

On October 14, the Western States Water Council (WSWC) hosted as part of its 194th meetings a special session on Mapping Waters of the United States (WOTUS). Speakers included: Tim Petty, Assistant Secretary for Water and Science, Department of the Interior (DOI); Dave Ross, Assistant Administrator for Water, Environmental Protection Agency (EPA); and Ryan Fisher, Principal Deputy Assistant Secretary of the Army for Civil Works, on behalf of R.D. James, Assistant Secretary of the Army for Civil Works. In addition, three technical presentations addressed efforts of federal agencies to improve existing mapping programs and tools for eventual regulatory use. The session concluded with a question and answer session.

Tim Davis, WSWC Chair, opened the session with brief remarks that highlighted the importance of mapping WOTUS, as there are no current comprehensive maps that identify jurisdictional waters, resulting in substantial regulatory uncertainty. He noted the Council supports developing maps and the data and tools needed to keep them up to date. He also thanked EPA, DOI and the Army for initiating the special session, and for reaching out to states as co-regulators as they embark on this process.

Petty discussed the President's recent Executive Order (EO) on "Modernizing America's Water Resource Management and Water Infrastructure." He noted the importance of the creation of a "Water Subcabinet," at the cabinet level. An informal group of Assistant Secretary-level individuals across agencies has been meeting for some time, and navigating through the roadblocks that can arise between federal agencies when trying to get important water resources work completed. He focused specifically on the directive to improve geospatial mapping collaboratively with States, Tribes and local governments, and the work being done to use available tools for improved water resource forecasting and modeling.

Ross' comments built on the geospatial mapping directive and highlighted that we currently do not have maps delineating federally-regulated waters. In the past, there have been concerns with our capacity to develop such maps, but he believes that it is possible with the resources and talent across the federal agencies. He described his vision as eventually producing a map that will identify jurisdictional waters, as well as any associated regulatory data, such as water quality standards and whether monitors are present. One goal would be for States and Tribes to be able to submit lists of regulated waters to the federal government. Currently, the technical capability does not exist to do this.

Fisher, on behalf of R.D. James, emphasized the benefits of the Water Subcabinet, especially in enhancing communication among federal agencies that often have competing missions. Speaking with one coordinated voice achieves the best outcomes for water resources. He also highlighted that James sees the new Navigable Water Protection Rule (NWPR), which redefined WOTUS, as creating more regulatory certainty and predictability for projects and as improving the efficiency and consistency of regulatory programs while respecting the primacy of States and Tribes over their waters.

The technical portion of the Special Session kicked off with a presentation from Dwane Young, Chief of the Water Data Integration Branch at EPA and formerly the WSWC WestFAST Liaison. He stressed that the current efforts underway to develop jurisdictional water maps are incremental and will build upon existing frameworks, such as the National Hydrography Dataset (NHD) and the National Wetlands Inventory (NWI). However, there are other data sources that need to be integrated, such as those regarding flow permanence that can help determine if a stream reach is perennial, intermittent or ephemeral and establish how waters connect. He also stated that these initial maps will not necessarily provide regulatory certainty, but they will help improve regulatory understanding and our confidence in whether a water is jurisdictional or not, and later maps can then improve on this effort.

Young then described the five interagency working groups that have been assembled to lead this mapping effort: (1) Executive Communication; (2) Planning (the workhorse of the groups); (3) Georeferencing and Data Interoperability; (4) Modeling; and (5) Modernized Frameworks (specifically regarding data and mapping modernization). The short-term goal is to evaluate the requirements, options and resources needed to achieve the long-term goal of developing a decision support system (DDS) that incorporates and steadily improves on existing frameworks over time as more data become available. The work groups are using four hydrologically and spatially different case studies to identify the unknowns and the gaps that need to be addressed to more clearly articulate what the mapping effort and existing frameworks need to accomplish to create a DSS that will provide the user with jurisdiction and related information for a given water. Two case studies cover the Upper Donner Blitzen Basin in Eastern Oregon, and Colorado's Roaring Fork in the Upper Colorado River Basin.

Jason Stoker, Acting Chief of Topographic Data Services, U.S. Geological Survey (USGS) followed with a detailed presentation on efforts related to improving the NHD. He described the three National Hydrography Datasets, which include the NHD, the Watershed Boundary Dataset (WBD) and NHDPlus High Resolution (NHDPlus HR). The NHD is a network representation of water features such as rivers, streams, canals, lakes, ponds, and stream gauges that have been created from USGS topographic maps and subsequently geographically "addressed" by assigning individual portions of a feature with a location code similar to an address. This system allows feature data to be tagged with these addresses to enable the integration of outside data sources. The WBD is a Geographic Information System (GIS) layer of polygons that represent drainage basins at

eight scales in a nested hierarchy. These polygons are assigned a Hydrologic Unit Code (HUC) that are akin to “zip codes.” The NHDPlus HR integrates these two datasets and adds in digital elevation data that enable water flow to be modeled across the landscape at a ten meter resolution. A beta version of NHDPlus HR will be available for the contiguous United States, Hawaii and territories in 2020, with plans for Alaska to be added in later years. Stoker highlighted that this dataset “provides a framework for linking data to landscape and stream networks, which enables the discovery and sharing of limitless sources of information and supports consistent and repeatable modeling results.” He also mentioned that the ultimate goal of the NHDPlus HR is to get to one meter resolution to support the National Water Model and provide forecasts down to the stream level.

Megan Lang, Chief Scientist, National Wetlands Inventory (NWI) at the U.S. Fish and Wildlife Service (USFWS), presented on the NWI development, status, and how it will support the WOTUS mapping effort. The NWI was mandated as part of the Emergency Wetlands Resources Act of 1986 (PL 99-645) and is the Wetlands Layer of the National Spatial Data Infrastructure that is used to understand, protect, and promote America’s global interests. Its creation has taken 40 years, \$220M, and the efforts of over 165 contributors. Each year, they work with stakeholders to map 50-100 million acres. It is used frequently with over one million views annually. It is used for a wide variety of applications, including understanding ecological functions and ecosystem services, disaster mitigation and clean water restoration, habitat assessments, species population modeling, and conservation-based development. Despite its importance, the NWI has had a flat budget for most of its duration, which makes it difficult to manage and further develop, while relying on partnerships and new technologies to help mitigate budget challenges. An ongoing partnership with the USGS NHD is of particular importance for their ability to contribute to the jurisdictional mapping effort. NWI features were originally created to complement USGS topographic maps, which are the foundation for NHD. NWI and NHD co-lead the Federal Geographic Data Committee’s Water-Inland Theme, which enhances coordination between spatial datasets regarding inland hydrologic features. Through this shared governance, NHD and NWI are working to identify opportunities to strengthen their partnership.

Jay Christensen, Research Ecologist in EPA’s Office of Research and Development (ORD), explained his role with the interagency workgroup exploring modeling methods, remote sensing and field data collection to support the mapping effort. As part of the modeling subgroup, he is working to develop models from existing datasets that can support the jurisdictional mapping efforts, including assessing existing statistical models for their limitations and applications to stream flows and stream reaches. Overall, ORD is leading a review of current mapping approaches and geodatabases, undertaking geospatial mapping and analysis of case studies, and assessing field-based tools and indicators to validate maps. ORD’s ensemble approach uses models and data to triangulate the information that can help lead to a conclusion. One of these efforts includes the Streamflow Duration Assessment Method (SDAM), which is a rapid assessment tool that feeds data into a machine-learning model and produces indicators that can be used to understand the permanence of a stream reach. This method is currently being piloted in the Pacific Northwest, with work being done to expand to the U.S. Southwest. Assistant Secretary Petty concluded by reiterating this will not be a quick fix nor fast process, but that USGS is very engaged with the other federal water agencies through data themes that will help source the data to ultimately determine jurisdictional waters. He expressed excitement that the EO highlights the geospatial framework and connections between the agencies that can help this mapping effort progress.

Owen McDonough, Senior Science Advisor to the Assistant Administrator at EPA, moderated the question and answer session.

Q&As

Q: Is there a landing/outreach web page with WOTUS mapping information?

A: Not yet, but given the EO, it is expected there will be an emphasis on providing this information publicly. At some point, ideally, there will be an app that you could have in the field with you to determine if you are in a regulated area.

Q: Dwane [Young] said that the long-term goal is to have a decision support system (DSS) ready as quickly as possible, and then iterate. Can you please let us know if you have a target date or ballpark for that first iteration of the DSS?

A: We don’t have a target release date for the DSS yet. We are in the early planning phases now. Once we have a better handle on the requirements and options, then we will have a better sense of a target date.

Q: Can existing maps or different layers now distinguish between wetlands adjacent to navigable waters and isolated wetlands? Will the jurisdictional status mapping tool be a regulatory dataset?

A: We do not currently have regulatory datasets, even though we have a ton of data. Part of this effort is to develop new geospatial data layers that take into consideration the regulatory framework so that users can know if there are permits required. Down the line, the goal is to have regulatory maps. The space we are striving for is to have a decision support tool to enhance the predictability or likelihood of the landowner having a better idea of jurisdictional status. The goal is to have a map that defines regulatory reaches, but it is hard to do that right now.

Q: What can the states contribute in terms of data and information as this mapping effort moves forward, and who should they contact to keep the communication ongoing?

A: Contact Rose Kwok if you are interested in being involved at the state level (kwok.rose@epa.gov). In this early phase, there could be value in engaging with the case studies. Having on-the-ground knowledge within those basins would be incredibly valuable. In later phases, connecting state data to the framework would be ideal.

Q: Under NHD+ are all basins, subbasins and/or catchments considered perennial, intermittent or ephemeral? Are there any topographic areas that are not one of the above? Some catchments rarely receive enough precipitation to ever produce significant if any runoff. Would they still be considered ephemeral?

A: For the purposes of this effort we are looking at the flow permanence classes defined by the rule. The existing flags in NHD+ are informative, but for the purposes of the decision support system, we will need to develop data that gives us a better sense of that from the regulatory perspective.

Q: How do we address messaging related to jurisdictional changes, given that past jurisdictional decisions have been made on a case-by-case basis, with little or no baseline geospatial data mapping?

A: Our initial thinking on how jurisdictional determinations would make it back into the map is that they would be referenced back to the frameworks in the DSS. The group is currently defining what that process would look like.

Q: Will we have access to today's presentations?

A: We should be able to post the presentation on the WSWC website (www.westernstateswater.org) along with our other meeting materials later this week.

Q: How will data in Alaska be collected and integrated?

A: Alaska is the exception to the rule, as it will take a lot of resources to get the data. The Alaska Mapping Executive Committee has coordinated this work for a long time and we are looking for ways to move forward in the best way possible with the resources we can find. Our current focus is on updating the NHD with WBD and elevation data, and building that into the NHDPlus product. This is the first time we have done this, and it's needed for the National Water Model to be applied to Alaska.

Questions (in Chat) left unanswered due to time:

Q: How do we address 404 permits that were assumed to be jurisdictional for expediency, but never received a Corps jurisdictional determination (JD)? How will that affect the way the jurisdictional map looks?

Q: How will the SDAM effort intersect or inform the mapping tool?