 531456 | Pebble Beach 5947 | 3S | 35W | SW17 |
| 531457 | Pebble Beach 6044 | 3S | 35W | NE18 |
| 531458 | Pebble Beach 6045 | 3S | 35W | NE18 |
| 531459 | Pebble Beach 6046 | 3S | 35W | NW17 |
| 531460 | Pebble Beach 6047 | 3S | 35W | NW17 |
| 531461 | Pebble Beach 6144 | 3S | 35W | NE18 |
| 531462 | Pebble Beach 6145 | 3S | 35W | NE18 |
| 531463 | Pebble Beach 6146 | 3S | 35W | NW17 |
| 531464 | Pebble Beach 6147 | 3S | 35W | NW17 |
| 531648 | Pebble Beach 4545 | 4S | 35W | NE6 |
| 531649 | Pebble Beach 4546 | 4S | 35W | NW5 |
| 540399 | Pebble Beach 5555 | 3S | 35W | SW22 |
| 540400 | Pebble Beach 5655 | 3S | 35W | NW22 |
| 540401 | Pebble Beach 5755 | 3S | 35W | NW22 |
| 540402 | Pebble Beach 5855 | 3S | 35W | SW15 |
| 540403 | Pebble Beach 5955 | 3S | 35W | SW15 |
| 540404 | Pebble Beach 6055 | 3S | 35W | NW15 |
| 540405 | Pebble Beach 6155 | 3S | 35W | NW15 |
| 540406 | Pebble Beach 6255 | 3S | 35W | SW10 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 540407 | Pebble Beach 6355 | 3S | 35W | SW10 |
| 540408 | Pebble Beach 6448 | 3S | 35W | NE8 |
| 540409 | Pebble Beach 6449 | 3S | 35W | NE8 |
| 540410 | Pebble Beach 6450 | 3S | 35W | NW9 |
| 540411 | Pebble Beach 6451 | 3S | 35W | NW9 |
| 540412 | Pebble Beach 6452 | 3S | 35W | NE9 |
| 540413 | Pebble Beach 6453 | 3S | 35W | NE9 |
| 540414 | Pebble Beach 6454 | 3S | 35W | NW10 |
| 540415 | Pebble Beach 6455 | 3S | 35W | NW10 |
| 540416 | Pebble Beach 6548 | 3S | 35W | NE8 |
| 540417 | Pebble Beach 6549 | 3S | 35W | NE8 |
| 540418 | Pebble Beach 6550 | 3S | 35W | NW9 |
| 540419 | Pebble Beach 6551 | 3S | 35W | NW9 |
| 540420 | Pebble Beach 6552 | 3S | 35W | NE9 |
| 540421 | Pebble Beach 6553 | 3S | 35W | NE9 |
| 540422 | Pebble Beach 6554 | 3S | 35W | NW10 |
| 540423 | Pebble Beach 6555 | 3S | 35W | NW10 |
| 540424 | Sill 7643 | 3S | 35W | SE22 |
| 540425 | Sill 7644 | 3S | 35W | SE22 |
| 540426 | Sill 7645 | 3S | 35W | SW23 |
| 540427 | Sill 7646 | 3S | 35W | SW23 |
| 540428 | Sill 7647 | 3S | 35W | SE23 |
| 540429 | Sill 7648 | 3S | 35W | SE23 |
| 540430 | Sill 7743 | 3S | 35W | NE22 |
| 540431 | Sill 7744 | 3S | 35W | NE22 |
| 540432 | Sill 7745 | 3S | 35W | NW23 |
| 540433 | Sill 7746 | 3S | 35W | NW23 |
| 540434 | Sill 7747 | 3S | 35W | NE23 |
| 540435 | Sill 7748 | 3S | 35W | NE23 |
| 540436 | Sill 7843 | 3S | 35W | NE22 |
| 540437 | Sill 7844 | 3S | 35W | NE22 |
| 540438 | Sill 7845 | 3S | 35W | NW23 |
| 540439 | Sill 7846 | 3S | 35W | NW23 |
| 540440 | Sill 7847 | 3S | 35W | NE23 |
| 540441 | Sill 7848 | 3S | 35W | NE23 |
| 540442 | Sill 7943 | 3S | 35W | SE15 |
| 540443 | Sill 7944 | 3S | 35W | SE15 |
| 540444 | Sill 7945 | 3S | 35W | SW14 |
| 540445 | Sill 7946 | 3S | 35W | SW14 |
| 540446 | Sill 7947 | 3S | 35W | SE14 |
| 540447 | Sill 7948 | 3S | 35W | SE14 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 540448 | Sill 8043 | 3S | 35W | SE15 |
| 540449 | Sill 8044 | 3S | 35W | SE15 |
| 540450 | Sill 8045 | 3S | 35W | SW14 |
| 540451 | Sill 8046 | 3S | 35W | SW14 |
| 540452 | Sill 8047 | 3S | 35W | SE14 |
| 540453 | Sill 8048 | 3S | 35W | SE14 |
| 540454 | Sill 8143 | 3S | 35W | NE15 |
| 540455 | Sill 8144 | 3S | 35W | NE15 |
| 540456 | Sill 8145 | 3S | 35W | NW14 |
| 540457 | Sill 8146 | 3S | 35W | NW14 |
| 540458 | Sill 8147 | 3S | 35W | NE14 |
| 540459 | Sill 8148 | 3S | 35W | NE14 |
| 540460 | Sill 8243 | 3S | 35W | NE15 |
| 540461 | Sill 8244 | 3S | 35W | NE15 |
| 540462 | Sill 8245 | 3S | 35W | NW14 |
| 540463 | Sill 8246 | 3S | 35W | NW14 |
| 540464 | Sill 8247 | 3S | 35W | NE14 |
| 540465 | Sill 8248 | 3S | 35W | NE14 |
| 540466 | Sill 8343 | 3S | 35W | SE10 |
| 540467 | Sill 8344 | 3S | 35W | SE10 |
| 540468 | Sill 8443 | 3S | 35W | SE10 |
| 540469 | Sill 8444 | 3S | 35W | SE10 |
| 540470 | Sill 8543 | 3S | 35W | NE10 |
| 540471 | Sill 8544 | 3S | 35W | NE10 |
| 540472 | Sill 8643 | 3S | 35W | NE10 |
| 540473 | Sill 8644 | 3S | 35W | NE10 |
| 541245 | PB 113 | 4S | 35W | SW18 |
| 541246 | PB 114 | 4S | 35W | SW18 |
| 541247 | PB 115 | 4S | 35W | SE18 |
| 541248 | PB 116 | 4S | 35W | SE18 |
| 541249 | PB 117 | 4S | 35W | SW18 |
| 541250 | PB 118 | 4S | 35W | SW18 |
| 541251 | PB 119 | 4S | 35W | SE18 |
| 541252 | PB 120 | 4S | 35W | SE18 |
| 542561 | Pebble Beach 4856 | 3S | 35W | NE34,NW34 |
| 542562 | Pebble Beach 4956 | 3S | 35W | NE34,NW34 |
| 542563 | Pebble Beach 5056 | 3S | 35W | SE27,SW27 |
| 542564 | Pebble Beach 5156 | 3S | 35W | SE27,SW27 |
| 542565 | Pebble Beach 5256 | 3S | 35W | NE27,NW27 |
| 542566 | Pebble Beach 5356 | 3S | 35W | NE27,NW27 |
| 542567 | Pebble Beach 5456 | 3S | 35W | SE22,SW22 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 542568 | Pebble Beach 5556 | 3S | 35W | SE22,SW22 |
| 542569 | Pebble Beach 5656 | 3S | 35W | NE22,NW22 |
| 542570 | Pebble Beach 5756 | 3S | 35W | NE22,NW22 |
| 542571 | Pebble Beach 5856 | 3S | 35W | SE15,SW15 |
| 542572 | Pebble Beach 5956 | 3S | 35W | SE15,SW15 |
| 542573 | Pebble Beach 6056 | 3S | 35W | NE15,NW15 |
| 542574 | Pebble Beach 6156 | 3S | 35W | NE15,NW15 |
| 542575 | Pebble Beach 6256 | 3S | 35W | SE10,SW10 |
| 542576 | Pebble Beach 6356 | 3S | 35W | SE10,SW10 |
| 542577 | Pebble Beach 6456 | 3S | 35W | NE10,NW10 |
| 542578 | Pebble Beach 6556 | 3S | 35W | NE10,NW10 |
| 542579 | Pebble Beach 4642 | 3S | 35W | SW31 |
| 542580 | Pebble Beach 4643 | 3S | 35W | SW31 |
| 542581 | Pebble Beach 4742 | 3S | 35W | SW31 |
| 542582 | Pebble Beach 4743 | 3S | 35W | SW31 |
| 542583 | Pebble Beach 4842 | 3S | 35W | NW31 |
| 542584 | Pebble Beach 4843 | 3S | 35W | NW31 |
| 542585 | Pebble Beach 4942 | 3S | 35W | NW31 |
| 542586 | Pebble Beach 4943 | 3S | 35W | NW31 |
| 542587 | Pebble Beach 5042 | 3S | 35W | SW30 |
| 542588 | Pebble Beach 5043 | 3S | 35W | SW30 |
| 542589 | Pebble Beach 5142 | 3S | 35W | SW30 |
| 542590 | Pebble Beach 5143 | 3S | 35W | SW30 |
| 542591 | Pebble Beach 5242 | 3S | 35W | NW30 |
| 542592 | Pebble Beach 5243 | 3S | 35W | NW30 |
| 542593 | Pebble Beach 5342 | 3S | 35W | NW30 |
| 542594 | Pebble Beach 5343 | 3S | 35W | NW30 |
| 542595 | Pebble Beach 5442 | 3S | 35W | SW19 |
| 542596 | Pebble Beach 5443 | 3S | 35W | SW19 |
| 542597 | Pebble Beach 5542 | 3S | 35W | SW19 |
| 542598 | Pebble Beach 5543 | 3S | 35W | SW19 |
| 542599 | Pebble Beach 5642 | 3S | 35W | NW19 |
| 542600 | Pebble Beach 5643 | 3S | 35W | NW19 |
| 542601 | Pebble Beach 5742 | 3S | 35W | NW19 |
| 542602 | Pebble Beach 5743 | 3S | 35W | NW19 |
| 542603 | Pebble Beach 5842 | 3S | 35W | SW18 |
| 542604 | Pebble Beach 5843 | 3S | 35W | SW18 |
| 566247 | Pebble Beach 1936 | 5S | 36W | SE4 |
| 566248 | Pebble Beach 1937 | 5S | 36W | SE4 |
| 566249 | Pebble Beach 1938 | 5S | 36W | SW3 |
| 566250 | Pebble Beach 1939 | 5S | 36W | SW3 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 566251 | Pebble Beach 1940 | 5S | 36W | SE3 |
| 566252 | Pebble Beach 1941 | 5S | 36W | SE3 |
| 566287 | Pebble Beach 2036 | 5S | 36W | NE4 |
| 566288 | Pebble Beach 2037 | 5S | 36W | NE4 |
| 566289 | Pebble Beach 2038 | 5S | 36W | NW3 |
| 566290 | Pebble Beach 2039 | 5S | 36W | NW3 |
| 566291 | Pebble Beach 2040 | 5S | 36W | NE3 |
| 566292 | Pebble Beach 2041 | 5S | 36W | NE3 |
| 566327 | Pebble Beach 2136 | 5S | 36W | NE4 |
| 566328 | Pebble Beach 2137 | 5S | 36W | NE4 |
| 566329 | Pebble Beach 2138 | 5S | 36W | NW3 |
| 566330 | Pebble Beach 2139 | 5S | 36W | NW3 |
| 566331 | Pebble Beach 2140 | 5S | 36W | NE3 |
| 566332 | Pebble Beach 2141 | 5S | 36W | NE3 |
| 566367 | Pebble Beach 2236 | 4S | 36W | SE35 |
| 566368 | Pebble Beach 2237 | 4S | 36W | SE35 |
| 566369 | Pebble Beach 2238 | 4S | 36W | SW36 |
| 566370 | Pebble Beach 2239 | 4S | 36W | SW36 |
| 566371 | Pebble Beach 2240 | 4S | 36W | SE36 |
| 566372 | Pebble Beach 2241 | 4S | 36W | SE36 |
| 566373 | Pebble Beach 2242 | 4S | 35W | SW31 |
| 566407 | Pebble Beach 2336 | 4S | 36W | SE35 |
| 566408 | Pebble Beach 2337 | 4S | 36W | SE35 |
| 566409 | Pebble Beach 2338 | 4S | 36W | SW36 |
| 566410 | Pebble Beach 2339 | 4S | 36W | SW36 |
| 566411 | Pebble Beach 2340 | 4S | 36W | SE36 |
| 566412 | Pebble Beach 2341 | 4S | 36W | SE36 |
| 566413 | Pebble Beach 2342 | 4S | 35W | SW31 |
| 566447 | Pebble Beach 2436 | 4S | 36W | NE35 |
| 566448 | Pebble Beach 2437 | 4S | 36W | NE35 |
| 566449 | Pebble Beach 2438 | 4S | 36W | NW36 |
| 566450 | Pebble Beach 2439 | 4S | 36W | NW36 |
| 566451 | Pebble Beach 2440 | 4S | 36W | NE36 |
| 566452 | Pebble Beach 2441 | 4S | 36W | NE36 |
| 566453 | Pebble Beach 2442 | 4S | 35W | NW31 |
| 566487 | Pebble Beach 2536 | 4S | 36W | NE35 |
| 566488 | Pebble Beach 2537 | 4S | 36W | NE35 |
| 566489 | Pebble Beach 2538 | 4S | 36W | NW36 |
| 566490 | Pebble Beach 2539 | 4S | 36W | NW36 |
| 566491 | Pebble Beach 2540 | 4S | 36W | NE36 |
| 566492 | Pebble Beach 2541 | 4S | 36W | NE36 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 566527 | Pebble Beach 2636 | 4S | 36W | SE26 |
| 566528 | Pebble Beach 2637 | 4S | 36W | SE26 |
| 566529 | Pebble Beach 2638 | 4S | 36W | SW25 |
| 566530 | Pebble Beach 2639 | 4S | 36W | SW25 |
| 566531 | Pebble Beach 2640 | 4S | 36W | SE25 |
| 566532 | Pebble Beach 2641 | 4S | 36W | SE25 |
| 566567 | Pebble Beach 2736 | 4S | 36W | SE26 |
| 566568 | Pebble Beach 2737 | 4S | 36W | SE26 |
| 566569 | Pebble Beach 2738 | 4S | 36W | SW25 |
| 566570 | Pebble Beach 2739 | 4S | 36W | SW25 |
| 566571 | Pebble Beach 2740 | 4S | 36W | SE25 |
| 566572 | Pebble Beach 2741 | 4S | 36W | SE25 |
| 566607 | Pebble Beach 3138 | 4S | 36W | SW24 |
| 566608 | Pebble Beach 3139 | 4S | 36W | SW24 |
| 566609 | Pebble Beach 3140 | 4S | 36W | SE24 |
| 566610 | Pebble Beach 3141 | 4S | 36W | SE24 |
| 566637 | Pebble Beach 2938 | 4S | 36W | NW25 |
| 566638 | Pebble Beach 2939 | 4S | 36W | NW25 |
| 566639 | Pebble Beach 2940 | 4S | 36W | NE25 |
| 566640 | Pebble Beach 2941 | 4S | 36W | NE25 |
| 566655 | Pebble Beach 2836 | 4S | 36W | NE26 |
| 566656 | Pebble Beach 2837 | 4S | 36W | NE26 |
| 566657 | Pebble Beach 2838 | 4S | 36W | NW25 |
| 566658 | Pebble Beach 2839 | 4S | 36W | NW25 |
| 566659 | Pebble Beach 2840 | 4S | 36W | NE25 |
| 566660 | Pebble Beach 2841 | 4S | 36W | NE25 |
| 566697 | Pebble Beach 3238 | 4S | 36W | NW24 |
| 566698 | Pebble Beach 3239 | 4S | 36W | NW24 |
| 566699 | Pebble Beach 3240 | 4S | 36W | NE24 |
| 566700 | Pebble Beach 3241 | 4S | 36W | NE24 |
| 566701 | Pebble Beach 3242 | 4S | 35W | NW19 |
| 566737 | Pebble Beach 3038 | 4S | 36W | SW24 |
| 566738 | Pebble Beach 3039 | 4S | 36W | SW24 |
| 566739 | Pebble Beach 3040 | 4S | 36W | SE24 |
| 566740 | Pebble Beach 3041 | 4S | 36W | SE24 |
| 566751 | Pebble Beach 3252 | 4S | 35W | NE21 |
| 566752 | Pebble Beach 3253 | 4S | 35W | NE21 |
| 566753 | Pebble Beach 3254 | 4S | 35W | NW22 |
| 566754 | Pebble Beach 3255 | 4S | 35W | NW22 |
| 566767 | Pebble Beach 3338 | 4S | 36W | NW24 |
| 566768 | Pebble Beach 3339 | 4S | 36W | NW24 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 566769 | Pebble Beach 3340 | 4S | 36W | NE24 |
| 566770 | Pebble Beach 3341 | 4S | 36W | NE24 |
| 566771 | Pebble Beach 3342 | 4S | 35W | NW19 |
| 566781 | Pebble Beach 3352 | 4S | 35W | NE21 |
| 566782 | Pebble Beach 3353 | 4S | 35W | NE21 |
| 566783 | Pebble Beach 3354 | 4S | 35W | NW22 |
| 566784 | Pebble Beach 3355 | 4S | 35W | NW22 |
| 566793 | Pebble Beach 3438 | 4S | 36W | SW13 |
| 566794 | Pebble Beach 3439 | 4S | 36W | SW13 |
| 566795 | Pebble Beach 3440 | 4S | 36W | SE13 |
| 566796 | Pebble Beach 3441 | 4S | 36W | SE13 |
| 566797 | Pebble Beach 3446 | 4S | 35W | SW17 |
| 566798 | Pebble Beach 3447 | 4S | 35W | SW17 |
| 566799 | Pebble Beach 3448 | 4S | 35W | SE17 |
| 566800 | Pebble Beach 3449 | 4S | 35W | SE17 |
| 566801 | Pebble Beach 3450 | 4S | 35W | SW16 |
| 566802 | Pebble Beach 3451 | 4S | 35W | SW16 |
| 566811 | Pebble Beach 3538 | 4S | 36W | SW13 |
| 566812 | Pebble Beach 3539 | 4S | 36W | SW13 |
| 566813 | Pebble Beach 3540 | 4S | 36W | SE13 |
| 566814 | Pebble Beach 3541 | 4S | 36W | SE13 |
| 566815 | Pebble Beach 3546 | 4S | 35W | SW17 |
| 566816 | Pebble Beach 3547 | 4S | 35W | SW17 |
| 566817 | Pebble Beach 3548 | 4S | 35W | SE17 |
| 566818 | Pebble Beach 3549 | 4S | 35W | SE17 |
| 566819 | Pebble Beach 3550 | 4S | 35W | SW16 |
| 566820 | Pebble Beach 3551 | 4S | 35W | SW16 |
| 566829 | Pebble Beach 3638 | 4S | 36W | NW13 |
| 566830 | Pebble Beach 3639 | 4S | 36W | NW13 |
| 566831 | Pebble Beach 3640 | 4S | 36W | NE13 |
| 566832 | Pebble Beach 3641 | 4S | 36W | NE13 |
| 566833 | Pebble Beach 3646 | 4S | 35W | NW17 |
| 566834 | Pebble Beach 3647 | 4S | 35W | NW17 |
| 566835 | Pebble Beach 3648 | 4S | 35W | NE17 |
| 566836 | Pebble Beach 3649 | 4S | 35W | NE17 |
| 566837 | Pebble Beach 3650 | 4S | 35W | NW16 |
| 566838 | Pebble Beach 3651 | 4S | 35W | NW16 |
| 566847 | Pebble Beach 3738 | 4S | 36W | NW13 |
| 566848 | Pebble Beach 3739 | 4S | 36W | NW13 |
| 566849 | Pebble Beach 3740 | 4S | 36W | NE13 |
| 566850 | Pebble Beach 3741 | 4S | 36W | NE13 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 566851 | Pebble Beach 3746 | 4S | 35W | NW17 |
| 566852 | Pebble Beach 3747 | 4S | 35W | NW17 |
| 566853 | Pebble Beach 3748 | 4S | 35W | NE17 |
| 566854 | Pebble Beach 3749 | 4S | 35W | NE17 |
| 566855 | Pebble Beach 3750 | 4S | 35W | NW16 |
| 566856 | Pebble Beach 3751 | 4S | 35W | NW16 |
| 566865 | Pebble Beach 3838 | 4S | 36W | SW12 |
| 566866 | Pebble Beach 3839 | 4S | 36W | SW12 |
| 566867 | Pebble Beach 3840 | 4S | 36W | SE12 |
| 566868 | Pebble Beach 3841 | 4S | 36W | SE12 |
| 566877 | Pebble Beach 3938 | 4S | 36W | SW12 |
| 566878 | Pebble Beach 3939 | 4S | 36W | SW12 |
| 566879 | Pebble Beach 3940 | 4S | 36W | SE12 |
| 566880 | Pebble Beach 3941 | 4S | 36W | SE12 |
| 566889 | Pebble Beach 4038 | 4S | 36W | NW12 |
| 566890 | Pebble Beach 4039 | 4S | 36W | NW12 |
| 566891 | Pebble Beach 4040 | 4S | 36W | NE12 |
| 566892 | Pebble Beach 4041 | 4S | 36W | NE12 |
| 566901 | Pebble Beach 4138 | 4S | 36W | NW12 |
| 566902 | Pebble Beach 4139 | 4S | 36W | NW12 |
| 566903 | Pebble Beach 4140 | 4S | 36W | NE12 |
| 566904 | Pebble Beach 4141 | 4S | 36W | NE12 |
| 566905 | Pebble Beach 4238 | 4S | 36W | SW1 |
| 566906 | Pebble Beach 4239 | 4S | 36W | SW1 |
| 566907 | Pebble Beach 4240 | 4S | 36W | SE1 |
| 566908 | Pebble Beach 4241 | 4S | 36W | SE1 |
| 566909 | Pebble Beach 4242 | 4S | 35W | SW6 |
| 566910 | Pebble Beach 4243 | 4S | 35W | SW6 |
| 566911 | Pebble Beach 4338 | 4S | 36W | SW1 |
| 566912 | Pebble Beach 4339 | 4S | 36W | SW1 |
| 566913 | Pebble Beach 4340 | 4S | 36W | SE1 |
| 566914 | Pebble Beach 4341 | 4S | 36W | SE1 |
| 566915 | Pebble Beach 4342 | 4S | 35W | SW6 |
| 566916 | Pebble Beach 4343 | 4S | 35W | SW6 |
| 566917 | Pebble Beach 4438 | 4S | 36W | NW1 |
| 566918 | Pebble Beach 4439 | 4S | 36W | NW1 |
| 566919 | Pebble Beach 4440 | 4S | 36W | NE1 |
| 566920 | Pebble Beach 4441 | 4S | 36W | NE1 |
| 566921 | Pebble Beach 4442 | 4S | 35W | NW6 |
| 566922 | Pebble Beach 4443 | 4S | 35W | NW6 |
| 566923 | Pebble Beach 4538 | 4S | 36W | NW1 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 566924 | Pebble Beach 4539 | 4S | 36W | NW1 |
| 566925 | Pebble Beach 4540 | 4S | 36W | NE1 |
| 566926 | Pebble Beach 4541 | 4S | 36W | NE1 |
| 566927 | Pebble Beach 4542 | 4S | 35W | NW6 |
| 566928 | Pebble Beach 4543 | 4S | 35W | NW6 |
| 566929 | Pebble Beach 4638 | 3S | 36W | SW36 |
| 566930 | Pebble Beach 4639 | 3S | 36W | SW36 |
| 566931 | Pebble Beach 4640 | 3S | 36W | SE36 |
| 566932 | Pebble Beach 4641 | 3S | 36W | SE36 |
| 566933 | Pebble Beach 4738 | 3S | 36W | SW36 |
| 566934 | Pebble Beach 4739 | 3S | 36W | SW36 |
| 566935 | Pebble Beach 4740 | 3S | 36W | SE36 |
| 566936 | Pebble Beach 4741 | 3S | 36W | SE36 |
| 566937 | Pebble Beach 4838 | 3S | 36W | NW36 |
| 566938 | Pebble Beach 4839 | 3S | 36W | NW36 |
| 566939 | Pebble Beach 4840 | 3S | 36W | NE36 |
| 566940 | Pebble Beach 4841 | 3S | 36W | NE36 |
| 566941 | Pebble Beach 4938 | 3S | 36W | NW36 |
| 566942 | Pebble Beach 4939 | 3S | 36W | NW36 |
| 566943 | Pebble Beach 4940 | 3S | 36W | NE36 |
| 566944 | Pebble Beach 4941 | 3S | 36W | NE36 |
| 566945 | Pebble Beach 5038 | 3S | 36W | SW25 |
| 566946 | Pebble Beach 5039 | 3S | 36W | SW25 |
| 566947 | Pebble Beach 5040 | 3S | 36W | SE25 |
| 566948 | Pebble Beach 5041 | 3S | 36W | SE25 |
| 566949 | Pebble Beach 5138 | 3S | 36W | SW25 |
| 566950 | Pebble Beach 5139 | 3S | 36W | SW25 |
| 566951 | Pebble Beach 5140 | 3S | 36W | SE25 |
| 566952 | Pebble Beach 5141 | 3S | 36W | SE25 |
| 566953 | Pebble Beach 5238 | 3S | 36W | NW25 |
| 566954 | Pebble Beach 5239 | 3S | 36W | NW25 |
| 566955 | Pebble Beach 5240 | 3S | 36W | NE25 |
| 566956 | Pebble Beach 5241 | 3S | 36W | NE25 |
| 566957 | Pebble Beach 5338 | 3S | 36W | NW25 |
| 566958 | Pebble Beach 5339 | 3S | 36W | NW25 |
| 566959 | Pebble Beach 5340 | 3S | 36W | NE25 |
| 566960 | Pebble Beach 5341 | 3S | 36W | NE25 |
| 566961 | Pebble Beach 5438 | 3S | 36W | SW24 |
| 566962 | Pebble Beach 5439 | 3S | 36W | SW24 |
| 566963 | Pebble Beach 5440 | 3S | 36W | SE24 |
| 566964 | Pebble Beach 5441 | 3S | 36W | SE24 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 566965 | Pebble Beach 5538 | 3S | 36W | SW24 |
| 566966 | Pebble Beach 5539 | 3S | 36W | SW24 |
| 566967 | Pebble Beach 5540 | 3S | 36W | SE24 |
| 566968 | Pebble Beach 5541 | 3S | 36W | SE24 |
| 566969 | Pebble Beach 5638 | 3S | 36W | NW24 |
| 566970 | Pebble Beach 5639 | 3S | 36W | NW24 |
| 566971 | Pebble Beach 5640 | 3S | 36W | NE24 |
| 566972 | Pebble Beach 5641 | 3S | 36W | NE24 |
| 566973 | Pebble Beach 5738 | 3S | 36W | NW24 |
| 566974 | Pebble Beach 5739 | 3S | 36W | NW24 |
| 566975 | Pebble Beach 5740 | 3S | 36W | NE24 |
| 566976 | Pebble Beach 5741 | 3S | 36W | NE24 |
| 566977 | Pebble Beach 5838 | 3S | 36W | SW13 |
| 566978 | Pebble Beach 5839 | 3S | 36W | SW13 |
| 566979 | Pebble Beach 5840 | 3S | 36W | SE13 |
| 566980 | Pebble Beach 5841 | 3S | 36W | SE13 |
| 566981 | Pebble Beach 5938 | 3S | 36W | SW13 |
| 566982 | Pebble Beach 5939 | 3S | 36W | SW13 |
| 566983 | Pebble Beach 5940 | 3S | 36W | SE13 |
| 566984 | Pebble Beach 5941 | 3S | 36W | SE13 |
| 566985 | Pebble Beach 6038 | 3S | 36W | NW13 |
| 566986 | Pebble Beach 6039 | 3S | 36W | NW13 |
| 566987 | Pebble Beach 6040 | 3S | 36W | NE13 |
| 566988 | Pebble Beach 6041 | 3S | 36W | NE13 |
| 566989 | Pebble Beach 6042 | 3S | 35W | NW18 |
| 566990 | Pebble Beach 6043 | 3S | 35W | NW18 |
| 566991 | Pebble Beach 6138 | 3S | 36W | NW13 |
| 566992 | Pebble Beach 6139 | 3S | 36W | NW13 |
| 566993 | Pebble Beach 6140 | 3S | 36W | NE13 |
| 566994 | Pebble Beach 6141 | 3S | 36W | NE13 |
| 566995 | Pebble Beach 6142 | 3S | 35W | NW18 |
| 566996 | Pebble Beach 6143 | 3S | 35W | NW18 |
| 566997 | Pebble Beach 6238 | 3S | 36W | SW12 |
| 566998 | Pebble Beach 6239 | 3S | 36W | SW12 |
| 566999 | Pebble Beach 6240 | 3S | 36W | SE12 |
| 567000 | Pebble Beach 6241 | 3S | 36W | SE12 |
| 567001 | Pebble Beach 6242 | 3S | 35W | SW7 |
| 567002 | Pebble Beach 6243 | 3S | 35W | SW7 |
| 567003 | Pebble Beach 6244 | 3S | 35W | SE7 |
| 567004 | Pebble Beach 6245 | 3S | 35W | SE7 |
| 567005 | Pebble Beach 6246 | 3S | 35W | SW8 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 567006 | Pebble Beach 6247 | 3S | 35W | SW8 |
| 567007 | Pebble Beach 6338 | 3S | 36W | SW12 |
| 567008 | Pebble Beach 6339 | 3S | 36W | SW12 |
| 567009 | Pebble Beach 6340 | 3S | 36W | SE12 |
| 567010 | Pebble Beach 6341 | 3S | 36W | SE12 |
| 567011 | Pebble Beach 6342 | 3S | 35W | SW7 |
| 567012 | Pebble Beach 6343 | 3S | 35W | SW7 |
| 567013 | Pebble Beach 6344 | 3S | 35W | SE7 |
| 567014 | Pebble Beach 6345 | 3S | 35W | SE7 |
| 567015 | Pebble Beach 6346 | 3S | 35W | SW8 |
| 567016 | Pebble Beach 6347 | 3S | 35W | SW8 |
| 567017 | Pebble Beach 6438 | 3S | 36W | NW12 |
| 567018 | Pebble Beach 6439 | 3S | 36W | NW12 |
| 567019 | Pebble Beach 6440 | 3S | 36W | NE12 |
| 567020 | Pebble Beach 6441 | 3S | 36W | NE12 |
| 567021 | Pebble Beach 6442 | 3S | 35W | NW7 |
| 567022 | Pebble Beach 6443 | 3S | 35W | NW7 |
| 567023 | Pebble Beach 6444 | 3S | 35W | NE7 |
| 567024 | Pebble Beach 6445 | 3S | 35W | NE7 |
| 567025 | Pebble Beach 6446 | 3S | 35W | NW8 |
| 567026 | Pebble Beach 6447 | 3S | 35W | NW8 |
| 567035 | Pebble Beach 6546 | 3S | 35W | NW8 |
| 567036 | Pebble Beach 6547 | 3S | 35W | NW8 |
| 567045 | Pebble Beach 6646 | 3S | 35W | SW5 |
| 567046 | Pebble Beach 6647 | 3S | 35W | SW5 |
| 567047 | Pebble Beach 6648 | 3S | 35W | SE5 |
| 567048 | Pebble Beach 6649 | 3S | 35W | SE5 |
| 567049 | Pebble Beach 6650 | 3S | 35W | SW4 |
| 567050 | Pebble Beach 6651 | 3S | 35W | SW4 |
| 567051 | Pebble Beach 6652 | 3S | 35W | SE4 |
| 567052 | Pebble Beach 6653 | 3S | 35W | SE4 |
| 567053 | Pebble Beach 6654 | 3S | 35W | SW3 |
| 567054 | Pebble Beach 6655 | 3S | 35W | SW3 |
| 567055 | Pebble Beach 6656 | 3S | 35W | SW3,SE3 |
| 567064 | Pebble Beach 6746 | 3S | 35W | SW5 |
| 567065 | Pebble Beach 6747 | 3S | 35W | SW5 |
| 567066 | Pebble Beach 6748 | 3S | 35W | SE5 |
| 567067 | Pebble Beach 6749 | 3S | 35W | SE5 |
| 567068 | Pebble Beach 6750 | 3S | 35W | SW4 |
| 567069 | Pebble Beach 6751 | 3S | 35W | SW4 |
| 567083 | Pebble Beach 6846 | 3S | 35W | NW5 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 567084 | Pebble Beach 6847 | 3S | 35W | NW5 |
| 567085 | Pebble Beach 6848 | 3S | 35W | NE5 |
| 567086 | Pebble Beach 6849 | 3S | 35W | NE5 |
| 567087 | Pebble Beach 6850 | 3S | 35W | NW4 |
| 567088 | Pebble Beach 6851 | 3S | 35W | NW4 |
| 567102 | Pebble Beach 6946 | 3S | 35W | NW5 |
| 567103 | Pebble Beach 6947 | 3S | 35W | NW5 |
| 567104 | Pebble Beach 6948 | 3S | 35W | NE5 |
| 567105 | Pebble Beach 6949 | 3S | 35W | NE5 |
| 567106 | Pebble Beach 6950 | 3S | 35W | NW4 |
| 567107 | Pebble Beach 6951 | 3S | 35W | NW4 |
| 567841 | Sill 5343 | 4S | 35W | NE22 |
| 567842 | Sill 5344 | 4S | 35W | NE22 |
| 567843 | Sill 5345 | 4S | 35W | NW23 |
| 567844 | Sill 5346 | 4S | 35W | NW23 |
| 567845 | Sill 5347 | 4S | 35W | NE23 |
| 567855 | Sill 5443 | 4S | 35W | NE22 |
| 567856 | Sill 5444 | 4S | 35W | NE22 |
| 567857 | Sill 5445 | 4S | 35W | NW23 |
| 567858 | Sill 5446 | 4S | 35W | NW23 |
| 567859 | Sill 5447 | 4S | 35W | NE23 |
| 567860 | Sill 5448 | 4S | 35W | NE23 |
| 567869 | Sill 5545 | 4S | 35W | SW14 |
| 567870 | Sill 5546 | 4S | 35W | SW14 |
| 567871 | Sill 5547 | 4S | 35W | SE14 |
| 567872 | Sill 5548 | 4S | 35W | SE14 |
| 567873 | Sill 5549 | 4S | 35W | SW13 |
| 567881 | Sill 5645 | 4S | 35W | SW14 |
| 567882 | Sill 5646 | 4S | 35W | SW14 |
| 567883 | Sill 5647 | 4S | 35W | SE14 |
| 567884 | Sill 5648 | 4S | 35W | SE14 |
| 567885 | Sill 5649 | 4S | 35W | SW13 |
| 567886 | Sill 5650 | 4S | 35W | SW13 |
| 567893 | Sill 5745 | 4S | 35W | NW14 |
| 567894 | Sill 5746 | 4S | 35W | NW14 |
| 567895 | Sill 5747 | 4S | 35W | NE14 |
| 567896 | Sill 5748 | 4S | 35W | NE14 |
| 567897 | Sill 5749 | 4S | 35W | NW13 |
| 567898 | Sill 5750 | 4S | 35W | NW13 |
| 567905 | Sill 5845 | 4S | 35W | NW14 |
| 567906 | Sill 5846 | 4S | 35W | NW14 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 567907 | Sill 5847 | 4S | 35W | NE14 |
| 567908 | Sill 5848 | 4S | 35W | NE14 |
| 567909 | Sill 5849 | 4S | 35W | NW13 |
| 567910 | Sill 5850 | 4S | 35W | NW13 |
| 567911 | Sill 5851 | 4S | 35W | NE13 |
| 567917 | Sill 5945 | 4S | 35W | SW11 |
| 567918 | Sill 5946 | 4S | 35W | SW11 |
| 567919 | Sill 5947 | 4S | 35W | SE11 |
| 567920 | Sill 5948 | 4S | 35W | SE11 |
| 567921 | Sill 5949 | 4S | 35W | SW12 |
| 567922 | Sill 5950 | 4S | 35W | SW12 |
| 567923 | Sill 5953 | 4S | 34W | SW7 |
| 567927 | Sill 6045 | 4S | 35W | SW11 |
| 567928 | Sill 6046 | 4S | 35W | SW11 |
| 567929 | Sill 6047 | 4S | 35W | SE11 |
| 567930 | Sill 6048 | 4S | 35W | SE11 |
| 567931 | Sill 6049 | 4S | 35W | SW12 |
| 567932 | Sill 6050 | 4S | 35W | SW12 |
| 567933 | Sill 6053 | 4S | 34W | SW7 |
| 567937 | Sill 6145 | 4S | 35W | NW11 |
| 567938 | Sill 6146 | 4S | 35W | NW11 |
| 567939 | Sill 6147 | 4S | 35W | NE11 |
| 567940 | Sill 6148 | 4S | 35W | NE11 |
| 567941 | Sill 6149 | 4S | 35W | NW12 |
| 567942 | Sill 6150 | 4S | 35W | NW12 |
| 567943 | Sill 6153 | 4S | 34W | NW7 |
| 567944 | Sill 6154 | 4S | 34W | NW7 |
| 567947 | Sill 6253 | 4S | 34W | NW7 |
| 567948 | Sill 6254 | 4S | 34W | NW7 |
| 567949 | Sill 6255 | 4S | 34W | NE7 |
| 567951 | Sill 6345 | 4S | 35W | SW2 |
| 567952 | Sill 6346 | 4S | 35W | SW2 |
| 567953 | Sill 6347 | 4S | 35W | SE2 |
| 567954 | Sill 6348 | 4S | 35W | SE2 |
| 567955 | Sill 6349 | 4S | 35W | SW1 |
| 567956 | Sill 6350 | 4S | 35W | SW1 |
| 567957 | Sill 6353 | 4S | 34W | SW6 |
| 567958 | Sill 6354 | 4S | 34W | SW6 |
| 567959 | Sill 6355 | 4S | 34W | SE6 |
| 567960 | Sill 6356 | 4S | 34W | SE6 |
| 567961 | Sill 6445 | 4S | 35W | SW2 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 567962 | Sill 6446 | 4S | 35W | SW2 |
| 567963 | Sill 6447 | 4S | 35W | SE2 |
| 567964 | Sill 6448 | 4S | 35W | SE2 |
| 567965 | Sill 6449 | 4S | 35W | SW1 |
| 567966 | Sill 6450 | 4S | 35W | SW1 |
| 567967 | Sill 6453 | 4S | 34W | SW6 |
| 567968 | Sill 6454 | 4S | 34W | SW6 |
| 567969 | Sill 6455 | 4S | 34W | SE6 |
| 567970 | Sill 6456 | 4S | 34W | SE6 |
| 567971 | Sill 6545 | 4S | 35W | NW2 |
| 567972 | Sill 6546 | 4S | 35W | NW2 |
| 567973 | Sill 6547 | 4S | 35W | NE2 |
| 567974 | Sill 6548 | 4S | 35W | NE2 |
| 567975 | Sill 6549 | 4S | 35W | NW1 |
| 567976 | Sill 6550 | 4S | 35W | NW1 |
| 567977 | Sill 6551 | 4S | 35W | NE1 |
| 567978 | Sill 6552 | 4S | 35W | NE1 |
| 567979 | Sill 6553 | 4S | 34W | NW6 |
| 567980 | Sill 6554 | 4S | 34W | NW6 |
| 567981 | Sill 6555 | 4S | 34W | NE6 |
| 567982 | Sill 6556 | 4S | 34W | NE6 |
| 568175 | Sill 8345 | 3S | 35W | SW11 |
| 568176 | Sill 8346 | 3S | 35W | SW11 |
| 568177 | Sill 8347 | 3S | 35W | SE11 |
| 568178 | Sill 8348 | 3S | 35W | SE11 |
| 568255 | Sill 8743 | 3S | 35W | SE3 |
| 568256 | Sill 8744 | 3S | 35W | SE3 |

The name and address of the claim owner for the 417 claims (40 are 40 acre claims, all others are 160 acres MRTS claims) listed below is:

Northern Dynasty Mines, Inc.

Suite 604, 3201 C Street

Anchorage, Alaska 99503

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 638779 | PEB 1 | 4 S | 36 W | NW 22 |
| 638780 | PEB 2 | 4 S | 36 W | NE 22 |
| 638781 | PEB 3 | 4 S | 36 W | NW 23 |
| 638782 | PEB 4 | 4 S | 36 W | NE 23 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 638783 | PEB 5 | 4 S | 36 W | SW 22 |
| 638784 | PEB 6 | 4 S | 36 W | SE 22 |
| 638785 | PEB 7 | 4 S | 36 W | SW 23 |
| 638786 | PEB 8 | 4 S | 36 W | SE 23 |
| 638791 | PEB 13 | 4 S | 37 W | NE 25 |
| 638792 | PEB 14 | 4 S | 36 W | NW 30 |
| 638793 | PEB 15 | 4 S | 36 W | NE 30 |
| 638794 | PEB 16 | 4 S | 36 W | NW 29 |
| 638795 | PEB 17 | 4 S | 36 W | NE 29 |
| 638796 | PEB 18 | 4 S | 36 W | NW 28 |
| 638797 | PEB 19 | 4 S | 36 W | NE 28 |
| 638798 | PEB 20 | 4 S | 36 W | NW 27 |
| 638799 | PEB 21 | 4 S | 36 W | NE 27 |
| 638800 | PEB 22 | 4 S | 36 W | NW 26 |
| 638801 | PEB 23 | 4 S | 36 W | NWNE 26 |
| 638802 | PEB 24 | 4 S | 36 W | NENE 26 |
| 638807 | PEB 29 | 4 S | 37 W | SE 25 |
| 638808 | PEB 30 | 4 S | 36 W | SW 30 |
| 638809 | PEB 31 | 4 S | 36 W | SE 30 |
| 638810 | PEB 32 | 4 S | 36 W | SW 29 |
| 638811 | PEB 33 | 4 S | 36 W | SE 29 |
| 638812 | PEB 34 | 4 S | 36 W | SW 28 |
| 638813 | PEB 35 | 4 S | 36 W | SE 28 |
| 638814 | PEB 36 | 4 S | 36 W | SW 27 |
| 638815 | PEB 37 | 4 S | 36 W | SE 27 |
| 638816 | PEB 38 | 4 S | 36 W | SW 26 |
| 638821 | PEB 43 | 4 S | 37 W | NE 36 |
| 638822 | PEB 44 | 4 S | 36 W | NW 31 |
| 638823 | PEB 45 | 4 S | 36 W | NE 31 |
| 638824 | PEB 46 | 4 S | 36 W | NW 32 |
| 638825 | PEB 47 | 4 S | 36 W | NE 32 |
| 638826 | PEB 48 | 4 S | 36 W | NW 33 |
| 638827 | PEB 49 | 4 S | 36 W | NE 33 |
| 638828 | PEB 50 | 4 S | 36 W | NW 34 |
| 638829 | PEB 51 | 4 S | 36 W | NE 34 |
| 638830 | PEB 52 | 4 S | 36 W | NW 35 |
| 638835 | PEB 57 | 4 S | 37 W | SE 36 |
| 638836 | PEB 58 | 4 S | 36 W | SW 31 |
| 638837 | PEB 59 | 4 S | 36 W | SE 31 |
| 638838 | PEB 60 | 4 S | 36 W | SW 32 |
| 638839 | PEB 61 | 4 S | 36 W | SE 32 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 638840 | PEB 62 | 4 S | 36 W | SW 33 |
| 638841 | PEB 63 | 4 S | 36 W | SE 33 |
| 638842 | PEB 64 | 4 S | 36 W | SW 34 |
| 638843 | PEB 65 | 4 S | 36 W | SE 34 |
| 638844 | PEB 66 | 4 S | 36 W | SW 35 |
| 638848 | PEB 70 | 5 S | 37 W | NW 3 |
| 638849 | PEB 71 | 5 S | 37 W | NE 3 |
| 638850 | PEB 72 | 5 S | 37 W | NW 2 |
| 638851 | PEB 73 | 5 S | 37 W | NE 2 |
| 638852 | PEB 74 | 5 S | 37 W | NW 1 |
| 638853 | PEB 75 | 5 S | 37 W | NE 1 |
| 638854 | PEB 76 | 5 S | 36 W | NW 6 |
| 638855 | PEB 77 | 5 S | 36 W | NE 6 |
| 638856 | PEB 78 | 5 S | 36 W | NW 5 |
| 638857 | PEB 79 | 5 S | 36 W | NE 5 |
| 638858 | PEB 80 | 5 S | 36 W | NW 4 |
| 638862 | PEB 84 | 5 S | 37 W | SW 3 |
| 638863 | PEB 85 | 5 S | 37 W | SE 3 |
| 638864 | PEB 86 | 5 S | 37 W | SW 2 |
| 638865 | PEB 87 | 5 S | 37 W | SE 2 |
| 638866 | PEB 88 | 5 S | 37 W | SW 1 |
| 638867 | PEB 89 | 5 S | 37 W | SE 1 |
| 638868 | PEB 90 | 5 S | 36 W | SW 6 |
| 638869 | PEB 91 | 5 S | 36 W | SE 6 |
| 638870 | PEB 92 | 5 S | 36 W | SW 5 |
| 638871 | PEB 93 | 5 S | 36 W | SE 5 |
| 638872 | PEB 94 | 5 S | 36 W | SW 4 |
| 638873 | PEB 95 | 5 S | 36 W | SWSE 4 |
| 638874 | PEB 96 | 5 S | 36 W | SESE 4 |
| 638875 | PEB 97 | 5 S | 36 W | SWSW 3 |
| 638882 | PEB 104 | 5 S | 37 W | NW 10 |
| 638883 | PEB 105 | 5 S | 37 W | NE 10 |
| 638884 | PEB 106 | 5 S | 37 W | NW 11 |
| 638885 | PEB 107 | 5 S | 37 W | NE 11 |
| 638886 | PEB 108 | 5 S | 37 W | NW 12 |
| 638887 | PEB 109 | 5 S | 37 W | NE 12 |
| 638888 | PEB 110 | 5 S | 36 W | NW 7 |
| 638889 | PEB 111 | 5 S | 36 W | NE 7 |
| 638890 | PEB 112 | 5 S | 36 W | NW 8 |
| 638891 | PEB 113 | 5 S | 36 W | NE 8 |
| 638892 | PEB 114 | 5 S | 36 W | NW 9 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 638893 | PEB 115 | 5 S | 36 W | NE 9 |
| 640061 | PEB N 1 | 4 S | 37 W | SE 24 |
| 640062 | PEB N 2 | 4S | 36 W | SW 19 |
| 640063 | PEB N 3 | 4 S | 36 W | SE 19 |
| 640064 | PEB N 4 | 4 S | 36 W | SW 20 |
| 640065 | PEB N 5 | 4 S | 36 W | SE 20 |
| 640066 | PEB N 6 | 4 S | 36 W | SW 21 |
| 640067 | PEB N 7 | 4 S | 36 W | SE 21 |
| 640068 | PEB N 8 | 4 S | 37 W | NE 24 |
| 640069 | PEB N 9 | 4 S | 36 W | NW 19 |
| 640070 | PEB N 10 | 4 S | 36 W | NE 19 |
| 640071 | PEB N 11 | 4 S | 36 W | NW 20 |
| 640072 | PEB N 12 | 4 S | 36 W | NE 20 |
| 640073 | PEB N 13 | 4 S | 36 W | NW 21 |
| 640074 | PEB N 14 | 4 S | 36 W | NE 21 |
| 640075 | PEB N 15 | 4 S | 37 W | SE 13 |
| 640076 | PEB N 16 | 4 S | 36 W | SW 18 |
| 640077 | PEB N 17 | 4 S | 36 W | SE 18 |
| 640078 | PEB N 18 | 4 S | 36 W | SW 17 |
| 640079 | PEB N 19 | 4 S | 36 W | SE 17 |
| 640080 | PEB N 20 | 4 S | 36 W | SW 16 |
| 640081 | PEB N 21 | 4 S | 36 W | SE 16 |
| 640082 | PEB N 22 | 4 S | 36 W | SW 15 |
| 640083 | PEB N 23 | 4 S | 36 W | SE 15 |
| 640084 | PEB N 24 | 4 S | 36 W | SW 14 |
| 640085 | PEB N 25 | 4 S | 36 W | SE 14 |
| 640086 | PEB N 26 | 4 S | 37 W | NE 13 |
| 640087 | PEB N 27 | 4 S | 36 W | NW 18 |
| 640088 | PEB N 28 | 4 S | 36 W | NE 18 |
| 640089 | PEB N 29 | 4 S | 36 W | NW 17 |
| 640090 | PEB N 30 | 4 S | 36 W | NE 17 |
| 640091 | PEB N 31 | 4 S | 36 W | NW 16 |
| 640092 | PEB N 32 | 4 S | 36 W | NE 16 |
| 640093 | PEB N 33 | 4 S | 36 W | NW 15 |
| 640094 | PEB N 34 | 4 S | 36 W | NE 15 |
| 640095 | PEB N 35 | 4 S | 36 W | NW 14 |
| 640096 | PEB N 36 | 4 S | 36 W | NE14 |
| 642334 | PEB EB A1 | 4 S | 35 W | NWNW 2 |
| 642335 | PEB EB A2 | 4 S | 35 W | NENW 2 |
| 642336 | PEB EB A3 | 4 S | 35 W | NWNE 2 |
| 642337 | PEB EB A4 | 4 S | 35 W | NENE 2 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 642338 | PEB EB 1 | 3 S | 35 W | SW 35 |
| 642339 | PEB EB 2 | 3 S | 35 W | SE 35 |
| 642340 | PEB EB 3 | 3 S | 35 W | NW 35 |
| 642341 | PEB EB 4 | 3 S | 35 W | NE 35 |
| 642342 | PEB EB 5 | 3 S | 34 W | SW 31 |
| 642343 | PEB EB 6 | 3 S | 34 W | SE 31 |
| 642344 | PEB EB 7 | 3 S | 34 W | SW 32 |
| 642345 | PEB EB 8 | 3 S | 34 W | SE 32 |
| 642346 | PEB EB 9 | 3 S | 34 W | SW 33 |
| 642347 | PEB EB 10 | 3 S | 34 W | SE 33 |
| 642348 | PEB EB 11 | 3 S | 34 W | NW 31 |
| 642349 | PEB EB 12 | 3 S | 34 W | NE 31 |
| 642350 | PEB EB 13 | 3 S | 34 W | NW 32 |
| 642351 | PEB EB 14 | 3 S | 34 W | NE 32 |
| 642352 | PEB EB 15 | 3 S | 34 W | NW 33 |
| 642353 | PEB EB 16 | 3 S | 34 W | NE 33 |
| 642354 | PEB EB 17 | 3 S | 35 W | SW 26 |
| 642355 | PEB EB 18 | 3 S | 35 W | SE 26 |
| 642356 | PEB EB 19 | 3 S | 35 W | SW 25 |
| 642357 | PEB EB 20 | 3 S | 35 W | SE 25 |
| 642358 | PEB EB 21 | 3 S | 34 W | SW 30 |
| 642359 | PEB EB 22 | 3 S | 34 W | SE 30 |
| 642360 | PEB EB 23 | 3 S | 34 W | SW 29 |
| 642361 | PEB EB 24 | 3 S | 34 W | SE 29 |
| 642362 | PEB EB 25 | 3 S | 34 W | SW 28 |
| 642363 | PEB EB 26 | 3 S | 34 W | SE 28 |
| 642364 | PEB EB 27 | 3 S | 35 W | NW 26 |
| 642365 | PEB EB 28 | 3 S | 35 W | NE 26 |
| 642366 | PEB EB 29 | 3 S | 35 W | NW 25 |
| 642367 | PEB EB 30 | 3 S | 35 W | NE 25 |
| 642368 | PEB EB 31 | 3 S | 34 W | NW 30 |
| 642369 | PEB EB 32 | 3 S | 34 W | NE 30 |
| 642370 | PEB EB 33 | 3 S | 34 W | NW 29 |
| 642371 | PEB EB 34 | 3 S | 34 W | NE 29 |
| 642372 | PEB EB 35 | 3 S | 34 W | NW 28 |
| 642373 | PEB EB 36 | 3 S | 34 W | NE 28 |
| 642374 | PEB EB 37 | 3 S | 35 W | SW 24 |
| 642375 | PEB EB 38 | 3 S | 35 W | SE 24 |
| 642376 | PEB EB 39 | 3 S | 34 W | SW 19 |
| 642377 | PEB EB 40 | 3 S | 34 W | SE 19 |
| 642378 | PEB EB 41 | 3 S | 34 W | SW 20 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 642379 | PEB EB 42 | 3 S | 34 W | SE 20 |
| 642380 | PEB EB 43 | 3 S | 34 W | SW 21 |
| 642381 | PEB EB 44 | 3 S | 34 W | SE 21 |
| 642382 | PEB EB 45 | 3 S | 35 W | NW 24 |
| 642383 | PEB EB 46 | 3 S | 35 W | NE 24 |
| 642384 | PEB EB 47 | 3 S | 34 W | NW 19 |
| 642385 | PEB EB 48 | 3 S | 34 W | NE 19 |
| 642386 | PEB EB 49 | 3 S | 34 W | NW 20 |
| 642387 | PEB EB 50 | 3 S | 34 W | NE 20 |
| 642388 | PEB EB 51 | 3 S | 34 W | NW 21 |
| 642389 | PEB EB 52 | 3 S | 34 W | NE 21 |
| 642390 | PEB EB 53 | 3 S | 35 W | SW 13 |
| 642391 | PEB EB 54 | 3 S | 35 W | SE 13 |
| 642392 | PEB EB 55 | 3 S | 34 W | SW 18 |
| 642393 | PEB EB 56 | 3 S | 34 W | SE 18 |
| 642394 | PEB EB 57 | 3 S | 34 W | SW 17 |
| 642395 | PEB EB 58 | 3 S | 34 W | SE 17 |
| 642396 | PEB EB 59 | 3 S | 34 W | SW 16 |
| 642397 | PEB EB 60 | 3 S | 34 W | SE 16 |
| 642398 | PEB EB 61 | 3 S | 35 W | NW 13 |
| 642399 | PEB EB 62 | 3 S | 35 W | NE 13 |
| 642400 | PEB EB 63 | 3 S | 34 W | NW 18 |
| 642401 | PEB EB 64 | 3 S | 34 W | NE 18 |
| 642402 | PEB EB 65 | 3 S | 34 W | NW 17 |
| 642403 | PEB EB 66 | 3 S | 34 W | NE 17 |
| 642404 | PEB EB 67 | 3 S | 34 W | NW 16 |
| 642405 | PEB EB 68 | 3 S | 34 W | NE 16 |
| 642406 | PEB EB 69 | 3 S | 35 W | SW 12 |
| 642407 | PEB EB 70 | 3 S | 35 W | SE 12 |
| 642408 | PEB EB 71 | 3 S | 34 W | SW 7 |
| 642409 | PEB EB 72 | 3 S | 34 W | SE 7 |
| 642410 | PEB EB 73 | 3 S | 34 W | SW 8 |
| 642411 | PEB EB 74 | 3 S | 34 W | SE 8 |
| 642412 | PEB WB 1 | 3 S | 36 W | SW 33 |
| 642413 | PEB WB 2 | 3 S | 36 W | SE 33 |
| 642414 | PEB WB 3 | 3 S | 36 W | SW 34 |
| 642415 | PEB WB 4 | 3 S | 36 W | SE 34 |
| 642416 | PEB WB 5 | 3 S | 36 W | NW 33 |
| 642417 | PEB WB 6 | 3 S | 36 W | NE 33 |
| 642418 | PEB WB 7 | 3 S | 36 W | NW 34 |
| 642419 | PEB WB 8 | 3 S | 36 W | NE 34 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 642420 | PEB WB 9 | 3 S | 36 W | SW 28 |
| 642421 | PEB WB 10 | 3 S | 36 W | SE 28 |
| 642422 | PEB WB 11 | 3 S | 36 W | SW 27 |
| 642423 | PEB WB 12 | 3 S | 36 W | SE 27 |
| 642424 | PEB WB 13 | 3 S | 36 W | SW 26 |
| 642425 | PEB WB 14 | 3 S | 36 W | SE 26 |
| 642426 | PEB WB 15 | 3 S | 36 W | NW 28 |
| 642427 | PEB WB 16 | 3 S | 36 W | NE 28 |
| 642428 | PEB WB 17 | 3 S | 36 W | NW 27 |
| 642429 | PEB WB 18 | 3 S | 36 W | NE 27 |
| 642430 | PEB WB 19 | 3 S | 36 W | NW 26 |
| 642431 | PEB WB 20 | 3 S | 36 W | NE 26 |
| 642432 | PEB WB 21 | 3 S | 36 W | SE 21 |
| 642433 | PEB WB 22 | 3 S | 36 W | SW 22 |
| 642434 | PEB WB 23 | 3 S | 36 W | SE 22 |
| 642435 | PEB WB 24 | 3 S | 36 W | SW 23 |
| 642436 | PEB WB 25 | 3 S | 36 W | SE 23 |
| 642437 | PEB WB 26 | 3 S | 36 W | NW 22 |
| 642438 | PEB WB 27 | 3 S | 36 W | NE 22 |
| 642439 | PEB WB 28 | 3 S | 36 W | NW 23 |
| 642440 | PEB WB 29 | 3 S | 36 W | NE 23 |
| 642441 | PEB WB 30 | 3 S | 36 W | SW 15 |
| 642442 | PEB WB 31 | 3 S | 36 W | SE 15 |
| 642443 | PEB WB 32 | 3 S | 36 W | SW 14 |
| 642444 | PEB WB 33 | 3 S | 36 W | SE 14 |
| 642445 | PEB WB 34 | 3 S | 36 W | NW 14 |
| 642446 | PEB WB 35 | 3 S | 36 W | NE 14 |
| 642447 | PEB WB 36 | 3 S | 36 W | SW 11 |
| 642448 | PEB WB 37 | 3 S | 36 W | SE 11 |
| 642449 | PEB WB 38 | 3 S | 36 W | NW 11 |
| 642450 | PEB WB 39 | 3 S | 36 W | NE 11 |
| 643892 | PEB SE A1 | 4 S | 35 W | SESW31 |
| 643893 | PEB SE A2 | 4 S | 35 W | NESW31 |
| 643894 | PEB SE A3 | 4 S | 35 W | SENW31 |
| 643895 | PEB SE A4 | 4 S | 35 W | NWNW31 |
| 643896 | PEB SE A5 | 4 S | 35 W | NENW31 |
| 643897 | PEB SE A6 | 4 S | 35 W | SENW19 |
| 643898 | PEB SE A7 | 4 S | 35 W | NENW19 |
| 643899 | PEB SE 1 | 4 S | 35 W | SE31 |
| 643900 | PEB SE 2 | 4 S | 35 W | SW32 |
| 643901 | PEB SE 3 | 4 S | 35 W | SE32 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 643902 | PEB SE 4 | 4 S | 35 W | NE31 |
| 643903 | PEB SE 5 | 4 S | 35 W | NW32 |
| 643904 | PEB SE 6 | 4 S | 35 W | NE32 |
| 643905 | PEB SE 7 | 4 S | 35 W | SW30 |
| 643906 | PEB SE 8 | 4 S | 35 W | SE30 |
| 643907 | PEB SE 9 | 4 S | 35 W | SW29 |
| 643908 | PEB SE 10 | 4 S | 35 W | SE29 |
| 643909 | PEB SE 11 | 4 S | 35 W | SW28 |
| 643910 | PEB SE 12 | 4 S | 35 W | SE28 |
| 643911 | PEB SE 13 | 4 S | 35 W | NW30 |
| 643912 | PEB SE 14 | 4 S | 35 W | NE30 |
| 643913 | PEB SE 15 | 4 S | 35 W | NW29 |
| 643914 | PEB SE 16 | 4 S | 35 W | NE29 |
| 643915 | PEB SE 17 | 4 S | 35 W | NW28 |
| 643916 | PEB SE 18 | 4 S | 35 W | NE28 |
| 643917 | PEB SE 19 | 4 S | 35 W | SW19 |
| 643918 | PEB SE 20 | 4 S | 35 W | SE19 |
| 643919 | PEB SE 21 | 4 S | 35 W | SW20 |
| 643920 | PEB SE 22 | 4 S | 35 W | SE20 |
| 643921 | PEB SE 23 | 4 S | 35 W | SW21 |
| 643922 | PEB SE 24 | 4 S | 35 W | SE21 |
| 643923 | PEB SE 25 | 4 S | 35 W | NE19 |
| 643924 | PEB SE 26 | 4 S | 35 W | NW20 |
| 643925 | PEB SE 27 | 4 S | 35 W | NE20 |
| 643926 | PEB SE 28 | 4 S | 35 W | NW21 |
| 643927 | PEB SE 29 | 4 S | 35 W | SW33 |
| 643928 | PEB SE 30 | 4 S | 35 W | SE33 |
| 643929 | PEB SE 31 | 4 S | 35 W | NW33 |
| 643930 | PEB SE 32 | 4 S | 35 W | NE33 |
| 643931 | PEB NW A1 | 3 S | 36 W | NWNW12 |
| 643932 | PEB NW A2 | 3 S | 36 W | NENW12 |
| 643933 | PEB NW A3 | 3 S | 36 W | NWNE12 |
| 643934 | PEB NW A4 | 3 S | 36 W | NENE12 |
| 643935 | PEB NW 1 | 3 S | 36 W | SW2 |
| 643936 | PEB NW 2 | 3 S | 36 W | SE2 |
| 643937 | PEB NW 3 | 3 S | 36 W | SW1 |
| 643938 | PEB NW 4 | 3 S | 36 W | SE1 |
| 643939 | PEB NW 5 | 3 S | 36 W | NW2 |
| 643940 | PEB NW 6 | 3 S | 36 W | NE2 |
| 643941 | PEB NW 7 | 3 S | 36 W | NW1 |
| 643942 | PEB NW 8 | 3 S | 36 W | NE1 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 643943 | PEB NW 9 | 2 S | 36 W | SW35 |
| 643944 | PEB NW 10 | 2 S | 36 W | SE35 |
| 643945 | PEB NW 11 | 2 S | 36 W | SW36 |
| 643946 | PEB NW 12 | 2 S | 36 W | SE36 |
| 643947 | PEB NW 13 | 2 S | 36 W | NW35 |
| 643948 | PEB NW 14 | 2 S | 36 W | NE35 |
| 643949 | PEB NW 15 | 2 S | 36 W | NW36 |
| 643950 | PEB NW 16 | 2 S | 36 W | NE36 |
| 643951 | PEB NW 17 | 2 S | 36 W | SW26 |
| 643952 | PEB NW 18 | 2 S | 36 W | SE26 |
| 643953 | PEB NW 19 | 2 S | 36 W | SW25 |
| 643954 | PEB NW 20 | 2 S | 36 W | SE25 |
| 643955 | PEB NW 21 | 2 S | 36 W | NW26 |
| 643956 | PEB NW 22 | 2 S | 36 W | NE26 |
| 643957 | PEB NW 23 | 2 S | 36 W | NW25 |
| 643958 | PEB NW 24 | 2 S | 36 W | NE25 |
| 643959 | PEB NW 25 | 2 S | 36 W | SW23 |
| 643960 | PEB NW 26 | 2 S | 36 W | SE23 |
| 643961 | PEB NW 27 | 2 S | 36 W | SW24 |
| 643962 | PEB NW 28 | 2 S | 36 W | SE24 |
| 643963 | PEB NW 29 | 2 S | 36 W | NW23 |
| 643964 | PEB NW 30 | 2 S | 36 W | NE23 |
| 643965 | PEB NW 31 | 2 S | 36 W | NW24 |
| 643966 | PEB NW 32 | 2 S | 36 W | NE24 |
| 644196 | PEB SE 33 | 4 S | 35 W | SW22 |
| 644197 | PEB SE 34 | 4 S | 35 W | SE22 |
| 644198 | PEB SE 35 | 4 S | 35 W | SW23 |
| 644199 | PEB SE 36 | 4 S | 35 W | SE23 |
| 644200 | PEB SE 37 | 4 S | 35 W | NW27 |
| 644201 | PEB SE 38 | 4 S | 35 W | NE27 |
| 644202 | PEB SE 39 | 4 S | 35 W | NW26 |
| 644203 | PEB SE 40 | 4 S | 35 W | NE26 |
| 644204 | PEB SE 41 | 4 S | 35 W | SW27 |
| 644205 | PEB SE 42 | 4 S | 35 W | SE27 |
| 644206 | PEB SE 43 | 4 S | 35 W | SW26 |
| 644207 | PEB SE 44 | 4 S | 35 W | SE26 |
| 644208 | PEB SE 45 | 4 S | 35 W | NW34 |
| 644209 | PEB SE 46 | 4 S | 35 W | NE34 |
| 644210 | PEB SE 47 | 4 S | 35 W | NW35 |
| 644211 | PEB SE 48 | 4 S | 35 W | SW34 |
| 644212 | PEB SE 49 | 4 S | 35 W | SE34 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 644213 | PEB SE 50 | 5 S | 36 W | NW2 |
| 644214 | PEB SE 51 | 5 S | 36 W | NE2 |
| 644215 | PEB SE 52 | 5 S | 36 W | NW1 |
| 644216 | PEB SE 53 | 5 S | 36 W | NE1 |
| 644217 | PEB SE 54 | 5 S | 35 W | NW6 |
| 644218 | PEB SE 55 | 5 S | 35 W | NE6 |
| 644219 | PEB SE 56 | 5 S | 36 W | SW2 |
| 644220 | PEB SE 57 | 5 S | 36 W | SE2 |
| 644221 | PEB SE 58 | 5 S | 36 W | SW1 |
| 644222 | PEB SE 59 | 5 S | 36 W | SE1 |
| 644223 | PEB SE 60 | 5 S | 35 W | SW6 |
| 644224 | PEB SE 61 | 5 S | 35 W | SE6 |
| 644225 | PEB SE A8 | 4 S | 35 W | SENE23 |
| 644226 | PEB SE A9 | 5 S | 36 W | SESE4 |
| 644227 | PEB SE A10 | 5 S | 36 W | SWSW3 |
| 644228 | PEB SE A11 | 5 S | 36 W | SESW3 |
| 644229 | PEB SE A12 | 5 S | 36 W | SWSE3 |
| 644230 | PEB SE A13 | 5 S | 36 W | SESE3 |
| 644231 | PEB EB 75 | 3 S | 34 W | SW9 |
| 644232 | PEB EB 76 | 3 S | 34 W | SE9 |
| 644233 | PEB EB 77 | 3 S | 35 W | NW11 |
| 644234 | PEB EB 78 | 3 S | 35 W | NE11 |
| 644235 | PEB EB 79 | 3 S | 35 W | NW12 |
| 644236 | PEB EB 80 | 3 S | 35 W | NE12 |
| 644237 | PEB EB 81 | 3 S | 34 W | NW7 |
| 644238 | PEB EB 82 | 3 S | 34 W | NE7 |
| 644239 | PEB EB 83 | 3 S | 34 W | NW8 |
| 644240 | PEB EB 84 | 3 S | 34 W | NE8 |
| 644241 | PEB EB 85 | 3 S | 34 W | NW9 |
| 644242 | PEB EB 86 | 3 S | 34 W | NE9 |
| 644243 | PEB EB 87 | 3 S | 35 W | SW2 |
| 644244 | PEB EB 88 | 3 S | 35 W | SE2 |
| 644245 | PEB EB 89 | 3 S | 35 W | SW1 |
| 644246 | PEB EB 90 | 3 S | 35 W | SE1 |
| 644247 | PEB EB 91 | 3 S | 34 W | SW6 |
| 644248 | PEB EB 92 | 3 S | 34 W | SW4 |
| 644249 | PEB EB 93 | 3 S | 34 W | SE4 |
| 644250 | PEB EB 94 | 3 S | 35 W | NW2 |
| 644251 | PEB EB 95 | 3 S | 35 W | NE2 |
| 644252 | PEB EB A5 | 3 S | 35 W | NWSW11 |
| 644253 | PEB EB A6 | 3 S | 35 W | NESW11 |

| ILIAMNA RECORDING DISTRICT | | SEWARD MERIDIAN | | |
|---|---|---|---|---|
| **ADL No.** | **Claim Name** | **Township** | **Range** | **Quarter Section** |
| 644254 | PEB EB A7 | 3 S | 35 W | NWSE11 |
| 644255 | PEB EB A8 | 3 S | 35 W | NESE11 |
| 644256 | PEB WB 40 | 4 S | 36 W | NW4 |
| 644257 | PEB WB 41 | 4 S | 36 W | NE4 |
| 644258 | PEB WB 42 | 4 S | 36 W | NW3 |
| 644259 | PEB WB 43 | 4 S | 36 W | NE3 |
| 644260 | PEB WB 44 | 4 S | 36 W | NW2 |
| 644261 | PEB WB 45 | 4 S | 36 W | NE2 |
| 644262 | PEB WB 46 | 4 S | 36 W | SW4 |
| 644263 | PEB WB 47 | 4 S | 36 W | SE4 |
| 644264 | PEB WB 48 | 4 S | 36 W | SW3 |
| 644265 | PEB WB 49 | 4 S | 36 W | SE3 |
| 644266 | PEB WB 50 | 4 S | 36 W | SW2 |
| 644267 | PEB WB 51 | 4 S | 36 W | SE2 |
| 644268 | PEB WB 52 | 4 S | 36 W | NW9 |
| 644269 | PEB WB 53 | 4 S | 36 W | NE9 |
| 644270 | PEB WB 54 | 4 S | 36 W | NW10 |
| 644271 | PEB WB 55 | 4 S | 36 W | NE10 |
| 644272 | PEB WB 56 | 4 S | 36 W | NW11 |
| 644273 | PEB WB 57 | 4 S | 36 W | NE11 |
| 644274 | PEB WB 58 | 4 S | 36 W | SW9 |
| 644275 | PEB WB 59 | 4 S | 36 W | SE9 |
| 644276 | PEB WB 60 | 4 S | 36 W | SW10 |
| 644277 | PEB WB 61 | 4 S | 36 W | SE10 |
| 644278 | PEB WB 62 | 4 S | 36 W | SW11 |
| 644279 | PEB WB 63 | 4 S | 36 W | SE11 |
| 646604 | Pebble Beach 5942 | 3 S | 35 W | NWSW 18 |
| 646605 | Pebble Beach 5943 | 3 S | 35 W | NWSW 18 |
| 646606 | PEB K 1 | 3 S | 35 W | NW 36 |
| 646607 | PEB K 2 | 3 S | 35 W | NE 36 |
| 646608 | PEB K 3 | 3 S | 35 W | SW 36 |
| 646609 | PEB K 4 | 3 S | 35 W | SE 36 |
| 646610 | PEB K 5 | 4 S | 35 W | NWNW 1 |
| 646611 | PEB K 6 | 4 S | 35 W | NENW 1 |
| 646612 | PEB K 7 | 4 S | 35 W | NWNE 1 |
| 646613 | PEB K 8 | 4 S | 35 W | NENE 1 |
| 646614 | PEB K 9 | 4 S | 34 W | NWNW 6 |
| 646615 | PEB K 10 | 4 S | 34 W | NENW 6 |
| 646616 | PEB K 11 | 4 S | 34 W | NWNE 6 |
| 646617 | PEB K 12 | 4 S | 34 W | NENE 6 |
| 648906 | PEB WB 64 | 3S | 36W | NW35 |
| 648907 | PEB WB 65 | 3S | 36W | NE35 |
| 648908 | PEB WB 66 | 3S | 36W | SW35 |
| 648909 | PEB WB 67 | 3S | 36W | SE35 |

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

**Application for Groundwater Right**

***Unnamed Tributary (NK1.190)***
***North Fork Koktuli River***

## LEGAL ACCESS DOCUMENT

**INSTRUCTION #3** – *Attach copy of legal access document (e.g., right-of-way, easement, permit) or application for legal access to water withdrawal point and transport route, if applicable, or copy of request for legal access to water withdrawal point.*

Not applicable. A legal access document is not necessary at this time, as discussed below. Water withdrawal points and transport routes will effectively be within the claims block.

NDM's current Pebble Project base case includes a concentrate slurry pipeline from the mill to a port on Cook Inlet. Depending on ongoing technical and economic analyses, however, there is a distinct possibility that concentrate may be trucked to the port site, thereby obviating the need for a slurry pipeline. If NDM ultimately determines a pipeline is required, it will definitively identify the route at that time and begin the permitting process with the State and other landowners.

With respect to slurry water being taken outside the hydrologic unit, because discharge of water from a concentrate slurry pipeline at the port site is not permittable, once the concentrates have been dried the slurry water will be recycled back to the mine site in a return pipeline. Because the concentrate slurry water will be returned to the hydrologic unit from which it originated, AS 46.15.035 would not apply.

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

**Application for Groundwater Right**

***Unnamed Tributary (NK1.190)***
***North Fork Koktuli River***

# DRILLER'S LOG

**INSTRUCTION #4** – *Attach driller's well log for drilled wells (if already drilled and available).*

Not applicable. Application is not for well water withdrawal.

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

**Application for *Groundwater* Right**

***Unnamed Tributary (NK1.190)***
***North Fork Koktuli River***

**INSTRUCTION #5** – *Attach sketch, photos, plans of water system, or project description (if applicable).*

## BRIEF PROJECT DESCRIPTION

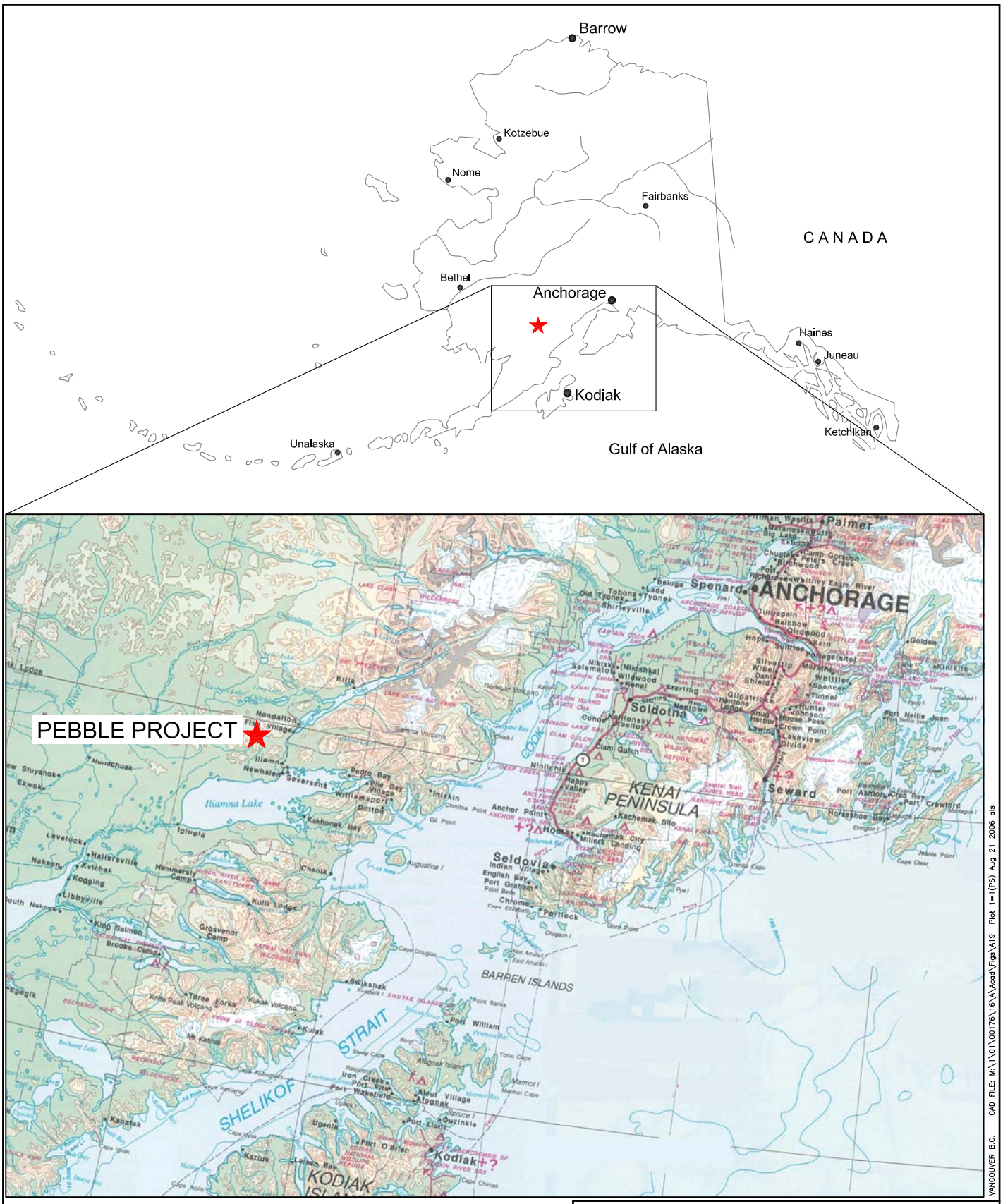
The Pebble Project will be a large open pit mine located 17 miles northwest of the community of Iliamna, on the north side of Lake Iliamna (Figure 1.1). Primary mine area facilities will consist of the open pit, ore conveyor, ore stockpile, a mill site (with associated offices, workshops, equipment repair and storage areas), tailing storage facilities, and a worker camp. Transportation facilities will include a mine area road network, and an approximately 100-mile road to a port facility on Cook Inlet. The primary port site facilities will include metal concentrates storage, fuel storage, a ship loading structure, barge landing, offices and worker housing.

## DESCRIPTION OF IMPOUNDMENT FACILITIES

11 AAC 93.040(c)(8) requires

> "a description of any impoundment, diversion, or withdrawal structures, including dimensions, construction materials, plans and specifications, and operation plans, and an application to construct or modify a dam, as defined in AS 46.17.900, if 11 AAC 93.171 requires an application;"

The Unnamed Tributary (NK1.190) North Fork Koktuli River surface water application filed July 7, 2006, submitted this information at this Tab 5 location (Project Description). In its Analysis of Application Completeness response of July 26, 2006, however, DNR requested that an initial dam application package be submitted to fulfill this (c)(8) requirement. In response, NDM is simultaneously submitting the requested initial dam application package with this Comment Response Document. In addition, however, to make this Unnamed Tributary (NK1.190) North Fork Koktuli River groundwater right application as similar as possible to the original surface water right application, the following Site G facilities description materials are also being submitted.




NORTHERN DYNASTY MINES INC.

PEBBLE PROJECT

**PROJECT LOCATION**

Knight Piésold CONSULTING

| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| VA101-176/16 | 10 |

**FIGURE NK1.190-1.1** REV. A

| REV. | DATE | DESCRIPTION |
|---|---|---|
| A | 23AUG'06 | ISSUED FOR INFORMATION |

XREF FILE : -

# NORTHERN DYNASTY MINES INC.
# PEBBLE PROJECT

## FACILITIES DESCRIPTION IN SUPPORT OF A *GROUNDWATER* RIGHTS APPLICATION

***UNNAMED TRIBUTARY (NK1.190)***
***NORTH FORK KOKTULI RIVER***

**(REF. NO. VA101-00176/16-10)**

**September 21, 2006**

# NORTHERN DYNASTY MINES INC.
# PEBBLE PROJECT

## FACILITIES DESCRIPTION IN SUPPORT OF A *GROUNDWATER* RIGHTS APPLICATION

## ***UNNAMED TRIBUTARY (NK1.190)***
## ***NORTH FORK KOKTULI RIVER***

**(REF. NO. VA101-00176/16-10)**

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# NORTHERN DYNASTY MINES INC.
# PEBBLE PROJECT

## FACILITIES DESCRIPTION IN SUPPORT OF A *GROUNDWATER* RIGHTS APPLICATION

## ***UNNAMED TRIBUTARY (NK1.190)***
## ***NORTH FORK KOKTULI RIVER***

### SECTION 1.0 - INTRODUCTION

1.1 GENERAL

The Pebble Project is a proposed mining development of a large copper-gold-molybdenum deposit located in the Bristol Bay region of Southwestern Alaska. The Pebble Project property is centered at latitude 59° 53' 54" and longitude 155°17'44", approximately 238 mi southwest of Anchorage and 17 mi northwest of the Village of Iliamna. The project location is shown on Figure NK1.190-1.1.

The deposit is situated on a drainage divide, with Upper Talarik Creek draining to the east and south, and the North Fork and South Fork Koktuli Rivers draining to the west and southwest, respectively. Mining of the ore deposit would result in a mine located at the headwaters of the South Fork Koktuli River Watershed and the Upper Talarik Creek Watershed. The mine waste (tailings and waste rock) would be stored in a the Tailings Storage Facility (TSF), located in the upper reaches of an unnamed tributary of the North Fork Koktuli River (TSF Site G) in the North Fork Koktuli Watershed. The unnamed tributary of the North Fork Koktuli River will be referred to as Tributary NK1.190 for the purpose of this report. A regional site plan indicating the location of TSF Site G in relation to the other TSF sites, and the watershed pertaining to this application, are shown on Figure NK1.190-1.2.

1.2 SCOPE OF REPORT

The scope of this report is to provide details of the TSF at Site G in support of the groundwater rights application process for the hydrogeological regime impacted by the TSF located in Site G. The Groundwater Extraction Point, GEP-4, and the areas of water use are shown on Figure NK1.190-1.3.

Ongoing exploration continues to expand the deposit and the tailings storage requirments. The design of the TSF at Site G is a work in progress, and the technical details contained within this report are preliminary.

Groundwater will be impounded in the TSF at Site G due to the seepage cutoff measures in the embankment design. The beneficial uses of the groundwater impounded in the TSF will be for TSF management, which includes:

- Ensuring a sufficient live pond volume to offset dry years and to support the mining processes (e.g., mill process, equipment cooling, tailings slurry, concentrate slurry, etc.),
- Submergence of potentially reactive waste materials to prevent oxidation,
- Saturation/flooding of tailings to prevent dust generation.
- Protection of downstream aquatic resources.

## SECTION 2.0 - TAILINGS STORAGE FACILITY

### 2.1 TAILINGS STORAGE FACILITY DESIGN AND OPERATION

#### 2.1.1 General

The principal objectives of the design and operation of the TSF are to provide secure containment for tailings solids, potentially reactive waste rock and impounded process water. The design and operation of the TSF at Site G is integrated with the overall water management objectives for the entire mine development, in that groundwater extracted and impounded in the TSF will be controlled and contained on site. An additional requirement for the TSF is to allow effective reclamation of the tailings impoundment and associated disturbed areas at closure to meet land use objectives.

The TSF at Site G will store approximately 500 million tons of tailings, mine waste, as well as mill process water, site runoff and the Probable Maximum Flood (PMF) event in conformance with the Alaska Dam Safety Guidelines.

The tailings are the by-product of processing the Pebble Project ore. The flotation mill process will create two separate tailings streams; a bulk tailings stream (approximately 97% of the total tailings stream) and a pyritic tailings stream (approximately 3% of the total tailings stream). The bulk tailings, which testwork has shown to be non-reactive, will be discharged from delivery pipelines located along the embankment crests and adjacent high ground to facilitate beach development and to keep the supernatant pond away from the embankments. The pyritic tailings, which will be potentially reactive (i.e., potentially acid generating if allowed to oxidize), will be deposited below ponded water to prevent oxidation.

Waste rock will be extracted from the mine workings in addition to the ore. Some of this waste is unmineralized rock or low grade rock adjacent to the ore, the remainder is material mined to maintain a safe geometry in the mine workings. Testwork has shown that some of this waste rock will be non-reactive, while the remainder will be potentially reactive. The non-reactive waste will be used for construction purposes at the site, particularly the construction of the TSF impoundment structure. The potentially reactive waste rock will be encapsulated within the tailings mass to prevent oxidation and acid generation.

The PMF event is the flow resulting from the most severe combination of Probable Maximum Precipitation (PMP) and basin hydrogeological conditions. The PMP is the precipitation which results from the worst possible meteorological conditions. The PMF is a purely hypothetical event that is sufficiently large to ensure that it is never exceeded, yet at the same time not so excessively large that design requirements are unnecessarily conservative.

The preliminary design of the TSF has taken into account the following requirements:

- Permanent, secure and total confinement of both tailings streams and the potentially reactive waste rock within an engineered disposal facility.

- Control, collection and removal of water from the TSF during operations for recycling as process water to the maximum practical extent.
- Minimizing seepage from the facility and providing seepage collection and recovery from the impoundment structures.
- Inclusion of monitoring features for all aspects of the facility to monitor embankment stability and ensure the design criteria are met.

2.1.2 Tailings Storage Facility Components

The TSF at Site G will ultimately include an earthfill/rockfill embankment at the north end of the facility, and an earthfill/rockfill saddle dam along the ridge between the north and south Fork Koktuli Watersheds, at the south end of the facility. The saddle dam will be constructed in the latter stages of the facility life as the embankment continues to increase in height during ongoing staged expansion. The objective of this saddle dam is to prevent water from the TSF at Site G from entering the South Fork Koktuli Watershed.

The TSF embankments will be raised in stages, with each stage providing the required capacity for that particular period until the next stage is completed. The highest section of the final embankment for the TSF at Site G will be approximately 450 feet high. The final length of the longest embankment section will be approximately 7,800 feet long, with the final facility covering approximately 3.6 square miles.

The general arrangement of the final TSF is shown on Figure NK1.190-2.1. A typical embankment section through the Main Embankment is shown on Figure NK1.190-2.2.

The main components of the TSF are as follows:

- **Face Liner - HDPE Geomembrane Liner**
  A synthetic High Density Polyethylene (HDPE) geomembrane liner will be included along the upstream face of the initial embankment to control embankment seepage prior to the development of low permeability tailings beaches. The liner will tie into a grout curtain or low permeability silts or silty glacial till materials at the base of the embankment. The 80-mil thick HDPE liner will be placed on low permeability core zone material (Zone S) which serves as a bedding layer for the liner and provides an added level of seepage control as the combined HDPE liner and Zone S material behaves as a compound liner. The HDPE liner will not be required once the low permeability tailings beaches have been developed and the supernatant pond is maintained away from the embankment.

- **Core Zone/ Low Permeability Blanket - Zone S**
  The core zone/ low permeability till blanket (Zone S) will be constructed with low permeability glacial till. The core zone combined with the HDPE liner will behave as a compound liner and serve as the primary seepage control zone for the initial embankment stages, until tailings beaches are established for additional seepage control. The core zone will provide the primary embankment seepage control feature (along with the tailings) for the upper section of the embankments. This material will also be used to provide a low permeability till blanket

beneath the downstream shell zone of the embankments to collect rainfall that percolates through the shell zone materials. The foundation will be graded such that infiltration reports to the downstream seepage collection sumps for recycle back to the TSF.

- **Transition Zone - Zone F/T**
  The filter and transition zones (Zone F/T) will be incorporated to ensure internal stability between embankment zones and will act to prevent the migration of fines from the core zone into the adjacent pervious shell zone materials. The transition zone will comprise both a specified sand filter adjacent to the core zone and a coarser gravelly sand transition zone between the filter sand and the downstream shell zone (C1).

- **Shell Zone - Zone C1(NR)**
  The downstream shell zone (C1), adjacent to the transition zone, and the upstream shell zone (C1), adjacent to the core zone, will be constructed in controlled compacted layers comprising well graded non-reactive waste rock and overburden from the open pit.

- **Shell Zone – Zone C2(NR)**
  The downstream shell zone (C2), downstream of shell zone (C1), will be constructed with similar to Zone C1, but will typically incorporate non-reactive coarse rockfill material from the open pit.

- **Seepage Cutoff Measures**
  The embankments will be keyed into low permeability foundation materials or a grout curtain through underlying bedrock if low permeability foundation materials do not exist to reduce seepage from the TSF.

- **Embankment Toe Drain**
  A toe drain will be constructed within the transition zone (Zone F/T) to capture potential seepage through or beneath the grout curtain and to enhance the stability of the embankments. The toe drain will drain into the seepage collection sumps for recycle back to the TSF.

- **Longitudinal Drain**
  A longitudinal drain will be installed within the upper sections of the South Embankment once the tailings beach is developed and the HDPE liner is no longer required to form a compound liner system with the core zone (Zone S). The longitudinal drain will collect seepage from the upper portions of the embankment and will drain into the seepage collection sump located at the eastern abutment prior to recycle back to the TSF.

- **Seepage Collection Sumps**
  The seepage collection sumps will be located at the downstream toe of the embankments. The sumps will collect water from the embankment toe drain systems and from the low permeability till blanket (Zone S). The sump located on the South abutment will collect water from the embankment longitudinal drain. Drainage collected in the seepage collection sumps will be pumped back to the TSF.

- **Groundwater Monitoring Wells**
  Groundwater monitoring wells will be installed downstream of all embankments to provide on-going groundwater quality data.

2.1.3 Foundation Preparation and Excavation Requirements

All organics and overburden from below the upstream zones of the embankments will be stripped and stockpiled for future reclamation. The stripping and overburden excavation will result in a large cut off trench. A seepage cutoff wall will be installed along the base of the trench. A secondary trench, perpendicular to the dam axes, will be excavated to allow seepage collected in the upstream toe drains to flow by gravity to sumps located outside the final downstream embankment toe.

## 2.2 TAILINGS PHYSICAL PROPERTIES

The tailings particle size distributions indicate that the bulk tailings are uniformly graded, consisting predominantly of silt-sized particles. The bulk tailings were classified as a low plasticity silt (ML), using the Unified Soil Classification System. There was little variation in the particle size distributions for the different bulk tailings samples.

Laboratory consolidation testing of the bulk tailings at low stresses indicates that the permeability will initially be around 3 x$10^{-7}$ ft/s (1 x $10^{-5}$ cm/s) at a confining pressure of less than 6 x $10^{-1}$ psi (4 kPa); however, the permeability will reduce over time, as the tailings consolidate to roughly 2 x $10^{-8}$ ft/s (5 x $10^{-7}$ cm/s) at a confining pressure of approximately 390 psi (2,700 kPa).

The predicted behavior of the bulk tailings can be summarized as follows:

- **Water Production**
  Lab testing has indicated that with a tailings slurry containing 32% solids, as much as 60% of the initial water volume will be released as supernatant. Based on this testwork, approximately 50 to 55% of the solution in the tailings slurry will be available for recycle to the mill from the TSF pond after allowing for evaporation losses and water retained in tailings. The volume of supernatant released will vary depending on the tailings type and the moisture content of the underlying tailings.

- **Tailings Density**
  The laboratory test results and operating experience at other similar copper mines indicate that final dry density will be in the order of 90 lb/$ft^3$ (1.44 t/$m^3$).

- **Pumping and Viscosity**
  The tailings streams will flow by gravity in pipelines from the process plant to the respective TSF for the initial several years of operations. The solids contents of the bulk and pyritic tailings streams will be approximately 32% and 50%, respectively. The critical solids content (i.e., the solids content at which the viscosity increases significantly) of tailings slurries, based on

experience with similar copper-gold porphyry deposits and flotation mill processes, is typically about 65%. Pumping systems will be installed once the TSF embankments are raised to the point where the driving head from the plant site is insufficient for gravity flow.

## 2.3 TSF CONSTRUCTION

The embankments will be developed in stages using low permeability glacial till, overburden and waste rock materials. The filling schedule and staged construction sequence of the TSF at Site G are shown on Figure NK1.190-2.3.

The staged construction of the TSF will directly integrate waste materials from the mine workings. The scheduled placement of fill within the downstream shell zone can accommodate fluctuating quantities of mine waste rock to coincide with the mine plan. The staged design of the embankments will be reviewed annually and refined, as required, to accommodate the availability of construction materials and to incorporate experience gained with local conditions and constraints.

## 2.4 RECLAIM WATER SYSTEM

A process water reclaim system is required to recycle a sufficient amount of water on a continuous basis from the TSF supernatant pond to the mill.. The recycled water will be routed through the Process Water Pond (PWP), which will be located near the process plant site.

Recycled process water will be reclaimed from the TSF supernatant pond using pumps mounted on a reclaim barge. The barge-mounted pump-station will be a prefabricated unit, naval architect designed and suitable for all anticipated weather conditions. Additional requirements include barge anchoring to cope with windy conditions, de-icing mechanisms to keep the unit free from surface ice, enclosure heating and ventilation, year round walkway access and sufficient water around the barge to minimize solids entrainment into the pipeline. Pipeline connections from the barge to shore will incorporate flexible joints to accommodate the rise and fall in pond elevation.

## 2.5 SEISMICITY AND EMBANKMENT STABILITY

Alaska is the most seismically active state in the U.S. and in 1964 experienced the second largest earthquake ever recorded worldwide. Both crustal earthquakes in the continental North American Plate and subduction earthquakes affect the Alaska region. Historically, the level of seismic activity is highest along the south coast, where earthquakes are generated by the Pacific Plate subducting under the North American plate. This seismic source region, known as the Alaska-Aleutian megathrust, has been responsible for several of the largest earthquakes recorded, including the 1964 Prince William Sound magnitude 9.2 (M9.2) earthquake. There is potential for a future large subduction earthquake (M9.2+) along the southern coast of Alaska, and this seismic source zone is located approximately 125 mi from the project site.

Several major active faults in Alaska have generated large crustal earthquakes within the last century. A magnitude 7.9 earthquake occurred along a part of the Denali fault in 2002, approximately 44 mi south of Fairbanks. The western portion of the Denali Fault trends in a NE-SW direction, approximately 125 mi

north of the project site. Approximately 19 mi northeast of the project site is the western end of the NE-SW trending Castle Mountain Fault, which terminates approximately at the northwest end of Lake Clark. A magnitude 7.0 earthquake associated with this fault occurred in 1933. The Denali and Castle Mountain faults are capable of generating large earthquakes with magnitudes in the range of M7.5 to M8.0.

Consistent with current design philosophy for geotechnical structures such as dams, two levels of design earthquake have been considered: the Operating Basis Earthquake (OBE) for normal operations; and the Maximum Design Earthquake (MDE) for extreme conditions (ICOLD, 1995). Values of maximum ground acceleration and design earthquake magnitude have been determined for both the OBE and MDE.

Appropriate OBE and MDE events for the facility are determined based on a hazard classification of the facility, with consideration of the consequences of failure. The hazard classification was carried out using the criteria provided by the document “Guidelines for Cooperation with the Alaska Dam Safety Program” (2005). Classification of the facility is carried out by considering the potential consequences of failure, including loss of life, economic loss and environmental damage. The hazard classification has been assessed as at least Class II (Significant). The OBE and MDE are selected based on the dam hazard classification and an appropriate earthquake return period, as defined by the “Guidelines for Cooperation with the Alaska Dam Safety Program” (2005).

For a Class II hazard classification, the OBE is selected from a range of return periods from 70 to 200 years, depending on the operating life of the facility, the frequency of regional earthquakes and the difficulty of quickly assessing the site for repairs. The impoundment would be expected to remain functional during and after the OBE and any resulting damage should be easily repairable in a limited period of time.

The MDE is typically selected from a range of return periods from 1,000 to 2,500 years for a Class II hazard classification. However, the MDE for the Site J TSF has been conservatively based on a Class I hazard classification making it equivalent to the Maximum Credible Earthquake (MCE), which has a bedrock acceleration of 0.30 g corresponding to a magnitude M7.8 earthquake, occurring along the nearby Castle Mountain Fault system. The MCE is considered to be the seismic event with the highest possible maximum ground acceleration at the project site. A M9.2+ megathrust earthquake does not impose the highest maximum ground acceleration at the Pebble site (predicted maximum acceleration of 0.17 g), but the event is also considered in seismic design analyses due to the very long duration of ground shaking associated with earthquakes of this magnitude.

The TSF embankments will be designed to meet or exceed the Alaska Dam Safety requirements to ensure the embankment will remain stable without release of tailings or process water for all loading cases, including the MDE and the M9.2+ megathrust event. Limited deformation of the facility is acceptable under seismic loading from the MDE, provided that the overall stability and integrity of the facility is maintained and that there is no release of stored tailings or water (ICOLD, 1995).

## SECTION 3.0 - GROUNDWATER EXTRACTION AND BENEFICIAL USES

The hydrogeological regime of Tributary NK1.190 North Fork Koktuli River will be impacted due to seepage cutoff measures in the embankment design of the TSF at Site G. The resulting accumulation of groundwater will be impounded in the TSF by the North Embankment and the saddle dam at the south end of the facility. The embankment will be keyed into low permeability foundation materials, or a grout curtain will be extended through underlying bedrock if low permeability foundation materials do not exist to reduce seepage from the TSF.

Groundwater from of the Unnamed Tributary (NK1.190) North Fork Koktuli River will be extracted along the northeast perimeter of TSF G, which is represented by groundwater extraction point, GEP-4, as shown on Figure NK1.190-1.3. The groundwater use and water take location are described in Table NK1.190-1. The groundwater flow will be extracted at an estimated rate of 0.04 cfs. Table NK1.190-2 and Table NK1.190-3 describe the quantity of groundwater appropriated for beneficial uses and the quantity of groundwater required for mine processes at start-up of the Site G facility, respectively. The beneficial uses of groundwater for the TSF management include:

- Ensuring a sufficient live pond volume to offset dry years and to support the mining processes (e.g., mill process, equipment cooling, tailings slurry, concentrate slurry, etc.),
- Submerge potentially reactive waste materials to prevent oxidation,
- Saturate/flood tailings to prevent dust generation,
- Protect downstream aquatic resources.

## SECTION 4.0 - REFERENCES

Alaska Department of Natural Resources (June 2005). Guidelines for Cooperation with the Alaska Dam Safety Program.

ICOLD – International Commission on Large Dams, (1995), "Tailings Dams and Seismicity: Review and Recommendations," Bulletin 98.

Knight Piésold Ltd. (June 2006). DRAFT – Facilities Description in Support of a Water Rights Application – South Fork Koktuli River. Ref. No. VA101-176/16-3.

Knight Piésold Ltd. (June 2006). DRAFT – Facilities Description in Support of a Water Rights Application – North Fork Koktuli River. Ref. No. VA101-176/16-4.

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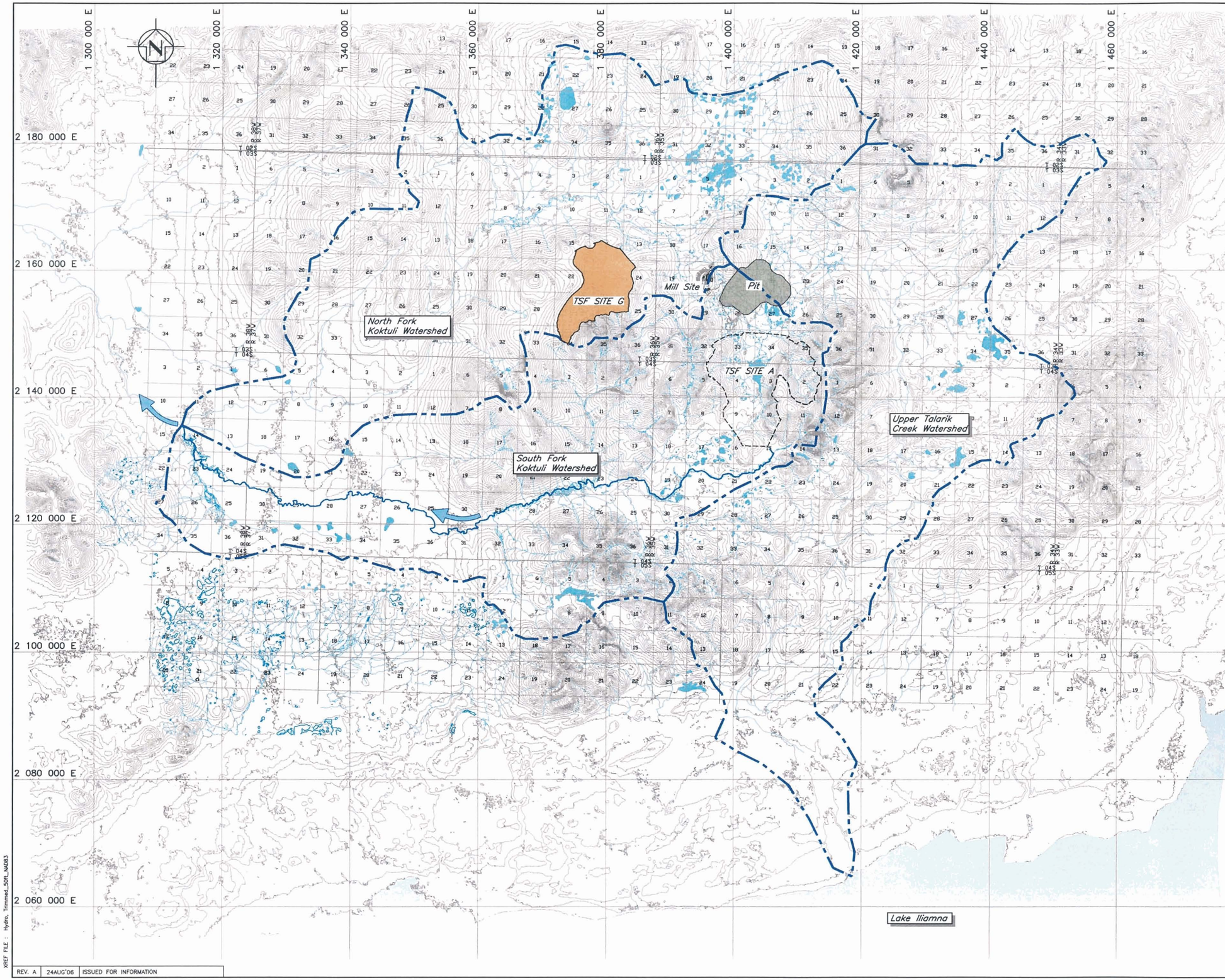



LEGEND

- Tailing Storage Facility
- Open Pit
- Watershed Boundary

NOTE

1. NAD83 datum, Alaska State Planes; Zone 5, US Foot.
2. The Pebble Project is located within Townships 3–5 South, Ranges 34–37 West, Seward Meridian.

Scale 7500 0 7500 15000 22500 Feet

NORTHERN DYNASTY MINES INC.

PEBBLE PROJECT

**REGIONAL SITE PLAN**

Knight Piésold CONSULTING

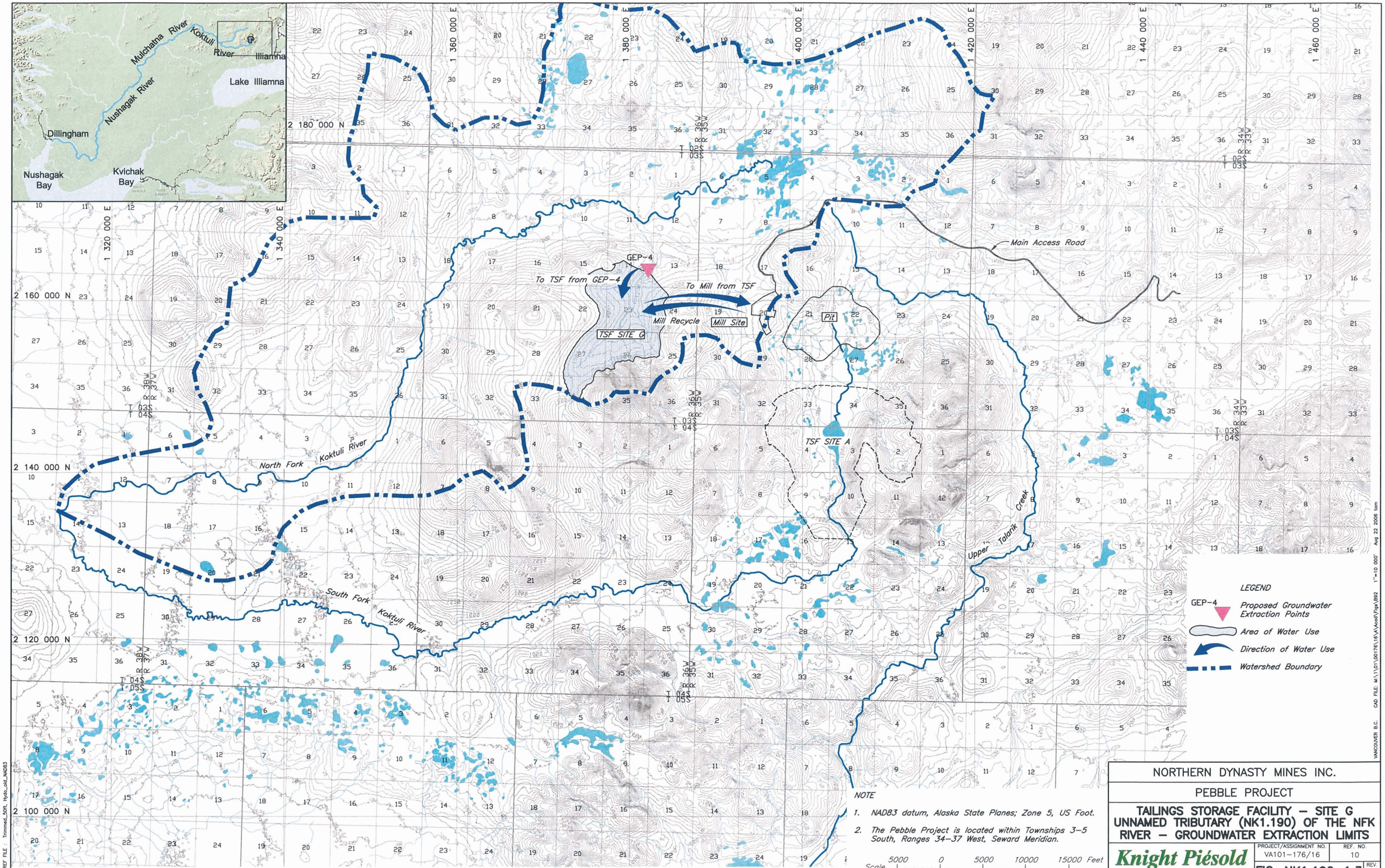
| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| VA101-176/16 | 10 |

FIG. NK1.190-1.2 REV. A

| REV. | DATE | ISSUED FOR |
|---|---|---|
| A | 24AUG'06 | INFORMATION |

XREF FILE : Hydro, Trimmed_50ft_NAD83

VANCOUVER B.C. CAD FILE: M:\1\01\00176\16\A\Acad\Figs\B91 1"=15 000' Plot 1=1(PS) Aug 21 2006 tom




| REV. | DATE | ISSUED |
|---|---|---|
| A | 23AUG'06 | FOR INFORMATION |

NORTHERN DYNASTY MINES INC.

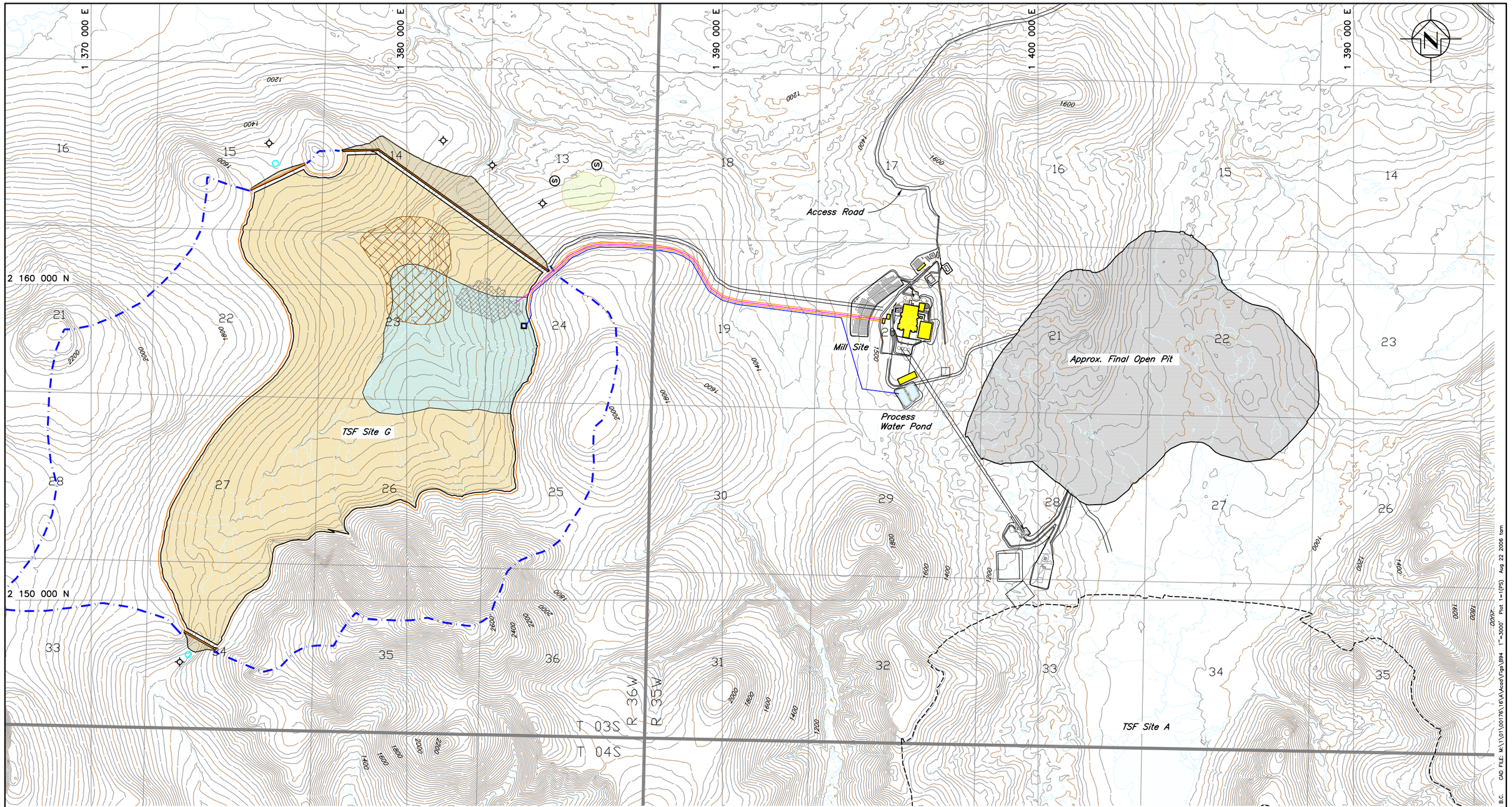
PEBBLE PROJECT

**TAILINGS STORAGE FACILITY – SITE G**
**UNNAMED TRIBUTARY (NK1.190) OF THE NFK RIVER – GROUNDWATER EXTRACTION LIMITS**

Knight Piésold CONSULTING

| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| VA101-176/16 | 10 |

FIG. NK1.190-1.3 REV. A




LEGEND

- Tailings Beach
- Supernatant Pond
- Non-reactive Mine Rock
- Potentially Reactive Waste Rock
- Potentially Reactive Tailings
- TSF Catchment Boundary
- Pyritic Tailings Slurry Pipeline
- Bulk Tailings Slurry Pipeline
- Reclaim Pipeline
- Roads
- Monitoring Well
- Sediment Control
- Seepage Collection Sump
- Topsoil Stockpile
- Reclaim Barge

NOTE

1. Mine site topography information is in NAD83 Alaska State Plane Zone 5 Foot. Outer stream/lake features have been incorporated from NAD27 information. Contour interval shown is 25 ft. Information provided by Eagle Mapping, Nov. 2004.
2. The Pebble Project is located within Townships 3–5 South, Ranges 34–37 West, Seward Meridian.

DRAFT

FOR DISCUSSION ONLY

NORTHERN DYNASTY MINES INC.

PEBBLE PROJECT

TAILINGS STORAGE FACILITY – SITE G
UNNAMED TRIBUTARY (NK1.190) OF THE
NFK RIVER – GENERAL ARRANGEMENT –FINAL

Knight Piésold CONSULTING

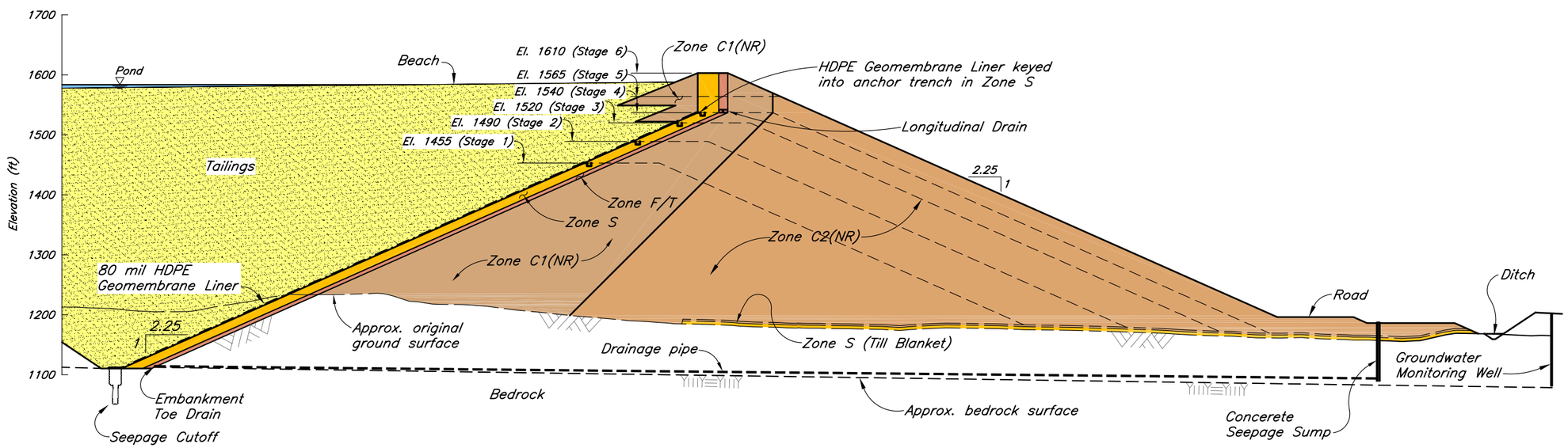
| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| VA101-176/16 | 10 |

FIGURE NK1.190-2.1 REV. C

| REV. | DATE | ISSUED FOR |
|---|---|---|
| C | 05SEPT'06 | INFORMATION |

XREF FILE : Topo_Sft, Hydro, Features

VANCOUVER B.C. CAD FILE: M:\1\01\00176\16\A\Acad\Figs\B94 1"=3000' Plot 1=1(PS) Aug 22 2006 tom




**MAIN EMBANKMENT SECTION**
Scale A

Scale A 100 0 100 200 300 Feet

VANCOUVER B.C. CAD FILE: M:\1\01\00176\16\A\Acad\Figs\B95 1"=200' Plot 1=1(PS) Aug 22 2006 tam

XREF FILE : -

| REV. | DATE | DESCRIPTION |
|---|---|---|
| A | 23AUG'06 | ISSUED FOR INFORMATION |

NORTHERN DYNASTY MINES INC.

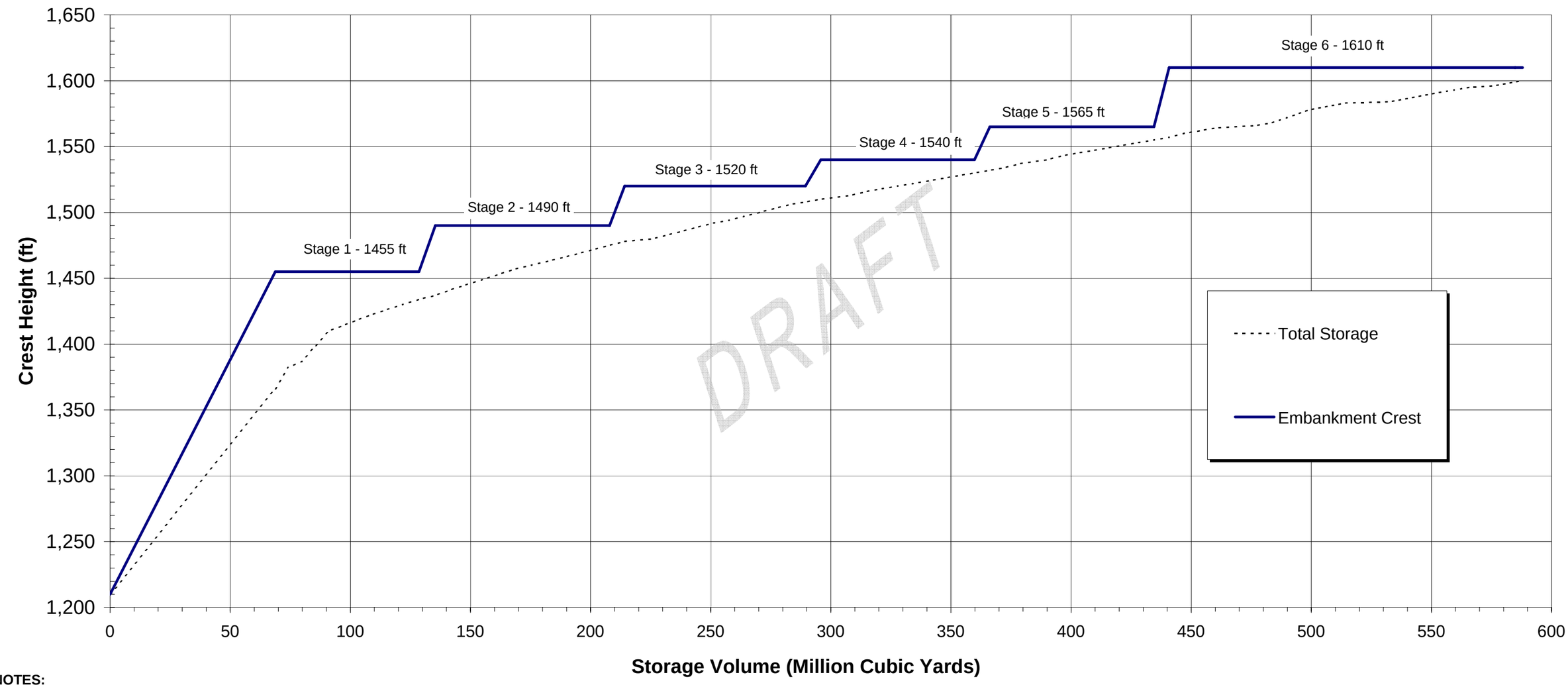
PEBBLE PROJECT

**TAILINGS STORAGE FACILITY – SITE G**
**MAIN EMBANKMENT SECTION**
**TYPICAL**

Knight Piésold CONSULTING

| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| VA101-176/16 | 10 |

**FIGURE NK1.190-2.2** REV. A




**NOTES:**
1) Total Storage Volume Includes Tailings, Supernatant Pond and Storm Containment
2) Embankment Crest Elevation Includes 10 ft. freeboard

NORTHERN DYNASTY MNES INC.

PEBBLE PROJECT

**TAILINGS STORAGE FACILITY SITE G**
**FILLING SCHEDULE**

Knight Piésold CONSULTING

| PROJECT / ASSIGNMENT NO. | REF NO. |
|---|---|
| VA101-176/16 | 10 |

**FIGURE NK1.190-2.3** REV. A

Rev A - Issued for Information

**TABLE NK1.190-1**

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

**GROUNDWATER USE AND WATER EXTRACTION POINTS**
**UNNAMED TRIBUTARY (NK1.190) NORTH FORK KOKTULI RIVER DRAINAGE**

| Beneficial Water Uses | Where (Figure 1.3) | Water Use Locations | | | | Description of Water Take Points | Water Take Point Locations | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Meridian | Twp | Range | Section | | Meridian | Twp | Range | Section |
| Management of the TSF (i.e., support mill processes, submerge potentially reactive waste materials to prevent oxidation, saturate/ flood tailings to prevent dust generation, and protect downstream aquatic resources) | Supernatant Pond TSF at Site G, mill, tailings slurry and reclaim pipelines, and concentrate slurry and reclaim pipelines | Seward | 3 S | 35 W<br>36 W | 19-20<br>13-15, 22-27 & 34 | Groundwater will be extracted from GEP-4 and impounded in the TSF. The accumulation of groundwater in the TSF will be due to seepage cutoff measures in the embankment design. | Seward | 3 S | 36 W | 13-15, 22-27 & 34 |

**TABLE NK1.190-2**

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

**GROUNDWATER TO BE USED BENEFICIALLY BY ACTIVITY**
**UNNAMED TRIBUTARY (NK1.190) NORTH FORK KOKTULI RIVER DRAINAGE**

Rev'd Aug/24/06

| Beneficial Use | Estimate Flow Rate[7] | | |
|---|---|---|---|
| | cfs | gpd | AFY |
| Potable Water for Camp Supply[1] | N/A | N/A | N/A |
| Mill Processing[2] | N/A | N/A | N/A |
| Management of the TSF: Water Permanently Retained in the Voids (i.e., submerged tailings voids and waste rock voids)[3] | N/A | N/A | N/A |
| Management of the TSF: Protection of Downstream Aquatic Resources - Water Stored in the TSF due to Seepage Cutoff Measures[4] | 0.04 | 100,000 | 100 |
| Dust Suppression on Haul Roads in the Water Extraction Area[5] | N/A | N/A | N/A |
| Concentrate Slurry Pipeline to Marine Terminal[6] | N/A | N/A | N/A |
| **TOTAL ESTIMATED RATE OF GROUNDWATER TO BE BENEFICIALLY USED** | **0.04** | **100,000** | **100** |

**Notes:**

1. The source of water for the camp supply will be groundwater within the water extraction limits of the South Fork Koktuli River drainage. Refer to SFK groundwater rights application.

2. Water used for mill processing will be withdrawn from the TSF at Site A only at mill start-up, which will occur prior to development of the TSF at Site G in NK1.190. Fresh make-up water for mill processing will be extracted from the open pit dewatering system. Refer to SFK groundwater rights application.

3. Refer to 11 AAC 93.040 (c)(13) in application response document for surface water rights for Unnamed Tributary (NK1.190) North Fork Koktuli River.

4. Refer to Table NK1.190-1 and Section 3.0 in the text for the beneficial uses of groundwater for TSF management.

5. Water for dust suppression will all be supplied by surface water. Refer to Table 2 in section 11 AAC 93.040 (c)(13) in application response document for surface water rights for Unnamed Tributary (NK1.190) North Fork Koktuli River.

6. Water for the concentrate slurry pipeline will be withdrawn from the TSF at Site A only to prime the system at start-up, which will occur prior to development of the TSF at Site G.

7. The number of significant figures is not intended to imply a high level of accuracy but to show relative proportions.

**TABLE NK1.190-3**

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

**GROUNDWATER REQUIRED FOR TSF SITE G AT START-UP**
**UNNAMED TRIBUTARY (NK1.190) NORTH FORK KOKTULI RIVER DRAINAGE**

Rev'd Aug/24/06

| Beneficial Use | Estimated Volume[5] | | |
|---|---|---|---|
| | ($ft^3$) | (gallons) | (acre-ft) |
| Mill Process and Equipment Cooling[1] | N/A | N/A | N/A |
| Tailings Slurry Pipelines from the Mill to the TSF[2] | 250,000 | 1,872,000 | 5.7 |
| Reclaim Pipelines from the TSF to the Mill[3] | 50,894 | 382,000 | 1.2 |
| Concentrate Slurry Pipeline to the Port Site[4] | N/A | N/A | N/A |
| Reclaim Pipeline from the Port Site to the Mill[4] | N/A | N/A | N/A |
| **TOTAL ESTIMATED VOLUME OF GROUNDWATER TO BE BENEFICIALLY USED** | **300,894** | **2,254,000** | **6.9** |

**Notes:**

1. Fresh water used for mill processing will be withdrawn from the TSF at Site A only at mill start-up, which will occur prior to development of the TSF at Site G in NK1.190. Fresh make-up water for mill processing will be extracted from the open pit dewatering system. Refer to SFK application response document for groundwater rights. All other water requirements for mill processing will be recycled from the TSF at Site G to the mill by the reclaim pipeline and discharged into the TSF from the mill by the tailings slurry pipelines, in a continuous loop.

2. Total water needed at TSF Site G for start-up = 28.7 acre-ft (9,360,000 gallons). 80% attributed to surface water, 20% to groundwater. 9,360,000 gallons x 20% = 1,872,000 gallons. Assumed two bulk tailings and one pyritic tailings pipelines, flowing at full capacity with water to charge the system. Pipe length = 78,000 ft, pipe diameter = 54 inches. During operations, the mill process water will circulate amongst the mill site, the tailings slurry pipelines and the reclaim pipeline.

3. Total water needed at TSF Site G for start-up =5.8 acre-ft (1,910,000 gallons). 80% attributed to surface water, 20% to groundwater. 1,910,000 gallons x 20% = 382,000 gallons. Assumed one reclaim pipeline, flowing at full capacity with water to charge the system. Pipe length = 16,000 ft, pipe diameter = 54 inches. During operations, water will be supplied from the TSF supernatant pond at Site G as part of the recycle system.

4. Water use for the concentrate slurry pipeline will be withdrawn from the TSF at Site A only to prime the system at mill start-up. Refer to Table 3 in 11 AAC 93.040(c)(13) of the application completeness response for the South Fork Koktuli River. During operations, the mill process water will circulate between the TSF G, the mill, the concentrate slurry pipeline, and the reclaim pipeline from the port site to the TSF.

5. The number of significant figures is not intended to imply a high level of accuracy but to show relative proportions.

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

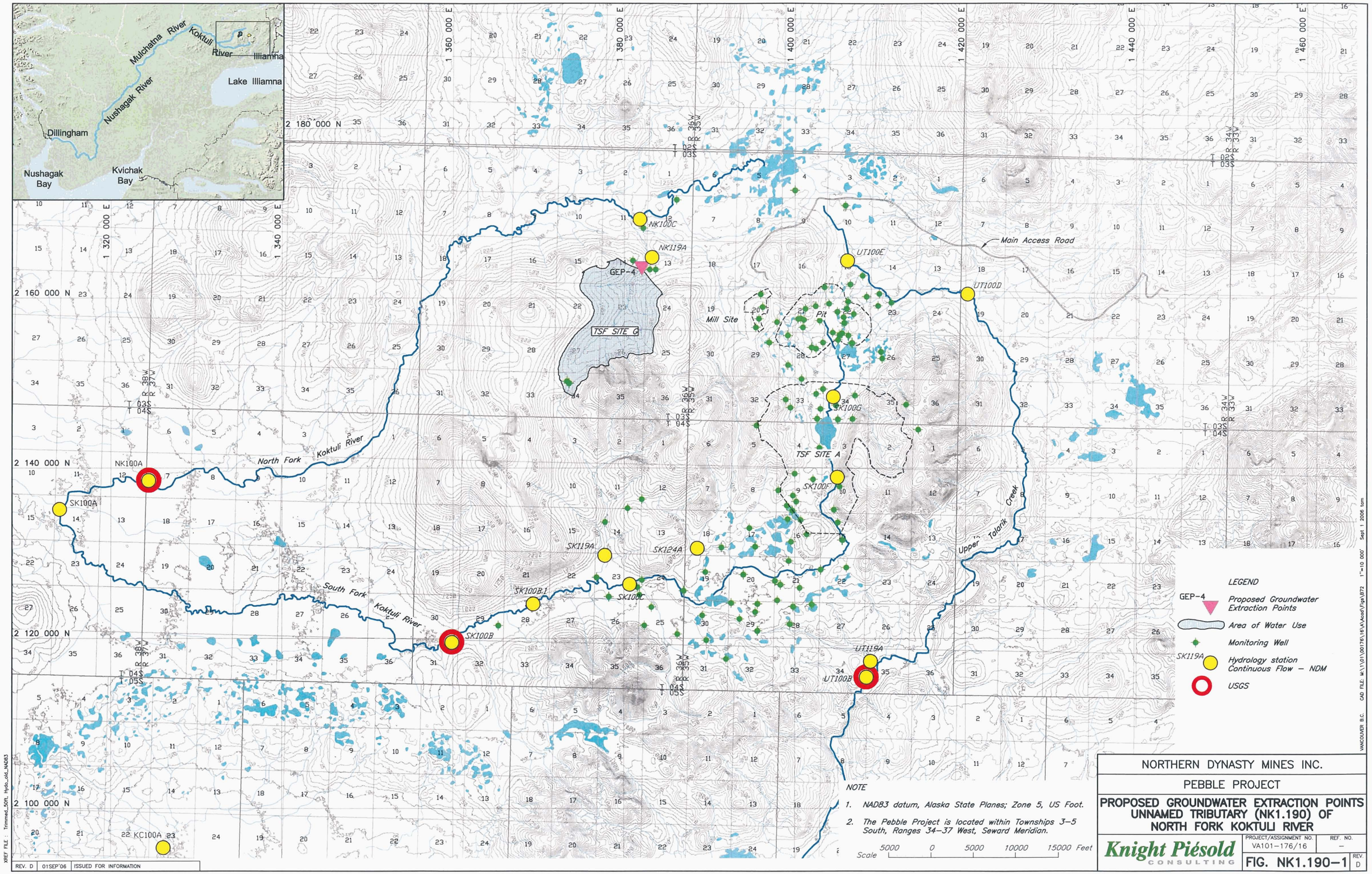
**Application for Groundwater Right**

***Unnamed Tributary (NK1.190)***
***North Fork Koktuli River***

**MAP**

**INSTRUCTION #6** – *Attach legible map that includes meridian, township, range, and section lines such as a subdivision plat, USGS topographical quadrangle, or borough tax map. Indicate location of water withdrawal, route of water transmission, water use area boundary, points of water use within boundary, and point of water return flow (if applicable).*

The following map (Figure NK1.190-1), originally introduced behind the Application Attachments tab, shows the township, range, and section lines for the location of the groundwater extraction point (GEP) and the area of water use.


Mulchatna River
Koktuli River
Illiamna
Lake Illiamna
Nushagak River
Dillingham
Nushagak Bay
Kvichak Bay
2 180 000 N
2 160 000 N
2 140 000 N
2 120 000 N
2 100 000 N
1 320 000 E
1 340 000 E
1 360 000 E
1 380 000 E
1 400 000 E
1 420 000 E
1 440 000 E
1 460 000 E
NK100C
NK119A
GEP-4
TSF SITE G
Mill Site
Pit
UT100E
UT100D
Main Access Road
NK100G
TSF SITE A
SK100F
NK100A
SK100A
North Fork Koktuli River
South Fork Koktuli River
Upper Talarik Creek
SK119A
SK124A
SK100B.1
SK100C
SK100B
UT119A
UT100B
22 KC100A
LEGEND
GEP-4
Proposed Groundwater Extraction Points
Area of Water Use
Monitoring Well
SK119A
Hydrology station Continuous Flow – NDM
USGS
NOTE
1. NAD83 datum, Alaska State Planes; Zone 5, US Foot.
2. The Pebble Project is located within Townships 3–5 South, Ranges 34–37 West, Seward Meridian.
Scale 5000 0 5000 10000 15000 Feet
NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT
PROPOSED GROUNDWATER EXTRACTION POINTS UNNAMED TRIBUTARY (NK1.190) OF NORTH FORK KOKTULI RIVER
Knight Piésold CONSULTING
PROJECT/ASSIGNMENT NO. VA101-176/16
REF. NO. –
FIG. NK1.190-1
REV. D
REV. D 01SEP'06 ISSUED FOR INFORMATION
XREF FILE : Trimmed_50ft_Hydo_old_NAD83
VANCOUVER B.C.
CAD FILE: M:\1\01\00176\16\A\Acad\Figs\B72
1"=10 000'
Sept 1 2006 tom

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

**Application for Groundwater Right**

***Unnamed Tributary (NK1.190)***
***North Fork Koktuli River***

## ADEC WASTEWATER SYSTEM CERTIFICATE

**INSTRUCTION #7** – *Attach copy of approved ADEC water and wastewater system certificate (if applicable).*

Not applicable. No wastewater system is being applied for at this time.

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**
**Application for Groundwater Right**

***Unnamed Tributary (NK1.190)***
***North Fork Koktuli River***

## ADNR FISH HABITAT PERMIT

**INSTRUCTION #8** – *Attach copy of ADNR fish habitat permit (if applicable).*

Not applicable. No activities requiring a fish habitat permit are being applied for at this time.

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**
**Application for Groundwater Right**

***Unnamed Tributary (NK1.190)***
***North Fork Koktuli River***

## STATEMENT OF BENEFICIAL USE

**INSTRUCTION #9** – *Attach notarized Statement of Beneficial Use of Water form and associated fee, if water system and water use are fully developed, and total water use does not exceed 500 gallons of water per day.*

Not applicable. No water system or water use has been established at this time.

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

**Application for Groundwater Right**

***Unnamed Tributary (NK1.190)***
***North Fork Koktuli River***

# COASTAL PROJECT QUESTIONNAIRE

**INSTRUCTION #10** – *Attach completed Coastal Project Questionnaire (if applicable).*

In its analyses of application completeness letter of July 26, 2006, regarding NDM's Unnamed Tributary (NK1.190) North Fork Koktuli surface water right application, DNR stated that the consistency review packet should be expanded to include additional detail related to the evaluation of the phased portion of the project, i.e., just the Phase I water rights application. Thus, following is a CPQ based on just Phase I activities.

Following the CPQ is NDM's evaluation of how the proposed Phase I activities will be consistent with the state ACMP standards at 11 AAC 112.200 – .320, and with the applicable district enforceable policies.

# Coastal Project Questionnaire and Certification Statement

All questions must be answered. **<u>If you answer "Yes" to any of the questions, please call that specific department for further instructions to avoid delay in processing your application</u>**. Maps and plan drawings must be included with your packet.

***An incomplete packet will be returned.***

## ■ APPLICANT INFORMATION

1. Northern Dynasty Mines Inc.
   Name of Applicant
   3201 C Street
   Address
   Anchorage, AK 99503
   City/State/Zip
   (907) 339-2600
   Daytime Phone
   (907) 339-2601
   Fax Number E-mail Address

2. 
   Agent (or responsible party if other than applicant)
   Address
   City/State/Zip State Zip Code
   Daytime Phone
   Fax Number E-mail Address

## ■ PROJECT INFORMATION

| | Yes | No |
|---|---|---|
| 1. This activity is a: ☐ new project ☒ modification or addition to an existing project<br>If this is a modification, do you currently have any State, federal or local approvals for this activity? | ☒ | ☐ |

*Note: Approval means any form of authorization.* If "yes," please list below:

| Approval Type | | Approval # | | Issuance Date | | Expiration Date |
|---|---|---|---|---|---|---|
| Multi-year Miscellaneous Land Use Permit | | A026118 | | 2002 | | 2006 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

2. If this is a modification, was this project reviewed for consistency with Alaska Coastal Management? ☒ ☐

   Previous State I.D. Number: AK <u>A022118</u>

   Previous Project Name <u>Pebble Project</u>

## ■ PROJECT DESCRIPTION

1. Provide a brief description of your entire project and ALL associated facilities and land use conversions.

   <u>See Attached. NOTE: This CPQ addresses only Phase I (water right application) activities.</u>

   Proposed starting date for project: <u>The overall project has been underway since the 1980s. NDM has been actively drilling on the property since 2002, and will continue in 2006 and later. Actual start of development will depend on 2006 drill results and length of permitting process.</u>

Proposed ending date for project: Unknown

2. Attach the following: • a detailed project description, all associated facilities, and land use conversions, etc. (Be specific, including access roads, caretaker facilities, waste disposal sites, etc.); • a project timeline for completion of all major activities; • a site plan depicting project boundary with all proposed actions; • other supporting documentation to facilitate project review. Note: If the project is a modification, identify existing facilities and proposed changes on the site plan.

## ■ PROJECT LOCATION

1. Attach a copy of the topographical and vicinity map clearly indicating the location of the project. Please include a map title and scale.

2. The project is located in which region (see attached map): ☐ Northern ☐ Southcentral ☐ Southeast ☒ Southwest ☐ within or associated with the Trans-Alaska Pipeline corridor

3. Location of project (Include the name of the nearest land feature or body of water.) See attached list of townships.

   Township _____ Range _____ Section _____ Meridian _____ Latitude/Longitude _____ / _____

   USGS Quad Map Iliamna 1:250,000

4. Is the project located in a coastal district? Yes ☒ No ☐ If yes, identify: Lake and Peninsula Borough,

   *(Coastal districts are a municipality or borough, home rule or first class city, second class with planning, or coastal resource service area.) Note: A coastal district is a participant in the State's consistency review process. It is possible for the State review to be adjusted to accommodate a local permitting public hearing. Early interaction with the district is important;* ***please contact the district representative listed on the attached contact list.***

5. Identify the communities closest to your project location: Iliamna, Newhalen, Nondalton

6. The project is on: ☒ State land or water* ☐ Federal land ☐ Private land ☐ Municipal land ☐ Mental Health Trust land

   **State land can be uplands, tidelands, or submerged lands to 3 miles offshore. See Question #1 in DNR section.*
   Contact the applicable landowner(s) to obtain necessary authorizations.

## ■ DEPARTMENT OF ENVIRONMENTAL CONSERVATION (DEC) APPROVALS

| | Yes | No |
|---|---|---|
| 1. Will a discharge of wastewater from industrial or commercial operations occur? | ☐ | ☒ |
| Will the discharge be connected to an approved sewer system? | ☐ | ☒ |
| Will the project include a stormwater collection/discharge system? | ☒ | ☐ |
| 2. Do you intend to construct, install, modify, or use any part of a wastewater (sewage or greywater) disposal system? | ☐ | ☒ |
| a) If the answer is yes, will the discharge be 500 gallons per day or greater? | ☐ | ☐ |
| b) If constructing a domestic wastewater treatment or disposal system, will the system be located within fill material requiring a COE permit? | ☐ | ☐ |

If you answered yes to a) or b), answer the following:

1) What is the distance from the bottom of the system to the top of the subsurface water table? _____

2) How far is any part of the wastewater disposal system from the nearest surface water? _____
3) Is the surrounding area inundated with water at any time of the year? ..... ☐ ☐
4) How big is the fill area to be used for the absorption system?_____
*(Questions 1 & 2 will be used by DEC to determine whether separation distances are being met; Questions 3 & 4 relate to the required size of the fill if wetlands are involved.)*

| | Yes | No |
|---|---|---|
| 3. Will your project require a mixing zone? ..... | ☐ | ☒ |
| *(If your wastewater discharge will exceed Alaska water quality standards, you may apply for a mixing zone. If so, please contact DEC to discuss information required under 18 AAC 70.032.)* | | |
| 4. a) Will your project result in construction, operation, or closure of a facility for solid waste disposal?..... | ☐ | ☒ |
| *(Note: Solid waste means drilling wastes, household garbage, refuse, sludge, construction or demolition wastes, industrial solid waste, asbestos, and other discarded, abandoned, or unwanted solid or semi-solid material, whether or not subject to decomposition, originating from any source. Disposal means placement of solid waste on land.)* | | |
| b) Will your project result in treatment of solid waste at the site?..... | ☐ | ☒ |
| *(Examples of treatment methods include, but are not limited to: incineration, open burning, baling, and composting.)* | | |
| c) Will your project result in storage or transfer of solid waste at the site?..... | ☐ | ☒ |
| d) Will the project result in storage of more than 50 tons of materials for reuse, recycling, or resource recovery?..... | ☐ | ☒ |
| e) Will any sewage solids or biosolids be disposed of or land-applied to the site? ..... | ☐ | ☒ |
| *(Sewage solids include wastes that have been removed from a wastewater treatment plant system, such as a septic tank, lagoon dredge, or wastewater treatment sludge that contain no free liquids. Biosolids are the solid, semi-solid, or liquid residues produced during the treatment of domestic septage in a treatment works which are land applied for beneficial use.)* | | |
| 5. Will your project require application of oil, pesticides, and/or any other broadcast chemicals? ..... | ☐ | ☒ |
| 6. a) Will you have a facility with industrial processes that are designed to process no less than *five tons per hour* and needs air pollution controls to comply with State emission standards? ..... | ☐ | ☒ |
| b) Will you have stationary or transportable fuel burning equipment, including flares, with a total fuel consumption capacity no less than 50 million Btu/hour? ..... | ☐ | ☒ |
| c) Will you have a facility with incinerators having a total charging capacity of no less than 1,000 pounds per hour?..... | ☐ | ☒ |
| d) Will you have a facility with equipment or processes that are subject to Federal New Source Performance Standards or National Emission Standards for hazardous air pollutants? .... | ☐ | ☒ |
| *i)* Will you propose exhaust stack injection?..... | ☐ | ☒ |
| e) Will you have a facility with the potential to emit no less than 100 tons per year of any regulated air contaminant?..... | ☐ | ☒ |
| f) Will you have a facility with the potential to emit no less than 10 tons per year of any hazardous air contaminant or 25 tons per year of all hazardous air contaminants?..... | ☐ | ☒ |
| g) Will you construct or add stationary or transportable fuel burning equipment of no less than 10 million Btu/hour in the City of Unalaska or the City of St. Paul? ..... | ☐ | ☒ |
| h) Will you construct or modify in the Port of Anchorage a volatile liquid storage tank with a volume no less than 9,000 barrels, or a volatile liquid loading rack with a design throughput no less than 15 million gallons? ..... | ☐ | ☒ |
| i) Will you be requesting operational or physical limits designed to reduce emissions from an existing facility in an air quality nonattainment area to offset an emission increase from another new of modified facility? ..... | ☐ | ☒ |
| 7. Do you plan to develop, construct, install, or alter a public water system?..... | ☐ | ☒ |
| 8. a) Will your project involve the operation of waterborne tank vessels or oil barges | | |

that carry crude or non-crude oil as bulk cargo, or the transfer of oil or other petroleum products to or from such a vessel or a pipeline system?..... ☐ ☒

b) Will your project require or include onshore or offshore oil facilities with an effective aggregate storage capacity of greater than 5,000 barrels of crude oil or greater than 10,000 barrels of non-crude oil?..... ☐ ☒

| | Yes | No |
|---|---|---|
| c) Will you operate facilities on land or water for exploration or production of hydrocarbons? ..... | ☐ | ☒ |

**If you answered "No" to ALL questions in this section, continue to next section.**
**If you answered "Yes" to ANY of these questions, contact the DEC office nearest you for information and application forms. Please be advised that all new DEC permits and approvals require a 30-day public notice period. DEC Pesticide permits take effect no sooner than 40 days after the permit is issued.**

Based on your discussion with DEC, please complete the following:

| Types of project approvals or permits needed and name of individual you contacted. | Date application submitted |
|---|---|
| Only preliminary discussions to date. | |
| | |
| | |
| | |

9. Does your project qualify for a general permit for wastewater or solid waste?..... ☐ ☒
*Note: A general permit is an approval issued by DEC for certain types of routine activities.*

**If you answered "Yes" to any questions in this section and are not applying for DEC permits, indicate reason:**

☐ **_____ (DEC contact) told me on _____ that no DEC approvals are required on this project because _____**

☒ **Other:** This CPQ addresses only Phase I (water right application) activities.

## ■ DEPARTMENT OF FISH AND GAME (DFG) APPROVALS

| | Yes | No |
|---|---|---|
| 1. Is your project located in a designated State Game Refuge, Critical Habitat Area or State Game Sanctuary? ..... | ☐ | ☒ |
| 2. Does your project include construction/operation of a salmon hatchery? ..... | ☐ | ☒ |
| 3. Does your project affect, or is it related to, a previously permitted salmon hatchery?..... | ☐ | ☒ |
| 4. Does your project include construction of an aquatic farm?..... | ☐ | ☒ |

**If you answered "No" to ALL questions in this section, continue to next section.**
**If you answered "Yes" to ANY questions under 1-4, contact the ADF&G Commercial Fisheries Division headquarters for information and application forms**

Based on your discussion with ADF&G, please complete the following:

| Types of project approvals or permits needed. | Date application submitted |
|---|---|
| | |
| | |
| | |
| | |

**If you answered "YES" to any questions in this section and are not applying for ADF&G permits, indicate reason:**

☐ _____ **(ADF&G contact) told me on _____ that no ADF&G approvals are required on this project because _____**

☐ **Other: _____**

## ■ DEPARTMENT OF NATURAL RESOURCES (DNR) APPROVALS

| | Yes | No |
|---|---|---|
| 1. Is the proposed project on State-owned land or water or will you need to cross State-owned land for access? ("Access" includes temporary access for construction purposes. *Note: In addition to State-owned uplands, the State owns almost all land below the ordinary high water line of navigable streams, rivers and lakes, and below the mean high tide line seaward for three miles.)* | ☒ | ☐ |
| a) Is this project for a commercial activity? | ☒ | ☐ |
| 2. Is the project on Alaska Mental Health Trust land (AMHT) or will you need to cross AMHT land? *Note: Alaska Mental Health Trust land is not considered State land for the purpose of ACMP reviews.* | ☐ | ☒ |
| 3. Do you plan to dredge or otherwise excavate/remove materials on State-owned land? | ☒ | ☐ |
| Location of dredging site if different than the project site: _____ | | |
| Township 3 S Range 35 W Section 20-22, 27-29 Meridian Seward USGS Quad Map Iliamna D-7 | | |
| 4. Do you plan to place fill or dredged material on State-owned land? | ☒ | ☐ |
| Location of fill disposal site if other than the project site: _____ | | |
| Township 3 S Range 36 W Section 13-15, 24 | | |
| Meridian Seward USGS Quad Map Iliamna D-7 | | |
| Source is on: ☒ State Land ☐ Federal Land ☐ Private Land ☐ Municipal Land | | |
| 5. Do you plan to use any of the following State-owned resources: | ☒ | ☐ |
| ☐ ***Timber***: Will you harvest timber? Amount: _____ | | |
| ☒ ***Materials such as rock, sand or gravel, peat, soil, overburden, etc.:*** | | |
| Which material? All of above. Amount: Undetermined. | | |
| Location of source: ☒ Project site ☐ Other, describe: _____ | | |
| Township _____ Range _____ Section _____ Meridian _____ USGS Quad Map _____ | | |
| 6. Do you plan to divert, impound, withdraw, or use any fresh water, except from an existing public water system or roof rain catchment system (regardless of land ownership)? | ☒ | ☐ |
| Amount (maximum daily, not average, in gallons per day): .01 cfs | | |
| Source: See Page 2 of Unnamed Tributary (NK1.190) of North Fork Koktuli River Application for Groundwater Right. Intended Use: See Page 3 of Unnamed Tributary (NK1.190) of North Fork Koktuli River Application for Groundwater Right. | | |
| If yes, will your project affect the availability of water to anyone holding water rights to that water? | ☐ | ☒ |
| 7. Do you plan to build or alter a dam (regardless of land ownership)? | ☒ | ☐ |
| 8. Do you plan to drill a geothermal well (regardless of land ownership)? | ☐ | ☒ |

9. At any one site (regardless of land ownership), do you plan any of the following?..... ☒ ☐

☒ Mine five or more acres over a year's time
☒ Mine 50,000 cubic yards or more of materials (rock, sand or gravel, soil, peat, overburden, etc.) over a year's time
☒ Have a cumulative unreclaimed mined area of five or more acres

If yes to any of the above, contact DNR about a reclamation plan.

If you plan to mine less than the acreage/amount stated above and have a cumulative unreclaimed mined area of less than five acres, do you intend to file a voluntary reclamation plan for approval? ..... **Yes** ☐ **No** ☐

10. Do you plan to explore for or extract coal? ..... ☐ ☒

11. a) Will you explore for or produce oil and/or gas?..... ☐ ☒
b) Will you conduct surface use activities on an oil and/or gas lease or within an oil and/or gas unit?..... ☐ ☒

12. Will you investigate, remove, or impact historical or archaeological or paleontological resources (anything over 50 years old) on State-owned land?..... ☒ ☐

13. Is the proposed project located within a known geophysical hazard area?..... ☐ ☒
*Note: 6 AAC 80.900(9) defines geophysical hazard areas as "those areas which present a threat to life or property from geophysical or geological hazards, including flooding, tsunami run-up, storm surge run-up, landslides, snowslides, faults, ice hazards, erosion, and littoral beach process." "known geophysical hazard area" means any area identified in a report or map published by a federal, state, or local agency, or by a geological or engineering consulting firm, or generally known by local knowledge, as having known or potential hazards from geologic, seismic, or hydrologic processes.*

14. Is the proposed project located in a unit of the Alaska State Park System? ..... ☐ ☒

15. Will you work in, remove water or material from, or place anything in, a stream, river or lake? (This includes work or activities below the ordinary high water mark or on ice, in the active flood plain, on islands, in or on the face of the banks, or, for streams entering or flowing through tidelands, above the level of mean lower low tide.)
*Note: If the proposed project is located within a special flood hazard area, a floodplain development permit may be required. Contact the affected city or borough planning department for additional information and a floodplain determination.)* ..... ☒ ☐

Name of waterbody: Small, unnamed streams and ponds (see attached topo map under "Project Location.")

16. Will you do any of the following:..... ☒ ☐
*Please indicate below:*

☒ Build a dam, river training structure, other instream impoundment, or weir
☒ Use water
☒ Pump water into or out of stream or lake (including dry channels)
☒ Divert or alter a natural stream channel
☒ Change water flow or the stream channel
☒ Introduce silt, gravel, rock, petroleum products, debris, brush, trees, chemicals, or other organic/inorganic material, including waste of any type, into water
☒ Alter, stabilize or restore banks of a river, stream or lake (provide number of linear feet affected along the bank(s)
☒ Mine, dig in, or remove material, including woody debris, from beds or banks of a waterbody
☒ Use explosives in or near a waterbody
☐ Build a bridge (including an ice bridge)
☒ Use a stream, lake or waterbody as a road (even when frozen), or cross a stream with tracked or wheeled vehicles, log-dragging or excavation equipment (backhoes, bulldozers, etc.)
☒ Install a culvert or other drainage structure
☒ Construct, place, excavate, dispose or remove any material below the ordinary high water of a waterbody

☒ Construct a storm water discharge or drain into a waterbody
☐ Place pilings or anchors
☐ Construct a dock
☐ Construct a utility line crossing
☐ Maintain or repair an existing structure
☐ Use an instream in-water structure not mentioned here

**If you answered "No" to ALL questions in this section, continue to next section.**
**If you answered "Yes" to ANY questions under 1-16, contact the Area DNR, office for information and application forms.**

Based on your discussion with DNR, please complete the following:

| Types of project approvals or permits needed. | Date application submitted |
|---|---|
| Preliminary discussions have been initiated. | |
| | |
| | |
| | |

**If you answered "Yes" to any questions in this section and are not applying for DNR permits, indicate reason:**

☐ **_____ (DNR contact) told me on _____ that no DNR approvals are required on this project because _____**

## ■ FEDERAL APPROVALS

| | Yes | No |
|---|---|---|
| **U.S. Army Corps of Engineers (COE)** | | |
| 1. Will you dredge or place structures or fills in any of the following: tidal (ocean) waters? streams? lakes? wetlands*? | ☒ | ☐ |
| If yes, have you applied for a COE permit? | ☐ | ☒ |
| Date of submittal: _____ | | |
| Name of COE contact: _____ | | |
| *(Note: Your application for this activity to the COE also serves as application for DEC Water Quality Certification.)* | | |
| ***If you are not certain whether your proposed project is in a wetlands (wetlands include muskegs), contact the COE, Regulatory Branch at 907-753-2712 for a wetlands determination (outside the Anchorage area call toll free 1-800-478-2712)* | | |
| **Bureau of Land Management (BLM)** | | |
| 2. Is the proposed project located on BLM land, or will you need to cross BLM land for access? | ☐ | ☒ |
| If yes, have you applied for a BLM permit or approval? | ☐ | ☐ |
| Date of submittal: _____ | | |
| Name of BLM contact: _____ | | |
| **U.S. Coast Guard (USCG)** | | |
| 3. a) Do you plan to construct a bridge or causeway over tidal (ocean) waters, or navigable rivers, streams or lakes? | ☐ | ☒ |
| b) Does your project involve building an access to an island? | ☐ | ☒ |
| c) Do you plan to site, construct, or operate a deepwater port? | ☐ | ☒ |
| If yes, have you applied for a USCG permit? | ☐ | ☒ |
| Date of submittal: _____ | | |
| Name of USCG contact: _____ | | |

**U.S. Environmental Protection Agency (EPA)**

4. a) Will the proposed project have a discharge to any waters? ☐ ☒
   b) Will you dispose of sewage sludge (contact EPA at 206-553-1941)? ☐ ☒
   If you answered yes to a) or b), have you applied for an EPA National Pollution Discharge Elimination System (NPDES) permit? ☐ ☐

   Date of submittal: _____

   Name of EPA contact: _____
   *(Note: For information regarding the need for an NPDES permit, contact EPA at 1-800-424-4372)*

   | | Yes | No |
   |---|---|---|
   | c) Will construction of your project expose 1 or more acres of soil? *(This applies to the total amount of land disturbed, even if disturbance is distributed over more than one season, and also applies to areas that are part of a larger common plan of development or sale.)* | ☒ | ☐ |
   | d) Is your project an industrial facility that will have stormwater discharge directly related to manufacturing, processing, or raw materials storage areas at an industrial plant? | ☐ | ☒ |

   If you answered yes to c) or d), your project may require an NPDES Stormwater permit. Contact EPA at 206-553-8399.

**Federal Aviation Administration (FAA)**

5. a) Is your project located within five miles of any public airport? ☐ ☒
   b) Will you have a waste discharge that is likely to decay within 5,000 feet of any public airport? ☐ ☒
   If yes, please contact the Airports Division of the FAA at 907-271-5438.

**Federal Energy Regulatory Commission (FERC)**

6. a) Does the project include any of the following:
   1) a non-federal hydroelectric project on any navigable body of water ☐ ☒
   2) a location on federal land (including transmission lines) ☐ ☒
   3) utilization of surplus water from any federal government dam ☐ ☒
   b) Does the project include construction and operation, or abandonment of natural gas pipeline facilities under sections (b) and (c) of the Federal Power Act (FPA)? ☐ ☒

   c) Does the project include construction for physical interconnection of electric transmission facilities under section 202 (b) of the FPA? ☐ ☒
   If you answered yes to any questions under number 6, did you apply for a permit from FERC? ☐ ☒

   Date of submittal: _____

   Name of FERC contact: _____
   (*Note: For information, Div. Hydropower-Environment and Engineering contact: Vince Yearek 202-502-6174 or Mike Henry 503-944-6762, 202-502 8700; (for Natural Gas Projects) Division of Pipeline Certificate 202-502-8625; for Alaska projects contact Richard Foley – 202-502-8955)*

**U.S. Forest Service (USFS)**

7. a) Does the proposed project involve construction on USFS land? ☐ ☒
   b) Does the proposed project involve the crossing of USFS land with a water line? ☐ ☒
   If the answer to either question is yes, did you apply for a USFS permit or approval? ☐ ☐

   Date of submittal: _____

   Name of USFS contact: _____

8. Have you applied for any other federal permits or authorizations? ☐ ☐

| AGENCY | APPROVAL TYPE | DATE SUBMITTED |
|---|---|---|

Name of USFS contact: _____

8. Have you applied for any other federal permits or authorizations? ..... ☐ ☐

| AGENCY | APPROVAL TYPE | DATE SUBMITTED |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

**Please be advised that the CPQ identifies permits subject to a consistency review. You may need additional permits from other agencies or the affected city and/or borough government to proceed with your activity.**

## Certification Statement

The information contained herein is true and complete to the best of my knowledge. I certify that the proposed activity complies with, and will be conducted in a manner consistent with, the Alaska Coastal Management Program.

Signature of Applicant or Agent _____ Date 8 SEPT. '06

*Note:* Federal agencies conducting an activity that will affect the coastal zone are required to submit a federal consistency determination, per 15 CFR 930, Subpart C, rather than this certification statement. ACMP has developed a guide to assist federal agencies with this requirement. Contact ACMP to obtain a copy.

This certification statement will not be complete until all required State and federal authorization requests have been submitted to the appropriate agencies.

- **To complete your packet, please attach your State permit applications and copies of your federal permit applications to this questionnaire.**

**NORTHERN DYNASTY MINES INC.**
**PEBBLE PROJECT**

**Application for Groundwater Right**

***Unnamed Tributary (NK1.190)***
***North Fork Koktuli River***

**Coastal Project Questionnaire**

**ATTACHMENTS**

## PROJECT DESCRIPTION

1. **Brief description of entire project**

   The Pebble Project will be a large open mine. Primary mine area facilities will consist of the open pit, ore conveyor, ore stockpile, a mill site (with associated offices, workshops, equipment repair and storage areas), tailing storage facilities, and a worker camp. Transportation facilities will include a mine area road network, and an approximately 100-mile road to a port facility on Cook Inlet. The primary port site facilities will include metal concentrates storage, fuel storage, a ship loading structure, barge landing, offices and worker housing.

2. **Attachments**

   - ***Detailed project description***

     A detailed project description will be available after the detailed design phase of the project is completed.

     The Phase I activities, addressed by this CPQ, consist of:

     - Water Take - How and where groundwater will be taken
     - Water Volume - Volumes that will be taken and used
     - Water Use - How the water will be used

   - ***Project timeline***

     The project timeline will depend on the results of 2006 drilling program and follow up analysis, and the length of the permitting and NEPA processes. The estimated timeline is as follows:

     - Permit applications January 2008
     - NEPA process January 2008 through June 2010
     - Construction June 2010 through June 2012
     - Operations Late 2012

- ***Site plan***

  The following figure (see Project Location topographical map, item # 1, below), titled "Pebble Project Location," shows the geographic scope of the project, and more specifically the locations of the major proposed water use facilities (the two tailings storage facilities, mine pit, and mill site).

  Figure NK1.190-1.3, first introduced behind Tab # 5 (Project Description), is titled Tailings Storage Facility – Site G, Unnamed Tributary (NK1.190) of the NFK River – Groundwater Extraction Limits. This figure shows the location of the tailings facility (TSF G) impoundment as well as the other major locations (pit, and mill site) where groundwater from Unnamed Tributary (NK1.190) North Fork Koktuli would be beneficially used.

  A site plan depicting locations of lesser facilities will be available after the detailed design phase of the project.

- ***Other supporting documentation***

  See the remainder of the Application for Water Right in this binder within which this Coastal Project Questionnaire is located.

## PROJECT LOCATION

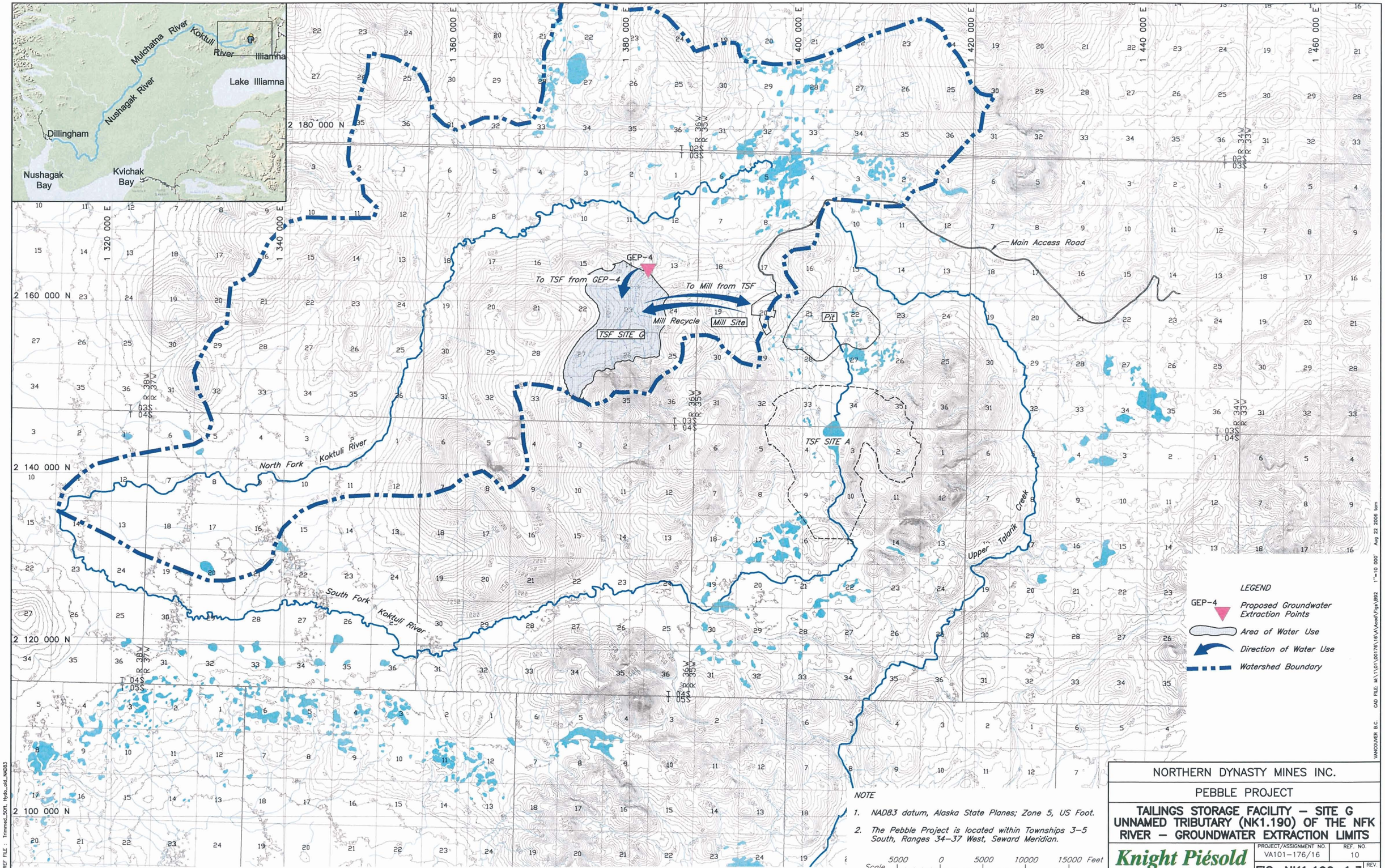
1. **Topographical map** – See attached figure "Pebble Project Location"

3. **Location of project**

   The proposed mine site is located 17 miles northwest of the community of Iliamna, on the north side of Lake Iliamna. An access road would extend approximately 100 miles from the mine site along the north side of Lake Iliamna to a possible port site on Cook Inlet (See attached figure "Pebble Project Location").

   The Phase I groundwater application activities would be located in the following townships, ranges, and sections, all within the Seward Meridian.

   T3S, R36W  Sections 13-15, 22-27 and 34




| REV. | DATE | ISSUED |
|---|---|---|
| A | 23AUG'06 | FOR INFORMATION |

NORTHERN DYNASTY MINES INC.

PEBBLE PROJECT

**TAILINGS STORAGE FACILITY – SITE G**
**UNNAMED TRIBUTARY (NK1.190) OF THE NFK RIVER – GROUNDWATER EXTRACTION LIMITS**

Knight Piésold CONSULTING

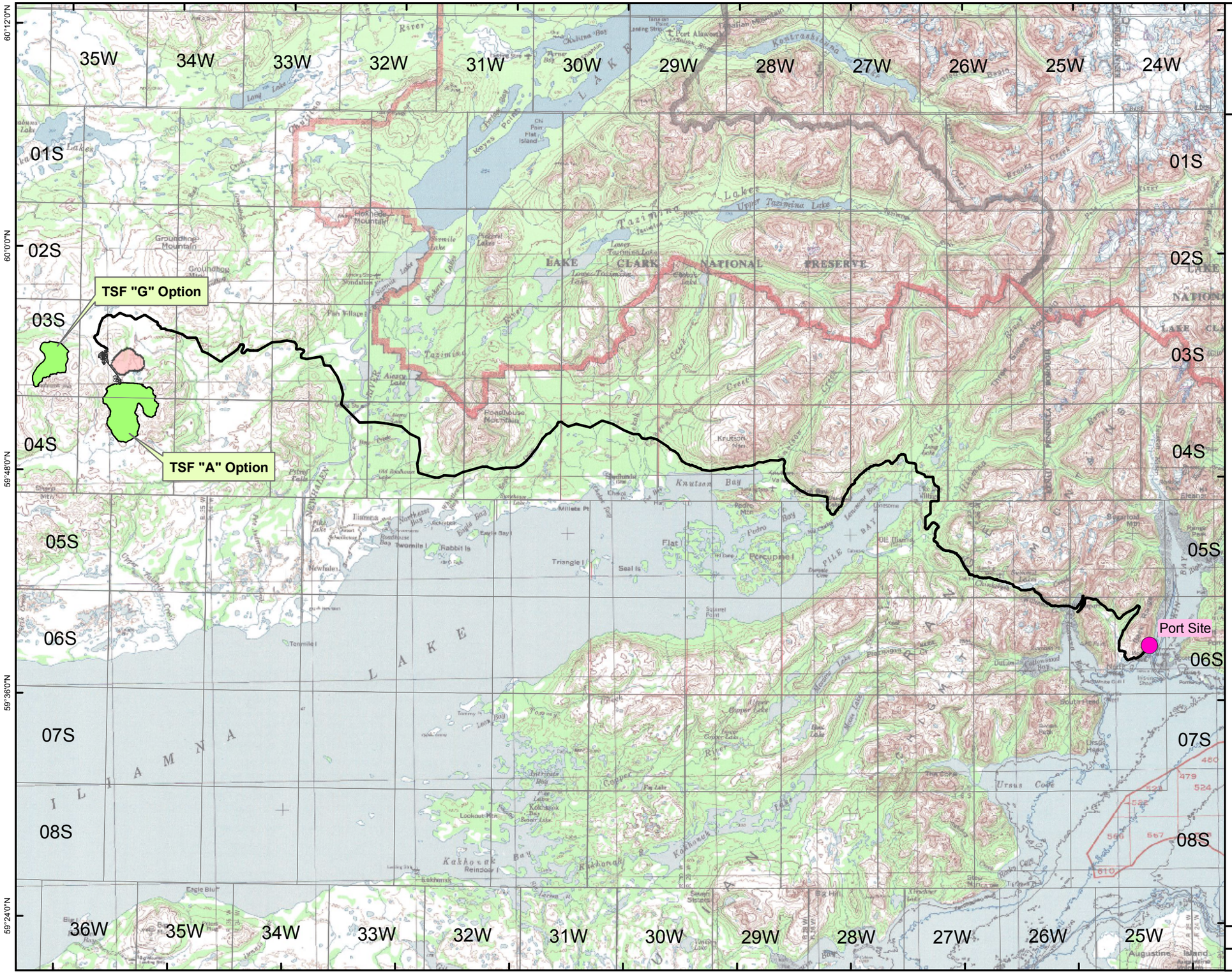
| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| VA101-176/16 | 10 |

FIG. NK1.190-1.3 REV. A

Pebble Project

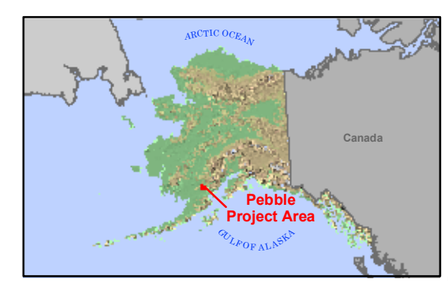
NORTHERN DYNASTY MINES INC.

PEBBLE PROJECT LOCATION




**Legend**

- Possible Port Site
- Possible Access Road
- Open Pit
- (TSF) "A" & "G" Options




0 3 6 9 12 15 Miles

0 5 10 15 20 Kilometers

N

Scale 1:380,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

| | |
|---|---|
| File: RDI_ND_PebProjArea_11x17L_1of1_D01.mxd | Date: March 13, 2006 |
| Version: 1 | Author: RDI-DWR |

# Northern Dynasty Mines Inc.
# Pebble Project Phase I

# Alaska Coastal Management Program
# Revised *Groundwater* Rights Consistency Evaluation

## *Unnamed Tributary (NK1.190)*
## *North Fork Koktuli River*

October 12, 2006

## Introduction

The scope of this Alaska Coastal Management Program (ACMP) consistency evaluation is the application submitted on September 21, 2006 by Northern Dynasty Mines Inc. (NDM) for groundwater rights in the Unnamed Tributary (NK1.190) North Fork Koktuli River drainage. This evaluation addresses the following Phase I activities:

1. Water Take - How and where surface water will be taken
2. Water Volume - How much water will be taken and used
3. Water use – How the water will be used

This valuation does not include activities not directly related to water extraction, volume, or use. Dam construction applications do not require individual consistency review under the Alaska Coastal Zone Management Program; however, construction of the TSF dams, operation of the TSFs, and construction and operation of the mill, camp and other project infrastructure will be described in future permit applications. Any activities for which NDM seeks authorization under those future permit applications will be reviewed under the ACMP program as part of the review process for those applications.

## Description of Activities

The Phase I activities are described in detail in the September 21, 2006, Unnamed Tributary (NK1.190) North Fork Koktuli River application for groundwater right. Following is a summary of those activities with approximate volumes of water:

| Activity | Description | Volume (cfs) |
|---|---|---|
| ***Water Take*** | | |
| Seepage cutoff measures | TSF seepage cutoff measures intercepting groundwater | 0.04 |
| ***Water Use*** | | |
| Water in supernatant pond | Water in pond on surface of TSF | 0.04 |
| ***Total Volume*** | | 0.04 |

## Consistency Evaluation

The Department of Natural Resources (DNR) has asked NDM to supplement its initial response to certain state and district policies, and those responses are set forth below. NDM questions the geographic and/or legal application of these policies and reserves the right to further define scope of the review during DNR's review of the coastal project questionnaire and consistency evaluation.

This evaluation below is comprised of two parts: the Statewide Enforceable Policies at 11 AAC 112.200 – .320, and the District Enforceable Policies (not Administrative Policies) of the Coastal Management Plan for the Lake and Peninsula Borough (L&PB).

The language of each standard or enforceable policy is shown below in italics, followed by a box containing NDM's evaluation.

## ***Alaska Statewide Enforceable Policies***

### 11 AAC 112.200. Coastal development

*(a) In planning for and approving development in or adjacent to coastal waters, districts and state agencies shall manage coastal land and water uses in such a manner that those uses that are economically or physically dependent on a coastal location are given higher priority when compared to uses that do not economically or physically require a coastal location.*

*(b) Districts and state agencies shall give, in the following order, priority to*

*(1) water-dependent uses and activities;*

*(2) water-related uses and activities; and*

*(3) uses and activities that are neither water-dependent nor water-related for which there is no practicable inland alternative to meet the public need for the use or activity.*

*(c) The placement of structures and the discharge of dredged or fill material into coastal water must, at a minimum, comply with the standards contained in 33 C.F.R. Parts 320 - 323, revised as of July 1, 2003.*

**NDM Evaluation:** **This coastal development policy addresses development in or adjacent to coastal waters. "Coastal water," defined at 11 AAC 112.990, means those waters, adjacent to the shoreline, that contain a measurable quantity or percentage of sea water, including sounds, bays, lagoons, ponds, estuaries, and tidally influenced waters. Phase 1 activities will be located approximately 58 miles from the nearest coastal water and therefore will not constitute development in or adjacent to coastal waters.**

### 11 AAC 112.210. Natural hazard areas

*(a) In addition to those identified in 11 AAC 112.990, the department, or a district in a district plan, may designate other natural processes or adverse conditions that present a threat to life or property in the coastal area as natural hazards. Such designations must provide the scientific basis for designating the natural process or adverse condition as a natural hazard in the coastal area, along with supporting scientific evidence for the designation.*

*(b) Areas likely to be affected by the occurrence of a natural hazard may be designated as*

*natural hazard areas by a state agency or, under 11 AAC 114.250(b), by a district.*

*(c) Development in a natural hazard area may not be found consistent unless the applicant has taken appropriate measures in the siting, design, construction, and operation of the proposed activity to protect public safety, services, and the environment from potential damage caused by known natural hazards.*

*(d) For purposes of (c) of this section, "appropriate measures in the siting, design, construction, and operation of the proposed activity" means those measures that, in the judgment of the coordinating agency, in consultation with the department's division of geological and geophysical surveys, the Department of Community and Economic Development as state coordinating agency for the National Flood Insurance Program under 44 C.F.R. 60.25, and other local and state agencies with expertise,*

*(1) satisfy relevant codes and safety standards; or*

*(2) in the absence of such codes and standards;*

*(A) the project plans are approved by an engineer who is registered in the state and has engineering experience concerning the specific natural hazard; or*

*(B) the level of risk presented by the design of the project is low and appropriately addressed by the project plans.*

**NDM Evaluation: In 11 AAC 112.990(15) natural hazards**

**(A) means the following natural processes or adverse conditions that present a threat to life or property in the coastal area: flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, storm surges, ice formations, snow avalanches, erosion, and beach processes;**

**(B) Includes other natural processes or adverse conditions designated by the department or by a district in a district plan;**

**Phase I activities will not occur in an area subject to the natural hazards listed in 11 AAC 112.990 except flooding and earthquakes. No other natural processes or adverse conditions have been designated by DNR or a district plan in the vicinity of the Pebble Project.**

**Because Phase I activities are located in the extreme upper reaches of their watersheds, the water courses subject to flooding are very small. Proper siting, design, construction and operation of the Phase I groundwater appropriation structures will be effected with standard engineering practices to withstand flooding.**

**Like most of Alaska, the site of the Phase I activities will be subject to earthquakes. The Phase I groundwater appropriation structure, designed and constructed with standard engineering practices, will be unlikely to be affected by earthquakes.**

**Procedures for siting, design, construction and operation of the Phase I water appropriation structures to withstand flooding and earthquakes, as ultimately proposed by NDM, will be reviewed and approved by DNR under its authorities governing the disturbance and reclamation of surface land in mining operations under 11 AAC 97.100 through 11 AAC 97.990. Thus, Phase I activities will be sited, designed, constructed and operated under the requirements of the above authorities such that these two natural processes will not present a threat to life or property.**

**11 AAC 112.220. Coastal access**

*Districts and state agencies shall ensure that projects maintain and, where appropriate, increase public access to, from, and along coastal water.*

**NDM Evaluation: This coastal access policy addresses public access to, from, and along coastal water. "Coastal water," defined at 11 AAC 112.990, means those waters, adjacent to the shoreline, that contain a measurable quantity or percentage of sea water, including sounds, bays, lagoons, ponds, estuaries, and tidally influenced waters. Phase 1 activities will be located approximately 58 miles from the nearest coastal water and therefore will not affect coastal access.**

**11 AAC 112.230. Energy facilities**

*(a) The siting and approval of major energy facilities by districts and state agencies must be based, to the extent practicable, on the following standards:*

*(1) site facilities so as to minimize adverse environmental and social effects while satisfying industrial requirements;*

*(2) site facilities so as to be compatible with existing and subsequent adjacent uses and projected community needs;*

*(3) consolidate facilities;*

*(4) consider the concurrent use of facilities for public or economic reasons;*

*(5) cooperate with landowners, developers, and federal agencies in the development of facilities;*

*(6) select sites with sufficient acreage to allow for reasonable expansion of facilities;*

*(7) site facilities where existing infrastructure, including roads, docks, and airstrips, is capable of satisfying industrial requirements;*

*(8) select harbors and shipping routes with least exposure to reefs, shoals, drift ice, and other obstructions;*

*(9) encourage the use of vessel traffic control and collision avoidance systems;*

*(10) select sites where development will require minimal site clearing, dredging, and construction;*

*(11) site facilities so as to minimize the probability, along shipping routes, of spills or other forms of contamination that would affect fishing grounds, spawning grounds, and other biologically productive or vulnerable habitats, including marine mammal rookeries and hauling out grounds and waterfowl nesting areas;*

*(12) site facilities so that design and construction of those facilities and support infrastructures in coastal areas will allow for the free passage and movement of fish and wildlife with due consideration for historic migratory patterns;*

*(13) site facilities so that areas of particular scenic, recreational, environmental, or cultural*

*value, identified in district plans, will be protected;*

*(14) site facilities in areas of least biological productivity, diversity, and vulnerability and where effluents and spills can be controlled or contained;*

*(15) site facilities where winds and air currents disperse airborne emissions that cannot be captured before escape into the atmosphere;*

*(16) site facilities so that associated vessel operations or activities will not result in overcrowded harbors or interfere with fishing operations and equipment.*

*(b) The uses authorized by the issuance of state and federal leases, easements, contracts, rights-of-way, or permits for mineral and petroleum resource extraction are uses of state concern.*

**NDM Evaluation:** **Phase 1 activities will not involve siting a major energy facility.**

**11 AAC 112.240. Utility routes and facilities**

*(a) Utility routes and facilities must be sited inland from beaches and shorelines unless*

*(1) the route or facility is water-dependent or water related; or*

*(2) no practicable inland alternative exists to meet the public need for the route or facility.*

*(b) Utility routes and facilities along the coast must avoid, minimize, or mitigate*

*(1) alterations in surface and ground water drainage patterns;*

*(2) disruption in known or reasonably foreseeable wildlife transit;*

*(3) blockage of existing or traditional access.*

**NDM Evaluation:** **Phase 1 activities will not involve any utility routes or facilities.**

**11 AAC 112.250. Timber harvest and processing**

*AS 41.17 (Forest Resources and Practices Act) and the regulations adopted under that chapter with respect to the harvest and processing of timber are incorporated into the program and constitute the components of the program with respect to those purposes.*

**NDM Evaluation:** **Phase 1 activities will not involve any timber harvesting or processing.**

**11 AAC 112.260. Sand and gravel extraction**

*Sand and gravel may be extracted from coastal waters, intertidal areas, barrier islands, and spits if there is no practicable alternative to coastal extraction that will meet the public need for the sand or gravel*

**NDM Evaluation:** **This sand and gravel extraction policy addresses extraction from coastal**

**waters, barrier islands and spits.**

- **Coastal water, defined at 11 AAC 112.990(6), means those waters, adjacent to the shoreline, that contain a measurable quantity or percentage of sea water, including sounds, bays, lagoons, ponds, estuaries, and tidally influenced waters.**
- **Intertidal areas are those subject to tidal ebb and flow.**
- **Barrier Islands (and lagoons), defined at 11 AAC 112.990(3), means**
  - **depositional coastal environments formed by deposits of sediment offshore; or;**
  - **coastal remnants that form a barrier of low-lying islands and bars protecting a salt-water lagoon with free exchange of water to the sea**
- **A spit is a deposition landform found off coasts. It is a type of bar or beach that develops where a re-entrant occurs, such as at a cove, bay, ria, or river mouth.**

**Phase 1 activities will be located approximately 58 miles from the nearest coast and therefore will not affect coastal waters, intertidal areas, barrier islands or spits.**

**11 AAC 112.270. Subsistence**

*(a) A project within a subsistence use area designated by the department or under 11 AAC 114.250(g) must avoid or minimize impacts to subsistence uses of coastal resources.*

*(b) For a project within a subsistence use area designated under 11 AAC 114.250(g), the applicant shall submit an analysis or evaluation of reasonably foreseeable adverse impacts of the project on subsistence use as part of*

*(1) a consistency review packet submitted under 11 AAC 110.215; and*

*(2) a consistency evaluation under 15 C.F.R. 930.39, 15 C.F.R. 930.58, or 15 C.F.R. 930.76.*

*(c) Repealed 10/29//2004, Register 172.*

*(d) Except in nonsubsistence areas identified under AS 16.05.258, the department may, after consultation with the appropriate district, federally recognized Indian tribes, Native corporations, and other appropriate persons or groups, designate areas in which a subsistence use is an important use of coastal resources as demonstrated by local usage.*

*(e) For purposes of this section, "federally recognized Indian tribe," "local usage", and "Native corporation" have the meanings given in 11 AAC 114.990.*

**NDM Evaluation: Phase I activities will not occur within a subsistence use area designated by the department or under 11 AAC 114.250(g).**

**NDM recognizes the extreme importance of traditional subsistence use areas and activities in the Pebble Project area. To document current subsistence uses before project development, it has commissioned a several-year, detailed subsistence baseline study over a geographically large region surrounding the Pebble Project area in**

**consultation with the Alaska Department of Fish and Game (ADFG) and other entities, including village tribal councils. Some or all of this analysis will become part of the project review under the National Environmental Policy Act (NEPA). This information has been, and will continue to be, incorporated into project design and operating plans.**

**Phase 1 activities will be conducted in compliance with all applicable requirements to prevent conflict with traditional subsistence use areas and activities and to protect access to them.**

### 11 AAC 112.280. Transportation routes and facilities

*Transportation routes and facilities must avoid, minimize, or mitigate*

*(1) alterations in surface and ground water drainage patterns;*

*(2) disruption in known or reasonably foreseeable wildlife transit; and*

*(3) blockage of existing or traditional access.*

**NDM Evaluation:** **Phase 1 activities will not involve any transportation routes or facilities.**

### 11 AAC 112.300. Habitats

*(a) Habitats in the coastal area that are subject to the program are*

- *(1) offshore areas;*
- *(2) estuaries;*
- *(3) wetlands;*
- *(4) tideflats;*
- *(5) rocky islands and sea cliffs;*
- *(6) barrier islands and lagoons;*
- *(7) exposed high-energy coasts;*
- *(8) rivers, streams, and lakes and the active floodplains and riparian management areas of those rivers, streams, and lakes; and*
- *(9) important habitat.*

*(b) The following standards apply to the management of the habitats identified in (a) of this section:*

- *(1) offshore areas must be managed to avoid, minimize, or mitigate significant adverse impacts to competing uses such as commercial, recreational, or subsistence fishing, to the extent that those uses are determined to be in competition with the proposed use;*
- *(2) estuaries must be managed to avoid, minimize, or mitigate significant adverse impacts to*
  - *(A) adequate water flow and natural water circulation patterns; and*
  - *(B) competing uses such as commercial, recreational, or subsistence fishing, to the extent that those uses are determined to be in competition with the proposed use;*

*(3) wetlands must be managed to avoid, minimize, or mitigate significant adverse impacts to water flow and natural drainage patterns;*

*(4) tideflats must be managed to avoid, minimize, or mitigate significant adverse impacts to*

*(A) water flow and natural drainage patterns; and*

*(B) competing uses such as commercial, recreational, or subsistence uses, to the extent that those uses are determined to be in competition with the proposed use;*

*(5) rocky islands and sea cliffs must be managed to*

*(A) avoid, minimize, or mitigate significant adverse impacts to habitat used by coastal species; and*

*(B) avoid the introduction of competing or destructive species and predators;*

*(6) barrier islands and lagoons must be managed to avoid, minimize, or mitigate significant adverse impacts (A) to flows of sediments and water;*

*(B) from the alteration or redirection of wave energy or marine currents that would lead to the filling in of lagoons or the erosion of barrier islands; and*

*(C) from activities that would decrease the use of barrier islands by coastal species, including polar bears and nesting birds;*

*(7) exposed high-energy coasts must be managed to avoid, minimize, or mitigate significant adverse impacts*

*(A) to the mix and transport of sediments; and*

*(B) from redirection of transport processes and wave energy;*

*(8) rivers, streams, and lakes must be managed to avoid, minimize, or mitigate significant adverse impacts to*

*(A) natural water flow;*

*(B) active floodplains; and*

*(C) natural vegetation within riparian management areas; and*

*(9) important habitat*

*(A) designated under 11 AAC 114.250(h) must be managed for the special productivity of the habitat in accordance with district enforceable policies adopted under 11 AAC 114.270(g); or*

*(B) identified under (c)(1)(B) or*

*(C) of this section must be managed to avoid, minimize, or mitigate significant adverse impacts to the special productivity of the habitat.*

*(c) For purposes of this section,*

*(1) "important habitat" means habitats listed in (a)(1) – (8) of this section and other habitats in the coastal area that are*

*(A) designated under 11 AAC 114.250(h);*

*(B) identified by the department as a habitat*

*(i) the use of which has a direct and significant impact on coastal water; and*

*(ii) that is shown by written scientific evidence to be biologically and significantly productive; or*

*(C) identified as state game refuges, state game sanctuaries, state range areas, or fish and game critical habitat areas under AS 16.20;*

*(2) "riparian management area" means the area along or around a waterbody within the following distances, measured from the outermost extent of the ordinary high water mark of the waterbody:*

*(A) for the braided portions of a river or stream, 500 feet on either side of the waterbody;*

*(B) for split channel portions of a river or stream, 200 feet on either side of the waterbody;*

*(C) for single channel portions of a river or stream, 100 feet on either side of the waterbody;*

*(D) for a lake, 100 feet of the waterbody.*

**NDM Evaluation: Of the nine habitats listed at 11 AAC 112.300(a), the following six are associated only with coastal water:**

**(1) offshore areas**

**(2) estuaries**

**(4) tideflats**

**(5) rocky islands and sea cliffs**

**(6) barrier islands and lagoons**

**(7) exposed high-energy coasts**

**Coastal water, defined at 11 AAC 112.990, means those waters, adjacent to the shoreline, that contain a measurable quantity or percentage of sea water, including sounds, bays, lagoons, ponds, estuaries, and tidally influenced waters. Phase 1 activities will be located approximately 58 miles from the nearest coastal water and therefore will not occur in any of those seven habitats.**

**A consistency evaluation for each of the remaining three habitats follow.**

**(3) wetlands**

**(8) rivers, streams, and lakes and the active floodplains and riparian management areas of those rivers, streams and lakes**

**(9) important habitat**

**(3) Wetlands**

**For the past three years NDM has undertaken an extensive, GIS-based wetlands identification program covering approximately 104,000 acres in the vicinity of the mine site. It is expected this program will continue for an additional two years. This area encompasses all of the Phase I activities. Thus, NDM will have a complete wetlands data base for siting, design, construction and operation of the water appropriation structures. This will allow NDM to avoid and minimize significant adverse impacts on water flow and natural drainage patterns. Because some impacts will occur, NDM is drafting a detailed wetlands plan for mitigation which will be coordinated with state and federal agencies.**

**Before NDM can proceed to appropriate water, DNR must approve its water appropriation application. This process requires an analysis of the effects of such an**

**appropriation on other resources dependent on water. Also, NDM's siting, design, construction and operation criteria and plans will have to be approved by DNR under its authorities governing the disturbance and reclamation of surface land in mining operations under 11 AAC 97.100 through 11 AAC 97.990, and by the U.S. Army Corps of Engineers (COE) and Environmental Protection Agency (EPA) under their 404(b)(1) guidelines which require avoiding, minimizing and mitigating significant adverse impacts on waters of the U.S., including wetlands.**

**(8) Rivers, streams, and lakes**

**For several years NDM has undertaken an extensive surface water and groundwater hydrology baseline program involving data from approximately 200 stations throughout the mine site area. This program will continue into the future. This data is providing the basis for an understanding of relationships between surface water and groundwater and their effects on rivers, stream, and lakes. Among other attributes, these studies have identified active floodplains. Other baseline studies, wetlands and vegetation, have identified vegetation types (including riparian) throughout the mine site area. Thus, NDM's baseline studies will have developed the necessary data for siting, design, construction and operation of the water appropriation structures to avoid, minimize and mitigate significant adverse impacts on rivers, streams, and lakes.**

**The Phase I groundwater activities in the Unnamed Tributary (NK1.190) North Fork Koktuli River will consist of a cutoff wall beneath the north tailings facility embankment. Because this structure is part of the initial dam application package, which does not require individual consistency review, it is not discussed further here.**

**Down gradient from the groundwater take points there will be an alteration of groundwater flow in the NFK. No estimate of the percent of flow reduction at the downstream U.S. Geological Service (USGS) station (NK100A) on the NFK has been developed, but ongoing baseline studies will provide one in the future.**

**As surface water and groundwater baseline studies proceed, as well as the extensive fish, fish habit, and other aquatic habitat studies, information will be available to predict the effects of such a flow reduction on other resources. As necessary to meet state and other regulatory requirements to protect these other resources, this flow reduction will be mitigated. A mitigation example would be supplying water to the North Fork Koktuli from other sources (wells, pipeline, treated discharge from the tailings storage facility at Site G).**

**As note above, before NDM can proceed to appropriate water, DNR must approve its water appropriation application. This process requires an analysis of the effects of such an appropriation on other resources dependent on water. Also, NDM's siting, design, construction and operation criteria and plans will have to be approved by DNR under its authorities governing the disturbance and reclamation of surface land in mining operations under 11 AAC 97.100 through 11 AAC 97.990, and by the COE and EPA under their 404(b)(1) guidelines which require avoiding, minimizing and mitigating significant adverse impacts on waters of the U.S., including wetlands.**

**(9) Important habitat**

**Phase I activities will not occur in, nor have an effect on, an important habitat**

- **designated under 11 AAC 114.250(h)**
- **identified by the department as a habitat the use of which has a direct and significant impact on coastal water**
- **identified as state game refuges, state game sanctuaries, state range areas, or fish and game critical habitat areas under AS 16.20**

**11 AAC 112.310. Air, land, and water quality.**

*Notwithstanding any other provision of this chapter, the statutes and regulations of the Department of Environmental Conservation with respect to the protection of air, land, and water quality identified in AS 46.40.040(b) are incorporated into the program and, as administered by that department, constitute the exclusive components of the program with respect to those purposes. (Eff. 7/1/2004, Register 170)*

**NDM Evaluation:** **Phase 1 activities will not require any air, land or water quality permit issued by DEC.**

**11 AAC 112.320. Historic, prehistoric, and archeological resources.**

*(a) The department will designate areas of the coastal zone that are important to the study, understanding, or illustration of national, state, or local history or prehistory, including natural processes.*

*(b) A project within an area designated under (a) of this section shall comply with the applicable requirements of AS 41.35.010 – 41.35.240 and 11 AAC 16.010 – 11 AAC 16.900. (Eff. 7/1/2004, Register 170)*

**NDM Evaluation:** **Phase 1 activities will not occur in an historical, prehistorical, or archaeological area designated by the department under 11 AAC 112.320(a).**

**NDM has initiated a detailed archeological and cultural resources baseline study throughout the project area, including searches of state and federal historic registers. Substantial portions of the mine site area have been investigated to date, including those where exploration activities have been conducted. The State Historic Preservation Office (SHPO) has been involved throughout this study, and on an annual basis these investigations have been thoroughly documented in reports to the SHPO. Phase I activities will only occur in areas that have been previously investigated pursuant to the SHPO standards. Procedures approved by the SHPO will be in place to immediately stop activities and provide for investigation and mitigation of unexpected discoveries.**

***Lake and Peninsula Borough Enforceable Policies***

In 2004 and 2005, the Legislature made significant revisions to the ACMP. The amendments had the effect of reforming and streamlining the ACMP. The Legislature made it clear than, except in specific circumstances unique to the district, district enforceable policies could not merely duplicate, restate or incorporate state or federal law. House Bill 191, CSHB 191(FIN)am ("HB 191"). Thus, the ACMP was not a permitting program under which local coastal districts could attempt simply to re-interpret and administer state or federal law.

The Legislature expressly provided that local enforceable policies in district plans should be "clear and concise, provide greater uniformity in coastal management throughout the state, relate to matters of local concern, and do not duplicate state and federal regulations." HB 191, § 1. To this end, the Legislature amended AS 46.40.070, which sets forth these restrictions and requirements. Under AS 46.40.070, the enforceable policies of a district coastal management plan must:

> (A) [be] clear and concise as to the activities and persons affected by the policies, and the requirements of the policies;
>
> (B) use precise, descriptive, and enforceable language; and
>
> (C) …not address a matter regulated or authorized by state or federal law unless the enforceable policies relate specifically to a matter of local concern; for purposes of this subparagraph, "matter of local concern" means a specific coastal use or resource within a defined portion of the district's coastal zone that is
>
> > (i) demonstrated as sensitive to development;
> >
> > (ii) not adequately addressed by state or federal law; and
> >
> > (iii) of unique concern to the coastal resource district as demonstrated by local usage or scientific evidence.

AS 46.40.070(a). The statutory language setting forth the requirements that must be met is clear and unambiguous. Furthermore, the burden is on the coastal district to show that a proposed policy meets these requirements.

Clearly, these statutory amendments are based on the premise that the state and federal laws and regulations in this area are comprehensive and inclusive, and that, therefore, the focus of district enforceable policies should be on circumstances unique to the area and not adequately protected by state and federal laws. In the process of enacting these amendments, the Legislature intended the new ACMP to "function with a minimum of delay and avoid regulatory confusion, costly litigation, and uncertainty regarding the feasibility of new investment." HB 191 § 1.

The Legislature decided that district policies could not "duplicate, restate or incorporate by reference statues and administrative regulations adopted by state and federal agencies." AS 46.40.040(b). In addition the Legislature declared any existing policies that duplicate, restate or incorporate by reference statues and administrative regulations adopted by state and federal agencies "null and void." SB 102, Sec. 19 (May, 2005).

# A. Coastal Development

## A-1 Water-Dependent and Water-Related Activities

*In planning for and approving development in shoreline and waterfront areas, the Lake and Peninsula Borough coastal management program and state agencies shall give priority, in the following sequence, to:*

*a) water-dependent uses and activities;*

*b) water-related uses and activities; and*

*c) uses and activities which are neither water-dependent nor water-related, for which there is no feasible and prudent inland alternative to meet the public need for the use or activity.*

**NDM Evaluation: By definition, Phase I activities for water appropriation constitute a water-dependent use and therefore must, in some cases, be sited adjacent to shoreline or waterfront areas.**

## A-2 Mitigation

*All land and water use activities shall be conducted with a level of planning, implementation, and monitoring/enforcement which is appropriate to mitigate potentially adverse effects and/or cumulative impacts on the following resources of local, state, or national importance:*

*a) fish and wildlife populations and their habitats;*

*b) commercial fishing uses and activities;*

*c) subsistence and personal use resources and activities;*

*d) air and water quality;*

*e) cultural resources; and*

*f) recreational resources.*

*The cost of mitigation relative to the benefit to the coastal resource shall be considered in the implementation of this policy. Mitigation is the responsibility of the project or activity permit applicant. Mitigation shall include and be considered in the following order of preference:*

*a) avoid the loss altogether by not taking a certain action or parts of an action;*

*b) when the loss cannot be avoided, minimize the loss by limiting the degree or magnitude of the action and its implementation;*

*c) when the loss of resources and/or associated activities of local, state, or national concern cannot be minimized, restore or rehabilitate the resource to its pre-disturbance condition, to the extent feasible and prudent; and*

*d) where the loss of important habitat or activities of local, state, or national concern is substantial and irreversible and cannot be avoided, minimized or rectified, compensate for the loss by replacing, enhancing, or providing substitute resources or environments. Compensation may be in-kind or out-of-kind, and off-site or on-site. The preferred option is in-kind and on-site, to the extent feasible and prudent.*

**NDM Evaluation:** **This policy does not designate who will determine compliance with its terms. It addresses identification of potential impacts and avoidance, minimization and mitigation of those impacts. These concerns are addressed in other regulatory programs, and NDM will comply with those regulatory programs to address the issues described in the policy.**

**This policy duplicates, restates or incorporates by reference state or federal law. For example, this policy duplicates the analysis to be undertaken by DNR under AS 46.15.080 (Water Appropriations), and, therefore, it duplicates state law. Potential affects on water volume, water quality and habitat are part of the adjudication to be undertaken by DNR under its water use regulations. Furthermore, DNR will evaluate Phase I activities under state habitat standards developed under AS 46.40.**

**Before construction of any impoundment structures, in a later phase of the review of the Pebble Project, NDM will submit permit applications to the US Army Corps of Engineers, seeking authorization under the CWA 404 program. That regulatory program requires an analysis of avoidance, minimization, mitigation and compensation of potential impacts. In addition, that and other applications will initiate a review under the National Environmental Policy Act, that will consider the potential adverse effects and/or cumulative impacts of the ultimate project.**

### A-3 Multiple Use

*To the extent feasible and prudent, ports, piers, docks, terminals, cargo handling, storage, parking, and other coastal facilities shall be designed and utilized to minimize the need for duplicate facilities. Subsequent use of facilities for other than their original intent shall also be a consideration in the siting and design of such facilities.*

**NDM Evaluation:** **Phase I activities will not involve ports, piers, docks, terminals, cargo handling, storage, or parking. The structures will be designed to extract water to accommodate the needs of the Pebble project and minimize the need for duplicate facilities.**

### A-4 Compatibility

*To the extent feasible and prudent, activities on and uses of coastal lands and waters shall be compatible with adjacent land and water uses.*

**NDM Evaluation:** **This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies. For example, compatible land uses identified for specific areas found in DNR's Bristol Bay Area Plan for state lands (2005).**

**The Phase I activities will occur on state lands classified for mineral development by the 2005 Bristol Bay Area Plan. DNR's management intent is to accommodate mineral exploration and development. Thus, prospective Pebble Project development has been determined compatible with surrounding state lands, subject to DNR's specific decisions as to how development may occur through the authorization process. The Phase I activities are limited to withdrawal and use of water. DNR's adjudication of the water right**

**application will evaluate the compatibility of the proposed water right with adjacent land and water uses.**

### A-5 Dredge and Fill Requirements

*Projects that involve dredging or filling in streams, rivers, wetlands, lakes, or marine areas including estuaries and tidelands, shall be located, designed, constructed, operated, and maintained to:*

*a) avoid significant adverse impacts to important fish and wildlife habitats;*

*b) avoid significant interference with fish migration, spawning, and rearing as well as critical life history stages of wildlife;*

*c) limit the extent of direct disturbance to the minimum area necessary to accommodate the proposed purpose or use;*

*d) minimize erosion and the potential for turbid waters and waterborne sediment to be transported away from the dredge or fill site; and*

*e) provide for circulation and drainage patterns adequate to maintain habitat productivity and water quality.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies. For example, the placement of dredged or fill material in important habitats is regulated by the COE, EPA and Department of Environmental Conservation (DEC) (30 CFR 325, CWA § 404, EPA § 404(b)(1) guidelines to 40 CFR 250 and AS 41). DNR's Office of Habitat Management & Permitting (OHMP) has responsibility for protecting fish migration, spawning, and rearing under AS 41, and for the habitat standards addressed under 11 AAC 112.300 and important habitat designations addressed under 11 AAC 114.250(h).**

**DNR's Water Section adjudication of this application for a water right must include an analysis of potential impacts on habitats, fish, and wildlife, of any potential direct disturbance, erosion, and waterborne sediments, and any potential impacts on habitat productivity and water quality.**

### A-6 Disposal of Dredge Spoil

*Dredged materials disposed of in shoreline landfills shall not cause significant alteration of important habitats or significant adverse impacts to coastal processes such as circulation, sediment transport, and coastal erosion and deposition patterns. On-shore disposal sites for dredged material shall be contained and stabilized to prevent erosion and leaching into adjacent waters. Offshore disposal of dredge spoil shall avoid important marine habitats and be conducted in compliance with state and federal water quality regulations.*

**NDM Evaluation: Phase I activities will not involve shoreline landfills or offshore disposal.**

**With respect to on-shore disposal sites, the placement of dredged or fill material in important habitats is regulated by the COE, EPA and DEC (30 CFR 325, CWA § 404, EPA § 404(b)(1) guidelines to 40 CFR 250 and CWA 401). The OHMP has responsibility for the habitat standards addressed under 11 AAC 112.300 and important habitat designations**

**addressed under 11 AAC 114.250(h). This policy therefore duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**Phase I activities will not consist of any structure that require individual consistency review, and therefore are not discussed further here. Thus, onshore disposal of dredged material will not occur.**

### A-7 Navigation Obstructions

*Uses and activities in coastal waters shall meet the following requirements:*

*a) Structures and buoys placed in navigable waters shall be visibly marked and placed in a manner to minimize navigation hazards or obstructions to other uses of coastal habitats; and*

*b) To the extent feasible and prudent, all developments, structures, and facilities in marine and estuarine waters of the Borough shall be sited, constructed, operated, and maintained in a manner that does not create a hazard or obstruction to marine transportation or commercial fishing operations.*

**NDM Evaluation: Phase 1 activities will be located approximately 58 miles from the nearest coast, and thus will not occur in coastal waters, navigable waters, or in marine or estuarine waters.**

## B. Coastal Habitats and Resources

### B-1 State Habitat Standards

*The Lake and Peninsula Borough Coastal Management Program adopts the ACMP Standards for coastal habitats contained in 6 AAC 80.130. Development activities and facility sites shall meet, at a minimum, the criteria established under the referenced standards and State regulations unless a greater performance standard is applicable under specific policies of the Lake and Peninsula Borough coastal program.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies. The state standards codified at 11 AAC 112.300 address coastal habitat standards.**

### B-2 Upland Habitats

*To the extent feasible and prudent, projects in upland habitats shall be designed, constructed, and maintained to assure that runoff volume, velocity, and sediment loads do not cause accelerated erosion, and to retain natural drainage patterns, surface water quality, and natural groundwater recharge areas. Disturbance of existing vegetation in a manner which may adversely affect slope stability or productivity of important upland habitats shall be minimized.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, AS 41.14.870 and 11 AAC 112.300 provide for standards habitat protection in, among other places, wetlands, rivers, streams, and lakes, and other important habitats. Habitat protection is also governed by regulations of DNR's Office of Project Management and Permitting (OPMP), OHMP and Division of Oil & Gas. DEC regulates water quality and discharge of water under AS 46.30.010 through 46.30.130 and 18 AAC 70.**

**Phase 1 activities will be designed, constructed and maintained in compliance with applicable requirements under the above authorities to prevent accelerated erosion and assure surface water quality and natural groundwater recharge areas.**

### B-3 Maintenance of Fish Habitat

*Maintenance and enhancement of fish habitat will be given the highest priority when evaluating projects which may impact fish spawning, migration, rearing, and overwintering areas. Shorelines that have banks, beaches, and streambeds critical to fish populations will be maintained in a productive condition comparable to the natural or pre-disturbance state.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, AS 41.14.870 and 11 AAC 112.300 provide for standards habitat protection in, among other places, wetlands, rivers, streams, and lakes, and other important habitats. Habitat protection is also governed by regulations of DNR's OPMP, OHMP and Division of Oil & Gas.**

**Phase 1 activities will be reviewed and permitted under the above authorities to maintain shoreline banks, beaches, and streambeds critical to fish populations in a productive condition.**

### B-4 Anadromous Fish Waters

*With the exception of approved transportation and utility crossings, water dependent structures, and uses involving the research, protection, or enhancement of anadromous fish or their habitats, no development activities, alteration of vegetation, excavation, placement of fill, or land clearing shall take place within a minimum distance of 100 feet from the ordinary high water mark of anadromous fish waters unless feasible and prudent alternatives are not available, and the protection of water quality and stream habitat can be assured. Exceptions or variances of either more than or less than 100 feet from the ordinary high water mark of anadromous fish streams shall minimize adverse impacts to water quality and fish and wildlife habitat. Where feasible and prudent, additional setback distances may be required by permitting entities on a site-specific basis, in consultation with the DF&G, to protect riparian and stream habitats. The following criteria will be considered in evaluating setback variations:*

*a) the presence and sensitivity of anadromous fish using the site;*

*b) the nature and timing of the proposed activity or anticipated disturbance, including construction and operation, and the size and configuration of the development with respect to the anadromous fish waters;*

*c) the characteristics and function of existing riparian vegetation; and*

*d) the slope, soil type, and soil stability at the proposed activity site as it affects the potential for erosion problems.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, AS 41.14.870, AS 41.14.840, and 11 AAC 112.300 provide for habitat protection in, among other places, wetlands, rivers, streams, and lakes, and other important habitats. Habitat protection is also governed by regulations of DNR's OPMP, OHMP and Division of Oil & Gas. The placement of dredged or fill material in important habitats is regulated by the COE, EPA and the DEC (30 CFR 325, § 404, EPA § 404(b)(1) guidelines to 40 CFR 250 and AS 41). 11 AAC 95.010 provides for the protection of anadromous fish habitat. The Bristol Bay Area Plan includes certain set-back requirements.**

**Phase 1 activities will be conducted in compliance with all applicable requirements under the above authorities to minimize adverse impacts to water quality and fish and wildlife habitat.**

### B-5 Drainage Structures and Maintenance of Fish Passage

*Development activities, facilities, and structures shall be designed, sited, constructed, operated, and maintained in a manner which does not impede or interfere with timely access to spawning streams by adult fish or in-stream movements of juvenile fish. All cross drainage structures on fish streams, including bridges and culverts, shall:*

*a) be sited, constructed, and maintained to avoid changes to the direction or velocity of the stream flow;*

*b) be adequately sized to accommodate the best available estimate of the 25-year peak discharge without significantly interfering with the volume, velocity, sediment transport, or substrate characteristics of the stream;*

*c) provide for efficient passage or movements of fish upstream, downstream and in associated aquatic habitats, including wetlands; and*

*d) avoid disturbance of fish spawning habitat.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, AS 41.14.840 through 41.14.900 and 11 AAC 112.300 provide for habitat protection for wetlands, rivers, streams, and lakes, and regulate fishways and any development in these habitats. 11 AAC 95.010 provides for the protection of anadromous fish habitat.**

**Phase 1 activities will be conducted in compliance with all applicable requirements under the above authorities in a manner that does not impede or interfere with timely access to spawning streams by adult fish or in-stream movements of juvenile fish.**

### B-6 Instream Flow

*Appropriation of water from rivers, streams, lakes, or wetlands shall not decrease instream flow below the amount determined necessary by the DF&G and/or the U.S. Fish and Wildlife Service to protect fish and wildlife habitat*

*and productivity, unless in accordance with AS 46.15, the Commissioner of DNR makes a finding based on public review that*

*1) the competing use of water is in the best public interest, and*

*2) no feasible and prudent alternative exists for the proposed water appropriation.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, DNR's Water Section regulates the appropriation, distribution and use of water in the state under AS 46.15.010 through 46.15.270.**

**This Phase I application for a water right will be adjudicated by DNR according to its regulations that require protection of fish and wildlife habitat values in assessing the merits of an application.**

### B-7 Water Removal from Fish Streams

*Approvals for water removal from fish-bearing waters shall require that intake structures be designed, constructed, and operated using appropriate technology to prevent fish entrainment or impingement, as approved by DF&G.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, DNR's Water Section regulates the appropriation, distribution and use of water in the state under AS 46.15.010 through 46.15.270. OHMP regulates protection of anadromous streams under AS 41. 11 AAC 95.010 provides for the protection of anadromous fish habitat.**

**This Phase I application for water right will be adjudicated by DNR pursuant to its regulations that require protection of fish from water intake structures. Phase 1 activities will not involve intake structures in waters containing fish, and therefore no fish entrapment or impingement will occur.**

### B-8 Geophysical Surveys and In-Water Use of Explosives

*Geophysical surveys shall, to the extent feasible and prudent, be located, designed, and conducted to avoid disturbances to fish and wildlife populations, habitats, and harvests. Seasonal restrictions, restrictions on the use of explosives, or restrictions relating to the type of transportation utilized in such operations may be required as necessary to mitigate potential adverse impacts to aquatic and marine resources. Geophysical surveys in fresh and marine waters supporting fish or wildlife shall use energy sources such as air-guns, gas exploders, or other sources that have been demonstrated to be harmless to fish and wildlife. The in-water use of explosives for purposes other than geophysical surveys shall be considered on a case by case basis after all steps have been taken to minimize impacts and when no feasible or prudent alternatives exist to meet the public need.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, OHMP regulates the use of explosives under AS 41.14.840 and 41.14.870. 11 AAC 112.270 and 11 AAC 112.300 also govern this standard. DNR's regulations at Title 11 AAC 97.100 through 11 AAC 97.990 under Alaska's Administrative Code govern the disturbance and reclamation of surface land in mining operations.**

**Phase 1 activities will not involve any geophysical surveys.**

### B-9 Raptor Nest Sites

*Development activities shall avoid harming or disturbing identified nest sites for raptors, or nest sites identified during project planning or review, by timing potentially disturbing operations when raptors are not breeding or nesting, or by retaining a buffer around occupied nest sites. The U.S. Fish and Wildlife Service and the Alaska Department of Fish and Game should be contacted for information concerning the known locations of raptor nest sites and appropriate criteria to minimize significant adverse impacts to nest sites and nesting activity. Bald eagle nest sites shall be protected in conformity with the Bald Eagle Protection Act (16 USC 668) and the use, size and management of bald eagle nest site buffers shall be determined on a case by case basis by the U.S. Fish and Wildlife Service.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, the Migratory Bird Treaty Act, 16 USC 703 through 16 USC 712 (MBTA), and the Bald Eagle Protection Act, 16 USC 668 *et seq.* regulate issues relating to raptors and raptor nest sites. These laws are administered by the US Fish & Wildlife Service (USFWS).**

**NDM has conducted extensive raptor nesting baseline studies in the mine site area, and has made this information available to the USFWS and ADFG, as well as the public. Phase 1 activities, based on this data base, will not affect any documented raptor nest.**

### B-10 Marine Mammal Haul-Outs and Seabird Colonies

*Seabird colonies and haul-outs and rookeries used by marine mammals shall not be physically altered or disturbed by structures or activities in a manner that would preclude or significantly interfere with continued use of these sites by wildlife for the habitat functions which they provide. Development structures and facilities shall be sited at least one-half mile from identified seabird rookeries and marine mammal haulouts unless feasible and prudent alternative sites are not available. Development activities with high levels of acoustical or visual disturbance shall be designed and operated to minimize impacts on seabird colonies and sea lion, fur seal, and harbor seal haul-outs or rookeries.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, the National Marine Fisheries Services (NMFS) and USFWS have authority over issues relating to marine mammals under the Marine Mammal Protection Act, 16 USC 1361 et seq. (MMPA), and its implementing regulations, and related laws. Protection of seabird colonies is covered by the MBTA, 16 USC 703-712.**

**Phase 1 activities will be located approximately 58 miles from the nearest coast and thus will not physically alter or disturb seabird colonies or haul-outs and rookeries used by marine**

**mammals, or be sited within one-half mile of such locations.**

### B-11 Disturbance by Aircraft

*To minimize adverse disturbances to seabird colonies, fixed-wing and helicopter aircraft shall maintain a minimum altitude of 2,000 feet or a one-half mile horizontal distance from identified seabird colonies between April 15 and September 30. To minimize adverse disturbances to sea lion and harbor seal haul-out sites, fixed-wing and helicopter aircraft shall maintain a minimum altitude of 2,000 feet or a one-half mile horizontal distance from identified haul-out sites between May 1 and December 31 for sea lions, and between March 1 and September 30 for harbor seals. Additional activity and disturbance buffers may be applicable under the Recovery Plan for the threatened Steller sea lion. These conditions shall not apply where safety, weather conditions, or authorized destination within the area of concern dictate otherwise. Flight operations shall not violate Federal Aviation Administration regulations.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, management of airspace and air traffic is regulated by the Federal Aviation Administration (FAA). Further, marine mammals and seabird colonies are protected under the MMPA, 16 USC 1361 et seq. and its implementing regulations. Protection of seabird colonies is covered by the MBTA, 16 USC 703-712.**

**Phase 1 activities will be located 58 miles from the nearest coast and therefore will not affect seabird colonies, sea lion and harbor seal haul-out sites, or the threatened Steller sea lion.**

### B-12 Bank Stabilization

*All stream or lake bank cuts, fills, or exposed earthwork adjacent to streams, wetlands, or marine waters shall be stabilized to prevent erosion or sedimentation into adjoining waters during construction, operation, and following abandonment of development activities.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, 11 AAC 97.100 through 11 AAC 97.990 govern the disturbance and reclamation of surface land in mining operations. DEC regulates water quality and the discharge of water under AS 46.30.010 through 46.30.130, AS 46.03.050 through 46.03.080, and 18 AAC 70. The COE regulates placement of materials into waters.**

**All Phase I activities involving stream or lake bank cuts, fills, or exposed earthwork adjacent to streams, wetlands, will be conducted in compliance with all applicable requirements under the above authorities to stabilize and prevent erosion or sedimentation.**

## C. Air, Land, and Water Quality

### C-1 State Standards

*The Lake and Peninsula Borough Coastal Management Program adopts the ACMP air, land, and water quality standards in 6 AAC 80.140. The following policies supplement these standards. Where state standards and the policies of this section present differing requirements, the stricter standard shall be applied.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**Specifically, the issuance of any air, land or water quality permit by the DEC constitutes adherence to 11 AAC 112.310.**

### C-2 Wastewater Discharge

*To the extent feasible and prudent, the discharge of wastewater (other than stormwater) or other effluent into fresh or marine waters of the Borough shall be located in areas of least biological productivity, diversity, and sensitivity and where effluents can be controlled, contained, or effectively dispersed by currents, as appropriate for the wastewater components and discharge location. All permits, leases, or plans of operation for land and water quality shall require that these activities be sited, designed, constructed and operated to provide reasonable assurance that discharges will meet state and federal water quality criteria for the receiving water uses protected by the water quality standards.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, DEC regulates discharge of water and wastewater in the state under AS 46.30.010 through 46.30.130 and 17 AAC 70. AS 46.03.050 through 46.03.080 prohibits polluting the waters of the state. The issuance of any air, land or water quality permit by the DEC constitutes adherence to 11 AAC 112.310.**

**Phase 1 activities will not involve a discharge of wastewater.**

### C-3 Waste Handling and Spill Contingency Planning

*Harbor, port, marina, seafood processors, and other commercial and industrial facilities shall develop and incorporate provisions for the proper transfer, storage, disposal, and handling of petroleum products and fuel, solid waste, waste oil, and sewage in accordance with local, state and federal regulations. Facilities and vessels required by state or federal regulations to prepare contingency response plans to address discharges of oil, petroleum products, or hazardous substances shall insure that these plans:*

1) *focus initial response and cleanup activities to protect environmentally sensitive areas (18 AAC 75.425) and commercial fishing areas;*
2) *recognize seasonal variability in the occurrence and sensitivity of resource use areas and habitats; and*

*3) provide for timely and functional response to spill incidents, including inregion availability of containment and cleanup equipment and training for local response and maintenance personnel.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, DEC regulates discharge and disposal of solid waste and sewage in the state under AS 46.03.100 through 46.03.120 and 18 AAC 60, and the discharge of wastewater in the State under AS 46.30.010 through 46.30.130 and 18 AAC 70. The issuance of any air, land or water quality permit by the DEC constitutes adherence to 11 AAC 112.310.**

**Phase 1 activities will not involve transfer, storage, disposal, or handling of petroleum products and fuel, solid waste, waste oil or sewage.**

### C-4 Environmental Protection Technology

*To the extent feasible and prudent, equipment and procedures utilizing the most effective technology shall be required for limiting emissions and the discharge of effluent, and for the storage, handling, cleanup, and disposal of oil and hazardous materials for municipal, industrial, military, energy, and transportation facilities.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, DEC regulates discharge and disposal of solid waste and sewage in the state under AS 46.03.100 through 46.03.120 and 18 AAC 60, and the discharge of wastewater in the state under AS 46.30.010 through 46.30.130 and 18 AAC 70. DEC regulates the use and handling of oil and hazardous materials in the state under AS 46.040.010 through 46.040.900 and 18 AAC 75. Air emissions are regulated by DEC under AS 46.14.120 through 46.14.290 and 18 AAC 50. The issuance of any air, land or water quality permit by the DEC constitutes adherence to 11 AAC 112.310.**

**Phase 1 activities will not involve emissions and discharge of effluent from storage, handling, cleanup and disposal of oil and hazardous materials.**

### C-5 Discharge of Suspended and Settleable Solids

*Development facilities, uses, and activities shall not allow suspended materials or settleable solids to be introduced into waters of the Borough in a manner, timing, or quantity which could have a significant adverse impact on marine or freshwater productivity or habitats, marine fish, shellfish, or resident or anadromous fish populations. Upon application and in its discretion, the DEC may grant short-term variances as appropriate, in accordance with the regulations stated in the Alaska Water Quality Standards.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, DEC regulates discharge and disposal of solid waste and sewage in the state under AS 46.03.100 through 46.03.120 and 18 AAC 60, and the discharge of wastewater in the state under AS 46.30.010 through 46.30.130 and 18 AAC 70. The issuance of any air, land or**

**water quality permit by the DEC constitutes adherence to 11 AAC 112.310.**

**Phase 1 activities will be conducted in compliance with all applicable requirements under the above authorities to prevent settleable solids from causing a significant adverse impact on freshwater productivity or habitats.**

### C-6 Refuse Disposal

*Within the Lake and Peninsula Borough, applicants for new or re-authorized solid waste disposal and sanitary landfill sites and operations shall comply with the requirements of local, state, and federal regulations. Approved sites for solid waste disposal shall be:*

*a) located to avoid destruction of important coastal habitats and resources;*

*b) sited, designed and operated to minimize drainage of leachate and runoff to surface and subsurface waters, and to avoid creation of an attractive nuisance for wildlife (i.e. prevent garbage foraging by wildlife), and;*

*c) to the extent feasible and prudent, located in upland sites a minimum of 1,500 feet from public and private water sources and a minimum of 200 feet from any surface waters. DEC may require a site -specific surface and subsurface hydrological investigation or evaluation of proximity to surface waters, conducted by the applicant, to determine the appropriate setback.*

*Incineration operations for disposal of refuse are encouraged to minimize wind-blown dispersal of trash, to reduce the volume of landfill materials, and to minimize attraction of birds and wildlife to putrescible wastes. All incineration operations, including the disposal of incinerator residue, shall be designed, constructed, and operated to comply with applicable state and federal air quality standards and to avoid the generation of toxic or carcinogenic compounds as a result of the incineration process.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, DEC regulates discharge and disposal of solid waste and sewage in the state under AS 46.03.100 through 46.03.120 and 18 AAC 60, and the discharge of wastewater in the state under AS 46.30.010 through 46.30.130 and 18 AAC 70. The issuance of any air, land or water quality permit by the DEC constitutes adherence to 11 AAC 112.310.**

**Phase 1 activities will not involve refuse disposal or sanitary landfill sites.**

### C-7 Sewage Disposal

*Where feasible and prudent, sewage treatment ponds and discharge locations shall be setback a minimum of 1,500 feet from public and private water systems and a minimum of 200 feet from any surface waters. Setback requirements do not apply to authorized marine outfalls for treated sewage which must meet Federal water quality regulations.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, DEC regulates discharge and disposal of solid waste and sewage in the state under AS 46.03.100 through 46.03.120 and 18 AAC 60, and the discharge of wastewater in the**

**state under AS 46.30.010 through 46.30.130 and 18 AAC 70. The issuance of any air, land or water quality permit by the DEC constitutes adherence to 11 AAC 112.310.**

**Phase 1 activities will not involve sewage disposal.**

### C-8 Siting of Petroleum Product Facilities

*To the extent feasible and prudent, new facilities, or re-permitting of existing facilities that include the storage, processing, or treatment of 5,000 gallons or more of petroleum or petroleum products shall be sited a minimum of 1,500 feet from domestic water supplies and a minimum of 200 feet from ordinary high water or MHHW of any surface waters. Impermeable berms and basins capable of retaining 115 percent of the tank capacity (or capacity of the largest tank where multiple tanks are separately valved) plus 12 inches of freeboard shall be required to minimize the potential for inadvertent pollution. Other technological approaches which achieve the same protection objective may be approved by the Borough, with input from DEC and/or EPA.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, DEC regulates the siting, design and operation of large petroleum facilities under 18 AAC 75.004 to .990. The issuance of any air, land or water quality permit by the DEC constitutes adherence to 11 AAC 112.310.**

**Phase 1 activities will not involve siting of petroleum product facilities.**

### C-9 Cumulative Impacts on Air Quality

*The Alaska Department of Environmental Conservation shall ensure that permits and renewals do not authorize or permit emissions from a project which, when added to ambient air quality conditions, would cumulatively cause air quality standards to be exceeded. To evaluate and consider the cumulative impacts on air quality, DEC, in consultation with the Lake and Peninsula Borough, may require the applicant to provide specific emissions data or modeling to evaluate the effect of their emissions on ambient air quality conditions.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, DEC regulates air quality and emissions in the state under AS 46.14.120 through 46.14.290 and 18 AAC 50. The issuance of any air, land or water quality permit by the DEC constitutes adherence to 11 AAC 112.310.**

**Phase 1 activities will not involve any activity requiring an air emissions permit.**

### C-10 Cumulative Impacts on Water Quality

*Authorizing agencies shall not authorize or permit discharges from a project which, when added to ambient water quality conditions, would cause water quality standards to be exceeded in the receiving waters. To evaluate and consider the cumulative impacts on water quality, authorizing agencies, in consultation with the Lake and Peninsula Borough, may require the applicant to provide*

*1) appropriate data or modeling to evaluate the effects of their discharge on the receiving waters, or*

*2) specific discharge data to be used by the authorizing agencies in their assessment of discharges by multiple users.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, DEC regulates the discharge of wastewater in the state under AS 46.30.010 through 46.30.130 and 18 AAC 70. AS 46.03.050 through 46.03.080 prohibits polluting the waters of the state. The issuance of any air, land or water quality permit by the DEC constitutes adherence to 11 AAC 112.310.**

**Phase 1 activities will not involve any discharge of water into receiving waters.**

### C-11 Maintain Water Quality Criteria

*The Borough and appropriate state agencies shall not consider any reduction in water quality standards for industrial use in locations where coastal habitats, fish and wildlife resources, or public uses and activities are dependent on the maintenance of higher water quality standards, unless the provisions of 18 AAC 70.010(a)(1, 2, & 3) are met.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, DEC regulates the discharge of wastewater in the state under AS 46.30.010 through 46.30.130 and 18 AAC 70. AS 46.03.050 through 46.03.080 prohibits polluting the waters of the state. The issuance of any air, land or water quality permit by the DEC constitutes adherence to 11 AAC 112.310.**

**Phase 1 activities will be conducted in compliance with all applicable requirements under the above authorities to maintain water quality standards.**

### C-12 Mining and Mineral Processing Waste Disposal

*Mining and mineral processing activities which dispose of potentially toxic tailings or discharge processing effluents which may contain toxic materials shall ensure that:*

*1) effluents are treated to remove materials toxic to human health, fish, or wildlife prior to discharge;*

*2) tailings are treated, stored, and disposed in a manner which avoids any possibility of toxic runoff to surface waters or infiltration of toxic waters into the groundwater aquifer; and*

*3) if conditions 1) and 2) cannot be achieved and satisfactorily demonstrated, all potentially toxic tailings and process waters shall be contained in a zero discharge disposal facility or impoundment.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, DEC regulates discharge and disposal of solid waste and sewage in the state under AS 46.03.100 through 46.03.120 and 18 AAC 60, and the discharge of wastewater in the state under AS 46.30.010 through 46.30.130 and 18 AAC 70. These matters are also regulated**

**by CWA 402 and RCRA, the Resource Conservation and Recovery Act, 42 USC 6901 et seq. The issuance of any air, land or water quality permit by the DEC constitutes adherence to 11 AAC 112.310.**

**Phase 1 activities will not involve mining or the disposal of mineral processing wastes.**

## D. Subsistence Use/Personal Use

### D-1 State Standards

*The Lake and Peninsula Borough adopts the subsistence standards presented in ACMP regulation 6 AAC 80.120(a).*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, the state standards under 11 AAC 112.270 address subsistence.**

### D-2 Development Impacts

*Traditional subsistence activities are recognized as an extremely important use of the coastal resources in the Borough. Maintenance of subsistence use areas and activities shall be given high priority in areas of traditional use. Prior to authorization of a potentially conflicting development activity, the project applicant shall conduct an analysis of the possible adverse impacts upon subsistence use and shall identify, in consultation with the Borough and fish and wildlife resource agencies, appropriate safeguards to assure continued access and use of subsistence resources.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, the state standards under 11 AAC 112.270 address subsistence.**

**NDM recognizes the extreme importance of traditional subsistence use areas and activities in the Pebble Project area. To document current subsistence uses before project development, it has commissioned a several-year, detailed subsistence baseline study over a geographically large region surrounding the Pebble Project area in consultation with the Alaska Department of Fish and Game and other entities, including village tribal councils. Some or all of this analysis will become part of the project review under the National Environmental Policy Act (NEPA). This information has been, and will continue to be, incorporated into project design and operating plans.**

**Phase 1 activities will be conducted in compliance with all applicable requirements to prevent conflict with traditional subsistence use areas and activities and to protect access to them.**

### D-3 Access

*Traditional and customary access to subsistence or personal use areas, as identified in Policy D-2, shall be accommodated unless reasonable alternative access is provided.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, the state standards under 11 AAC 112.270 address subsistence.**

**NDM recognizes the extreme importance of traditional subsistence use areas and activities in the Pebble Project area. To document current subsistence uses before project development, it has commissioned a several-year, detailed subsistence baseline study over a geographically large region surrounding the Pebble Project area in consultation with the Alaska Department of Fish and Game and other entities, including village tribal councils. Some or all of this analysis will become part of the project review under the National Environmental Policy Act (NEPA). This information has been, and will continue to be, incorporated into project design and operating plans.**

**Phase 1 activities will be conducted in compliance with all applicable requirements to prevent conflict with traditional subsistence use areas and activities and to protect access to them.**

## E. Transportation and Utilities

### E-1 Stream Crossings

*Bridges and culverts shall be designed, constructed, and maintained in accordance with Policy B-6 and fisheries conservation practices which minimize habitat disturbance and allow efficient fish passage up- and downstream.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, DNR regulates stream crossings and related matters under AS 41.14.150 through 41.14.990. ADF&G also has authority over streams containing or used by salmon under AS 16.10.010 through 16.10.050. DNR regulates the appropriation, distribution and use of water in the state under AS 46.15.010 through 46.15.270 (Policy B-6).**

**Phase 1 activities will not involve bridges or installation of culverts.**

### E-2 Maintaining Traditional Public Access

*Restrictions on traditional methods and means of public access through municipal, state, and federal land shall be minimized. Elements of public access include roads, waterways, trails, campsites, picnic sites, and marine anchorages. Prior to disposal of municipal, state, or federal lands, public access routes shall be identified and dedicated.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or**

**administrative regulations adopted by state or federal agencies.**

**For example, DNR protects public access on state lands pursuant to the Bristol Bay Area Plan (2005) and other requirements of state law. For example, development of the Pebble deposit will occur on leased state land. In leasing state land, DNR "expressly reserves the right to grant easements or rights-of-way across leased land if it is determined in the best interest of Alaska to do so."**

**Phase 1 activities will be localized, and will be conducted in compliance with applicable requirements under the above authorities to ensure no significant effect on traditional methods and means of public access to and through the area. These activities will not include the disposal of municipal, state or federal lands.**

### E-3 Off-Road Access

*Off-road access shall minimize surface disturbance and impacts to fragile soils and wetlands.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, 11 AAC 97.100 through 11 AAC 97.990 govern the disturbance and reclamation of surface land in mining operations.**

**Phase 1 activities will be on state lands and localized, and will be conducted in compliance with applicable requirements of the above authorities to minimize impacts to fragile soils and wetlands.**

### E-4 Siting, Construction, and Operation

*Transportation, pipeline, and utility facilities and corridors shall be sited, designed, constructed, and operated, using the following standards:*

*a) adverse impacts to habitats, biological resources, coastal resource uses, recreation, socio-economic characteristics, and traditional subsistence and personal use activities shall be minimized;*

*b) to the extent feasible and prudent, transportation corridors and facilities shall be consolidated; and,*

*c) to the extent feasible and prudent, road, utility, and pipeline crossings of resident and anadromous fish streams shall be minimized and consolidated at a single location to reduce multiple impacts to an individual drainage.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, this policy duplicates, restates or incorporates by reference requirements set forth in 11 AAC 112.280.**

**Phase 1 activities will not involve transportation, pipeline or utility facilities or corridors.**

## F. Fisheries and Seafood Processing

### F-1 Protection of Fisheries

*Maintenance and enhancement of fisheries shall be given high priority in land use management plans and in reviewing or permitting any activities which may adversely impact important fisheries habitat, fish migration routes, or the recreational or commercial harvest of fish.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, 11 AAC 95.010 provides for the protection of anadromous fish habitat. In addition, this policy duplicates, restates or incorporates by reference requirements set forth in 11 AAC 112.300, DNR's Bristol Bay Area Plan (2005), and AS 41.**

**For the past three years NDM has undertaken extensive, GIS-based studies of fish, fish habitat, and other aquatic resources on streams and lakes throughout the mine site area. It is expected these programs will continue for some period into the future. This area encompasses all of the Phase I activities. Thus, NDM will have a substantial data base for siting, design, construction and operation of the water appropriation structures. This will allow NDM to avoid and minimize adverse impacts on important fisheries habitat, fish migration routes, and recreational and commercial harvest of fish.**

**The Phase I groundwater activities in the Unnamed Tributary (NK1.190) North Fork Koktuli River will consist of a cutoff wall beneath the north tailings facility embankment. Because this structure is part of the initial dam application package, which does not require individual consistency review, it is not discussed further here.**

**Down gradient from the groundwater take points there will be an alteration of groundwater flow in the NFK. No estimate of the percent of flow reduction at the downstream U.S. Geological Service (USGS) station (NK100A) on the NFK has been developed, but ongoing baseline studies will provide one in the future.**

**As surface water and groundwater baseline studies proceed, as well as the extensive fish, fish habit, and other aquatic habitat studies, information will be available to predict the effects of such a flow reduction on other resources. As necessary to meet state and other regulatory requirements to protect these other resources, this flow reduction will be mitigated. A mitigation example would be supplying water to the North Fork Koktuli from other sources (wells, pipeline, treated discharge from the tailings storage facility at Site G).**

**Before NDM can proceed to appropriate water, DNR must approve its water appropriation application. This process requires an analysis of the effects of such an appropriation on other resources dependent on water, particularly fish and fish habitat. Also, NDM's siting, design, construction and operation criteria and plans will have to be approved by DNR under its authorities governing the disturbance and reclamation of surface land in mining operations under 11 AAC 97.100 through 11 AAC 97.990, and by the COE and EPA under their 404(b)(1) guidelines which require avoiding, minimizing and mitigating significant adverse impacts on waters of the U.S., and the resources such as fish that are dependent on**

**them**

**Phase 1 activities will be conducted in compliance with applicable requirements under the above authorities to ensure no significant effects on important fisheries habitat, fish migration routes, or the recreational or commercial harvest of fish.**

### F-2 Development

*Development shall incorporate appropriate designs and measures to mitigate significant adverse impacts to fisheries resources, recreational fishing, enhancement projects, subsistence or personal use fishing, or commercial fishing, in accordance with Policy A-2.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, this policy duplicates, restates or incorporates by reference requirements set forth in AS 46.15.080, and DNR authorities under AS 41.**

**Phase 1 activities will be conducted in compliance with applicable requirements under the above authorities to ensure appropriate incorporation of designs and measures to mitigate significant impacts on the cited resources. Policy A-2 above, incorporated by reference, also relates to mitigation of any loss of a coastal resource.**

### F-3 Disposal of Seafood Processing Wastes

*Land-based and floating fish processors shall conduct their operations in compliance with all state and federal water quality regulations pertaining to discharge of effluent and disposal of seafood processing wastes. Processing effluent from new facilities or the modification of existing seafood processing facilities shall avoid the discharge of wastes into waters in areas:*

*a) which do not have circulation characteristics or biological assimilation capacity to accept these discharges without causing significant adverse impact on water quality or habitat productivity; and*

*b) which create an "attractive" nuisance situation (attract wildlife to waste disposal areas in a manner that creates a threat to fish and wildlife or human health and safety).*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, DEC regulates water quality and the discharge of water and wastewater under AS 46.30.010 through 46.30.130, AS 46.03.050 through 46.03.080, and 18 AAC 70.**

**Phase 1 activities will not involve any processing or disposal of seafood processing wastes.**

## G. Geophysical Hazard Areas

### G-1 Design and Siting Criteria

*Major projects (see Section 7.7) in known or suspected geophysical hazard areas (Map 1) shall incorporate appropriate geotechnical investigations and siting, design, construction, and operation measures to minimize property damage and impacts to the environment, and to protect against injury or loss of life. At a minimum, the geotechnical investigation shall evaluate pertinent geophysical hazards such as soils, erosion rates, vegetation and clearing options, setbacks from active erosion, and bluff stability.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies. For example, this policy duplicates, restates or incorporates by reference requirements set forth in 11 AAC 112.210.**

**In 11 AAC 112.990(15) natural hazards**

**(A) means the following natural processes or adverse conditions that present a threat to life or property in the coastal area: flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, storm surges, ice formations, snow avalanches, erosion, and beach processes;**

**(B) Includes other natural processes or adverse conditions designated by the department or by a district in a district plan;**

**Phase I activities will not occur in an area subject to the natural hazards listed in 11 AAC 112.990, except flooding and earthquakes. No other natural processes or adverse conditions have been designated by the department or by a district plan in the vicinity of the Pebble Project.**

**Because Phase I activities are located in the extreme upper reaches of their watersheds, the water courses subject to flooding are very small. Proper siting, design, construction and operation of the Phase I surface water appropriation structures (diversion ditch, surface runoff collection point) will be easily effected with standard engineering practices to withstand flooding.**

**Like most of Alaska, the site of the Phase I activities will be subject to earthquakes. The Phase I surface water appropriation structure, however, will be small and, with standard engineering practices, will be unlikely to be affected by earthquakes.**

**Procedures for siting, design, construction and operation of the Phase I water appropriation structures to withstand flooding and earthquakes, as ultimately proposed by NDM, will be reviewed and approved by DNR under its authorities governing the disturbance and reclamation of surface land in mining operations under 11 AAC 97.100 through 11 AAC 97.990. Thus, Phase I activities will be sited, designed, constructed and operated under the requirements of the above authorities such that these two natural processes will not present a threat to life or property.**

### G-2 Coastal Processes

*Development and resource extraction activities shall be sited and conducted to minimize accelerated coastal erosion or adverse impacts to coastal processes which could contribute to increased geophysical hazards.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, this policy duplicates, restates or incorporates by reference requirements set forth in 11 AAC 112.210.**

**Phase 1 activities will not involve resource extraction activities that would cause coastal erosion or adverse impacts to coastal processes which could contribute to increased geophysical hazards.**

### G-3 Stream Flooding

*To the extent feasible and prudent, industrial and commercial developments shall not be sited within the annual floodplain or high water channels of streams. Where siting of development within this area is unavoidable, structures must be designed and constructed to meet minimum federal floodplain standards, to minimize property damage and impacts to the stream environment, and to protect against injury or loss of life.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, this policy duplicates, restates or incorporates by reference requirements set forth in 11 AAC 112.210.**

**The Phase I groundwater activities in the Unnamed Tributary (NK1.190) North Fork Koktuli River will consist of a cutoff wall beneath the north tailings facility embankment. Because this structure is part of the initial dam application package, which does not require individual consistency review, it is not discussed further here.**

**Procedures for siting, design, construction and operation of the Phase I water appropriation structures to withstand flooding, as ultimately proposed by NDM, will be reviewed and approved by DNR under its authorities governing the disturbance and reclamation of surface land in mining operations under 11 AAC 97.100 through 11 AAC 97.990.**

### G-4 Erosion

*To the extent feasible and prudent, development activities shall retain existing vegetative cover in erosion-prone areas. In cases where development necessitates removal of vegetation, erosion shall be minimized through revegetation or by other appropriate erosion control measures.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, 11 AAC 97.100 through 11 AAC 97.990 govern the disturbance and reclamation**

**of surface land in mining operations.**

**Phase 1 activities will be conducted in compliance with all applicable requirements under the above authorities to minimize surface disturbance and require revegetation and other appropriate erosion control measures.**

### G-5 Structural Erosion Control Measures

*Structures and facilities adjacent to the shorelines of rivers, streams, lakes, or marine waters shall be sited, designed, and constructed to minimize the need for erosion control or stabilization measures and to minimize interference with natural shoreline processes. Borough subdivisions and State land disposals shall be designed to provide sufficient lot depth to minimize the need for shoreline stabilization measures to protect facilities or improvements.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, 11 AAC 97.100 through 11 AAC 97.990 govern the disturbance and reclamation of surface land in mining operations.**

**Phase 1 activities will not locate structures or facilities adjacent to the shorelines of rivers, streams, or lakes, nor involve any borough subdivisions or state land disposals.**

## H. Recreation

### H-1 Protection of Recreation Values

*Projects and activities on public lands and waters used for recreational activities, or on private lands and waters where the landowner has granted formal permission for recreational activities, shall be located, designed, constructed, and operated to minimize adverse impacts to recreation resources and activities, including access. To the extent feasible and prudent, activities which conflict with recreational uses shall be conducted in a manner which minimizes conflicts or provides alternative recreation opportunities or access.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, this policy duplicates, restates or incorporates by reference requirements adopted within the DNR's Bristol Bay Area Plan (2005) and under various DNR land use regulations. For example, DNR is required by Alaska law to take protect recreational values when adjudicating an application for a water right and for determining whether the public interest will be adversely affected or impaired. 11 AAC 93.070. As part of that analysis, DNR must consider any effect "on public recreational opportunities" and "access to navigable or public water." AS 46.15.080.**

**Phase 1 activities will be conducted in compliance with all applicable requirements under the above authority that will minimize adverse impacts to recreation resources and activities, including measures to minimize impacts on access.**

# I. Archaeological and Historic Resources

## I-1 Cultural and Historic Resource Areas

*In consultation with the State Historic Preservation Office, assessment of potential impacts to cultural and historic resources, and the identification of appropriate mitigation, shall be the responsibility of the developer. The potential adverse impacts of development on known historic and archaeological values (state and federal historic resource registers) shall be evaluated early in project planning.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, AS 41.35.010 through 41.35.240 regulate development, excavation and other activities in areas of known historic and archaeological values, and historic, prehistoric and archaeological resources are addressed by 11 AAC 112.320. Section 106 of the National Historic Preservation Act, 16 USC 470 et seq. also regulate activities in these areas.**

**NDM has initiated a detailed archeological and cultural resources baseline study throughout the project area, including searches of state and federal historic registers. Substantial portions of the mine site area have been investigated to date, including those where exploration activities have been conducted. The State Historic Preservation Office (SHPO) has been involved throughout this study, and on an annual basis these investigations have been thoroughly documented in reports to the SHPO. Phase I activities will only occur in areas that have been previously investigated pursuant to the SHPO standards. Procedures approved by the SHPO will be in place to immediately stop activities and provide for investigation and mitigation of unexpected discoveries.**

**Based on archaeological studies conducted to date, there are no known historic or archaeological values that will be affected by Phase I activities.**

## I-2 Resource Protection

*Uses and activities which may adversely affect cultural resource areas shall comply with the following standards:*

*a) where there is potential for undiscovered cultural or historic sites in a project area, a resource survey may be required by the State Historic Preservation Office prior to surface disturbance;*

*b) to the extent feasible and prudent, archaeological, prehistoric, and historic resources shall be protected from significant adverse impacts caused by surrounding uses and activities;*

*c) artifacts of significant historic, prehistoric, or archaeological importance shall not be disturbed during project development unless the State Historic Preservation Office and the surface and subsurface landowners, in consultation with the Lake and Peninsula Borough, approves the action; and,*

*d) if previously undiscovered artifacts or areas of historic, prehistoric, or archaeological importance are encountered during development, the State Historic Preservation Office, the surface and subsurface landowners, and the Lake and Peninsula Borough shall be notified and the site shall be protected from further disturbance pending evaluation by the State Historic Preservation Office.*

**NDM Evaluation:** **This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, AS 41.35.010 through 41.35.240 regulate development, excavation and other activities in areas of known historic and archaeological values, and historic, prehistoric and archaeological resources are addressed by 11 AAC 112.320. Section 106 of the National Historic Preservation Act, 16 USC 470 et seq. also regulate activities in these areas. Phase I activities will only occur in areas that have been previously investigated pursuant to the SHPO standards. Procedures approved by the SHPO will be in place to immediately stop activities and provide for investigation and mitigation of unexpected discoveries.**

**Based on archaeological studies conducted to date, there are no known historic or archaeological values that will be affected by Phase I activities.**

## J. Energy Facilities

### J-1 State Standards

*The Lake and Peninsula Borough adopts the energy facility standards presented in ACMP regulation 6 AAC 80.070(b).*

**NDM Evaluation:** **This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, the state standards under 11 AAC 112.230 address energy facilities.**

**Phase 1 activities will not involve any energy facilities.**

### J-2 Oil and Gas Development

*Prior to conducting activities associated with seismic surveys, exploration, or development of oil and gas resources, developers proposing activities (including support activities) that will be based within the Borough shall work with the Borough and representatives of affected communities to:*

*a) minimize adverse offshore and onshore impacts to coastal resources and uses; and*

*b) minimize interference with commercial fishing and subsistence activities*

**NDM Evaluation:** **This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, 11 AAC 97.100 through 11 AAC 97.990 govern the disturbance, including seismic surveys, and reclamation of surface land in mining operations.**

**Phase 1 activities will not include activities associated with seismic surveys, exploration, or development of oil and gas resources.**

## K. Material Extraction and Processing

### K-1 Siting of Material Sources

*To the extent feasible and prudent and environmentally responsible, sources of sand, gravel, rock and other construction materials shall be authorized in the following sequence:*

*a) existing approved gravel pits or quarries operated in compliance with state and federal authorizations;*

*b) reuse of material from abandoned development areas, unless reuse could cause more environmental damage than non-use;*

*c) new upland sites;*

*d) beaches of low habitat values*

*e) streams which do not provide fish habitat*

*f) portions of fish streams which do not provide spawning or overwintering habitat.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, 11 AAC 97.100 through 11 AAC 97.990 govern the disturbance and reclamation of surface land in mining operations, 11 AAC 112.260 addresses state standards for sand and gravel extraction and AS 41.14.840 through 41.14.900 and 11 AAC 112.300 provide for habitat protection in rivers, streams, and lakes, and regulate fishways and any development in these habitats.**

**Phase 1 groundwater extraction activities subject to a consistency review will not require materials extraction.**

### K-2 In-Stream Material Extraction

*Extraction of sand and gravel from stream floodplains shall be located and conducted to avoid changes to channel hydraulics and the potential for channel diversion through the mining site.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, 11 AAC 97.100 through 11 AAC 97.990 govern the disturbance and reclamation of surface land in mining operations, and 11 AAC 112.260 addresses state standards for sand and gravel extraction.**

**Phase 1 activities will not specifically involve extraction of sand or gravel from stream floodplains. They will include, however, a diversion ditch and a surface runoff collection point. The purpose of the diversion ditch is specifically to intercept surface runoff and route it around the open pit and other facilities to a surface water collection point. Thus, the ditch will cross several very small upper headwater streams and their narrow floodplains. Construction of these structures will require removal of small quantities of material from**

**these narrow floodplains.**

**Procedures for siting, design, construction and operation of the Phase I water appropriation structures will be reviewed and approved by DNR under its authorities governing the disturbance and reclamation of surface land in mining operations under 11 AAC 97.100 through 11 AAC 97.990.**

### K-3 Best Management Practices

*In streams and their floodplains which provide habitat for anadromous fish, the following practices shall be incorporated into the siting, design, and operation of mining activities:*

*a) clearing of riparian vegetation and disturbance of natural banks shall be minimized;*

*b) to the extent feasible and prudent, mining site configurations shall be shaped to blend with physical features and surroundings to provide for diverse riparian and aquatic habitats;*

*c) gravel washing operations which discharge effluent to streams shall use settling ponds and recycle treatment waters, as necessary, to comply with state and federal water quality regulations. Settling ponds shall be adequately diked or set-back from active channels to avoid breaching by a 25-year frequency flood. Wash water shall be recycled and the effluent discharge shall comply with state and federal water quality regulations. Effective use of recycled water shall minimize water withdrawal and subsequent discharge of effluent to adjacent lands or waters; and*

*d) equipment storage and operation shall be conducted in a manner that does not release fuel and lubricants into the environment.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, 11 AAC 97.100 through 11 AAC 97.990 govern the disturbance and reclamation of surface land in mining operations, and 11 AAC 95.010 provides for the protection of anadromous fish habitat. AS 41.14.870, AS 41.14.840, and 11 AAC 112.300 provide for habitat protection in, among other places, wetlands, rivers, streams, and lakes, and other important habitats. Habitat protection is also governed by regulations of DNR's OPMP, OHMP and Oil & Gas. The placement of dredged or fill material in important habitats is regulated by the COE, EPA and the DEC (30 CFR 325, § 404, EPA § 404(b)(1) guidelines to 40 CFR 250 and AS 41).**

**Phase 1 activities will be conducted in compliance with all applicable requirements under the above authorities to ensure siting, design, and operation of mining activities employ best management practices.**

### K-4 Mining In Fish Habitat

*Sand and gravel shall not be removed from locations which have been documented to provide spawning or over-wintering habitat for fish.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or**

**administrative regulations adopted by state or federal agencies.**

**For example, 11 AAC 97.100 through 11 AAC 97.990 govern the disturbance and reclamation of surface land in mining operations; 11 AAC 112.260 addresses state standards for sand and gravel extraction; AS 41.14.840 through 41.14.900 and 11 AAC 112.300 provide for habitat protection in rivers, streams, and lakes, and regulate fishways and any development in these habitats; and 11 AAC 95.010 provides for the protection of anadromous fish habitat. It also duplicates authorities in AAC 112.300 and AS 41.**

**Phase 1 activities will not remove sand and gravel from locations which have been documented to provide spawning or over-wintering habitat for fish.**

### K-5 Overburden Disposal

*Whenever feasible and prudent, overburden in upland areas shall be saved and replaced on the disturbed area to conform to the natural topography as part of the reclamation process. Overburden shall not be disposed of in lakes, within the mean annual floodplain of streams, in wetlands, or below the limit of mean high water in intertidal areas and estuaries.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, 11 AAC 97.100 through 11 AAC 97.990 govern the disturbance and reclamation of surface land in mining operations.**

**Phase 1 activities will not generate overburden.**

### K-6 Reclamation and Restoration

*Reclamation of all upland and floodplain mined sites shall be required unless such reclamation would cause greater adverse impact to the environment than leaving the area unreclaimed. At a minimum, reclamation shall include the following elements, as applicable:*

*a) Topsoil and overburden shall be segregated and stored separately above the 25-year floodplain of watercourses.*

*b) At the end of each mining season, all disturbed areas shall be regraded to stable slopes. Within mean annual floodplains, regrading to ground contours which will not entrap fish nor significantly alter stream hydraulics shall occur at the end of each operating season. Tailings used in the construction of settling ponds and other essential facilities may be retained in place until completion of their use.*

*c) At the completion of mining activities or gravel extraction, all disturbed areas shall be stabilized and re-vegetated, as appropriate. Restoration shall include the following:*

*(1) all disturbed areas shall be graded to stable slopes that blend with the natural topography;*

*(2) erosion control measures shall be implemented as appropriate to stabilize the site;*

*(3) areas designated for re-vegetation shall be covered with topsoil to encourage establishment of native plant species; and*

*(4) where material sites which are excavated below groundwater may have value as habitat for waterfowl or fish, DF&G shall be consulted prior to final design of the excavation area.*

*Excluded from these requirements is the portion of a gravel extraction site required to provide materials for continuing maintenance and operation. Maintenance sand and gravel sites shall comply with the requirements of part b) of this policy.*

**NDM Evaluation: This policy duplicates, restates or incorporates by reference statutes or administrative regulations adopted by state or federal agencies.**

**For example, 11 AAC 97.100 through 11 AAC 97.990 govern the disturbance and reclamation of surface land in mining operations.**

**Phase 1 activities will not involve mining in uplands or floodplains.**