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May 20, 2010

Frances Pierce
U.S. Geological Survey
Mail Stop 912
12201 Sunrise Valley Drive
Reston, VA 20192

Re: Letter of Transmittal for NNGDPP Deliverables; Massachusetts, Award No. G09AP00045

Dear Frances:

This letter serves as our formal transmittal of Metadata for the National Catalog for the above referenced project. As required, we have uploaded the metadata file to the my.usgs.gov website. We have selected the csv format for upload.

This fulfills our project deliverable obligations for FY2009. Attached is the Final Technical Report as well as a copy of the metadata file that was uploaded.

If you have any additional questions, please do not hesitate to contact me.

Sincerely,

Stephen B. Mabee, Ph.D., PG
State Geologist

cc: Margaret Eastman, USGS
Carol Sprague, OGCA
Lloyd Thomas, Accounting

Metadata for a Portion of the DCR Well Completion Reports - Massachusetts

National Geophysical and Geological Data Preservation Program
Award No. G09AP00045

Final Technical Report

May 24, 2009 to May 23, 2010



Principal Investigator

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Abstract

Metadata for 5,876 wells were created and uploaded to the National Digital Catalog. The metadata was created in the .csv format in accordance with the procedures and schema outlined in the Metadata Profile for the National Catalog (March 17, 2008; version 1.0) and the NCGDPP Metadata Preparation guidelines.

(<http://datapreservation.usgs.gov/docs/NGGDPPMetadataProfile.pdf>)

(http://datapreservation.usgs.gov/docs/NGGDPP_MetadataPreparation.pdf)

The well records are part of a much larger collection of well reports held by the Massachusetts Department of Environmental Protection (formerly held by the MA Department of Conservation and Recreation) and the Massachusetts Water Resources Authority that contains 350,000 records. The 5,876 well records included in this project have been compiled from well inventories that were developed as part of bedrock geologic mapping conducted in five, 1:24,000 scale quadrangles in eastern Massachusetts. These quadrangles include Milford, Marlborough, Hudson, Ayer and Westford.

Well records included here were extracted from a variety of sources including the Massachusetts Highway Department geotechnical bridge borings, Massachusetts Water Resources Authority project borings, MA Department of Environmental Protection Bureau of Waste Site Cleanup monitoring wells, transient and non-transient, non-community water supply wells, irrigation well, heat pump wells and private domestic water supply wells. Fields included in the metadata are: collectionID, Title, Abstract, DataType, SupplementalInformation that includes the URL where the data can be found, Coordinates for the well, and DatasetReferenceDate. The abstract for each well was created by concatenating several fields in the source files so that an understandable description of the data type was provided.

All records were inspected visually twice for accuracy and typographical errors. Any errors were corrected. In addition, the locations of all wells in the National Catalog metadata were overlain in ArcGIS onto the well locations derived from the individual source files to make sure the data project correctly and that there were no errors in transcribing well latitude and longitudes. Any offsets were corrected. Finally, a subset of approximately 50 wells were located in the field using the metadata from the National Catalog and cross referenced with street addresses and locations in the source files. URL's provided in the metadata were also randomly checked to be sure they pointed to the correct location so the user can download the necessary files.

Introduction

The following technical report describes the work completed on Award No. G09AP00045 during the project period extending from May 24, 2009 to May 23, 2010. This award is for the creation of digital metadata for the National Digital Catalog. The metadata are for well logs compiled from borehole data collected and assembled into well inventories by the Office of the Massachusetts State Geologist as part of its bedrock geologic mapping program. The well inventories have been created for five, 1:24,000 scale quadrangles and include the Westford, Ayer, Hudson, Marlborough and Milford quadrangles. The well data contained in each inventory were derived from many sources. These sources include the U.S. Geological Survey ground water site inventory database, Massachusetts Highway Department geotechnical bridge borings, Massachusetts Water Resources Authority geotechnical borings, and monitoring wells and well completion reports for private wells on file with the Massachusetts Department of Environmental Protection.

Metadata are provided for 5,876 wells and point to well log data found online at the Office of the Massachusetts State Geologist. The file containing the metadata has been uploaded successfully to the my.usgs.gov website as instructed.

Tasks Completed Between May 24, 2009 and May 23, 2010

Task 1 – Data Entry

The metadata were prepared in accordance with the procedures outlined in the metadata profile for the National Catalog (March 17, 2008; version 1.0) and the NNGDPP Metadata preparation guidelines.

<http://datapreservation.usgs.gov/docs/NNGDPPMetadataProfile.pdf>

http://datapreservation.usgs.gov/docs/NNGDPP_MetadataPreparation.pdf

All mandatory fields were populated using data from the source files. The abstract field was populated by concatenating several individual fields in the source files so that a unique identifier for each well was provided along with the well type and the name of the town, county, state and 1:24,000 scale quadrangle. The decision as to which fields should be used for the abstract was made by the PI. The transcription of data from the source files to the metadata was completed by our GIS specialist.

Task 2 – Quality Control/Quality Assurance

To facilitate reviews, all metadata were entered into separate excel spreadsheets. One spreadsheet was created for each data source and quadrangle. For example, the file named *ayer_gwsi_review.xls* represents the wells derived from the U.S. Geological Survey ground water site inventory. Each spreadsheet was inspected visually and checked for spelling and content. Corrections were made and the files inspected visually a second time. URL's provided in the metadata were also randomly checked to be sure they pointed to the correct location so the user can download the necessary files.

The locations of all the wells were then plotted in ArcGIS and compared visually to the locations derived from the source files. All 5,876 wells were checked. If the wells did not plot directly on top of one another, then the files were checked and corrected. 100% of the well locations in the metadata match the locations in the source files.

Finally, a subset of approximately 50 wells was extracted from the metadata at random and field checked against the addresses and locations provided in the source files.

Once each of these QA/QC procedures were completed the individual excel spreadsheets were concatenated into one large .csv file using the “pipe” symbol to separate fields.

One final note, due to homeland security issues and state requirements, the locations of all public water wells and community water supply wells were omitted from the metadata. We are not allowed to publicize the locations of these features.