Pebble Project

NORTHERN DYNASTY MINES INC.

PEBBLE PROJECT

Application for Groundwater Right

Upper Talarik Creek

SEPTEMBER 21, 2006

Pebble Project

NORTHERN DYNASTY MINES INC.

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Anchorage, AK
USA 99503

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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: *Upper Talarik Creek* Groundwater Right Application

Dear Mr. Crafford:

On July 7, 2006, Northern Dynasty Mines Inc. (NDM) submitted an application for water right for Upper Talarik Creek 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 Upper Talarik Creek to be a surface water right application. Thus, the purpose of this letter is to transmit a separate groundwater right application for Upper Talarik Creek, for that portion of the water that will be diverted as groundwater from Upper Talarik Creek.

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

Upper Talarik Creek

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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
10.	Coastal Project Questionnaire

NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT

Application for *Groundwater* Right

Upper Talarik Creek

APPLICATION BINDER INTRODUCTION

This binder contains a stand alone application for a water right on Upper Talarik Creek. 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 550 West 7th Avenue, Suite 1020 Anchorage, AK 99501-3562 (907) 269-8600 Fax: (907) 269-8947	Juneau Office PO Box 111020 400 Willoughby Avenue Juneau, AK 99811-1020 (907) 465-3400 Fax: (907) 586-2954	Fairbanks Office 3700 Airport Way Fairbanks, AK 99709 (907) 451-2790 Fax: (907) 451-2703	***For ADNR Use Only*** ***Date/Time Stamp***
For ADNR Use Only ***LAS #***	***For ADNR Use Only*** ***CID #*** ***CID #***	***For ADNR Use Only*** ***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)
	Upper Talarik Creek

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	20 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 Date
Bruce W. Jenkins Name (please print)	Chief Operating Officer 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

Upper Talarik Creek

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, R35W

Section: 22

T4S, R35W

Sections: 2-5, 8-11, 15 and 16

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

WATER SOURCE

There would be one source of groundwater:

GEP-5 Mine workings

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

METHOD OF TAKING WATER

Pumping from collection sumps in the mine workings.

AMOUNT OF WATER

The estimated volume to groundwater to be extracted at GEP-5 is approximately 20 cfs

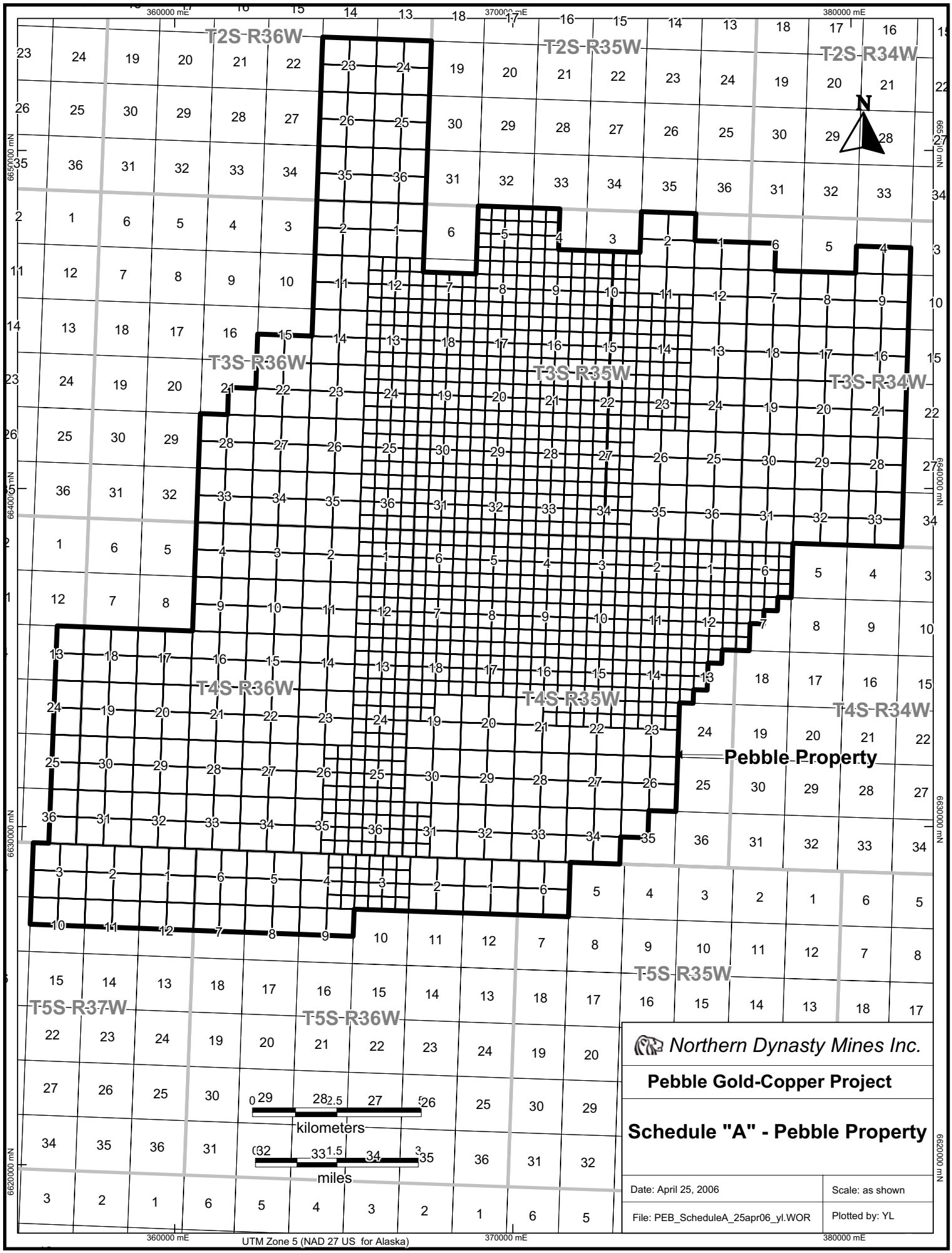
The basis for this volume of groundwater is discussed below in this “Attachments” tab section in the document titled Flow Estimates in Support of Groundwater Rights Application for Upper Talarik Creek. This 20 cfs volume figure will be better refined as NDM continues to gather data.

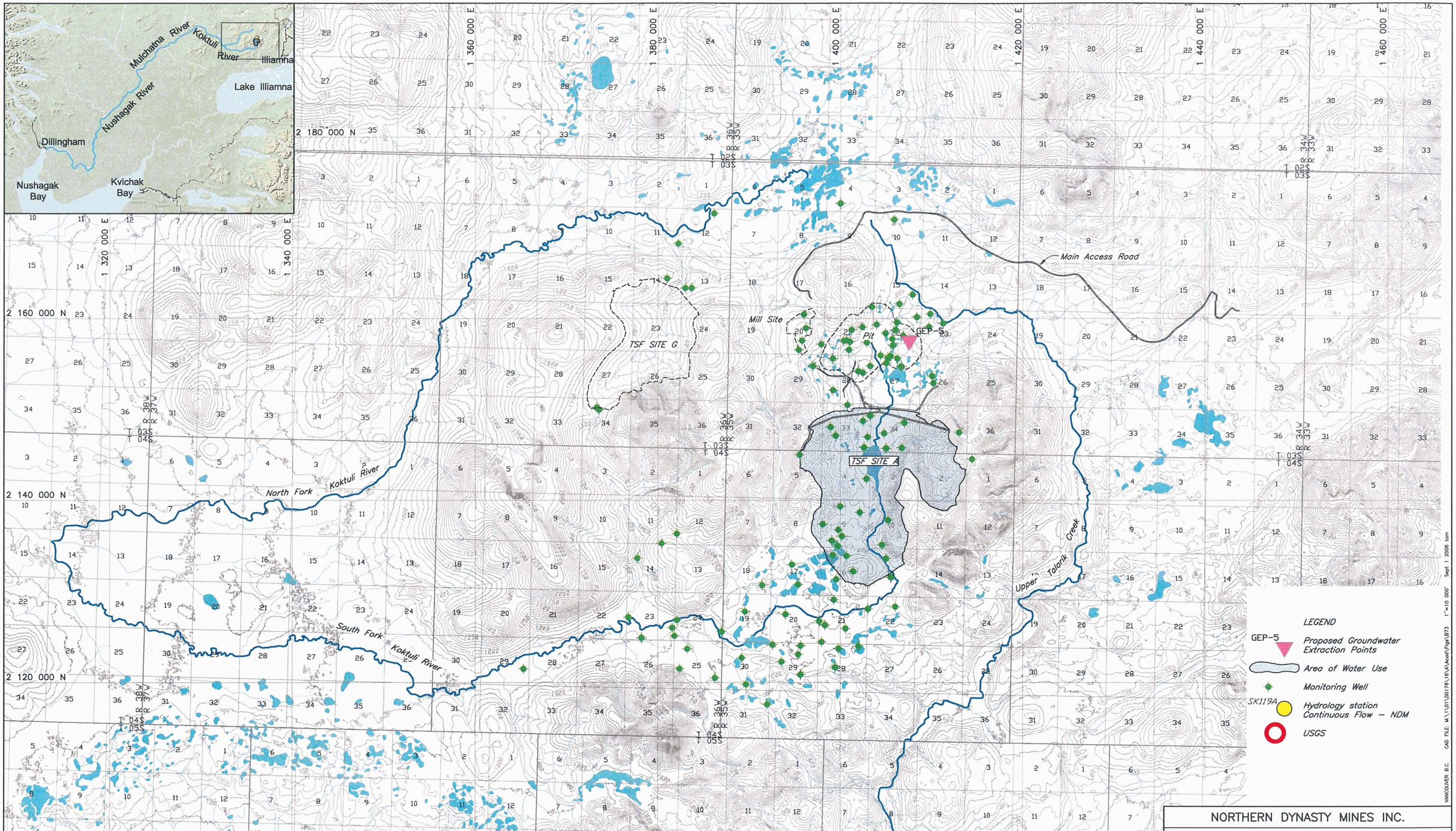
TYPE OF USE

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.


T2S-R36W
T2S-R35W
T2S-R34W
T3S-R36W
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
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



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.

REV.	DATE	ISSUED FOR
D	01SEP'06	INFORMATION

NORTHERN DYNASTY MINES INC.

PEBBLE PROJECT

PROPOSED GROUNDWATER EXTRACTION POINTS UPPER TALARIK CREEK

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO.	REF. NO.
VA101-176/16	–

FIGURE UT-1 REV. D

VANCOUVER B.C. CAD FILE: M:\1\01\00176\16\A\Acad\Figs\B73 1"=10 000' Sept 1 2006 tom

XREF FILE : Trimmed_Soft, Hydro_old_NAD83

NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT

FLOW ESTIMATES IN SUPPORT OF *GROUNDWATER* RIGHTS APPLICATION

UPPER TALARIK CREEK

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 UT-1. The data from these wells, in conjunction with the surface water information presented in NDM's corresponding Upper Talarik Creek 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 Upper Talarik Creek area. Conventional groundwater flow equations have also been used to generate an estimate of the rate of groundwater flow at groundwater extraction point GEP-5 in the Upper Talarik Creek basin, as shown on Figure UT-1.

Construction of the open pit and subsequent dewatering activities will result in the removal of groundwater from the Upper Talarik Creek watershed. Overburden typically covers a higher permeability fractured zone near the top of bedrock in the open pit area. Underlying this is relatively intact rock with decreasing permeability with depth. Within a depth of about 600 ft, the hydraulic conductivity of this intact rock is expected to be approximately 1.6×10^{-6} ft/s, and this zone will limit the size of the drawdown cone that will develop adjacent to the pit from drainage through the pit walls. The recharge rate is estimated to be approximately 24 inches per year inside the drawdown cone area. The distance from the pit rim to the drawdown cone perimeter is expected to be approximately 3,000 ft. The pit perimeter length within the Upper Talarik Creek watershed will be about 2.6 miles and the perimeter length of the estimated drawdown cone will be about 4.6 miles. The groundwater recharge area adjacent to the pit is therefore estimated to be approximately 2.0 sq. miles. A recharge of 24 inches in this area translates to an annual recharge volume of approximately 112 million ft^3, or an average of 3.5 cfs.

The groundwater extraction at the pit will also include groundwater that drains from pores in the rock and overburden when the pit is excavated. The pumping rate to remove the draining groundwater is estimated to be approximately 1.8 cfs. Approximately 50% of this water will be from the Upper Talarik Creek watershed, with the remaining 50% of groundwater originating from the South Fork Koktuli River watershed. The latter is described and accounted for in the South Fork Koktuli River groundwater rights application.

The total estimated groundwater extraction rate at GEP-5 that is associated with the pit development is approximately 4.4 cfs (3.5 cfs + 0.5 x 1.8 cfs).

The overall extent of the Pebble orebody and the possible use of underground operations in the East Zone have not been determined, nor is there much water level, flow and hydraulic conductivity data available yet on the deep groundwater systems in the area. Based on current information, however, it is reasonable to assume that extraction of groundwater from the underground workings would be at a rate in the order of 15 cfs.

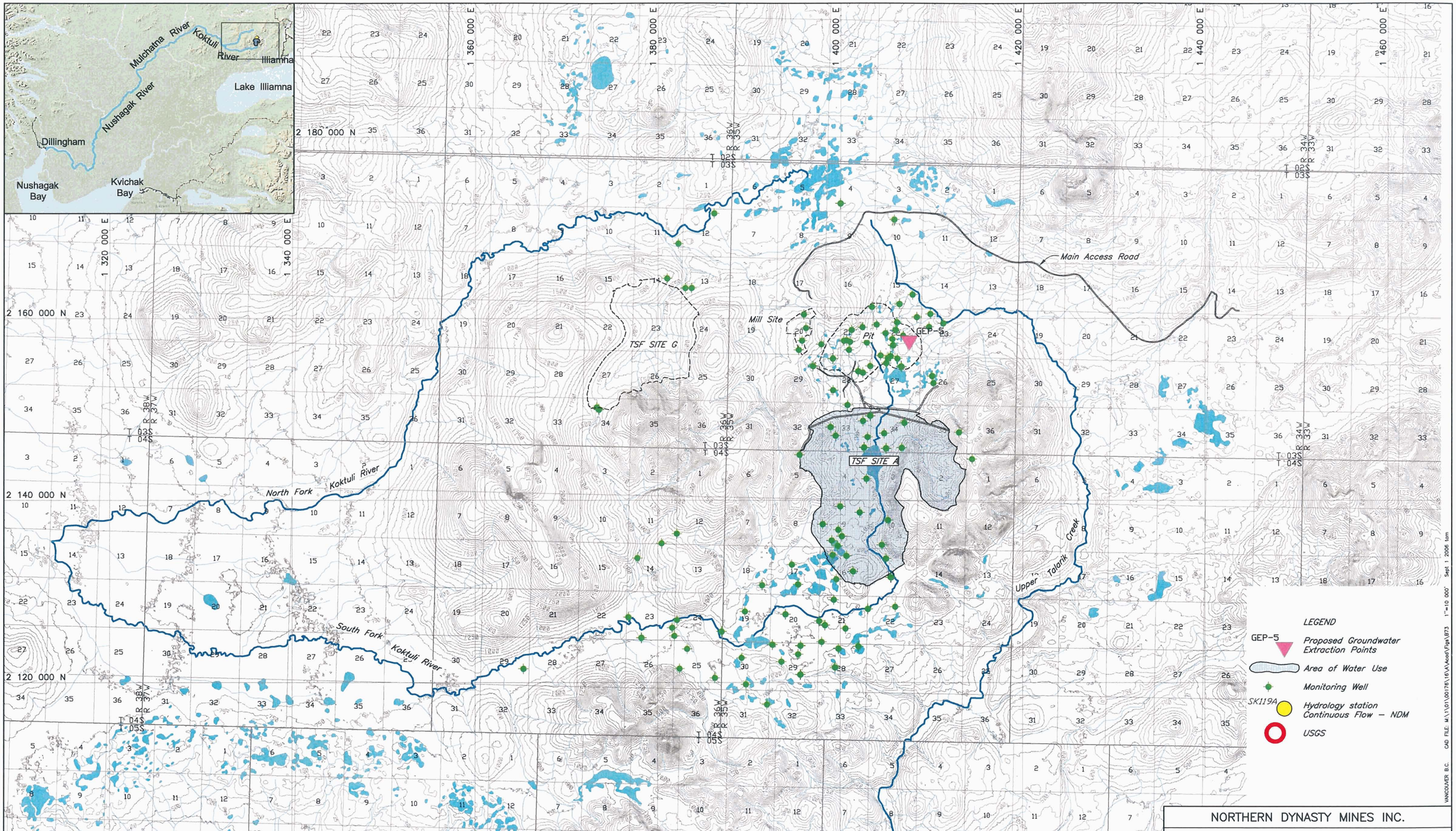
The total combined estimate of groundwater flow that would be extracted at GEP-5 is 19.4 cfs (4.4 cfs + 15 cfs).

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

Source	GEP	Rate (cfs)
Open pit	5	19.4
Total		19.4

Figure UT-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 UT-1 describes the allocation of groundwater appropriated for beneficial uses. Additional details on the beneficial uses are presented in Section 5 of this application.



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.

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NORTHERN DYNASTY MINES INC.

PEBBLE PROJECT

PROPOSED GROUNDWATER EXTRACTION POINTS UPPER TALARIK CREEK

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO.	REF. NO.
VA101-176/16	–

FIGURE UT-1 REV. D

VANCOUVER B.C. CAD FILE: M:\1\01\00176\16\A\Acad\Figs\B73 1"=10 000' Sept 1 2006 tom

XREF FILE : Trimmed_Soft, Hydro_old_NAD83

TABLE UT-1

NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT

GROUNDWATER TO BE USED BENEFICIALLY BY ACTIVITY
UPPER TALARIK CREEK

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: Water in TSF supernatant pond[4]	19.4	12,600,000	14,100
Dust Suppression on Haul Roads in 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	**19.4**	**12,600,000**	**14,100**

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 Table SFK-2 at Tab 5 of the 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 mine workings in the Upper Talarik Creek drainage. Fresh make-up water for mill processing will be extracted from the open pit dewatering system. Refer to Table SFK-2 at Tab 5 of the SFK groundwater rights application.

3. Refer to Table 2 at 11 AAC 93.040 (c)(13) in the SFK surface water completeness response document.

4. The full volume of groundwater flow intercepted by GEP-5 (Figure UT-1) in the mine workings will be directed to the TSF at Site A.

5. Water for dust suppression will all be sourced from surface water. Refer to Table 2 at 11 AAC 93.040(c)(13) of the UT surface water completeness response document.

6. Water for the concentrate slurry pipeline will be withdrawn from the TSF A only to prime the system at start-up, which will occur prior to the development of mine workings in the Upper Talarik Creek drainage.

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

NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT

Application for Groundwater Right

UPPER TALARIK CREEK

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-5 as shown on Figure UT-1. The groundwater appropriated from this point will be used for the following beneficial mining uses:

Development of the Pebble Project will require capture of all groundwater flows originating up gradient of the proposed downstream limit of water extraction, DL-5, as indicated in Figure UT-1. The water appropriated from up gradient of DL-5 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

UPPER TALARIK CREEK

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
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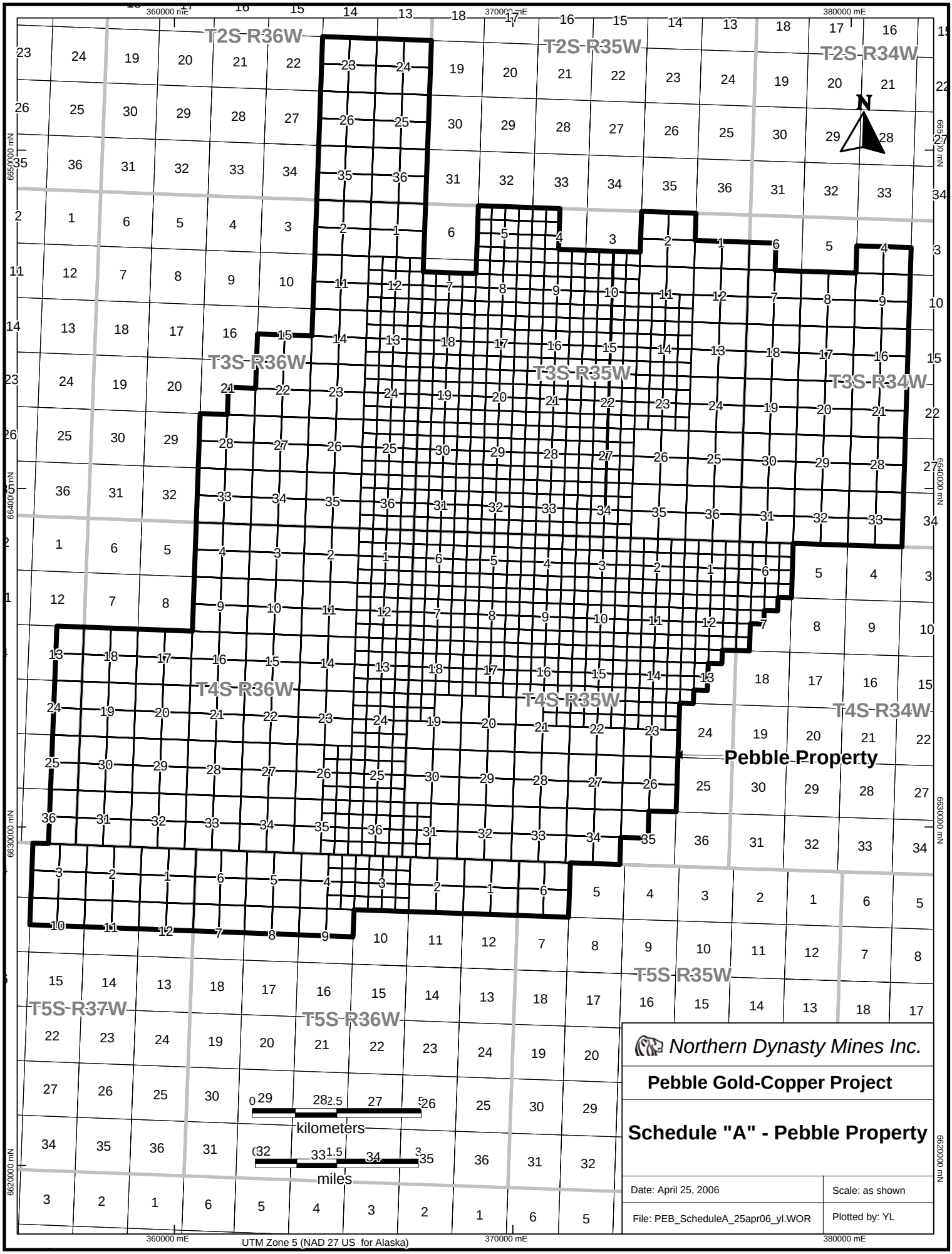
STATE OF WASHINGTON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T2S-R35W
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T4S-R36W
T4S-R35W
T4S-R34W
T5S-R37W
T5S-R36W
T5S-R35W
Pebble Property
N
360000 mE
370000 mE
380000 mE
6650000 mN
6640000 mN
6630000 mN
6620000 mN
0 2.5 5
kilometers
0 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

Upper Talarik Creek

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

Upper Talarik Creek

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

Upper Talarik Creek

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

BRIEF PROJECT DESCRIPTION

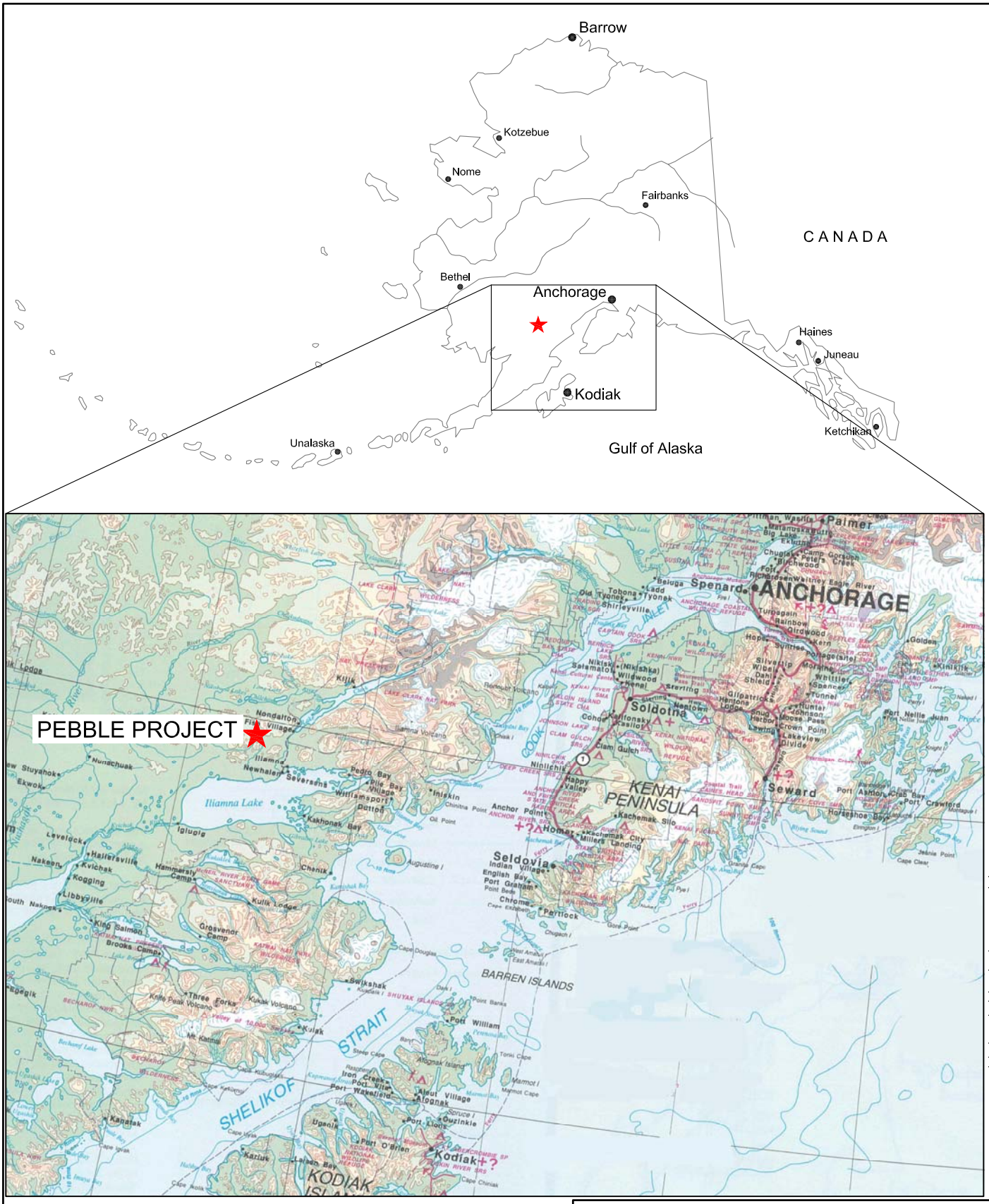
The Pebble Project will be a large open pit mine located 17 miles northwest of the community of Iliamna, on the north side of Lake Iliamna (Figure 1.1). Primary mine area facilities will consist of the open pit, ore conveyor, ore stockpile, a mill site (with associated offices, workshops, equipment repair 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 Upper Talarik Creek 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 Upper Talarik Creek groundwater right application as similar as possible to the original surface water right application, the following Site A facilities description materials are also being submitted.



VANCOUVER B.C. CAD FILE: M:\1\01\00176\16\A\Acad\Figs\A18 Plot 1=1(PS) Aug 21 2006 tam

NORTHERN DYNASTY MINES INC.

PEBBLE PROJECT

PROJECT LOCATION

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO.	REF. NO.
VA101-176/16	7

FIGURE UT-1.1 REV. A

REV.	DATE	ISSUED FOR
A	22AUG'06	INFORMATION

XREF FILE : -

NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT

FACILITIES DESCRIPTION IN SUPPORT OF A *GROUNDWATER* RIGHTS APPLICATION

UPPER TALARIK CREEK

(REF. NO. VA101-00176/16-7)

September 21, 2006

NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT

FACILITIES DESCRIPTION IN SUPPORT OF A *GROUNDWATER* RIGHTS APPLICATION

UPPER TALARIK CREEK

(REF. NO. VA101-00176/16-7)

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TABLES

Table UT-1 Rev B Groundwater to be Used Beneficially by Activity – Upper Talarik Creek

FIGURES

Figure UT-1.1 Rev A Project Location
Figure UT-1.2 Rev A Regional Site Plan
Figure UT-1.3 Rev A Tailings Storage Facility – Site A – Proposed Groundwater Extraction Points – Upper Talarik Creek
Figure UT-2.1 Rev B Pit Slope Depressurization Measures

NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT

FACILITIES DESCRIPTION IN SUPPORT OF A *GROUNDWATER* RIGHTS APPLICATION

UPPER TALARIK CREEK

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 miles southwest of Anchorage and 17 miles northwest of the Village of Iliamna. The project location is shown on Figure UT-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. The mining of the ore deposit would result in a mine located at the headwaters of the South Fork Koktuli River Watershed; ongoing development would extend the mine into the headwaters of the Upper Talarik Creek Watershed. A regional site plan indicating the location of the mine workings, the TSF sites, and the watershed pertaining to this application are shown on Figure UT-1.2.

1.2 SCOPE OF REPORT

The scope of this report is to provide details of the mine workings in support of the groundwater rights application process for the hydrogeological regime impacted by the mine development in the water extraction limits of the Upper Talarik Creek watershed. The Groundwater Extraction Point, GEP-5, and the associated area of water use, are shown on Figure UT-1.3.

The open pit mine will act as a groundwater discharge zone. Hydrogeological field tests and piezometer monitoring suggest that the baseline groundwater table varies between 0 and 50 feet below the ground surface. Ongoing development of the mine would cause a gradual lowering of the groundwater table in the vicinity of the excavation. The resulting increase in groundwater gradient with respect to the mine floor will increase groundwater flows towards the mine workings.

Ongoing exploration continues to expand the deposit and the understanding of the geological/ hydrogeological conditions of the deposit areas. The technical details in this report are preliminary.

The beneficial uses of the groundwater extracted from the Upper Talarik Creek water extraction limits are:

- Impoundment of potential process water in TSF at Site A.
    - Ensure sufficient live pond volume to offset dry years and to support the mining processes at start-up (e.g., mill process, equipment cooling, tailings slurry, concentrate slurry and reclaim pipelines, 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 - MINE WORKINGS

2.1 GENERAL

A conceptual level pit drainage design has been developed to depressurize the pit wall rocks and to provide for the controlled removal of groundwater runoff from the mine workings. The open pit drainage systems will include the following:

- Vertical depressurization wells on the perimeter.
- Sub-horizontal wall drains installed in both interim and final walls.
- A series of pumps and collection systems to remove water from the pit.

These depressurization and drainage techniques will be implemented in a staged approach to suit the mine workings and hydrogeological conditions. A schematic plan of the mine workings with conceptual locations for the depressurization and drainage measures are shown on Figure UT-2.1.

2.2 VERTICAL PERIMETER PUMPING WELLS

Removal of undisturbed groundwater from the overburden will improve the stability of the pit slopes by reducing water pressure. Shallow pumping wells will pass through the overburden materials and penetrate into competent bedrock.

2.3 SUB-HORIZONTAL WALL DRAINS

Sub-horizontal drains will be installed in both interim and final pit walls. These horizontal drains will be installed to suit the actual conditions of the mine workings. This observational approach will place drain holes based on a number of different sources of information, including: geological features identified by mapping, recorded locations of wet production blast holes, geological modeling, piezometric readings, and slope monitoring observations.

2.4 PIT PUMPING SYSTEM

The objective of the pit depressurization system is to reduce water inflows into the mine workings. Groundwater inflows are expected to be largely from localized alluvial overburden materials and fractured rock that are exposed as the pit excavation is progressively developed.

In-pit sumps will be included in the pit floor; water reporting to these sumps will be pumped out to sediment control sumps on the west side of the open pit. Water collected in the sumps will be impounded in the TSF at Site A in order to protect downstream aquatic resources.

2.5 GROUNDWATER EXTRACTION AND BENEFICIAL USES

The groundwater will be extracted from the mine workings at GEP-5, at an estimated rate of 19.4 cfs. The groundwater use and water take location are described in Table UT-1. Table UT-2 describes the quantities of groundwater to be appropriated for the following beneficial uses:

Impoundment of potential process water in TSF at Site A.

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

SECTION 3.0 - REFERENCES

Brown, Adrian. 1988. Groundwater Evaluation and Control for Gold Mining Project.

Freeze, R.A. and Cherry, J.A.1979. Groundwater, Prentice Hall, New Jersey.

Knight Piésold Ltd. November 2004. Pebble Project, Hydrometeorology. Ref. No. VA101-176\7-6.

Knight Piésold Ltd. June 2006. Pebble Project, Facilities Description in Support of a Water Rights Application Process – South Fork Koktuli. Ref. No. VA101-176\16-3.

Knight Piésold Ltd. June 2006. Pebble Project, Facilities Description in Support of a Water Rights Application Process – Upper Talarik Creek. Ref. No. VA101-176\16-5.

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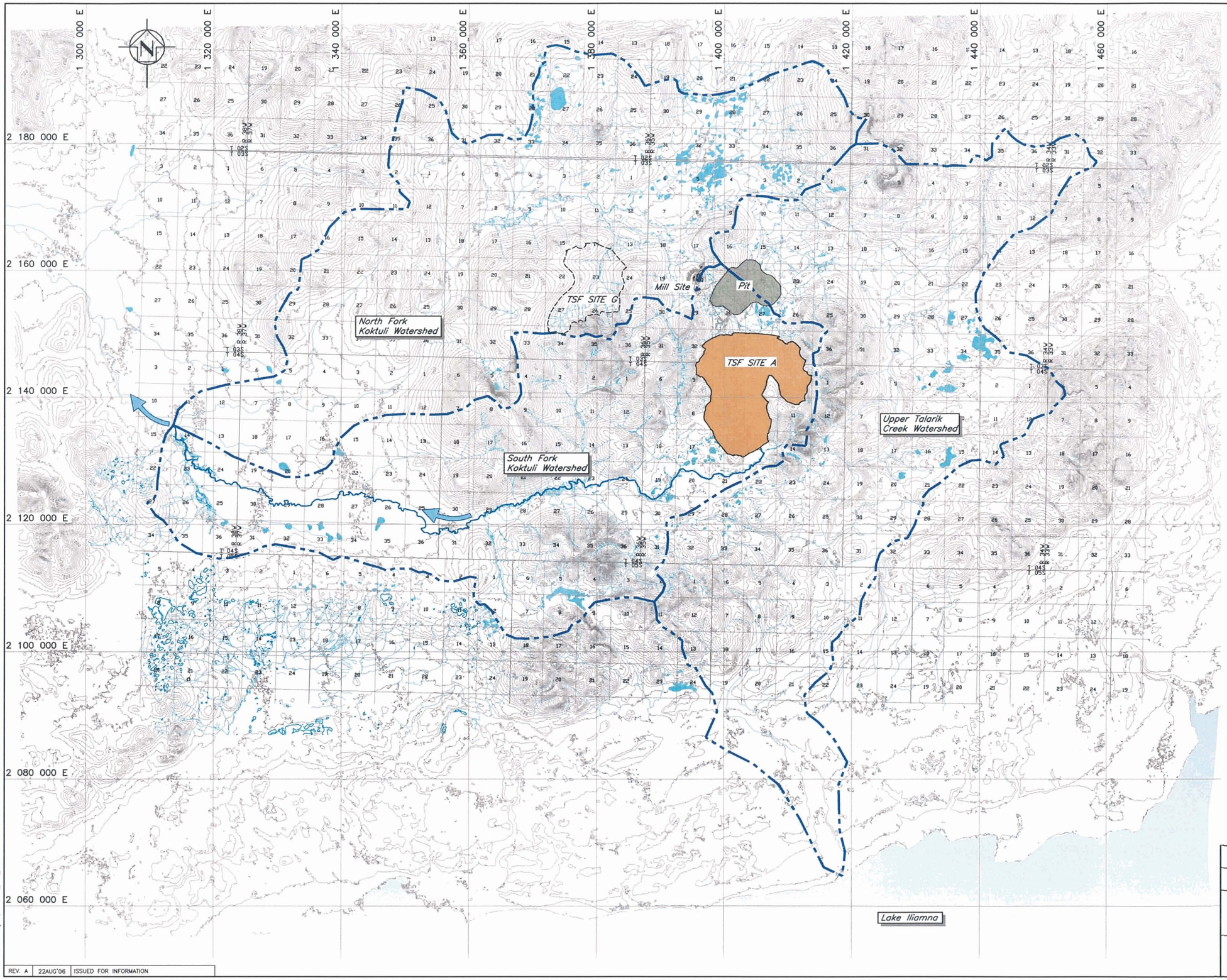


LEGEND

- 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

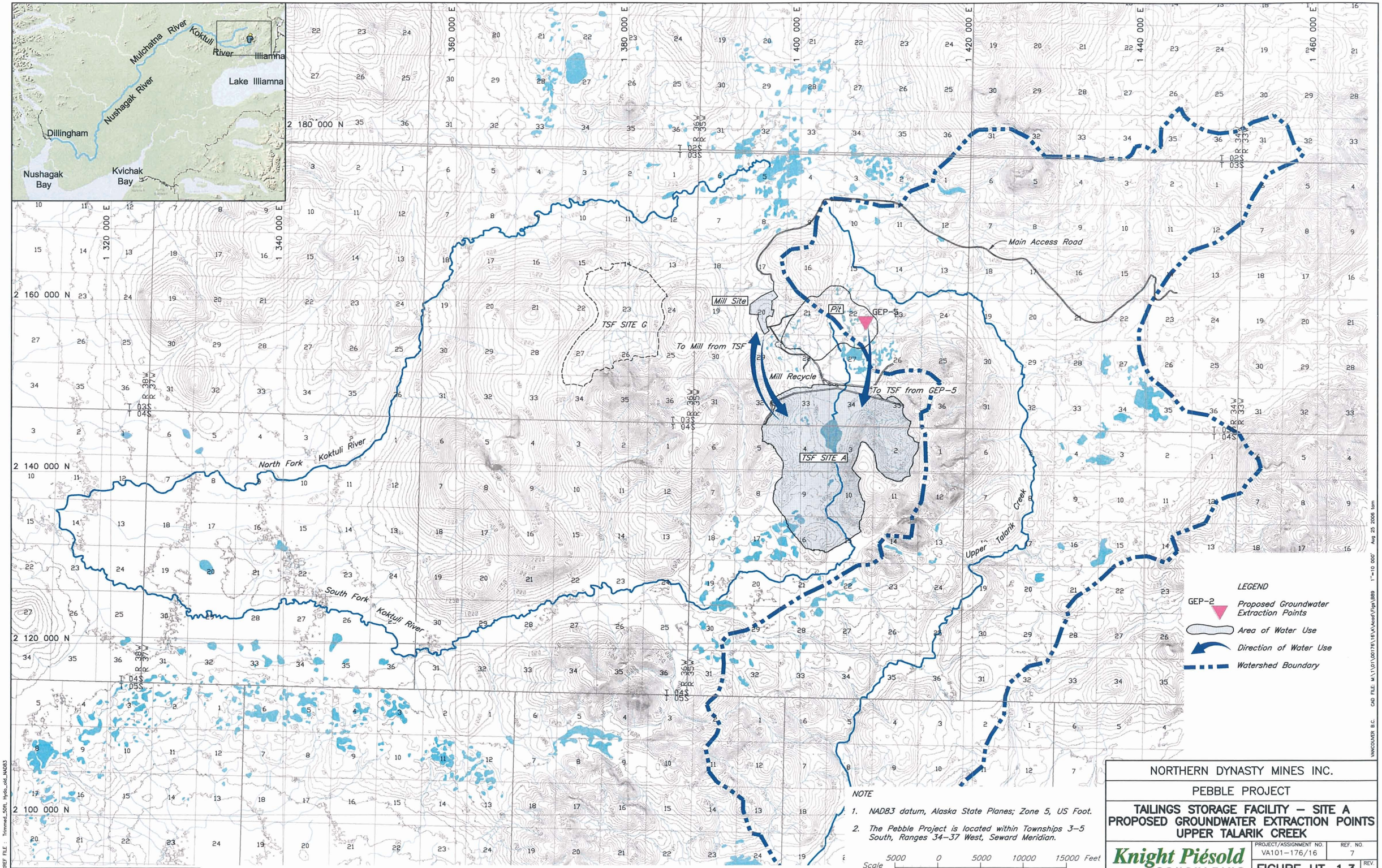
PROJECT/ASSIGNMENT NO.	REF. NO.
VA101-176/16	7

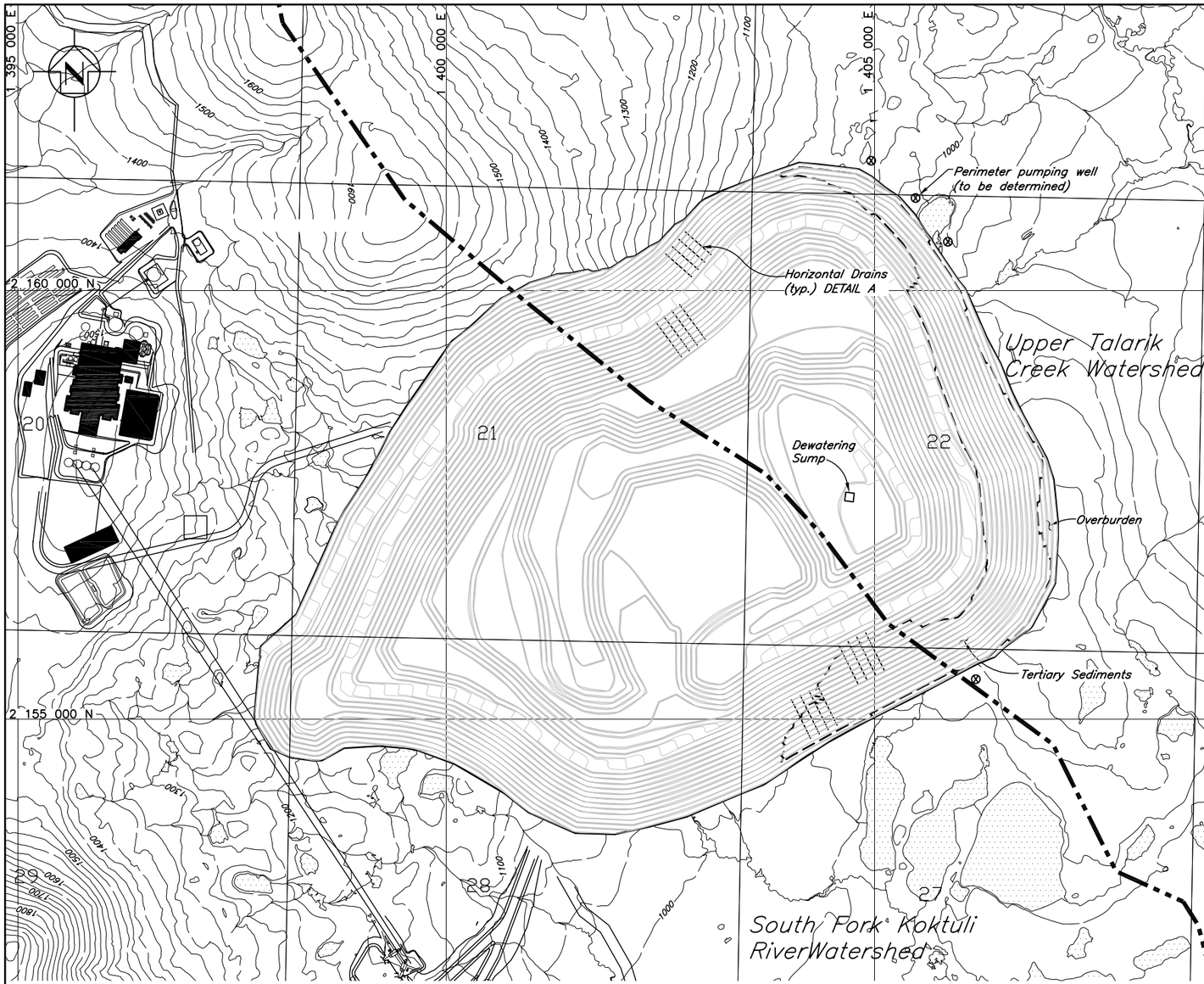
FIGURE UT-1.2 REV. A

REV.		
A	22AUG'06	ISSUED FOR INFORMATION

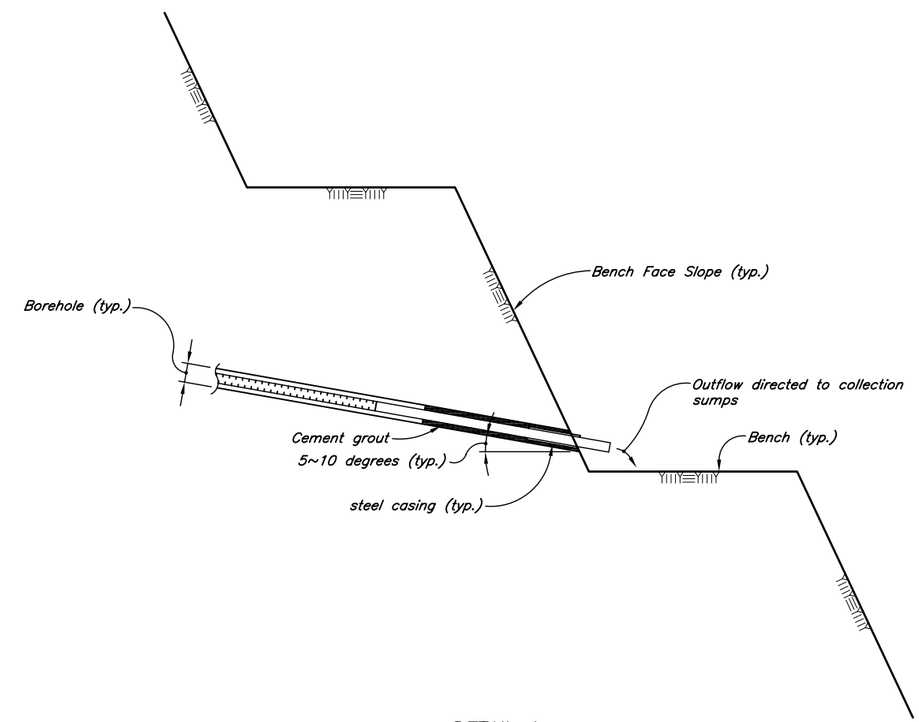
XREF FILE : Hydro, Trimmed_50ft_NAD83

VANCOUVER B.C. CAD FILE: M:\1\01\00176\16\A\Acad\Figs\B88 1"=15 000' Plot 1=1(PS) Aug 24 2006 tam


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
Main Access Road
Mill Site
Pit
GEP-5
TSF SITE G
To Mill from TSF
Mill Recycle
To TSF from GEP-5
TSF SITE A
North Fork Koktuli River
South Fork Koktuli River
Upper Talarik Creek
LEGEND
GEP-2
Proposed Groundwater Extraction Points
Area of Water Use
Direction of Water Use
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 5000 0 5000 10000 15000 Feet
NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT
TAILINGS STORAGE FACILITY – SITE A
PROPOSED GROUNDWATER EXTRACTION POINTS
UPPER TALARIK CREEK
Knight Piésold CONSULTING
PROJECT/ASSIGNMENT NO. VA101-176/16
REF. NO. 7
FIGURE UT-1.3
REV. A
REV. A 22AUG'06 ISSUED FOR INFORMATION
XREF FILE : Trimmed_50ft, Hydo_old_NAD83
VANCOUVER B.C. CAD FILE: M:\1\01\00176\16\A\Acad\Figs\889 1"=10 000' Aug 25 2006 tom



PLAN
OPEN PIT
Scale A



DETAIL A
TYPICAL HORIZONTAL DRAIN
NTS

LEGEND

Watershed Boundary

NOTES

1. Pit geometry provided by Northern Dynasty Mines Inc., October 2004.
2. Perimeter pumping wells and horizontal drains are for conceptual illustration only. Actual locations, depths, spacings will be determined during operation based on monitoring data.
3. Coordinate system is in NAD83 Alaska State Plane Zone 5 Foot.
4. The Pebble pit is located within Township 3 South, Range 35 West, Seward Meridian.

Scale A 750 0 750 1500 2250 Feet

NORTHERN DYNASTY MINES INC.	
PEBBLE PROJECT	
PIT SLOPE DEPRESSURIZATION MEASURES	
Knight Piésold CONSULTING	PROJECT/ASSIGNMENT NO. VA101-176/16 · REF. NO. 7 · FIGURE UT-2.1 · REV. B

REV.	DATE	DESCRIPTION
B	30AUG'06	ISSUED FOR INFORMATION

VANCOUVER B.C. CAD FILE: M:\1\01\00176\16\A\Acad\Figs\890 1"=1500' Plot 1=1(PS) Aug 30, 2006 EER

XREF FILE : -

TABLE UT-1

NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT

GROUNDWATER USE AND WATER EXTRACTION POINTS
UPPER TALARIK CREEK 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 (e.g., 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 A	Seward	3 S	35 W	32-35	Groundwater will be pumped from the mine workings from GEP-5 and impounded in the TSF.	Seward	3 S	35 W	22
			4 S		2-5, 8-11 & 15-16					

TABLE UT-2

NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT

GROUNDWATER TO BE USED BENEFICIALLY BY ACTIVITY
UPPER TALARIK CREEK

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: Water in TSF supernatant pond[4]	19.4	12,600,000	14,100
Dust Suppression on Haul Roads in 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	**19.4**	**12,600,000**	**14,100**

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 Table SFK-2 at Tab 5 of the 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 mine workings in the Upper Talarik Creek drainage. Fresh make-up water for mill processing will be extracted from the open pit dewatering system. Refer to Table SFK-2 at Tab 5 of the SFK groundwater rights application.

3. Refer to Table 2 at 11 AAC 93.040 (c)(13) in the SFK surface water completeness response document.

4. The full volume of groundwater flow intercepted by GEP-5 (Figure UT-1) in the mine workings will be directed to the TSF at Site A.

5. Water for dust suppression will all be sourced from surface water. Refer to Table 2 at 11 AAC 93.040(c)(13) of the UT surface water completeness response document.

6. Water for the concentrate slurry pipeline will be withdrawn from the TSF A only to prime the system at start-up, which will occur prior to the development of mine workings in the Upper Talarik Creek drainage.

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

NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT

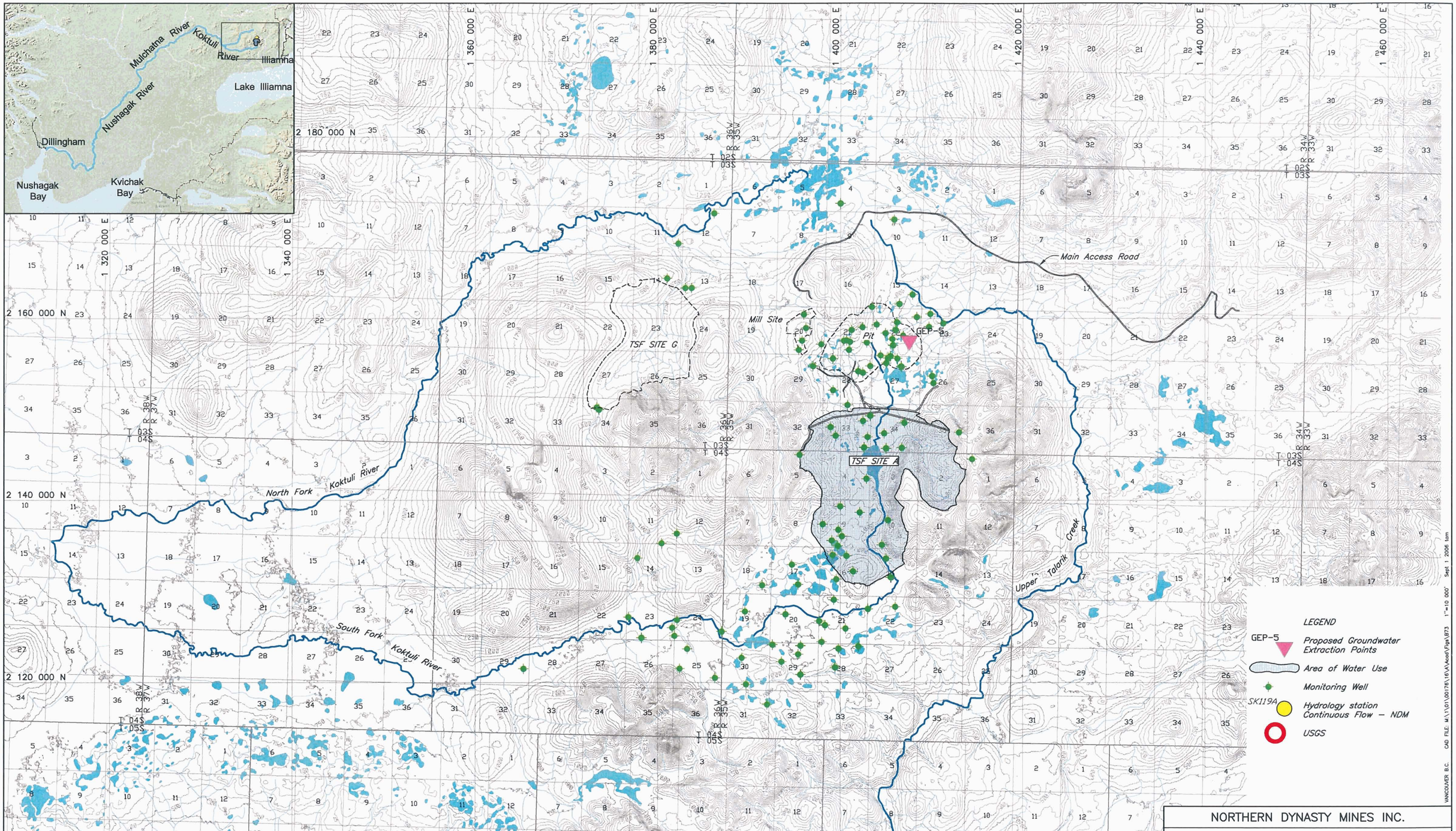
Application for Groundwater Right

Upper Talarik Creek

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 UT-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.



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.

REV.	DATE	ISSUED FOR
D	01SEP'06	INFORMATION

NORTHERN DYNASTY MINES INC.

PEBBLE PROJECT

PROPOSED GROUNDWATER EXTRACTION POINTS UPPER TALARIK CREEK

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO.	REF. NO.
VA101-176/16	–

FIGURE UT-1 REV. D

VANCOUVER B.C. CAD FILE: M:\1\01\00176\16\A\Acad\Figs\B73 1"=10 000' Sept 1 2006 tom

XREF FILE : Trimmed_Soft, Hydro_old_NAD83

NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT

Application for Groundwater Right

Upper Talarik Creek

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

Upper Talarik Creek

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

Upper Talarik Creek

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

Upper Talarik Creek

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 Upper Talarik Creek 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 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 15-16, 21, 22, 27 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 & 4 S Range 35 W Section 3 S, Secs. 20-22, 28, 29, 32-35; 4 S, Secs. 2-5, 9-11, 15, 16 Meridian Seward USGS Quad Map Iliamna D-6 and 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): 20 cfs

   Source: See Page 2 of UT Application for Groundwater Right. Intended Use: See Page 3 of UT 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.

	Yes	No
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?	☐	☐
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: Several waterbodies (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)
   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.)* **Yes** ☒ **No** ☐
   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

Upper Talarik Creek

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 UT-1.3, first introduced behind Tab # 5 (Project Description), is titled Tailings Storage Facility – Site A, Proposed Groundwater Extraction Points, Upper Talarik Creek. This figure shows the location of the tailings facility (TSF A) impoundment as well as the other major locations (pit, and mill site) where groundwater from Upper Talarik Creek 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

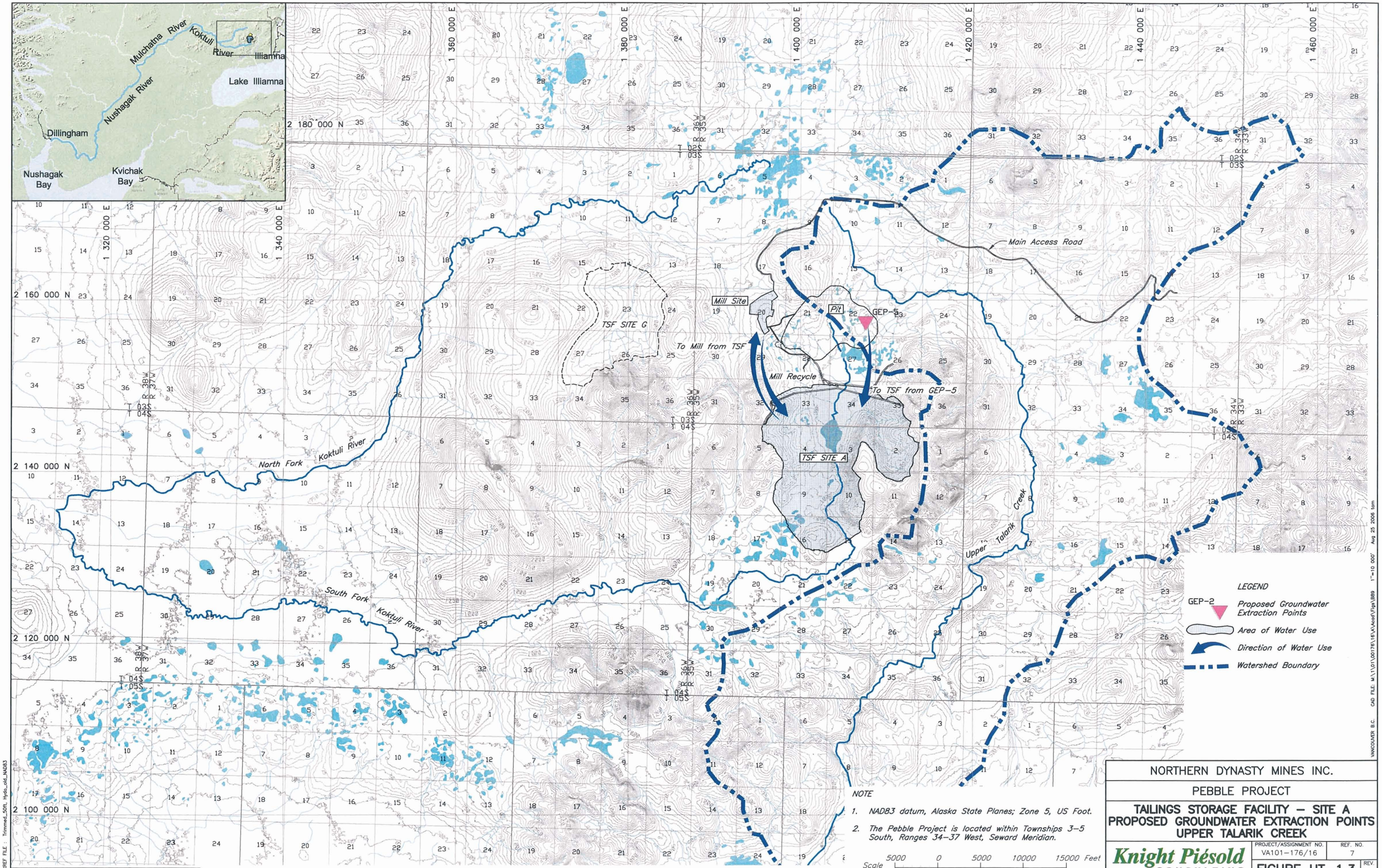
1. **Topographical map** – See attached figure "Pebble Project Location"

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 township, range, and section, all within the Seward Meridian.

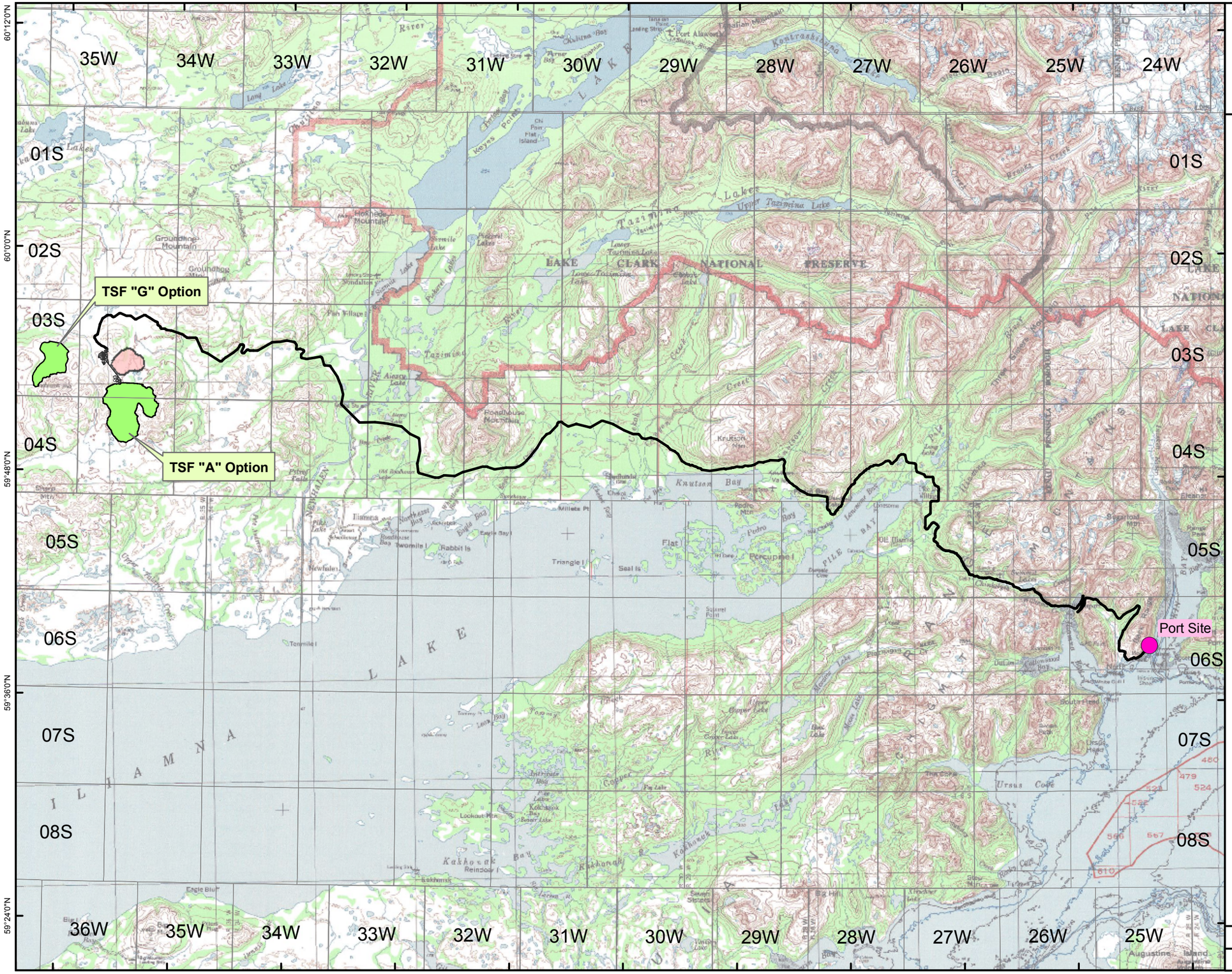
T3S, R35W	Section 22
T4S, R 35W	Sections: 2-5, 8-11, 15 and 16


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
Main Access Road
Mill Site
Pit
GEP-5
TSF SITE G
To Mill from TSF
Mill Recycle
To TSF from GEP-5
TSF SITE A
North Fork Koktuli River
South Fork Koktuli River
Upper Talarik Creek
LEGEND
GEP-2
Proposed Groundwater Extraction Points
Area of Water Use
Direction of Water Use
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 5000 0 5000 10000 15000 Feet
NORTHERN DYNASTY MINES INC.
PEBBLE PROJECT
TAILINGS STORAGE FACILITY – SITE A
PROPOSED GROUNDWATER EXTRACTION POINTS
UPPER TALARIK CREEK
Knight Piésold CONSULTING
PROJECT/ASSIGNMENT NO. VA101-176/16
REF. NO. 7
FIGURE UT-1.3
REV. A
REV. A 22AUG'06 ISSUED FOR INFORMATION
XREF FILE : Trimmed_50ft, Hydo_old_NAD83
VANCOUVER B.C. CAD FILE: M:\1\01\00176\16\A\Acad\Figs\889 1"=10 000' Aug 25 2006 tom

Pebble Project

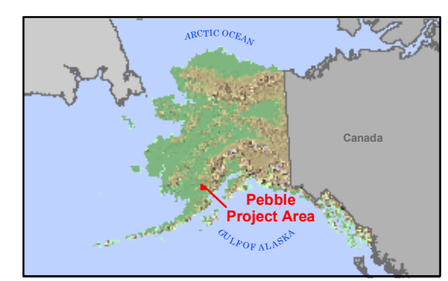
NORTHERN DYNASTY MINES INC.

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

Upper Talarik Creek

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 Upper Talarik Creek 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, Upper Talarik Creek application for groundwater right. Following is a summary of those activities with approximate volumes of water:

Activity	Description	Volume (cfs)
Water Take		
Dewatering open pit	Pumping groundwater entering the open pit into the TSF	19.4
Water Use		
Water in supernatant pond	Water in pond on surface of TSF	19.4
Total Volume		19.4

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 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 groundwater appropriation structures (pumping from the open pit) 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 groundwater appropriation structure, however, 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 Upper Talarik Creek will consist of pumping from the open pit. Down gradient from the groundwater take point there will be an alteration of natural surface water flow in Upper Talarik Creek. No estimate of the percent of flow reduction at the downstream U.S. Geological Service (USGS) station (UT100B) on Upper Talarik Creek has been developed, but ongoing baseline studies will provide one in the future.

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 Upper Talarik Creek from other sources (wells, pipeline, treated discharge from the tailings storage facility at Site A).

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 consist of pumping from the open pit. Thus, onshore disposal of dredged material will be minimal, and will be contained and stabilized to prevent leaching into adjacent waters using standard best management practices as stipulated by EPA's stormwater and DNR's surface disturbance regulations under 11 AAC 97.100 through 11 AAC 97.990 that govern disturbance and reclamation of surface land in mining operations.

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 Upper Talarik Creek will consist of pumping from the open pit. Down gradient from the groundwater take point there will be an alteration of natural surface water flow in Upper Talarik Creek. No estimate of the percent of flow reduction at the downstream U.S. Geological Service (USGS) station (UT100B) on Upper Talarik Creek 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 Upper Talarik Creek from other sources (wells, pipeline, treated discharge from the tailings storage facility at Site A).

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 surface water activities in Upper Talarik Creek will consist of pumping from the open pit. This system will be designed and constructed to minimize risk of property damage, impacts to the stream environments, and will protect against injury and loss of life.

Also, 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 activities will occur on state lands, and require minimal materials extraction for the open pit pumping system. These activities will be conducted in compliance with all applicable requirements under the above authorities that will minimize impacts from material extractions.

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.