



Pebble Project Environmental Baseline Studies
2004-2008
Technical Summary

APPENDIX C.
Data Management and Geographic
Information System

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APPENDIX C. DATA MANAGEMENT AND GEOGRAPHIC INFORMATION SYSTEM

C.1 Introduction

The Data Management and Geographic Information System were created to store scientific data from Pebble Project studies in a secure centralized location with standardized data formats, analysis, and reporting. The goal is to support environmental baseline study teams and maintain the data through the life of the project.

Work on the geographic information system includes managing all mapping data including spatial study data and base maps, analyzing mapping data, supporting the wetlands study, distributing data to the investigators, and creating and cataloging cartographic map products. Data management tasks include building a database and a website for data entry, data loading, analysis, document management, reporting, and long-term secure archival storage.

The geographic information system uses ArcGIS 9.3 for map production, Environmental Systems Research Institute shapefiles as a standard vector format, Geotiff and other raster formats, and an Environmental Systems Research Institute File Geodatabase. The standard map projection is Alaska State Plane Zone 5 Feet using North American Datum 1983 (NAD 83).

For data management, Oracle 10g is the current database management system. Web programming uses Microsoft .NET 3.5 in C#.NET with Microsoft Internet Information Server. The production hardware is a Dell PowerEdge R710 with Windows Server 2008 as the operating system.

The Pebble Project server is maintained in a secure environment in compliance with the Sorbanes-Oxley Act of 2002. Both production and test systems are maintained with the ability for fail-over to the test system. Backups are done daily to a removable RAID backup disk in a separate location. Dual backup disks are kept and are swapped to a third-party off-site storage site each month.

The Data Management and Geographic Information System for Pebble Project has been in operation at Resource Data Inc. since 2004 and is expected to continue for the life of the project.

C.2 Results and Discussion

The Data Management and Geographic Information System provides data management and analytical, programming, and mapping support for the environmental investigators. This data management and support spans all disciplines, study areas, and project phases.

The geographic information system includes the following elements:

- Basemaps in vector and orthophotographic form.
- Environmental data including those for fish, habitats, vegetation, soils, and surficial geology.
- Quality assurance and quality control, field maps, and photo reports for wetlands.
- Cartographic services.

The data management system is an integrated website and database that provides the following features:

- Secure site with varying levels of role-based user access.
- Real-time meteorological data for the mine study area.
- Document repository.
- Contacts list for study teams and project teams.
- Wetlands pages to enter, verify, review, and report wetlands plot information.
- Analytical data for loading, extracting, editing, and reporting sample data.

The Data Management and Geographic Information System is routinely populated by investigators, Pebble staff, and other project team members. Table C-1 is a recent summary of the data for Pebble Project.

Appendix C, Data Management and Geographic Information System

TABLE C-1
Summary of Data for Pebble Project, March 2010

Data Category	Data Instances	Recent Count
Analytical Sample Data	Laboratory Sample Results	396,146
	Laboratory Sample Parameters	12 - 72
	Distinct Sample Locations	1,133
Wetlands	Plots	19,512
	Field Photographs	50,069
	Distinct Plant Species Identified by Crews	1,575
	Parameters Identified for each Plot	164
Geographic Information System	Layers	1737
	Archived Layers	555
	Total Layers	2,292
	Unique Maps Produced	949