

NORTHERN DYNASTY MINES INC.

DRAFT ENVIRONMENTAL BASELINE STUDIES PROPOSED 2007 STUDY PLANS

CHAPTER 7. TRACE ELEMENTS

DRAFT

SEPTEMBER 2007

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7. TRACE ELEMENTS

7.1 Introduction

This document summarizes the proposed scope of work for the 2007 trace elements program for the Pebble Project. SLR Alaska (SLR) is the lead consultant for the trace elements program in 2007. Bristol Environmental and Engineering Services Corporation (BEESC) is performing sampling for the study in the transportation corridor.

The term "trace elements" refers to naturally occurring elements (mostly metals) that are analyzed for in various matrices. In Pebble Project documents, the term "trace elements" also is used to refer to the trace elements program. The trace elements program examines not only elements, but other naturally occurring compounds such as anions, cations, and biogenic hydrocarbons; the term "naturally occurring constituents" (NOC) is commonly used in this document to refer collectively to the analytical parameters included in the trace elements program.

The NOC studies in 2005 and 2006 are described in Chapter 7 of the study plans for those years (NDM, 2005 and 2006). The discussions in Sections 7.3 and 7.4 below indicate how the 2007 program differs from the studies in previous years.

7.2 Objectives

The objectives of the baseline study of NOC at the mine study area and along the transportation corridor are as follows:

- Continue collecting baseline data to characterize the natural levels of NOC existing in environmental media (i.e., terrestrial and aquatic vegetation, lake and pond sediment, surface soil), including their spatial and temporal variability, prior to mining operations.
- Provide environmental input to engineering design.
- Determine organic content in surface soils to support long-term site-monitoring objectives.
- Support the permitting process.
- Continue and update field procedures established in the 2004 study of NOC in surface soil and vegetation.

7.3 Mine Study Area

The study activities for 2004 through 2007 in the mine study area are summarized in Table 7.1-1. The sampling locations for the mine study area are presented on Figure 7.1-1. A record of sampling conducted at all locations in the mine study area in 2004 through 2006, and to be conducted in 2007, is presented in Tables 7.1-2a and b.

The 2007 study will characterize NOC in the following media:

- Terrestrial vegetation (includes lichens and mosses).
- Aquatic vegetation associated with lakes and ponds.
- Freshwater sediments associated with lakes and ponds.
- Surface soil (including soil bacteria).

The number of samples to be collected in 2007 is summarized by area and sample media in the 2007 field sampling plan for naturally occurring constituents in surface soil, sediment, and vegetation (NDM, In press2). The short-term goal of the sampling program is to collect data over two years at each location. Therefore, soil and terrestrial plant sampling in the area near the west deposit (Pebble West) will not be repeated except at sites where two years of data have not been collected. Sampling at Pebble West will occur in July and August and will target soil and terrestrial vegetation at the three sites (335011, 335081, and 335101) where only one year of sampling has been done, and sediment and aquatic vegetation from tundra ponds and lakes (Table 7.1-2a).

A new soil study to be conducted in Pebble West in 2007 will test the hypotheses of cyanogenic bacteria as a cyanide source in soil. Soil samples will be collected at 11 locations for bacteriological analysis focusing on the presence or absence of cyanide (HCN)-producing bacteria in native soils. In addition to vascular plants, mosses and lichens will be collected concurrently with and at the same location as each bacteriological soil sample. The 11 sample locations identified in Table 7-1.2a were selected based on previous analytical data that showed high levels of cyanide in soil and plants.

Sampling for the eastern deposit (Pebble East) is summarized in Table 7.1-2b. A total of 17 locations were sampled in 2006 as part of the Pebble East program. Surface soil, terrestrial and aquatic vegetation, and pond and lake sediments will be collected in 2007 from the same sites that were sampled in 2006 (Table 7.1-2 and Figure 7.1-1).

Additional aquatic vegetation samples will be collected in 12 small ponds in 2007 to complete two years of data collection which started in 2006. These samples will be collected from the same locations as in 2006. All aquatic vegetation sampling from these ponds will be coordinated with the water-quality team, which is collecting surface water and sediment samples, so that water, sediment, and aquatic vegetation samples are temporally and spatially collocated. The surface water and sediment sampling is described in Chapter 6 and in the 2007 field sampling plan for surface water quality, hydrology, and sediment (NDM, In press1).

Terrestrial vegetation sampling will include specific mosses and lichens that were relevant to other mine projects in Alaska. These vegetative types were first collected for the Pebble studies in 2006. Additional moss and lichen samples will be collected in 2007 in both Pebble East and Pebble West.

7.4 Transportation Corridor

The study activities for 2004 through 2007 for the trace elements study in the transportation corridor are summarized in Tables 7.2-1a and b. The sampling locations for the transportation corridor are presented on Figure 7.2-1. Table 7.2-2 presents a summary of sampling at each sample location throughout the

project. The number of samples of each sample medium proposed for 2007 in the transportation corridor is summarized in the 2007 field sampling plan for naturally occurring constituents (NDM, In press2). In 2007, sampling will be conducted only in the portion of the transportation corridor located in the Cook Inlet drainages.

The 2007 study will characterize NOC in the following media:

- Surface soil.
- Terrestrial vegetation.
- Aquatic vegetation associated with lakes and ponds.
- Pond and stream sediments.
- Stream surface water.

The study program for the transportation corridor will be conducted as outlined in Section 7.2 of the 2005 and 2006 study plans (NDM, 2005 and 2006). The 2007 season will focus on achieving a second year of sampling in the portion of the transportation corridor east of Summit Lake and will include a minimum of 12 locations (Figure 7.2-1).

7.5 References

Northern Dynasty Mines Inc. (NDM). In press1. Draft Environmental Baseline Studies; 2007 Field Sampling Plans; Surface Water Quality, Hydrology, and Sediment; Mine Study Area.

------. In press2. Draft Environmental Baseline Studies; 2007 Field Sampling Plans; Naturally Occurring Constituents in Surface Soil, Sediment, and Vegetation.

- . 2006. Draft Environmental Baseline Studies, 2006 Study Plan. July.
- ------. 2005. Draft Environmental Baseline Studies, 2005 Study Plans. November.

TABLES

TABLE 7.1-1Pebble Project Environmental StudiesStudy Summary for Trace Elements, Mine Study Area, 2004-2007Consultant: SLR Alaska

Dissipling	2004	2005	2006	2007
Discipline	(completed by CH2M Hill)	Data Collected or Tasks	Data Collected or Tasks	Tasks To Be Completed
Trace Elements		Mine St	udy Area	
	Information gathering	Information gathering	Information gathering	Information gathering
	Scope, schedule, field sampling	Scope, schedule, field sampling	Scope, schedule, field sampling	Scope, schedule, field sampling
	1	plan	plan	plan
	2004 study plan	2005 study plan	2007 study plan summary	2007 study plan summary
	Soil sampling (Aug/Sep)	Soil sampling (July and August)	Soil sampling (July)	Bacteriological soil, lichens and moss sampling (July)
				Surface soil sampling (July)
	Vegetation sampling	Vegetation sampling (July	Terrestrial vegetation sampling	Terrestrial vegetation sampling
	(Aug/Sepleaves and berries)	leaves; Augleaves and berries)		(Julyleaves only; Augleaves
			and berries)	and berries)
		Aquatic plant sampling (August)	Aquatic plant sampling	Aquatic plant sampling (coordinated with HDR; August)
		Mercury/methylmercury fish- tissue data analysis	Fish-tissue data analysis	Fish-tissue data analysis
			Pond sediment sampling	Pond/lakes sediment sampling (August)
			Stream-sediment and surface- water data analysis	Stream-sediment and surface- water data analysis
			Coordination with HDR and BEESC	Coordination with HDR and BEESC
			Draft environmental baseline document	Draft environmental baseline document
		Coordination with NDM &	Coordination with NDM, agency	Coordination with NDM, agency
		agencies, monthly reporting	meetings, monthly reporting	meetings, monthly reporting
		Communication and data	Communication and data	Communication and data
		management	management	management
		Data entry and analysis	Data analysis	Data analysis
	QAPP review	QAPP update	QAPP update: aquatic species	
		2004 progress report		

TABLE 7.1-2aPebble ProjectSample Site Period-of-Record IndexTrace Elements, Pebble West Area Mine Studies

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1857	2006						Х																					Pond Study
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1230	2006						X																					Pond Study
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Grid 10 ^b	2006																											
	2007 2004	╉╌┾╸	┿		_					_						x				_				_	_	_	_	
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Section 36,	2004 2005	╉┼┼╸	+							_	_					X						_			-	_		
Grid 20 ^b	2005																								+			
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Section 32,	2004	╉┼┼								_						X		_)	X	_		
Grid 16 ^b	2005 2006	╉┼	++	\vdash	+	\vdash		+	\vdash	+	+	\vdash	+	+	+	+	\vdash	+	\vdash	+	╞┼┤	+	╉╋	+	+	+	╞	
	2007									1															1		L	
Section 27,	2004	╉┯	$+ \overline{1}$			\square			\square			\square		$ \overline{ }$	-	X	\square		\square		\square		$ \overline{ }$	\square	Ţ			
Grid 28 ^b	2005 2006	╉┼╴	+	\vdash	+	\vdash		+	\vdash	+	+	\square	-	+		_	\vdash	+	\vdash	+	$\left \cdot \right $	+	+	-+	+	+	-	<u> </u>
	2007	╆┼	╧┼┤			\Box^{\dagger}		╧┤											Ŀ†		╘┼		╧┼		+			<u> </u>
Occuti in	2004	\square	╓		T	\square				Т				\square				\square				T)	X	T		
Section 17, Grid 106 ^b	2005 2006	╉┼┼	+		_	\vdash		+		_		\square	_	$\left \right $		_	\vdash	+	\vdash		\vdash		+		+	_	-	
Grid 106	2006	╉┼┼	++	\vdash	+	\vdash				+	+			+			\vdash	+	\vdash		$\left \cdot \right $	+	+		+	+	\vdash	
	2004		╈							T)	X		L	
Section 34,	2005	╉┼┼	\square							_																_		
Grid 72 ^b	2006 2007	╉┼┼╴	+		_					_						_		_		_		_			-	_	-	
	2007	╉─┼─	++)	x			
Section 32,	2005																											
Grid 76 ^b	2006 2007	╉┼┼								_								_							_	_		
	2007	╉─┼─	┿┯┥	_	_					-)	x	-	-	
Section 28,	2005																								-			
Grid 81 ^b	2006	╉┼┼	\rightarrow		_													_								_		
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Section 21,	2005																											
Grid 91 ^b	2006	\square																										
	2007 2004	╉─┾─	┿┥	_	_					_	_					_		_		_		_		,	x	_	_	
Section 3,	2005																							ľ				
Grid 128 ^b	2006	\square																										
	2007 2004	╉─┾─	┿		_					_								_							x	_		
Section 12,	2004					\square																			<u> </u>	+		
Grid 120 ^b	2006																											
	2007 2004	╉╼┾╾	+		_					_	_					_		_		_		_			x	_		
Section 27,	2004 2005	╉┼┼╴	++		_																			- 1	^	-		
Grid 142 ^b	2006																											
	2007	╇┿	\rightarrow																							_		
Section 22,	2004 2005	╉┼┼	++	\vdash	+	\vdash		+	\vdash	+	+	\vdash		+			\vdash	+	\vdash		$\left \cdot \right $	+	+		x	+	+	
Grid 158 ^b	2006									\bot															\pm		L	
	2007	╉┿╴	╇			Щ		$\downarrow \downarrow$				$\square [$		ĻД		<u> </u>	$\square \overline{\square}$	\square	Щ		\square		╷┤					
Section 11,	2004 2005	╉┼┼	++	\vdash	+	\vdash		+	\vdash	+	+	\vdash		+		Х	\vdash	+	\vdash		$\left \cdot \right $	+	+		X	+	+	
Grid 53 ^b	2006									T															1		L	
	2007	╉┿╴	╇			Щ		$\downarrow \downarrow$	$\square \overline{[}$	Ļ		$\square [$		ĻД		<u> </u>	$\square \overline{\square}$	\square	Щ		\square		╷┤					
Section 4,	2004 2005	╉┼╴	+	\vdash		\vdash	_	+	\vdash	+	$\left \right $	\square	-	+		X	\vdash	+	\vdash	+	++	+	+		K	+	-	<u> </u>
Grid 67 ^b	2006	±+	╧	\square	_†_					1						1							<u>†</u> †				T	
	2007	\blacksquare	Т			\square								П						Ţ	\square							
Section 26,	2004 2005	╉┼┼	+	\vdash	+	\vdash	-	+	\square	+	$\left - \right $	\square	-	\vdash	+	X	\vdash	+	\vdash	+	$\left \right $	+	+)	X	+	-	
Grid 23 ^b	2005	╉┼┼	++	\vdash	_	\vdash		+	\vdash	+	$\left \right $	\vdash		+	+		\vdash	+	⊢┼	-	\vdash	+	+	+	+	+	╞	
	2007																											
Section 22	2004	$\downarrow \downarrow$	\square													X			ЦŢ)	X			
Section 23, Grid 39 ^b	2005 2006	╉┼╴	+	\vdash	+	\vdash	_	+	\vdash	+	$\left \right $	\square	-	+	-	_	\vdash	+	\vdash	-	+	+	+	-	+	+	-	
	2007									1															╈			
	2004	\blacksquare	Т		1	П				T				Π		T		\square					\square)	K	-	ſ	
		╉┼┼	+		_	\vdash		+		+	+		_	$\left \right $		_	\vdash	+	\vdash	_	++	_	+		+	-	\vdash	<u> </u>
Section 16 ^b	2005		+-+	\vdash	+	\vdash	+	+	\vdash	+		\vdash		+		+	\vdash		\vdash	+	$\left \right $	+	+	-	+	+	+	<u> </u>
Section 16 ^b	2006		1 1		1	t t				T						X												
	2006 2007 2004		╈				_				1	I T		ΙŤ			$\square \overline{\square}$	\square			ΙT		ΙT		_ [[*]			
Section 12,	2006 2007 2004 2005							+		_			_	+ +							<u> </u>		+ +	_	+			
	2006 2007 2004 2005 2006									╞				\square									$\left \right $				-	
Section 12, Grid 54 ^b	2006 2007 2004 2005 2006 2007 2004															X									x			
Section 12, Grid 54 ^b Section 19,	2006 2007 2004 2005 2006 2007 2004 2005															X)	ĸ			
Section 12, Grid 54 ^b	2006 2007 2004 2005 2006 2007 2004 2005 2006															X								,	x			
Section 12, Grid 54 ^b Section 19,	2006 2007 2004 2005 2006 2007 2004 2005 2006 2007															X												
Section 12, Grid 54 ^b Section 19, Grid 35 ^b	2006 2007 2004 2005 2006 2007 2004 2005 2006 2007 2004 2005															X									x			
Section 12, Grid 54 ^b Section 19,	2006 2007 2004 2005 2006 2007 2004 2005 2006 2007 2004															X												

NOTES: a. Work for 2007 is shown as planned, but not yet completed. b. Site removed from program after 2004.

TABLE 7.1-2b Pebble Project Sample Site Period-of-Record Index Trace Elements, Mine Study Area, Pebble East

Monitoring	Year ^a												P	Peri	od	-of	-Re	co	rd l	by	Dis	scip	olin	e													
Site	rear						etat											So											_	edi							Notes
One	Month	J	F	M	M	IJ	J	Α	S	0	Ν	D	J	F	Μ	Α	Μ	J	J	Α	S	0	Ν	D	J	F	Μ	Α	Μ	J	J	Α	S	0	Ν	D	
	2004																																				
335245	2005																																				
555245	2006						X	Х											Χ																		Lowland wet graminoid moss
	2007						X	X											Χ																		meadow habitat
	2004																																				
335244	2005																																				
333244	2006						Х	Х											Х																		Riverine willow scrub habitat
	2007						X	X											Χ																		Riverine willow scrub habitat
	2004																																				
335246	2005																																				
555240	2006																		Χ																		Riverine willow scrub habitat
	2007																		Χ																		Riverine willow scrub habitat
	2004																																				
335141	2005																																				
555141	2006							Χ											Х																		Upland dwarf, low & tall scrub
	2007						X	X											Χ																		habitat
	2004																																				
335142	2005																																				
	2006							Х											Х																		Upland dwarf, low & tall scrub
	2007						X	X											Х																		habitat
	2004																																				
335143	2005																																				
	2006							X											Х																		Upland dwarf, low & tall scrub
	2007						X	Χ											Χ																		habitat
	2004																																				
335144	2005																																				
	2006							Х											Х																		Upland dwarf shrub habitat
	2007						X	X											Х																		
	2004																																				
335132	2005																																				
000.02	2006																		Х																		Upland dwarf shrub habitat
	2007																		Χ																		

Monitoring	Year ^a													Pe	erio	d-c	of-R	eco	ord	by	Dis	scij	plin	ne											
Site	Teal						geta												ioil												mer				Notes
One	Month	J	F	Μ	Α	Μ	J	J	A	S	0	NC) ၂	JF	= N	A A	A M	IJ	J	Α	S	0	Ν	D	J	F	Μ	Α	Μ	J	J	Α	SC		D
	2004																																		
335145	2005																																		
555145	2006							X											X																Upland dwarf shrub habitat
	2007							X	X										X																
	2004																																		
335233	2005	T																																	
555255	2006							X											X																Subalpine dwarf & low scrub
	2007							X	X										X																habitat
	2004																																		
335234	2005																																		
555254	2006							X	X										X																Subalpine dwarf & low scrub
	2007							X	X										X																habitat
	2004																																		
335235	2005																																		
335235	2006																		X																Subalpine dwarf & low scrub
	2007																		X																habitat
	2004	T																																	
335243	2005																																		
555245	2006							X	X										X																Alpine rock & dwarf shrub
	2007							X	X										X																habitat
	2004																																		
335242	2005																																		
555242	2006							X											X																Alpine rock & dwarf shrub
	2007							X	X										X																habitat
	2004																																		
335131	2005																																		
555151	2006							X											X																Alpine rock & dwarf shrub
	2007							X	X										X																habitat
	2004																																		
335241	2006																																		
333271	2007							X											X																Alpine rock & dwarf shrub
	2006							X	X										X																habitat
	2004																																		
335133	2005																																		
335133	2006								Х																							Χ			Tundra Pond
	2007								X																		_					X			Tundra Pond

NOTES: a. Work for 2007 is shown as <u>planned</u>, but not yet completed. No sampling was done in this area in 2004 or 2005.

TABLE 7.2-1aPebble Project Environmental StudiesStudy Summary for Trace Elements, Transportation Corridor, 2004-2007Consultant: SLR Alaska

Discipline	2004	2005	2006	2007
Discipline	Data Collected or Tasks	Data Collected or Tasks	Data Collected or Tasks	Tasks to be Completed
Trace Elements		Transportat	tion Corridor	
	None	Information Gathering	Information Gathering	Information Gathering
			Scope, Schedule, Field	Scope, Schedule, Field
			Sampling Plan	Sampling Plan
		BEESC Study Plan Review	2006 Study Plan Summary	2007 Study Plan Summary
			Coordination with HDR and	Coordination with HDR and
			BEESC	BEESC
		Coordination with NDM &	Coordination with NDM and	Coordination with NDM and
		Agencies	Resource Agencies, Monthly	Resource Agencies, Monthly
			Reporting	Reporting
		Data Analysis	Data Entry and Analysis	Data Entry and Analysis
		2004 Progress Report	Prepare Preliminary	Prepare Preliminary
			Environmental Baseline	Environmental Baseline
			Document	Document

TABLE 7.2-1bPebble Project Environmental StudiesStudy Summary for Trace Elements in Vegetation and Sediment, Transportation Corridor, 2004-2007Consultant: BEESC

Dissipling	2004	2005	2006	2007
Discipline	Data Collected or Tasks	Data Collected or Tasks	Data Collected or Tasks	Tasks to be Completed
Trace Elements, Vegetation		Transportat	tion Corridor	
	Information Gathering	None	Information Gathering	Information Gathering
	Scope, Schedule, Field		Scope, Schedule, Field	Scope, Schedule, Field
	Sampling Plan		Sampling Plan	Sampling Plan
	Field SamplingAugust		Field SamplingAugust	Field SamplingAugust
	Communication and Data		Communication and Data	Communication and Data
	Management		Management	Management
	Coordination with local		Coordination with local	Coordination with local
	communities for observers		communities for observers	communities for observers
	Prepared presentation		Data Compilation	Data Compilation
	Report Writing		Report Writing	Report Writing
Trace Elements, Sediment		Transportat	tion Corridor	
	Information Gathering	Information Gathering	Information Gathering	Information Gathering
	Scope, Schedule, Field	Scope, Schedule, Field	Scope, Schedule, Field	Scope, Schedule, Field
	Sampling Plan	Sampling Plan	Sampling Plan	Sampling Plan
	Field SamplingJuly, Sept.	Field SamplingMay, July, Sept.	Field SamplingAugust	Field SamplingAugust
	Communication and Data	Communication and Data	Communication and Data	Communication and Data
	Management	Management	Management	Management
	Coordination with NDM	Coordination with NDM	Coordination with NDM	Coordination with NDM
	Coordination with local	Coordination with local	Coordination with local	Coordination with local
	communities for observers	communities for observers	communities for observers	communities for observers
	Prepared presentation	Data Compilation and Analysis	Data Compilation and Analysis	Data Compilation and Analysis
	Report Writing	Report Writing	Report Writing	Report Writing

TABLE 7.2-2Pebble ProjectSample Site Period-of-Record IndexTrace Elements, Transportation Corridor

Comula	V a												Р	erio	od-o	f-R	eco	rd by	y Di	sci	pline	;												
Sample Location	Year ^a					Sed										Ve	ege	tatio	n									Soi						Comment
Location	Month	J	F	Μ	AN	ΛJ	J	Α	S	0	Ν	D	JF	· N	1 A	Μ	J	J	A	S	O N	I D	J	F	Μ	Α	Μ	J,	J	A :	S O	Ν	D	
	2004						F		F																									
NHRIV	2005				F	=	F		F																									
	2006																																	
	2007																																	
	2004						F		F																									
GS20	2005						F		F																									
6320	2006																																	
	2007																																	
	2004						F		F																									
GS20A	2005																																	
00204	2006																																	
	2007																																	
	2004						F		F																									
GS18A	2005																																	
COTOA	2006																																	
	2007																																	
	2004						F		F																									
GS17A	2005				F	=	F		F																									
CONA	2006																																	
	2007																																	
	2004						F		F																									
GS14A	2005																																	
	2006																														_			
	2007																																	
	2004						F		F																									
GS14B	2005				F	=	F		F																									
	2006														_																_			
	2007	_																																
	2004						F		F																									
GS12A	2005							_																										
	2006			_	_								_		_					_	_										_		_	
	2007																											_						
	2004					_	F		F			_			_	-	-			_			_								_			
GS11A	2005				F	=	F	-	F		_			_	_	-	-			_		_	1	<u> </u>							_			
	2006																																	
	2007								_																									
	2004					_	F		F			+		-	_	-	-			_		-	-											
GS8A	2005				F	-	F	-	F		-+			_		-	-			_		_	1	-							_			
	2006	_																					1											
	2007																																	

Sample	Year ^a							Perio	d-of-F	Recor	d by	Disc	ciplin	9									
Location				limer					<u> </u>	/egeta	ation					1		Soi					Comment
	Month	JFM	AMJ	JJ	AS	0	ND	JFM		J	JA	A S	ON	I D	JF	Μ	AM	J	JA	S	ON	D	
	2004																						
GS7A	2005																						
	2006										_	_											
	2007			_																			
	2004			F	F																		
GS6A	2005											_		_						_			
	2006						_				_	_								-			
	2007			-	_																		
	2004			F	F															_		_	
GS4A	2005		F	F	F															_		_	
	2006						_				_						_			-			
	2007				_																		
	2004 2005			_	F												_			_		_	
GS4B	2005			_													_			_		_	
	2008																						
	2007				FF																		
	2004		F	F	F							_		_						-			
GS3A	2005		F	F	F									_									
	2000																						
	2004			F	F																		
	2004			-																			
GS23	2006				F																		
	2007				•																		
	2004																			-			
	2005			F	F																		
GS22	2006				F																		
	2007																						
	2004				FF																		
GS21	2005		F	F	F																		
6521	2006				F																		
	2007																						
	2004																						
PSC	2005			F																			
P30	2006																						
	2007																						
	2004																						
PSD	2005			F																			
. 05	2006																						
	2007																						
	2004			F	F																		
POND1	2005		F	F	F																		
	2006																						
	2007																						
	2004			F	F														_	-			
POND2	2005		F	F	F		+		++	+	-+					+			_				
-	2006																						
	2007																						

Sample	Year ^a														P	erio	od-	of-	Re	cor	d by	y D	isciplin	e													
Location			1 -						nen			<u></u>							Ve	geta	atio	n									Soi					_	Comment
	Month	J		-	M	AI	VI .					ON	D) J	F	· N	A A	1	М	J	J	Α	S O I	NL	כ	J	F	M	A	M	J,	JA	\ S	5 0	Ν	D	
	2004 2005						F		F F		F F			+	_					_		_			_												
POND3	2005								г				_	-				-							+												
	2000																																				
	2004								F		F			T											T												
POND4	2005						F		F		F																										
POND4	2006																																				
	2007																																				
	2004								F		F																										
POND5	2005						F		F		F																										
	2006 2007				_			-		_	_					_					_	-						_							_	_	
	2007				-																																
	2004 2005													-											-												
POND6	2006									F												٧															
	2007									F												V															
	2004																					۷	V		T							S	5				
TE01	2005																																				
1201	2006																																				
	2007																								_												
	2004													_								۷										S	5				
TE02	2005 2006													+	_					_					_												
	2008																																				
	2004													T								v			T							s	:				
7500	2005																					-															
TE03	2006																																				
	2007																																				
	2004																					۷										S	5				
TE04	2005																																				
	2006		1		_			+																	-					-					_	_	
	2007 2004																					v	V		+							6					
	2004	-	+	+			+	+			+			+				+				v	v		+		+			+		S	-				
TE05	2005		+				+	+				-		╋			-	+							+					-							
	2007																																				
	2004																					۷			T							S	5				
TE06	2005																																				
1200	2006																																				
	2007																																				
	2004		_				_	_			_						_					۷			-			_				S	5				
TE07	2005		-	_	_		+	+	_				_	-	_	_	_	+	_			_			+	_	_	_		_		_	_	+			
	2006 2007				+																									+							
	2007																																				

Sample	Year ^a														P	eri	od-	of-	Re	cor	d by	/ D	iscipline												
Location			1 -		-		Se	dir	ner	it 🔒	_						-		Ve	geta	atio	n A		_	l.			-	1.0.4	So	oil				Comment
	Month	J	ŀ	·	N	A	M	J	J	Α	S	0 M	I L	ּ	JF	• N	Λ	٩.	M	J	J	A	SON V	D	J	F	M	Α	M	J	J		SON	N	D
	2004 2005			_										-								v	V									S			
TE08	2005													+																					
	2000																																		
	2004													Т								v										s			
TE09	2005																																		
1209	2006																																		
	2007																																		
	2004													_								V										S			
TE10	2005 2006												_				_																		
	2006			_														-				-													
	2007	-												T								v										s			
7544	2005													t								•										•			
TE11	2006																																		
	2007																																		
	2004																					V	V									S			
TE12	2005													_																					
	2006 2007								_	_	_		_		_		_	_	_			_													
	2007													÷								v										S			
	2004																					v										3			
TE13	2006													t																					
	2007																																		
	2004																					V										S			
TE14	2005																																		
	2006								_	_	_				_				_			_													
	2007 2004	_		_		_		_	_		_			+				_				v			_							S		_	
	2004				-									+								v										3			
TE15	2005													+																					
	2007																																		
	2004													T								v										s			
TE16	2005																																		
1210	2006																																		
	2007																						V									_			
	2004 2005		-	_				_		_			_		_	_	_		_			v	V		-	-		-	_			S		_	
TE17	2005	_	-	+	-		_	-					+	+	_	-	+	-	-			-		-	\vdash	-		-	-				\vdash		
	2003																																		
	2004				T									T								v										s			
TE18	2005		1											T				╞				t			1			1				-			
1 1 1 0	2006																					V										S			
	2007																					V										S			

	N a												P	erio	od-	of-l	Rec	orc	l by	Dis	cip	line												
Sample Location	Year ^a						mei												tior										So					Comment
Location	Month	J	F	Μ	AM	J	J	Α	S	0	N	D	JF	· N	A A	A I	M .	J,	JA	A S	6 0	Ν	D	J	F	Μ	A	M	J	JA	S	0	NC	
	2004																		/	1										S				
TE19	2005																																	
1213	2006																		\											S				
	2007																		\											S				
	2004																		\	1										S				
TE20	2005																																	
	2006																		١											S				New Loc: North Head - East
	2007																		١											S				
	2004											_							/	/										S				
TE21	2005																			-										_				
	2006											_							\ \											S				New Loc: Knoll Head
	2007											_							\					_						S				
	2004											_							١	/										S				
TE22	2005											_								,										_				New Least had seed of Deat Offe 4
	2006																		\											S				New Loc: Just west of Port Site 1
	2007											_							١	/										S				
	2004											_																						
TE23	2005											_		_	_				1	,										S				
	2006 2007									_																				S				
	2007											-							,	/				-						3				
	2004											_																						
TE24	2005											-							١	,										S				
	2000																		Ň											S				
	2007											-							•	/				-						3				
	2004											-																						
SWQ1 ^b	2006							F																										
	2007							F																										
	2007																																	
b	2005					ł						t											ł											
SWQ2 ^b	2006					1		F				1											1	l		1					1			
	2007							F																										
	2004																																	
eu ve eb	2005					1						1											1	l		1					1			
SWQ3 ^b	2006	1						F				1												1										
	2007							F																										
	2004											T																						
SWQ4 ^b	2005											1																						
5WQ4	2006							F				1																						
	2007							F																										

<u>KEY:</u> F

F Sediment samples collected.

V Vegetation samples collected from various plant species.

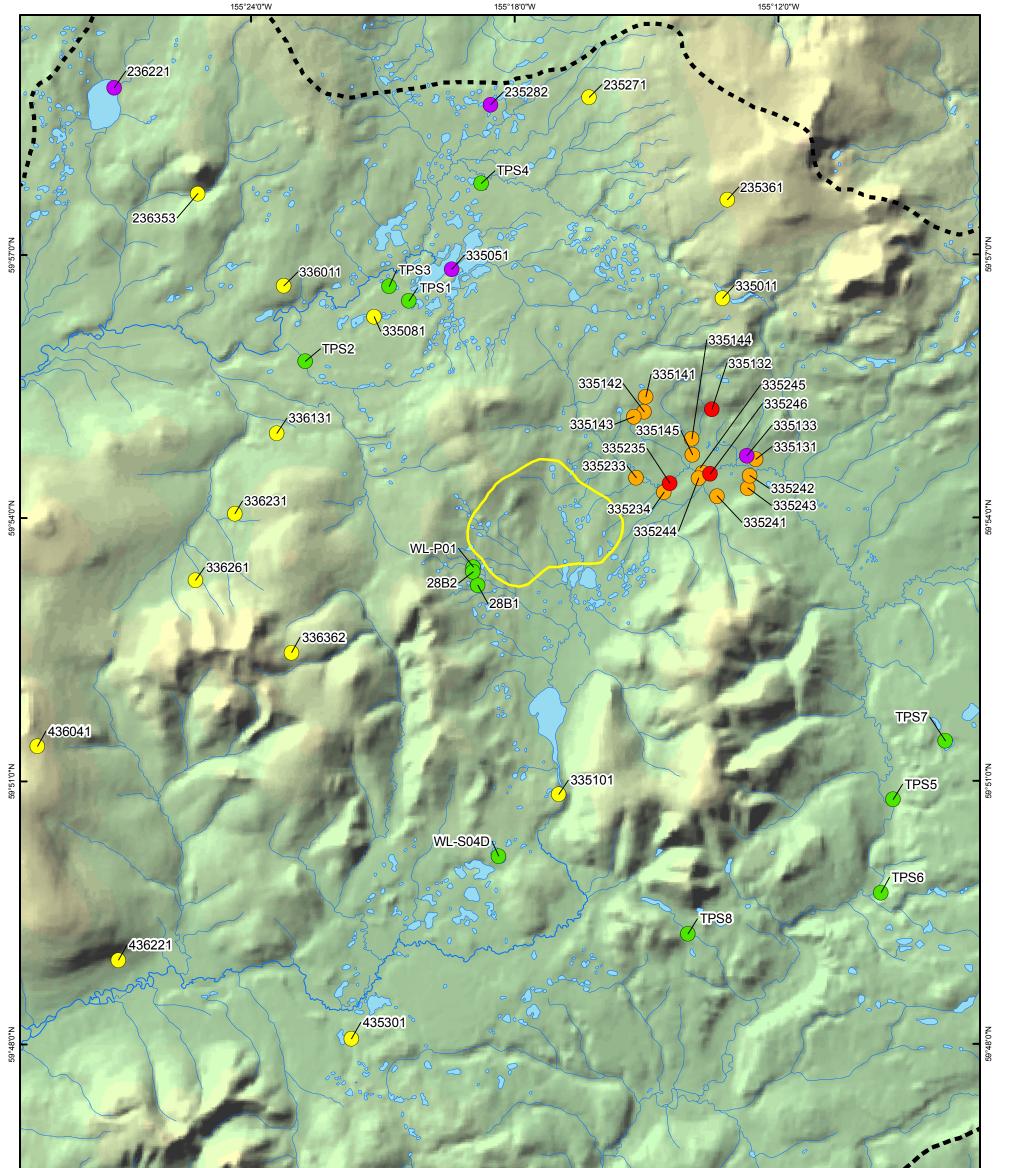
S Soil samples collected.

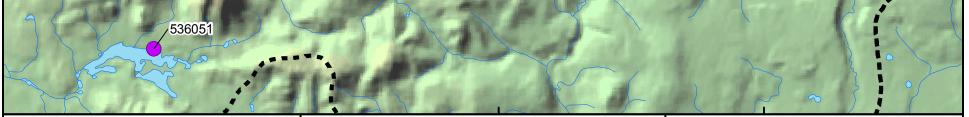
NOTES:

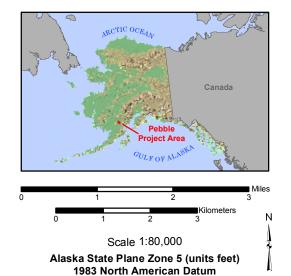
a. Work for 2007 is shown as <u>planned</u>, but not yet completed. This work will be conducted by BEESC.

b. Water-quality samples, as well as sediment, are being collected at these sites.

FIGURES







Legend

- - Bacteriology Soil, Surface Soil, and Terrestrial Vegetation Sample Locations
- Surface Soil and Terrestrial Vegetation Sample Locations
- Surface Soil Sample Locations
- Aquatic Vegetation and Sediment
- Sample Locations
- Aquatic Vegetation (Small Pond Study) Sample Locations

Study Boundary

General Pit Outline

R Pebble Project

NORTHERN DYNASTY MINES INC.

DRAFT

Figure 7.1-1 2007 Study Plan; Naturally Occurring Constituents; Proposed 2007 Sampling Locations for Soil, Sediment, and Vegetation; Mine Study Area

RDI_SLR_2007_StudyPlan_TE_Fig7.1-1_11x17P_v06.mxd	Date: August 8, 2007
Version: 6	Author: RDI-LS

153°45'0"W

153°40'0"W

153°30'0"W

153°35'0"W

153°25'0"W



153°55'0"V

