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National Geological and Geophysical Data Preservation Program

**Washington State Metadata Project:
Continuation of Geotechnical Report Metadata Production**

Final Technical Report

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Abstract

The Washington State Department of Natural Resources, Division of Geology and Earth Resources, houses many geologic and geophysical data collections, 15 of which have been inventoried in the National Digital Catalog. For our 2014 project we choose to focus on digitizing geotechnical boring reports.

The 2014 project objective was a continuation of the work done in 2009 and 2010 on the geotechnical report collection and housing this information in a database linked to an interactive mapping application to make it more accessible to the public.

For the year 2014 we produced 23,247 metadata records including about 17,000 borings we had previously digitized but not yet submitted to the National Digital Catalog (NDC), and about 6,000 new borings digitized using NGGDPP funding. This information was compiled into XML format in accordance with the NDC specifications, and submitted for inclusion in the catalog.

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Introduction

The Washington State Department of Natural Resources, Division of Geology and Earth Resources (DGER), has identified 15 collections of geologic and geophysical data, which have been inventoried in the National Digital Catalog.

In 2008, David K. Norman, Washington State Geologist and Division Manager for DGER, produced the first draft of the *Geological Data Preservation Plan of Washington*, which states that preserving subsurface records is a priority of the Division of Geology and Earth Resources. Subsequent updates to the data preservation plan retain this emphasis on preserving all

available subsurface data, and ensuring that it is accessible through our Geological Information Portal and the National Digital Catalog.

With these goals in mind, geotechnical reports including subsurface data were chosen for fiscal year 2014 because they were most at risk of loss or degradation and held high value geological and geophysical data. These data are part of collection P961-Geotechnical reports.

For year 2014 of the National Geological and Geophysical Data Preservation Program (NGGDPP), we produced xml metadata records for 23,247 boreholes represented in 14,852 geotechnical reports for submission to the National Digital Catalog.

Geotechnical reports are an indispensable source of subsurface geological and geophysical information, and are produced at considerable expense. Unfortunately, geotechnical reports are generally not made available for long-term use; most local governments commonly dispose of these reports at the conclusion of the project for which the borings were drilled, and geotechnical firms typically keep their records of geotechnical investigations private. A countless number of geotechnical reports submitted to local governments have already been lost. Over the past several years, DGER has made an effort to collect geotechnical reports for borings drilled in Washington to preserve their long-term value. DGER has collected these reports over the years as supporting information for mapping and hazards studies, but has stepped up efforts to collect as many reports as possible for preservation and access by contacting local jurisdictions and engineering firms and requesting copies of any reports they have.

Project Goals

Our focus for the year 2014 was to continue the work begun in 2009 and 2010 on the geotechnical reports (P961), creating sample-level metadata for entry into the National Digital Catalog, and to make this information readily accessible to the public through hyperlinks to scanned documents and through an interactive mapping application. The number of individual records contained in the reports is 23,247.

The project continued over a one-year period beginning August 1, 2014, and ending June 30, 2015. It was anticipated that scanning the reports and digitizing the points would be completed during the first two quarters of the project. The remaining time would be focused on QAQC of the resulting data set, adding the data to our existing subsurface database (which makes it available over our Geological Information Portal), and creating XML format metadata in accordance with the National Digital Catalog specifications.

Methodology

Much the same methodology was used as in the previous 2010 and 2009 projects. In order to produce metadata suitable for the National Digital Catalog, we extracted information from various parts of the subsurface database and constructed metadata elements that were not represented in the database. We created active links to the PDF files of each scanned report for each borehole record, and links to the online database.

Most of these tasks, and the exporting of the metadata to an XML file formatted for importing into the catalog, were accomplished using Microsoft Excel and a complex series of computer programming scripts that we had previously custom-built for this purpose.

Results

We scanned documents, collected and processed information, and produced and submitted on June 19, 2015, compliant with NCGDPP standards, for 14,852 geotechnical reports, representing 23,247 boreholes. This number is slightly higher than we originally estimated.

Data from this project has been added to the subsurface database displayed on the Washington State Geologic Information Portal, an interactive mapping site designed to address one of the core requirements of the Geologic Data Preservation Plan of Washington, which is to make data available and accessible.

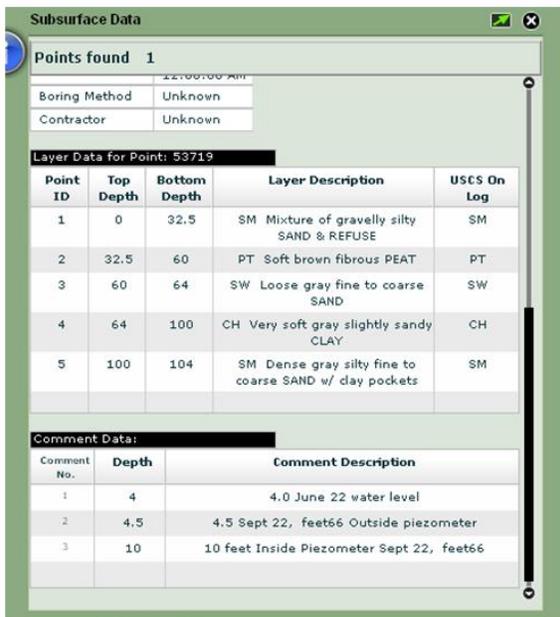
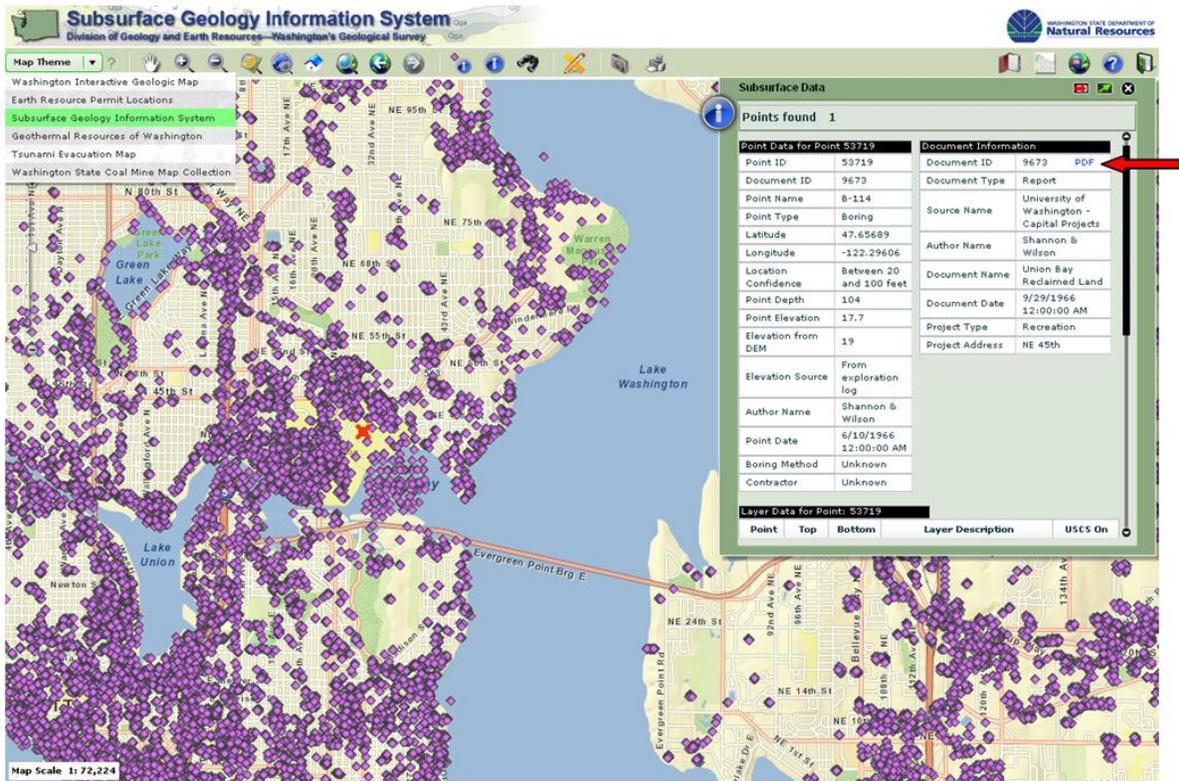
The Washington State Geologic Information Portal utilizes the Arc Server interactive mapping application and is programmed with the Flex API, which is based on the Adobe Flash platform. One of the many strengths of Arc Server with Flex is serving large datasets to the user quickly. With this application the user can navigate through different themes; locate, overlay, and query data; create maps with titles, legends, and labels; create their own points and polygons; and export their maps as PDFs or geo-referenced TIFFs.

The Subsurface Geology Information System is the map theme where the data from the geotechnical reports are now housed. It can be selected from the Map Theme drop-down in the upper left hand corner of the application. When a point is selected with the Point Identify tool, a pop-up gives the user useful information related to that point in four categories;

1. Point Data
2. Layer Data
3. Comment Data
4. Document Information

A hyperlink to a PDF of the scanned document is provided in the Document Information section of the Identify pop-up, indicated by the “PDF” in blue text, as seen in the figure on the following

page.



The Subsurface Geology Information System can be selected from the Map Theme drop-down in the upper left hand corner of the application (highlighted in green, as seen in the above map).

A hyperlink to a PDF of the document is provided in the Document Information section (note the blue PDF hyperlink emphasized by the red arrow in the upper right corner of the map above).

Using the scroll bar on to left of the Identify pop-up reveals the layer and comment information as seen in the screenshot to the left.

<https://fortress.wa.gov/dnr/geology/>