



January 1, 2020

[newmexicowaterdata.org](http://newmexicowaterdata.org)



# EXECUTIVE SUMMARY

The [Water Data Act \(NMSA 1978, § 72-4B\)](#) marks the first time in New Mexico’s history that a law has been enacted to identify and integrate key water data. In response to this new legislation, the directing agencies, as convened by the New Mexico Bureau of Geology and Mineral Resources (NMBGMR), are developing an integrated Water Data Service for New Mexico. The progress so far includes establishing governance for the tasks, initiating technical support, inventorying data, and development of a digital platform to host New Mexico water data. NMBGMR and the implementation team have convened multiple working groups to ensure that the data and useful information about the data is findable, accessible, interoperable, and usable for those seeking water information for decision making related to water management and planning – the primary goal of the legislation. Challenges include legacy data issues such as paper data and agency silos of data, while opportunities include increased efficiency and coordination among agencies in data handling. Currently the Water Data Service can be found at < <http://newmexicowaterdata.org> >. Next steps include continuing to identify and integrate data, further interagency coordination, and development of additional funding.

## INTRODUCTION

New Mexico is the second state in the country to enact policy that directs integration and access to water data. This legislation, 2019 House Bill 651, underscores New Mexicans’ value of our state’s water resources. The legislation raises awareness of our challenges, while requiring communication and collaboration among agencies and others collecting or managing water data for the state. Supporting the need for this process, the 2018 New Mexico State Water Plan includes a “Data Collection, Accessibility and Monitoring Policy” as one of its eight policies. This policy includes a goal to “promote accessibility to data,” while NMSA §72-14-3.1 (D)(2) calls for the “creation and completion of a comprehensive database and an electronically accessible information system on the state’s water resources and water rights, including file abstraction and imaging of paper files as well as information on pending adjudications.”

The Water Data Act specifically asks the directing agencies including the New Mexico Bureau of Geology and Mineral Resources (NMBGMR), the New Mexico Interstate Stream Commission (ISC), the New Mexico Office of the State Engineer (OSE), the New Mexico Environment Department (NMED), and the Energy, Minerals, and Natural Resources Department (EMNRD) to address the following by January 1, 2020:

- A. Identify key water data, information, and tools needed to support water management and planning;
- B. Develop common water data standards [for data collection];
- C. Develop an integrated water data and information platform; and
- D. Identify available and unavailable data.

### Data vs. Information

We define “**water data**” as the facts, such as actual measurements or properties, while “**information**” is used to describe the assembly of water data in an interpretation, model or analysis. Water data are analogous to the building blocks, while information is the object that is constructed from those blocks. Water data may include reservoir levels, groundwater levels or measurements of arsenic in water, while the information we can gain from this type of data may be graphs of trends in water levels or maps of locations where arsenic occurs.

This project will be a multi-year endeavor, as we illuminate New Mexico’s water data following a fundamental philosophy that water data should be Findable, Accessible, Interoperable, and Reusable (FAIR). It is our goal to make New Mexico water data as FAIR as possible. This update satisfies the requirement in the legislation to report back to the legislature by January 1, 2020 on the steps taken to support the Water Data Act.

# UPDATE FOR JANUARY 1, 2020

Over the period from July to December 2019, the following tasks were initiated or accomplished for governance and operation:

## Governance Activities

- Governance of Water Data Act established
- Implementation team established by NMBGMR with members from NMBGMR, New Mexico Interstate Stream Commission and Sandia National Laboratories
- Hired staff to support tasks through NMBGMR
- Developed vision and goals for long-term success

## Water Data Initiative: Vision and Goals

### Vision:

New Mexicans will have accessible and useful data for water management and planning.

### Goals:

- We will have easy access to key water datasets
- We will have common water data standards and definitions
- Data gaps will be identified and prioritized
- We will ensure that accessible water data are useful, such as for decision making, research, public inquiry, management and planning

# Water Data Act Governance

### DIRECTING AGENCIES TEAM

Agencies in legislation (or directly related) that collect, publish, and maintain data, and will work to integrate data and implement water data standards.

**Initial Tasks:** Help set goals and metrics, determine priority needs and key data, assist with communications and data inventory in agency, help with reporting

NMBGMR  
NM ISC  
NM OSE  
NMED  
EMNRD  
NMDGF



### IMPLEMENTATION TEAM

Stacy Timmons  
NMBGMR, ISC, SNL

**Initial Tasks:** Provide oversight, convene and organize groups, guide strategy and direction, assist with finance and procurement, reporting

*With support from:*

*Internet of Water, at Duke University  
Sandia National Laboratories*

### TECHNICAL WORK GROUP

Technical staff or researchers that collect, publish, and maintain data. Research, database, IT or GIS roles.

**Initial Tasks:** Guide development of data standards, help evaluate technical needs/software, help complete data inventory, share and maintain data

### DATA USERS WORK GROUP

Stakeholder and data users, may include water planners, water managers, policy makers and researchers

**Initial Tasks:** Articulate users needs, provide recommendations and feedback, develop use case scenarios.

## Stakeholder engagement

- Held bi-weekly Implementation Team meetings to coordinate the efforts of all sub-groups and work to meet high-level goals of project
- Established supportive partnership with the Internet of Water, at Duke University
- Formed and convened working groups (Directing Agencies, Users, and Technical)
- Held bi-weekly Technical Group conference calls
- Held monthly Directing Agencies Group meetings (in person or by webinar)
- Hosted the first Water Data Workshop (Oct. 24, 2019) for all interested parties to learn and contribute to the future for water data in New Mexico

## Funding

- Acquired philanthropic funding of \$25,000 from Healy Foundation
- Submitted application for WaterSMART grant leveraging \$110,000 annual state funding as match for US Bureau of Reclamation federal funding on NM Water Data (for a total of \$300,000)

# STATUS OF WATER DATA ACT REQUIREMENTS

Specific activities performed in support of the Water Data Act requirements are listed below.

### **A. Identify key water data, information, and tools needed to support water management and planning**

1. Identified preliminary key data from data inventory (D, below) for selection of initial data sets for upload to online water data service,
2. Developed draft key data criteria based on the New Mexico Office of the State Engineer’s 2018 State Water Plan and NM First Town Hall (2017, Albuquerque) on water planning; and
3. Set up a team that is developing a robust key data and tool selection process based on User and Technical Group inputs.

### **B. Develop common water data standards**

1. Defined focus of this activity to address essential descriptions (metadata) of data, rather than data collection (i.e. sampling) procedures;
2. Initiated development of water data standards through the Technical Work Group, and
3. Created metadata form for uniform data identification and searching.

### **C. Develop an integrated water data and information service**

1. Interviewed several platform providers and experts; selected the initial water data software/platform (CKAN),
2. Contracted with University of New Mexico’s Earth Data Analysis Center to provide data service set up and IT support, and
3. Launched initial Water Data Service with map and preliminary data catalog ([newmexicowaterdata.org](http://newmexicowaterdata.org)).

### **D. Identify available and unavailable data.**

1. Acquired an inventory of “available” New Mexico data from Internet of Water, and
2. Performed initial inventory of digitally available and unavailable water data from New Mexico state agencies.

## CHALLENGES & OPPORTUNITIES

Creation of a Water Data Service to improve access to New Mexico’s water data has benefits including improved efficiency, improved data quality, potential reduction of data redundancy, and will allow data users to spend less time searching for and organizing data for their needs. Meetings with the Directing Agencies, Technical, and User Work groups have brought the following common concerns forward.

Challenge	Opportunity
Water data collected at the state level are often managed only for its original intention, not taking future users or other applications into account. This process does not facilitate wide-spread use of data and risks losing data that may, for instance, be on a single computer.	Leveraging knowledge and processes used by federal agencies, like the USGS, EPA, and NOAA, can help harmonize state water data and improve interoperability.
A large amount of the state’s water data is on paper records.	This project provides an impetus to digitize paper data and bring it into the common platform. Funds and staff will be required to enable this process.
Agencies may face numerous difficulties sharing data outside of the agency, and in some cases, within the same agency from one division to another. Sharing challenges range from software incompatibility to data structuring or may include legal concerns.	The use of the common platform and uniform metadata standards can facilitate data sharing, as required by the legislation.
A large amount of staff time and resources are spent responding to data requests through Inspection of Public Records Act (IPRA). Often these data are available, however, the public is not always able to find it or how to use it.	Data that is made public (and FAIR) under the platform can be found easily by the public, promoting greater transparency. Site analytics can identify popular searches; guidance documentation can be developed for users to improve access.
State agencies are presently under-staffed and under-funded to support aspects of this legislation, including digitizing paper data, filling data gaps, and updating to modern data management platforms.	Use of the common platform, common metadata standards, and standardizing data formats will, over time, require less staff time for data entry and free up more time for data analysis.

## NEXT STEPS

Acknowledging that this is a multi-year process to create open, interoperable water data and make the data accessible, the Implementation Team and work groups will continue to inventory and discover datasets in state agencies or other groups who are interested in sharing water data (such as NGOs, academic groups, municipalities, etc.). Bringing these data to the Water Data Service will be prioritized by using the “key data” criteria.

While not required in legislation, one next step is to work with data users and stakeholders to begin pilot studies (“use cases”) to utilize data for decision making, water management and planning. Starting in late spring 2020, the Data Users Work Group will begin to address region-specific questions, working with local stakeholders. Demonstration of the ability to address specific, use-case questions with the Water Data Service can help to refine the process of incorporating data and making it usable as part of the decision making process.

The Implementation Team and Technical Work Group continue to explore options for digitizing legacy, paper data and to develop funding to help agencies accomplish this. Options are being explored but having example data to test this on has proven challenging.

The Implementation Team and Directing Agencies will continue to coordinate with other initiatives including the New Mexico 50-year Water Plan, the Rio Grande Basin Study (US BOR), and maintain essential multi-agency coordination through workshops and meetings.

Maintaining the momentum and engagement on the NM Water Data Initiative requires recurring, stable funding to administer the initiative, as well as funding to agencies providing data to improve data stewardship and management. This may include data collection technology and upgrades; operations and maintenance costs of data collectors and recorders; and upgrades in data storage and security, as well as funding for personnel to operate and maintain the equipment. The Implementation Team is exploring options for grant opportunities (i.e. the WaterSMART grant from US Bureau of Reclamation), public-private partnerships, and other collaborative funding sources. Reporting in April 2020 will include suggestions for budgetary resources needed to support this effort.

Please send comments or questions to Stacy Timmons ([stacy.timmons@nmt.edu](mailto:stacy.timmons@nmt.edu)).