

# Subcommittee on Spatial Water Data

## Meeting Details:

Date/Time: January 27, 2017, 1:00 - 3:00 PM Eastern Time

Location: Teleconference only (administered from USGS Headquarters, 12201 Sunrise Valley Drive, Reston, VA 20192)

Conference Line: 703-648-4848

From non-DOI locations, dial toll free 855-547-8255

Conference code 1712-0464#

### JOIN WEBEX MEETING

When it is time to attend the meeting, please visit this link:

<https://usgs.webex.com/usgs/j.php?MTID=m9d6f264cf4268301448e8625ad8ea6a8>

Meeting number: 716 325 658

Shared document space:

<https://drive.google.com/open?id=0B877MDsx9plFTmpocGE1d0M4TVE&authuser=0>

## Agenda

All Times Eastern Time Zone

1:00 - 1:10 Introductions for new attendees

1:10 - 1:30 Work Group Reports

1:30 - 1:55 New Issues

1:55 - 2:00 Adjourn

## Attendees:

### New (did not attend 8/28/14 or later meeting)

John McEnery, NWS National Water Center, [john.mcenery@noaa.gov](mailto:john.mcenery@noaa.gov)  
William Parker, EPA Region 4, [parker.william@epa.gov](mailto:parker.william@epa.gov)  
Martha Bearskin, USGS, [mbearskin@usgs.gov](mailto:mbearskin@usgs.gov)  
Alex Porteus, Booz Allen Hamilton  
Joe Kirby  
Anthony Saracino

### Returning (attended 8/28/14 or later meeting)

Al Rea, USGS, [ahrea@usgs.gov](mailto:ahrea@usgs.gov)  
Rob Dollison, USGS, [rdollison@usgs.gov](mailto:rdollison@usgs.gov)  
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Rich Moore, USGS, [rmoore@usgs.gov](mailto:rmoore@usgs.gov)  
Chris Mickle, Cardno, [christopher.mickle@cardno.com](mailto:christopher.mickle@cardno.com)  
Wendy Blake-Coleman, EPA, [Blake-Coleman.Wendy@epa.gov](mailto:Blake-Coleman.Wendy@epa.gov)

## Items of interest:

## Work Group Reports

### Network Linked Data

Have made progress on catchment characteristics. New service URLs (not deployed yet) will look like:

To get available characteristics:

<https://cida-test.er.usgs.gov/nldi/local/characteristics>

<https://cida-test.er.usgs.gov/nldi/div/characteristics>

<https://cida-test.er.usgs.gov/nldi/tot/characteristics>

To get characteristics for specific watershed locations:

<https://cida-test.er.usgs.gov/nldi/comid/13297184/local>

<https://cida-test.er.usgs.gov/nldi/comid/13297184/div>

<https://cida-test.er.usgs.gov/nldi/comid/13297184/tot>

Or for one of the crawled sources:

<https://cida-test.er.usgs.gov/nldi/nwissite/USGS-05427718/local>

<https://cida-test.er.usgs.gov/nldi/nwissite/USGS-05427718/div>

<https://cida-test.er.usgs.gov/nldi/nwissite/USGS-05427718/tot>

Can also filter for specific characteristics:

[https://cida-test.er.usgs.gov/nldi/nwissite/USGS-05427718/tot?characteristicId=TOT\\_ET,TOT\\_PRSNOW](https://cida-test.er.usgs.gov/nldi/nwissite/USGS-05427718/tot?characteristicId=TOT_ET,TOT_PRSNOW)

Basin boundary service optimization work has been planned and will move forward soon.

### Drought Use Case Team

- Reclamation is working on preparing a public data portal for launch; the web portal is substantially complete and is being assessed by security for approval to operate. Launch is tentatively planned for World Water Day on 3/22
- Angela Adams will be taking a different position and transitioning the leadership of the Team to another volunteer. Reclamation will still have membership on the team through other staff.
- AI will get with Angela offline to talk about next steps on the Team.

### Spill Response Use Case

Best practices for environmental data management - next time

# New Issues

## OGC seeks public comment on OGC WaterML 2 - Part 3, Surface Hydrology Features Conceptual Model

FOR IMMEDIATE RELEASE

Contact: [info@opengeospatial.org](mailto:info@opengeospatial.org)

18 January 2017: The membership of the Open Geospatial Consortium (OGC®) seeks public comment on its WaterML 2 - Part 3, Surface Hydrology Features Conceptual Model.

The OGC WaterML 2 - Part 3, Surface Hydrology Features Conceptual Model (HY\_Features) is part of an intended “OGC WaterML 2” suite of standards that groups water-related OGC standards. The candidate standard follows Part 1: Timeseries, and Part 2: Ratings, Gaugings and Sections.

The candidate HY\_Features standard defines a common feature model for the identification and description of surface hydrologic features. The feature model is based on established models and patterns in use in the Hydrology domain and endorsed by WMO and UNESCO, such as those documented in the “International Glossary of Hydrology.”

The candidate HY\_Features standard also defines a common conceptual information model for surface hydrologic features independent of their geometric representation and scale. The model describes fundamental relationship types that exist among major components of the hydrosphere. This includes relationships such as hierarchies of catchments, segmentation of watercourses, and topological connectivity of hydrologic features based on the flow and conservation of water.

The standard is intended to be used to document and share information about real-world objects that are studied in a wide range of hydrologic study types. The original design goal for HY\_Features was to link hydrologic information across the scientific and technical programs of organizations with local to global scope, and to assist in discovery, access, and use of hydrologic data from different sources.

The HY\_Features model is designed to support many types of hydrologic information and sub-disciplines. The model supports referencing information about a hydrologic feature across disparate information systems or products, thereby improving data integration within and among organizations. Similarly, the model can be applied to cataloging of observations, model results, or other study information involving hydrologic features. The ability to represent the same catchment, river, or other hydrologic feature in several ways is critical for aggregation of cross-referenced or related features into integrated datasets and data products on global, regional, or basin scales.

Agreement on common concepts and methods is necessary to enable semantic interoperability of hydrologic data and services. The HY\_Features model was developed in order to formalize concepts and relationships of hydrologic and hydrographic features using the WMO/UNESCO “International Glossary of Hydrology” as a starting point.

The candidate standard is available for review at [portal.opengeospatial.org/files/?artifact\\_id=72353&version=3](https://portal.opengeospatial.org/files/?artifact_id=72353&version=3). Comments are due by 16 February 2017 and should be submitted to [requests@lists.opengeospatial.org](mailto:requests@lists.opengeospatial.org).

## Time of Travel Estimates through Waterbodies – Now Included as part of the Medium Resolution NHDPlusV2

by Richard Moore, USGS and the NHDPlus Team (medium resolution)

We are pleased to announce that time of travel estimates through waterbodies, such as lakes and reservoirs, are now included as part of the NHDPlusV2 data (available at <https://www.epa.gov/waterdata/nhdplus-national-hydrography-dataset-plus>). To provide this data, a simple volumetric approach of estimating lake residence times was employed. It is assumed that the residence time is the time required to replace lake volume. This technique is used to roughly estimate average travel time through each lake or lake segment.

These estimates of lake travel time are provided in the medium resolution NHDPlusV2 NHDPlusFlowlineVAA table, in the field TOTMA – Mean annual time of travel for flowline (in days). The field is shared with stream travel times which are calculated from the stream velocity field (V0001E) and the flowline length (for tidal reaches the field is set to -9999). For waterbodies, such as lakes and reservoirs, the field is calculated based on volume replacement time for each lake or lake segment.

The national availability of lake depth estimates (Hollister and others, 2011; USEPA, Data available at <https://edg.epa.gov/clipship/>) has made possible this ability to estimate residence time for lakes and reservoirs throughout the contiguous United States. Lake volumes are apportioned to each flowline or artificial path according to the length and flow associated with that flowline. Segment travel times are then calculated to be equal to the lake segment volume / segment flow. Essentially the proportion of the lake volume that should be associated with each flowline within that lake is used to determine the volume replacement time for each lake segment.

The presence of lake stratification, however, introduces a complication where the average travel time is better represented as the time required to replace the upper strata of the lake. In this case the transport can be assumed to occur above the depth where stratification occurs. A direct way to calculate the adjusted mean annual time of travel (in days) for a stratified lakes or lake segments is to calculate it equal to TOTMA times the ratio of (depth of stratification / estimated mean depth of the lake). Adjustments for lake stratification cannot be done nationally, but rather must be done on a lake by lake basis. This is because lake specific knowledge on depth (and duration) of stratification is required.

Two new NHDPlusV2 extension tables provide the data that went into calculating these estimates of the travel times through waterbodies. The new attribute table PlusWaterbodyLakeMorphology.dbf provides data for the waterbody as a whole, such as mean depth and lake volume. The new attribute table PlusFlowlineLakeMorphology.dbf provides data that has been allocated to flowlines (or lake segments), such as the fraction of lake and surface area assigned to each flowline. Additional information on these new tables and “time of travel” is provided in the User Guide at the website referenced above.

**Reference**

Hollister, J.W., Milstead, W.B., Urrutia, M.A., 2011, *Predicting Maximum Lake Depth from Surrounding Topography*. [PLoS ONE 6\(9\): e25764](https://doi.org/10.1371/journal.pone.0025764). doi:10.1371/journal.pone.0025764

## NHDPlus High Resolution Status Report - AI Rea

[https://drive.google.com/open?id=1c3x2VWj7UcZCQd2\\_r7GiTMjaRwjtA9e0tWDssXWTPYI](https://drive.google.com/open?id=1c3x2VWj7UcZCQd2_r7GiTMjaRwjtA9e0tWDssXWTPYI)

If you're interested in helping to QC NHDPlusHR Beta for your area, contact:

- [Tatyana Dimascio](#)
- [Karen Adkins](#)

**NEXT MEETING: Friday, February 24, at 1:00 p.m. Eastern Time**