

**National Geological and Geophysical Data Preservation Program
Fiscal Year 2009**

**Final Technical Report
for
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Budget period: 06/01/2009 through 05/31/2010**

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Abstract

The Energy Policy Act of 2005 mandates the U.S. Geological Survey to implement a National Geologic and Geophysical Data Preservation Program to inventory, archive, and preserve geologic and geophysical data collected over the past 150 years. With financial assistance from U.S. Geological Survey (USGS) Grant G09AP00094 proposal 2009-0006, Ohio Department of Natural Resources, Division of Geological Survey completed comprehensive inventories for two major collections and started inventories on two additional collections currently housed at the H. R. Collins Laboratory (HRCL). The completed collection inventories include: 1) Lake Erie soft-sediment core, core samples, and grab samples and 2) records, analytical results, and data summaries of sand and gravel resource investigations. Partial inventories were started for the Lake Erie Data Center paper records and maps and for environmental impact statements containing point data for boring logs. Collection metadata, site-specific metadata for those records with coordinate data, and ACCESS databases were forwarded to the USGS for inclusion into the National Catalog.

Introduction

In the mid 1980's, the ODNR, Division of Geological Survey (ODGS) began work to integrate all paper inventories and records from physical sample, derived geoscience collections, and indirect geoscience collections into a digital catalog of databases and user friendly web-based maps. From June of 2005, a major effort has been underway to inventory and develop ACCESS databases for the 15 major geoscience collections housed at the HRCL. Cooperative efforts with the USGS and funding provided by USGS Grant 07HQGR0145, proposal 0024 (2007) and Grant 08HQGR0106-0007 (2008) have assisted the ODGS in completing inventories and ACCESS databases for 11 of the 15 collections. The USGS Grant G09AP00094-0006 (2009) provided funds to assist the ODGS in completing inventories for the Lake Erie soft-sediment core and grab sample collections and the sand and gravel resource investigations. Also, substantial progress was made in inventorying the boring records from the extensive collection of environmental impact statements and Lake Erie Data Center paper records housed at the HRCL (Table 1).

This report will focus on the inventories, ACCESS databases, and metadata completed from June 1, 2009 through May 31, 2010 as part of USGS Grant G09AP00094-0006. In addition, we will provide updates concerning revision of the HRCL webpage and the HRCL advisory committee meeting of August 27, 2009.

Goals Accomplished

Introduction

The ODGS completed comprehensive inventories, ACCESS databases, and metadata for the two collections and made substantial progress on two additional

collections outlined in Table one. A total of 6,111 records were entered into nine ACCESS databases. The ACCESS databases have been reviewed and edited to ensure that reliable information was entered. Copies of the databases and metadata were provided to the USGS to be incorporated into the National Catalog.

Collection overview

The Lake Erie soft-sediment core and grab sample collection consists of vibratory cores and grab samples taken from sediments occurring in Lake Erie open waters, bays, and harbors. Additional samples were collected from selected rivers of northern Ohio draining into Lake Erie and wetlands and other areas onshore in the Ohio counties adjacent to Lake Erie from 1974 to 2005. Many samples were placed in new sample bags and storage boxes to replace the original deteriorating sample bags and boxes. These samples are important for understanding the historical levels of phosphorous and other man-made chemical that have accumulated in sediments over time.

A statewide investigation of the sand and gravel resources on a county by county basis was conducted in the 1970 and 1980's by the ODGS. Nine published ODGS Report of Investigations and unpublished data for additional counties were generated by the end of this project in the late 1980's. Large samples collected from field locations, measured sections and core borings were returned to the laboratory for air drying, sieve analysis using U.S. Standard Sieve Series, and pebble counts. All cobbles and pebbles greater than 1.27 cm in diameter were identified and counted. This latter collection is important because it helps provide information necessary for producing derivative maps that could benefit Ohio's aggregate industry in exploring for mineral resources. See collection inventories and metadata for additional details.

An additional inventory was initiated that consists of Lake Erie bottom sediment samples collected from cores and grab samples of the lake sediment. The data collected for these samples includes sample location, water depth; percentages of sand, silt, and clay; field sample description; lake deposit thickness; glacial till thickness; depth to bedrock; bedrock elevation; and miscellaneous notes. This collection is of unique importance due to initiatives to site wind turbines within the Lake Erie Basin. Knowledge of the substrate is critical to engineering the foundations.

River and flood plain borings drilled for the U. S. Army-Corps of Engineers detailed surveys of the entire floodplain of the Ohio River from Pittsburgh PA to Powhatan Point, OH. An index sheet and a series of 280 charts were produced by the Ohio River Board of Engineers between 1911 and 1914 and revised in 1930. Each chart illustrates Ohio River bathymetry, topographic elevations, cultural and navigational features, land-use, property owners, lithologic composition of river bank and bar sediments, and subsurface lithologic data and, in some cases bedrock elevations, from river bank and river bottom borings. All borings are numbered from the Ohio River left bank to the right bank and occur in a line perpendicular to river flow direction. Boring top and bottom elevations were determined from the low water slope of the Ohio River Surveys of 1896-1906. Latitude and longitude coordinates, referred to the North American datum, were derived by connecting with primary triangulation stations established by other government bureaus. This information is useful as a number of

channel repairs and upgrades and new docking facilities are being constructed along the Ohio River.

Web page update

After completing a major revision of the Horace R. Collins Laboratory web page in September of 2009, (see <http://www.ohiodnr.com/OhioGeologicalSurvey/HoraceRCollinsLaboratory/tabid/7943/Default.aspx>) on-going deep budget cuts have limited available funding to activate links to the eleven collections inventoried as part of USGS Grant 07HQGR0145-0024 and Grant 08HQGR0106-0007. The ODGS is hopeful that in the near future additional funding will allow a limit number of inventories to be available for public use.

Advisory committee

On August 27, 2010, the ODGS hosted the second meeting of the HRCL advisory committee. The committee reviewed and provided insight to improve our 2010 Grant proposal: USGS Grant G10AP00118-0016 and provided guidance for future grant proposals. Other topics discussed included: plans for a core workshop that was held on April 20, 2010, plans for HRCL open house for the geology departments of Ohio colleges and universities, and additional sources of funding to help offset reduced funding because of ongoing budget reductions.

Goals yet be to Accomplished

All of the goals submitted to the USGS for Grant G09AP00094, proposal 2009-0006 were completed by the deadline of August 31, 2010.

Table 1. Collections housed at Ohio Division of Geological Survey Horace R. Collins Laboratory and a summary of the collection inventories completed as part of the National Geological and Geophysical Data Preservation Program. The original work load proposed for FY 2009 NGGDPP Grant is underlined. The inventories completed for this grant are presented in **bold type**.

FY 2007 Grant 07HQGR0145-0024 (completed)

5,000 well sample suite that includes 1,175 duplicate well sample suites
845 rock core totaling over 300,000 feet
600 well sample strip logs

FY2008 Grant 08HQGR0106-0007 (completed)

54,009 USGS and USDA aerial photographs flown from 1949 to 1979
8,650 samples of unconsolidated Cenozoic-age sediment
6,205 seismogram tracings recording earthquake events
3,428 lithology strip logs of cores, oil and gas wells, and measured sections
2,627 geochemical analysis records for economic carbonate deposits and coal beds
353 Thin sections
241 Side wall core or core plugs
199 Oil samples from Ohio's producing horizons

FY2009 grant G09AP00094-0006 (completed)

250 Lake Erie soft-sediment core and grab samples
37 Lake Erie vibra cores
736 CERC core samples
1,318 Miscellaneous soft-sediment core and grab samples from 1974 to 2005
80 sand and gravel resource investigations
68 County sand and gravel data file inventories
186 reports detailing sand & gravel sample geology and quality
270 pebble count analyses for samples collected from 10 Ohio counties
629 sieve analyses for samples collected from 12 Ohio counties
50 file drawers Lake Erie Data Center of paper records and maps
2,778 Lake Erie bottom sediment records entered in database
150 environmental impact statements
89 Ohio River boring records from engineering reports dating from 1911 to 1914