WESTERN STATES WATER COUNCIL
State Use of Federal Water Data – An Abbreviated List (non-exhaustive)
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All levels of government must prioritize the collection, analysis and open sharing of reliable data regarding water availability, quality, and usage given its importance to research for sound science and data driven decisionmaking. This includes actions related to hydropower development and Forecast Informed Reservoir Operations (FIRO). Sound decisionmaking for water resource management requires accurate and timely data on precipitation, streamflow, evapotranspiration, soil moisture, snow depth, snow water content, droughts, and water quality. In addition to state, tribal, and local data, many federal programs provide critical data.

For example, the U.S. Geological Survey's (USGS) Groundwater and Streamflow Information Program (GWSIP) and National Streamflow Network provide data on water supply availability and water levels. Landsat thermal data is archived and distributed by the USGS. The former National Hydrography Dataset (NHD) and 3D Hydrography Program (3DHP) provide map locations of water features and streamgages. The National Water Information System (NWIS) provides surface water data.

The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) provides water supply data through the Snow Survey and Water Supply Forecasting Program, based primarily on data from SNOTEL weather stations that measure snowpack through winter and early spring. The National Water and Climate Center (NWCC) provides soil moisture data through the Soil and Climate Analysis Network (SCAN). The USDA's National Agriculture Imagery Program (NAIP) is used in water right transactions (e.g., water right transfers, instream leases) to confirm or support assertions of beneficial use of water on subject lands.

The National Atmospheric and Space Administration (NASA) and its water-related missions provide remotely-sensed data, and WGA has specifically expressed support for the Landsat program and its use of thermal infrared imagery for monitoring water use.

The National Oceanic and Atmospheric Administration's (NOAA) National Weather Service, Climate Programs Office, Office of Atmospheric Research (OAR), National Environmental Satellite Data and Information Service (NESDIS), National Centers for Environmental Information (NCEI), and National Integrated Drought Information System (NIDIS), another program specifically supported by WGA, all conduct research and provide forecasting data, supporting water management and preparation for the extremes of drought and flooding.

The Bureau of Reclamation's (USBR) Agrimet system is an agricultural weather station network that collects site-specific data that, among other things, is often used to ground truth and calibrate remotely sensed satellite data. It also provides data for improving agricultural water planning and water use efficiency, conserving water, improving crop yields, reducing pesticide and fertilizer application, and reducing energy costs for growers.

The Environmental Protection Agency's National Environmental Information Exchange Network (NEIEN) facilitates environmental data sharing among state, federal, tribal, and local governments to improve timeliness for decisionmaking.

Many of these programs operate very efficiently on lean budgets, yielding public safety and water supply benefits much greater than the cost of their operation. WSWC recently asked our Western states how they are using some of these federal datasets. While not all of these responses will be specifically relevant to this Subcommittee, nor is this an exhaustive list, the complexity of the responses below underscores the many critical roles that federal data play in water management across the West:

California has a long history of collecting its own data to meet its water needs, and also relies on federal data to make informed water infrastructure operations and management decisions. California's State Water Project and Reclamation's Central Valley Project, the two largest water projects in California, rely on a mix of state and federally collected and served water and weather data to support project operations, including hydropower generation. The NWS California-Nevada River Forecast Center has been co-located with CDWR's State Flood Operations Center for decades, and the two entities partner closely in flood forecasting and flood emergency operations. State and local agencies use USGS streamflow and groundwater level measurements for water project operations, water rights compliance, and groundwater management. Following the 2016 Open and Transparent Water Data Act, California's Department of Water Resources (CDWR) created an integrated water data platform, which includes water and ecological data related to California water supply and management and collected or held by USBR, USGS, NOAA, U.S. Forest Service, and the U.S. Fish and Wildlife Service. NWS watches and warnings support emergency responders in preparing to issue evacuation warnings and orders, such as the high wind and extreme fire risk warnings leading up to and through the recent 2025 LA fires, and the 2023 flood warnings during the atmospheric river events prior to the breach of levees on the Pajaro River.

Colorado's Water Conservation Board uses NRCS SNOTEL and streamgage data to conserve, develop, protect, and manage Colorado's water. Many federal data programs are even more beneficial in the long term (decadal scale) as they provide robust statistical information through variable climate conditions. Discontinuing these data programs can disrupt the long-term benefits.

Kansas uses USGS streamgage data for water rights administration, and reservoir data for reservoir operations. Landsat and OpenET data provide information for irrigated acreage analysis. They use USGS Real Time Water Quality Sensors to monitor ambient water quality and for tracking plumes and relating pollutant levels to stream flows. USACE and USBR reservoir data enables them to manage reservoir release decisions for mitigating instream water quality impacts from harmful algal blooms (HABs). USACE reservoir data provides information on drought or low flow operations and informs interstate water compact compliance. USACE Missouri River data and projections help determine the impacts to Kansas reservoir operations. USACE water quality data supplement state data for TMDL analysis and development. EPA water quality data supplements state data for water quality planning and evaluation. The NOAA-NIDIS drought monitor is used to determine gubernatorial declarations of drought emergencies. The USDA Risk Management Agency (RMA) supports the PRISM project that Kansas uses to update the Republican River Compact Administration groundwater model, and to do other historical analyses with its gridded precipitation

and temperature data.

Idaho's Department of Water Resources relies extensively on the USGS stream gaging program for water resource management, to carry out the priority administration of surface water (Snake River, Bear River, Big Lost River, Big Wood River, Payette River, and Upper Salmon River), for dam operations (Priest Lake Outlet), and to ensure compliance with interstate compacts (Upper Snake and Bear River) and tribal water rights settlements (Nez Perce and Shoshone- Bannock). Idaho also relies on the USGS Landsat program for the remote sensing of evapotranspiration data across the Snake River Plain and tributary basins. Landsat data is used to map irrigated lands and to calculate data needed both annually and in real-time to carry out conjunctive surface and groundwater administration; to calibrate and validate groundwater models; to evaluate and approve new water appropriations via permitting, licensing, transfers, and water supply bank transactions; and to recommend historical water use in adjudication processes. Idaho relies on NRCS SNOTEL data for water supply forecasting, tracking the state's water resources, and informing management decisions. These data allow IDWR and water users to plan for potential water shortages. SNOTEL forecasts allow Idaho to maintain statutorily prescribed water levels in Priest Lake, and to determine whether summer flows will meet the hydropower minimum streamflow requirements in the Swan Falls Settlement Agreement. The Idaho NRCS office manages 119 of the 900 national SNOTEL sites. The NRCS State Snow offices have 27 of 71 positions vacant, and the Idaho office has 4 of 10 positions vacant due to recent federal terminations, threatening SNOTEL network maintenance and forecasting capabilities.

Montana's Department of Natural Resources and Conservation relies on several federal water datasets to actively manage the water resources. As a headwaters state, Montan relies heavily on streamgage data, SNOTEL data, and weather data that are used daily during the winter and spring to forecast anticipated runoff and water availability for their state reservoir management, flood risk assessment, and water compact agreements including international, interstate, tribal and federal compacts.

New Mexico heavily relies on water data developed by or in consultation with federal agencies for several different purposes collaboratively integrates several sources of federal and non-federal water data under the authority of New Mexico's Water Data Act, NMSA 72-4B-1, et seq.. New Mexico and other states rely on federal water data to track reservoir levels, gauging and stream flow measurements, and forecasts for water management operations in intrastate and interstate basins. For example, in connection with the current severe drought conditions, New Mexico has utilized the NRCS monthly SNOTEL data and current and historic precipitation data, NOAA monthly soil moisture measurements, NIDIS interactive drought maps, and the U.S. Drought Monitor, and Climate Assessment for the Southwest (CLIMAS), an interdisciplinary NOAA program that is a collaboration between the University of Arizona and New Mexico State University. Federal water data is also useful in connection with implementation of the technical elements of interstate and Indian Water Rights Settlement Agreements. Federal water data also has been utilized recently in New Mexico in connection with coordinated responses across several agencies to flooding and channel capacity constraints.

In Nevada, the NRCS water supply forecasts, based primarily on SNOTEL data, are the principal indicator used by irrigators in the Walker River Basin to set pumping thresholds to prevent chronic groundwater depletions. Such local efforts to manage groundwater use for the benefit of the

community helps prevent the need for state-mandated curtailments of water rights by priority date. During record-breaking precipitation in the winter and spring of 2023, Nevada relied on those monthly forecasts to notify dam owners of potential runoff volumes that could exceed dam spillway capacity. They relied on NOAA weather predictions to determine flood control reservoir releases during a near-failure event at the Echo Canyon Dam in 2023; two of the three subsurface grade check structures in the downstream outlet channel were breached by headcutting, and the third and final structure held up. USDA's RMA PRISM Climate Data is an extremely valuable gridded geodatabase to estimate climate parameters in the many remote regions of Nevada where there is little ground-based weather data. It is commonly used for hydrologic modeling to estimate water budgets and groundwater availability. They widely rely on the U.S. Drought Monitor to gauge drought severity, which is easily communicated and often drives water conservation efforts at the local level.

North Dakota relies heavily on precipitation data provided through NOAA and NRCS. NOAA's Atlas 14 program was a gargantuan shift on the understanding of precipitation patterns and statistical probability of those patterns. The recent development of Atlas 15, a spatially continuous national precipitation frequency atlas, is expected to be an equivalent leap forward in understanding when, where, and how much precipitation is to be expected. NRCS precipitation distribution publications, such as Technical Papers 40 (1961) and 49 (1964) (then-U.S. Soil Conservation Service) help in the construction of water-related infrastructure. Data from Atlas 15 will help North Dakota to ensure that its water infrastructure projects are designed accurately and efficiently, making the most efficient use of taxpayer dollars.

Oregon uses federal data for almost all major functions for characterizing and managing surface and groundwater, including water distribution, forecasting, monitoring, modeling, allocation, regulation, management, public safety, water right transactions (permits, transfers, evidence of beneficial use, forfeiture of non-use), reservoir monitoring, basin studies, municipal water supply planning, agricultural water supply needs, and meeting the needs of ESA-listed aquatic species. Data include USGS NWIS groundwater monitoring network, streamgage network, water chemistry, and maps; USBR Hydromet and Agrimet; U.S. Fish and Wildlife Service threatened and endangered aquatic species lists; NOAA precipitation data; USDA soil surveys, NRCS snow surveys, CREP-enrolled lands, and Ag Census.

South Dakota's Department of Agriculture and Natural Resources relies heavily on USGS stream flow, Mesonet datasets, and other USGS and NOAA publications when investigating water right or water quality permit applications. These data are also used during droughts, floods, responding to pollution spill situations, and to verify hydrologic modeling for dam spillway sizing. On the water quality side, streamflow gages are critical in determining allowable pollutant discharges. Federal water chemistry data impact water quality permit decisions. Mesonet data help inform their beneficial use analysis of waterbodies. On the water resources side, streamflow data informs decisions about bypass requirements and water shut off orders. The state dam safety program is waiting for NOAA to complete its updated probable maximum precipitation (PMP) study (last completed in the 1970s) to provide updated numbers for designing and rehabilitating dams. NOAA's Atlas 15 is needed to update the National Precipitation Frequency Standards for designing infrastructure to the best available information and current storm data.

Utah's Department of Natural Resources relies heavily on USGS streamgages for accurate real-time flow measurements and historical data that inform decisions about diversions, withdrawals

and compliance for the fair and transparent allocation of water rights. Streamflow data help optimize reservoir operations, groundwater management, and other water projects. This can lead to more efficient water use, reduced conflicts, and better environmental outcomes. Accurate data allows for complex Great Salt Lake management, from flow modeling to salinity forecasting. Streamgage data supports early warning systems and informs emergency response strategies. Having access to near real-time conditions aids in flood forecasting, drought planning, informing agricultural decisions, minimizing risks to communities and infrastructure, and supports recreational and ecological needs. Historical records enable trend analysis, helping detect changes in flow regimes over time, which helps with modeling and state planning efforts. Such insights guide policy development, water resources planning, and future infrastructure investments.

Washington's Department of Ecology relies on NOAA and USGS flood forecasts for predicting peak flood elevations, severity, and inundation areas days in advance, which helps identify potential road closures or evacuations before flood events occur. NOAA's precipitation gauges and cameras in wildfire-affected areas help monitor and predict post-wildfire debris flows and flood risks, improving responses and mitigation efforts. The staff of NRCS's regional Snow Survey and Water Supply Forecasting Program has been decimated – only 5 of 12 staff remain to cover both Washington and Oregon, and the northwest SNOTEL system will not be maintained without sufficient staff, and is expected to fail as soon as this summer. The U.S. General Services Administration has proposed cancelling the lease for the NRCS facility that houses the SNOTEL equipment, and listed the vehicles and supplies used to maintain the monitoring network as potentially being put up for sale as soon as June. Without snowpack data, Ecology will not be able to accurately forecast water supplies, and may not be able to issue timely drought declarations. This means that farmers and water managers will not be able to plan for and mitigate drought impacts. The Bureau of Reclamation's determinations regarding Yakima basin water allocation rely on NRCS data. Ecology's Office of Chehalis Basin noted that without the integrated federal system for collecting, analyzing, and reporting data, every aspect of the work they do and fund would be impaired or impossible. Their Flood Warning System relies on a combination of federal, state, and local funding to build, upgrade, and maintain the system. The system includes data from USGS gages, NOAA's GOES satellite system, NWS weather forecasts, and NOAA's River Forecast Center – all of those elements need to be working and communicating with one another for the flood warning system to operate. The system provided thousands of residents with advance notice of a major flood event in 2022, enabling them to protect lives and property. NIDIS is the sole source of collaboration between Washington and other states on drought response and resilience. The NIDIS data analysis is in a format that is accessible to the public and allows Ecology and other water managers to evaluate drought conditions, including the impacts on irrigation districts in the Yakima Basin. Ecology is concerned about proposed cuts to OAR where NIDIS is housed; the data collected and analyzed there is critical to their understanding of and forecasts for seasonal climate trends, including drought. USGS gages and historical weather data are essential in creating and operating the hydrologic and hydraulic models used for reducing flood damage and protecting aquatic species, and to assess the potential impact of future infrastructure and conveyance improvements.

Data and forecasting provide early warning that can help water and power suppliers, communities, and businesses to take action to mitigate loss of life, property damage, and economic impacts. Examples of recent billion-dollar disasters in the West include: flooding and mudslides, severe weather and wildfires (2023): extensive West and Midwest drought, heatwave, and wildfires, as well as severe Central weather and North Central and South Central hail (2022); Western drought,

heatwave and wildfires, with California flooding, as well as Central and South Central severe storms and cold wave (2021); continued drought, heatwave, wildfires, as well as severe storms and hail (2020); Missouri River and northern Great Plains flooding (2019); Colorado hail storms (multiple years), drought in the southern Great Plains (2018); California and Nevada flooding (2017),;severe multi-year drought in California and much of the West (2012-16); Texas and Oklahoma flooding (2015); and flooding in Texas resulting from Hurricane Harvey (2017); drought across the southern Great Plains (2011); Missouri River and northern Great Plains flooding (2011). Such disasters are not isolated occurrences in the West and are likely to continue.

Water agencies depend on NOAA forecasting to be the early warning for extreme weather events. Unfortunately, the skill of NOAA precipitation forecasting is poor more than a week in advance. Reliable forecasts with longer lead times would allow water managers to operate infrastructure more efficiently and allocate resources to mitigate and manage impacts. WSWC urges Congress to prioritize the needed research funding to improve precipitation forecasting at subseasonal to seasonal (S2S) lead times. Public Law 115-25 directed NOAA to improve its S2S forecasts and to submit a report to Congress with recommendation for doing so. NOAA submitted its report in 2020 but has not taken action on its recommended pilot projects for water management and agriculture.

Western water agencies also rely on streamflow water supply products produced by NOAA's three western River Forecast Centers. The services the river forecast centers provide to federal, state, and local reservoir operators in the West are unique to the West; NOAA's National Water Center in Tuscaloosa does not have the capability to prepare water supply forecasts. WSWC urges Congress to require NOAA to keep the centers operational and to continue providing the water supply products used by federal, state, and local agencies, including the critical modeling needed to support Colorado River water and power operations.

WSWC urges Congress to prioritize the appropriation of sufficient funds to maintain, modernize, expand, and improve these federal data programs, ensuring that they remain accessible to a growing and diffuse number of decisionmakers and stakeholders. The erosion or loss of these programs and the disruption of data may have significantly adverse consequence for our economic and environmental future.

WSWC further urges Congress to invest in additional research and data sharing to help resolve state and regional water problems, including support for water resources research institutes and the Water Resources Research Act program, transitioning from research to operations and technology transfers, forecast informed reservoir operations, hydroclimate data collection, and seasonal to subseasonal forecasting.