



PEBBLE PROJECT

DRAFT ENVIRONMENTAL BASELINE STUDIES PROPOSED 2008 STUDY PLANS

CHAPTER 10. WETLANDS

DRAFT



Prepared For:
State of Alaska Large Mine Permitting Team
Department of Natural Resources

Prepared By:
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10. WETLANDS

Three Parameters Plus, Inc., will lead the wetlands study in 2008 for the mine study area, with support from Dr. Mark Rains of Coshow Environmental, Inc., for the small pools study. HDR Alaska Inc. will lead the wetlands study in 2008 for the lower reaches of Upper Talarik Creek. The objectives and methods for the 2008 wetlands study are the same as described in the 2005, 2006, and 2007 Study Plans, except as noted below. Work for the wetlands study in 2004 through 2008 is summarized in Table 10-1.

The overall scope of the wetland study has not changed substantially. Digital mapping of areas visited in 2004, 2005, 2006, and 2007 is still underway. The mine study area for 2008 has changed only slightly from the 2007 Study Plan and is described in Figure 10-1.

Changes in scope since 2007 include the following:

- Continue small pools study piezometer monitoring, including data logger installation in new wells added in late 2007.
- Begin expanding survey to 2008 study area.

The study area for the transportation corridor has not changed and was shown on Figure 10-2 in the 2005 study plan.

**TABLE 10-1
Pebble Project Environmental Studies
Study Summary for Wetlands, 2004-2008
Consultants: Three Parameters Plus, Inc., and HDR Alaska, Inc.**

Discipline	2004 Data Collected or Tasks	2005 Data Collected or Tasks	2006 Data Collected or Tasks	2007 Data Collected or Tasks	2008 Tasks to be Completed
Wetlands	Mine Study Area				
	Information Gathering Scope, Schedule, Field Sampling Plan 2004 Study Plan	Scope, Schedule, Field Sampling Plan 2005 Study Plan	Scope, Schedule, Field Sampling Plan 2006 Study Plan Summary	Scope, Schedule, Field Sampling Plan 2007 Study Plan Summary	Scope, Schedule, Field Sampling Plan
	With RDI, Initial Design and Testing of Wetlands Application in the NDM Database	With RDI, Design and Testing of Reports and QC Tools in Wetlands Application of the NDM Database.	With RDI, Design New Forms Related to New Alaska Delineation Manual, and Test Wetland Application in the NDM Database		
	With RDI, Initial Design and Layout of Project GIS and Data Management Procedures	GIS and Data Management Coordination	GIS and Data Management Coordination	GIS and Data Management Coordination	GIS and Data Management Coordination
	Preliminary Wetland Impact Analysis Using Historical Data Sources and NDM Mine Development Concept Footprints	Preliminary Wetland Impact Analysis Using Historical Data Sources and NDM Mine Development Concept Footprints	Preliminary Wetland Impact Analysis Using Historical Data Sources and NDM Mine Development Concept Footprints		
	Jurisdictional Wetland Determinations Using the 1987 Corps of Engineers Manual (Portions of the South Fork Koktuli, North Fork Koktuli, Upper Talarik, and Newhalen Watersheds)	Jurisdictional Wetland Determinations Using the 1987 Corps Manual (Same Area as 2004)	Jurisdictional Wetland Determinations Using the 1987 Corps Manual and the 2006 Alaska Delineation Manual (Upper Talarik Watershed)	Jurisdictional Wetland Determinations Using the 1987 Corps Manual and the 2006 Alaska Delineation Manual or Equivalent (Predominantly Upper Talarik & North Fork Koktuli Watersheds)	Jurisdictional Wetland Determinations Using the 1987 Corps Manual and the 2006 Alaska Delineation Manual or Equivalent
	Rapid Wetland Functional Assessments Using the Magee/Hollands Method	Rapid Wetland Functional Assessments Using the Magee/Hollands Method	Rapid Wetland Functional Assessments Using the Magee/Hollands Method	Rapid Wetland Functional Assessments Using the Magee/Hollands Method	Rapid Wetland Functional Assessments Using the Magee/Hollands Method
	Photo Documentation of Streams, Various Habitat Features, Representative Wetlands and Uplands	Photo Documentation of Streams, Various Habitat Features, Representative Wetlands and Uplands	Photo Documentation of Streams, Various Habitat Features, Representative Wetlands and Uplands	Photo Documentation of Streams, Various Habitat Features, Representative Wetlands and Uplands	Photo Documentation of Streams, Various Habitat Features, Representative Wetlands and Uplands
		Two-Day Work Plan/Database Overview with Corps and EPA Project Staff			
		Initial SWANCC Field Review with Corps and EPA Staff			
		Problem Soil Evaluations with Joe Moore of NRCS and Chien-Lu Ping of UAA			
		Small Pools Study Design & Piezometer Installation (Dr. Mark Rains)	Small Pools Study Implementation (Dr. Mark Rains)	Small Pools Study Continuation (South Fork Koktuli) and Expansion into the Upper Talarik and North Fork Koktuli (Dr. Mark Rains)	Small Pools Study Continuation (South Fork Koktuli, Upper Talarik and North Fork Koktuli) (Dr. Mark Rains)
		Water Body Evaluations with Photos and pH and EC Data to Support Small Pools Study.	Water Body Evaluations with Photos and pH and EC Data to Support Small Pools Study.	Water Body Evaluations with Photos and pH and EC Data to Support Small Pools Study.	Water Body Evaluations with Photos and pH and EC Data to Support Small Pools Study.
		Rapid Evaluations of Willow and Mixed Willow/Alder Shrub Thickets to Support Jurisdictional Mapping Work	Rapid Evaluations of Willow and Mixed Willow/Alder Shrub Thickets to Support Jurisdictional Mapping Work	Rapid Evaluations of Willow and Mixed Willow/Alder Shrub Thickets to Support Jurisdictional Mapping Work	Rapid Evaluations of Willow and Mixed Willow/Alder Shrub Thickets to Support Jurisdictional Mapping Work
	Data Entry and QC	Data Entry and QC	Data Entry and QC	Data Entry and QC	Data Entry and QC
	Digital Mapping of Jurisdictional Wetland Boundaries, HGM Type, Vegetation Type, and Existing Disturbance	Digital Mapping of Jurisdictional Wetland Boundaries, HGM Type, Vegetation Type, and Existing Disturbance	Digital Mapping of Jurisdictional Wetland Boundaries, HGM Type, Vegetation Type, and Existing Disturbance	Digital Mapping of Jurisdictional Wetland Boundaries, HGM Type, Vegetation Type, and Existing Disturbance	Digital Mapping of Jurisdictional Wetland Boundaries, HGM Type, Vegetation Type, and Existing Disturbance
		Develop Basic Mitigation Concepts with Other Study Leaders	Basic Abandoned Mine Database/GIS Evaluations and Search for Compensatory Mitigation Opportunities	Basic Abandoned Mine Database/GIS Evaluations and Search for Compensatory Mitigation Opportunities	Basic Abandoned Mine Database/GIS Evaluations and Search for Compensatory Mitigation Opportunities
	Coordination with NDM & Agencies	Coordination with NDM & Agencies, Monthly Reporting, Fall Agency Summary Presentation	Coordination with NDM, agency meetings, and monthly reporting	Coordination with NDM, agency meetings, and monthly reporting	Coordination with NDM, agency meetings, and monthly reporting
		2004 Progress Report		Review plant species data collected to date, revisit field sites with potential species of interest to the Alaska Natural Heritage Program. Collect voucher specimens where appropriate.	Review plant species data collected to date, revisit field sites with potential species of interest to the Alaska Natural Heritage Program. Collect voucher specimens where appropriate.
					Write draft EBD background vegetation and wetland sections for early 2009 submittal. Review HDR submittals.
Wetlands	Transportation Corridor				
	2004 Study Plan	2005 Study Plan	2006 Study Plan Summary	2007 Study Plan Summary	
		Two Day Work Plan/Database Overview with Corps and EPA Project Staff			
		Initial SWANCC Field Review with Corps and EPA Staff			
	Jurisdictional Wetland Determinations Using the 1987 Corps Manual (including work for minor route variations and for two routes from Pile Bay to Cook Inlet)	Jurisdictional Wetland Determinations Using the 1987 Corps Manual (field work, same area as 2004 plus Y Valley)			
	Rapid Wetland Functional Assessments Using the Magee/Hollands Method	Rapid Wetland Functional Assessments Using the Magee/Hollands Method	Analysis of Wetland Function Data	Analysis of Wetland Function Data	Analysis of Wetland Function Data
	Photo Documentation of Streams, Various Habitat Features, Representative Wetlands and Uplands	Photo Documentation of Streams, Various Habitat Features, Representative Wetlands and Uplands			
	Data Entry	Data Entry	Data QC and Update	Data QC and Update	Data QC and Update
	Digital Mapping of Jurisdictional Wetland Boundaries, HGM Type, Vegetation Type, and Existing Disturbance	Digital Mapping of Jurisdictional Wetland Boundaries, HGM Type, Vegetation Type, and Existing Disturbance	Digital Mapping of Jurisdictional Wetland Boundaries, HGM Type, Vegetation Type, and Existing Disturbance	Digital Mapping of Jurisdictional Wetland Boundaries, HGM Type, Vegetation Type, and Existing Disturbance	Digital Mapping of Jurisdictional Wetland Boundaries, HGM Type, Vegetation Type, and Existing Disturbance
		Communications w/ Design Team Regarding Constraints			
		2004 Progress Report			
				Review plant species data collected to date, revisit field sites with potential species of interest to the Alaska Natural Heritage Program. Collect voucher specimens where appropriate.	Review plant species data collected to date, revisit field sites with potential species of interest to the Alaska Natural Heritage Program. Collect voucher specimens where appropriate.
					Write draft EBD background vegetation and wetland sections for early 2009 submittal.

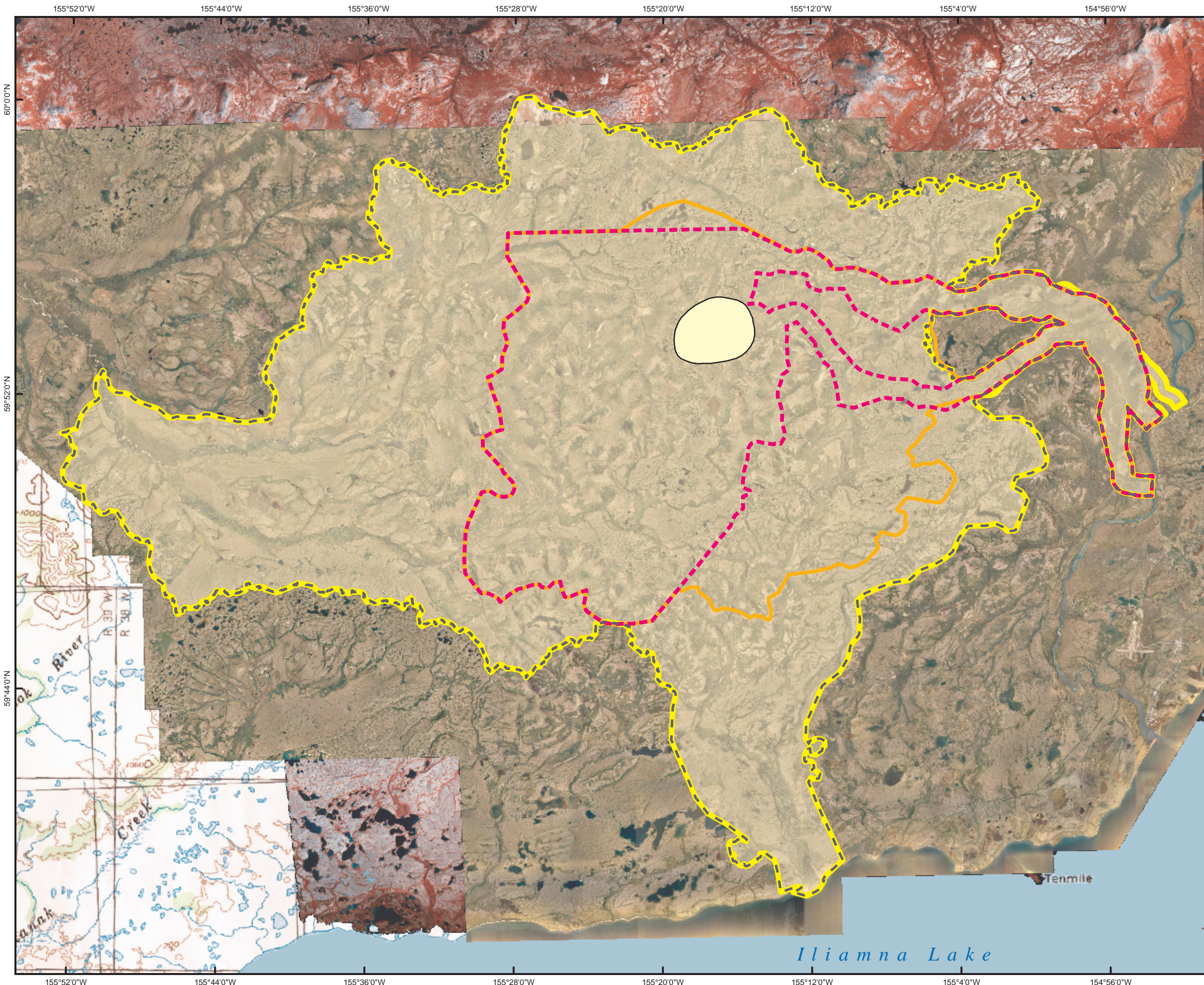





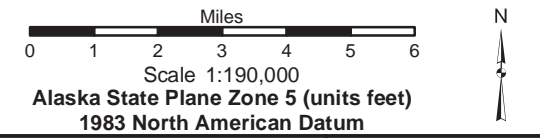
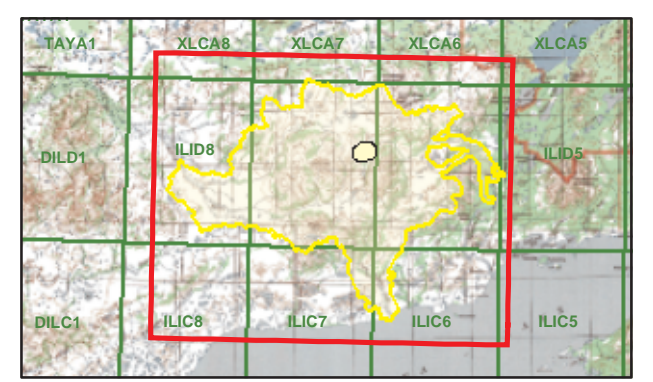


Figure 10-1
2008 Study Plan
Wetland Study Area, Mine
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Legend

-  General Deposit Location
-  3PPI 2008 Field Study Area (249,407 Acres)
-  3PPI 2007 Field Study Area (248,766 Acres)
-  3PPI 2006 Field Study Area (105,441 Acres)
-  3PPI 2004/2005 Field Study Area (76,656 Acres)



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