United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Office of Groundwater
411 National Center
Reston, Virginia 20192

In Reply Refer To:
Mail Stop 411

October 15, 2014

OFFICE OF GROUNDWATER TECHNICAL MEMORANDUM 2015.01

Subject: Update of Policies on Storage, Review, and Publication of Discrete Groundwater-Level Data

PURPOSE AND SCOPE

This memorandum updates the recent Water Mission Area policy for the review and publication of discrete water data, Office of Groundwater (OGW) Policy Memorandum No. 2012.03, specifically, groundwater-level data. This memorandum also reiterates the policy for storage of water-level data, OGW Policy Memorandum No. 2006.01. Although the fundamental policies remain the same, the requirements for discrete groundwater-level data must be updated to reflect recent changes in the National Water Information System (NWIS) and the associated workflow that allow for data approval.

The scope of this policy includes discrete groundwater-level measurements collected for all USGS programs and projects regardless of data source (i.e., USGS collected, furnished data, or other), method of collection, or purpose of collection. Purpose of collection includes, but is not limited to, periodic manual measurements, calibration measurements collected during a continuous or real-time site visit, or measurements collected as part of a water-quality sampling event. Software development is ongoing to increase the efficiency and integrity of discrete water-level data collection, processing, review, and publication. The discrete data policy will be updated when these software developments impact workflow.

POLICY

All discrete groundwater-level measurements must be stored in the NWIS Groundwater Site Inventory (GWSI) database, including all discrete groundwater-level measurements collected as part of water-quality sampling events. It is strongly recommended that electronic data collection and entry methods be used to minimize data transcription and calculation errors and streamline data movement from the field to NWIS, the archive database. Examples of current electronic methods include Multi-Optional Networking Key Entry System (MONKES)/SVMobile and Personal Computer Field Form (PCFF). There will be further guidance on the use of preferred electronic data collection methods as products currently in development are enhanced to meet the needs for discrete groundwater data.

All discrete groundwater-level measurements must be reviewed and an approval status must be coded in GWIS for each record. An Approval Status code was added to the GWSI water-level table (GW_LEV) in NWIS 5.2. This field indicates the approval status (in-review, approved, or rejected) of every discrete water-level measurement. Upon entry, the Approval Status code for all discrete water-level measurements will be coded as "S" (In-Review) by default, regardless of the data entry method. "S" coded data should be reviewed and approved in a timely manner consistent with USGS continuous records processing timelines. After review, the Approval Status code should be changed as appropriate to either "R" (Reviewed and approved) indicating data analysis is complete and the value is deemed to be final, or "Q" (Reviewed and rejected) indicating the value is questionable and cannot be approved. Prior to rejecting a water-level record, the reason should be noted in the record's remark field.

Revisions: Any change or revision to an approved and published discrete water-level value should be noted in the record's remark field. The documentation should include the date of revision, previous value and reason for revision. Although this information is not served to the public, it serves as an archive for the record.

Legacy Data Transfer: Legacy water-level records stored in GWSI prior to installing NWIS 5.2 will be coded as "T" (Historical records, assumed reviewed and approved). If the legacy data require additional review, the record's Approval Status code must be set to "S" to clearly indicate its quality until it has been reviewed.

Impact on NWISWeb: It is expected that NWISWeb programming will include a display of the Approval Status code by January 2015. In general, the Approval Status code will not affect the display of records on NWISWeb; the water-level web-ready code will still be the primary control for web display. However, some effects should be noted as follows:

- All records will appear on NWISWeb in their provisional (In-review, "S") or approved (Assumed-approved, "T", or Approved, "R") state if the web-ready code allows it.
- All records that are coded as "Q" (Reviewed and rejected) will be removed from NWISWeb at the next refresh.

GUIDELINES FOR DATA REVIEW AND APPROVAL

Review and approval of discrete water-level data requires, at a minimum, one reviewer other than the person collecting the data. The reviewer of discrete water-level data must be assigned elevated usergroup access (nwlevmgr) in NWIS. As described in OGW Policy Memorandum No. 2012.03, discrete data should be reviewed and approved in a timely manner consistent with USGS continuous records processing timelines. While the timeline should be data-driven, current policy (OGW 2012.03 and WRD 2010.02) states that data must be finalized in NWIS and allow for publication to NWISWeb within 150 days of data collection or receipt. The new Approval Status code available with NWIS 5.2 provides the means to display data to the public quickly, yet clearly qualified. Once a water-level record has been reviewed and the Approval Status code is changed, the record is locked from editing. Only the database administrator can un-approve or "unlock" a record for editing by setting the approval status code to "S" (In-review). Only the database administrator can set "rejected" records back to "in-review". For NWIS 5.2, the ApproveWL

application will be the only tool available to change the Approval Status code; see the ApproveWL tip sheet for program description.

Discrete water-level data review can be done in a variety of ways. Data review procedures should include, at a minimum:

- a check of corrections applied to the data such as measuring point, time datum, and tape calibration corrections;
- a review of notes from the site visit that substantiate the record relative to site status, site conditions, and the site history;
- a check for mathematical and data entry errors if not using preferred electronic data collection and entry methods; and
- a hydrograph comparison of the new measurement with previous water-level data.

Data review procedures should be documented in the Water Science Center's Groundwater Quality Assurance Plan and Data Management Plan.

Note:

- Data review begins in the field by following data collection quality assurance procedures. As described in OGW Technical Procedures documents GWPD 1, GWPD 4, and GWPD 12, the initial measurement should be immediately followed by a check measurement using the same method to ensure the quality and precision (reproducibility) of the data. Both measurements should be documented for subsequent review.

- The initial hydrograph/data table comparison should be done in the field at the time of data collection to allow for issues to be resolved before leaving the site.

REFERENCES

Cunningham, W.L., and Schalk, C.W., comps., 2011a, Groundwater technical procedures of the U.S. Geological Survey, GWPD 1—Measuring water levels by use of a graduated steel tape: U.S. Geological Survey Techniques and Methods 1–A1, 4 p.

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Cunningham, W.L., and Schalk, C.W., comps., 2011c, Groundwater technical procedures of the U.S. Geological Survey, GWPD 12—Measuring water level in a flowing well: U.S. Geological Survey Techniques and Methods 1–A1, 6 p.

Office of Groundwater/Office of Surface Water/ Office of Water Quality Technical Memorandum No. 2012.03, Update of Policy on Review and Publication of Discrete Water Data accessed September 3, 2014 at http://water.usgs.gov/admin/memo/GW/gw12.03.pdf

Office of Groundwater/Office of Water Quality Technical Memorandum No. 2006.01, Storage of Water-Level Data for Ground Water accessed September 3, 2014 at http://water.usgs.gov/admin/memo/GW/gw06.01.html

WRD Policy Numbered Memorandum No. 2010.02, Continuous Records Processing of all Water Time Series Data, accessed September 3, 2014 at http://water.usgs.gov/admin/memo/policy/wrdpolicy10.02.html

William L. Cunningham /s/
Chief, Office of Groundwater

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