



2022 Plan: New Mexico Water Data Initiative

SEPTEMBER 2022

Plan for continued implementation of the Water Data Act

This plan was prepared by the New Mexico Bureau of Geology and Mineral Resources, in partnership with the New Mexico Interstate Stream Commission; New Mexico Office of the State Engineer; New Mexico Environment Department; and New Mexico Energy, Minerals and Natural Resources Department.



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Executive Summary

With the passage of the Water Data Act in 2019, New Mexico became a national leader in addressing water and climate challenges by prioritizing a statewide collaborative approach to modernizing water data. The goal of the Water Data Act is to make finding water data simple by coordinating data integration efforts across multiple state agencies and working with regional and federal data providers. We continue to make progress, building collaborations, working groups, and data catalogs, and implementing data standards. And yet, there is significant work ahead to complete our digital transformation of New Mexico water data.

The Water Data Initiative refers to the collaborating team effort and project convened by the New Mexico Bureau of Geology and Mineral Resources to implement the Water Data Act. This plan presents the goals for each of the five directing agencies as well as the Water Data Initiative. The goals serve to focus effort on communications between and within agencies, implement water data plans at each agency, develop success stories, provide a range of support to agency-specific needs, build data literacy and a water data community, and provide opportunities for data users' feedback. Budget requirements are provided in detail for each agency and summarized in this plan. We estimate that state agencies will require a combined annually recurring budget of \$2.65 million, with other non-recurring costs of approximately \$6.5 million over the next 5 years, to fully implement the Water Data Act. Additional state funding may be addressed through an IT special appropriation (C2 request), while state agencies are also working to build funding through grants and programs related to water data.

New Mexicans need transparent and efficient access to data and information and to know that decision-makers in water management also have the most current and complete data available. The agencies' water data plans provided in Appendix 1 can help ensure our state has the information it requires to face our water-limited future and plan accordingly.

This 2022 Water Data Initiative Annual Plan fulfills an annual requirement for the New Mexico Water Data Act to provide information to the governor and legislators on the progress, goals, metrics, and budget requirements for improving New Mexico's water data. This project is convened by the New Mexico Bureau of Geology and Mineral Resources, working with the New Mexico Office of the State Engineer; New Mexico Interstate Stream Commission; New Mexico Environment Department; and New Mexico Energy, Minerals and Natural Resources Department.

Background

New Mexico enacted the Water Data Act (NMSA 1978, § 72-4B) in 2019 to identify, share, and integrate key water data for New Mexico. This document serves as the Annual Plan, pursuant to Section 3D of this statute:

*Within two hundred seventy-five days of enactment of the Water Data Act, and thereafter **annually by September 1 of each year** the agencies shall develop and submit a plan to the governor and the appropriate interim legislative committee that details: (1) an assessment of water data and information needs to support water management and planning; (2) goals, targets and actions to carry out the purposes of the Water Data Act in the upcoming fiscal year; (3) budgetary resources to carry out the purposes of the Water Data Act; and (4) metrics for achieving the purposes of the Water Data Act.*

The Water Data Initiative (referred to as WDI) is the collaborative project and people working to fulfill the Water Data Act. It is convened and managed by the New Mexico Bureau of Geology and Mineral Resources (NMBGMR) and involves state directing agencies including the New Mexico Office of the State Engineer (OSE); New Mexico Interstate Stream Commission (ISC); New Mexico Environment Department (NMED); and New Mexico Energy, Minerals and Natural Resources Department (EMNRD). The intentions of the Water Data Act are to integrate water data using consistent and standardized formats; identify key water data, information, and tools as well as available and unavailable data; and to ensure compliance with water data standards and best practices. The legislation requires communication and collaboration among these agencies and others collecting or managing water data for the state. Other key partners and support currently include the Healy Foundation, the Internet of Water Coalition, Sandia National Laboratories, the U.S. Bureau of Reclamation (WaterSMART program), and the Thornburg Foundation.

Assessment of Water Data and Information Needs

Several key findings from our stakeholder engagement process since 2019 are summarized here:

1. Water data and information needs vary from year to year and region to region and are based on individuals' roles in water management and planning.
2. There are differing levels of data users, from highly technical programmers and modelers to a general audience, who seek to answer very specific questions. How they work with or interact with data varies depending on their use of the data.
3. Some of the highest priority datasets that people search for include groundwater trends, aquifer data, and disaggregated water use data.
4. Most people want to find data in one location using searchable maps, not having to search through numerous sites.

Standardized data formats and metadata are needed to integrate data and thus make finding water data simple. This is where our work is now focused. Data integration is critical, as it enables us to use the data from various sources to make maps, tools, and applications to better inform water management and planning.

The topics of greatest interest for New Mexico water data include:

Water quantity
Water planning
Natural hazards

Water quality
Energy
Infrastructure

Water use
Ecosystems and wildlife
Climate data

Although much of the data related to these topics is hosted within the state agencies listed in the Water Data Act, these agencies will need continuing collaboration with other local, regional, and federal data holders to ensure coverage of all data on these topics. The continuing collaboration will also ensure accurate and up-to-date information is available to all users.

The 2021 Annual Plan includes more detailed information about the data infrastructure plans, road map, and successes and challenges that the WDI is working to address.

This plan, with other reports and summaries, is available online at newmexicowaterdata.org/resources/

Goals, Actions, Targets, and Metrics

Building on work completed since 2019, the following goals are provided to guide agency activities over the next year. Further details on the directing agencies' plans and budget needs are found in Appendix 1.

GOALS FOR DIRECTING AGENCIES

Goal 1: Maintain agency internal and external communications about water data.

Action: Each directing agency will maintain a staff member to be the designated point of contact (or POC) for the Water Data Act. This person will work among the WDI teams and periodically check in within their agency to evaluate progress on goals and data sharing or to set plans for future years.

Target: Improved communication and understanding of the steps needed to implement the Water Data Act will be achieved by designating a consistent person responsible for communication/action in each agency.

Metric: Each of the directing agencies will maintain a designee to act as POC for the agency.

Goal 2: Implement a plan for engaging in the Water Data Act.

Action: Each directing agency will establish a Water Data Act implementation plan (following a template) to describe how the agency will accomplish the goals of the Act over the next 5 years. This includes specifying budget and staff requirements and establishing a mechanism to track metrics and changes in water data requests.

Target: Directing agencies will set water data as an internal priority and will create a plan to engage. By making a plan, budget requests can be made, and agency staff will know what to expect.

Metric: Each agency's Water Data Act implementation plan outline or plan will be included as an appendix in the Annual Plan, summarizing agency goals, budget, staff requirements, and data metrics. The agencies will submit their implementation plans to the convening agency by May 1 of each year. Budget expansion or increase requests and grant funding obtained or applied for will be reported in the Plan for the upcoming fiscal year.

Goal 3: Build digital data availability and integration using modern web services (computer/machine-readable format and standardized application programming interfaces [APIs]) and documentation.

Action: The agency POC will work with agency staff to select which water data features align with key data, as discussed internally or with the implementation team, as well as to document successes and challenges. The POC will work with the WDI team to set up a process for data sharing and seek help as needed.

Target: To ensure progress on data sharing, the agency will focus internally on working through the data sharing process, with complete metadata and mapping to SensorThings API data standards. Agencies will report successful data progress through brief narrative stories with their implementation plans by May 1 of each year.

Metric: At least one dataset per agency will be available by public web service, and each agency will list data on the WDI data catalog annually. Each agency will submit at least one data success story with its annual plan.

GOALS FOR THE WATER DATA INITIATIVE

Goal 1: Provide help to build directing agencies' required resources to implement the Water Data Act.

Action: The WDI will work with agency POCs and working group members to identify greatest needs and provide a range of resource recommendations regarding funding opportunities, training, and staffing or contract resources.

Target: Directing agencies will have successful data integration support through funding, staffing, and data improvements utilizing state, local, or federal awards and collaborative funding pursuits.

Metric: At least one success story narrative will be provided in the next annual plan describing data integration, funding, training, and/or data sharing.

Goal 2: Grow the data-literate community among directing agencies, working with local, regional, and national data experts and data contributors.

Action: The WDI will develop an annual workshop for interacting with, learning about, and building the community effort around open water data, the needs for water data, and new opportunities.

Target: Directing agency water data staff will improve collaboration within and among state agencies to improve data management and data-sharing practices.

Metric: The WDI will provide at least one annual workshop/learning opportunity to New Mexico data providers and data users.

Goal 3: Maintain stakeholder engagement and working group activities to refine data priorities and evaluate applications using water data in New Mexico.

Action: The WDI will provide stakeholder opportunities to engage with data visualizations or applications and provide input and feedback.

Target: The WDI will present at least two workshops or surveys to explore data provided and gain feedback on the effectiveness of the data tools.

Metric: The WDI will provide summary fact sheets, periodic email newsletters, and blog posts on the website to keep data providers and data users connected.

Budget Requirements

Building the data and information platform that integrates multiple agencies' water data in a robust, dynamic way is a large and critical project to undertake. This is a multiyear project that will require each participating agency to make tremendous improvements on how they manage water data. Unless properly funded, this process will progress at a slow pace. As New Mexico faces increasing and exceptional water uncertainty with numerous water-management challenges and ambitious goals for water planning, it is essential that the Water Data Act be fully funded to keep pace with current and future water challenges. This is New Mexico's opportunity to break new ground and fund what we refer to as "life"—our water.

As shown in Figure 1, state funds have been provided to NMBGMR over the past 3 years. These have been leveraged for federal grant programs and gift contributions from philanthropic organizations including the Healy Foundation (2020–2023) and the Thornburg Foundation (2022–2023). Over the regular and special legislative sessions in 2022, new recurring (\$410,000) and non-recurring (\$500,000) funds were allocated to OSE and ISC for FY23. Additionally, the NMBGMR received an additional \$150,000 in state funding to support the Water Data Act.

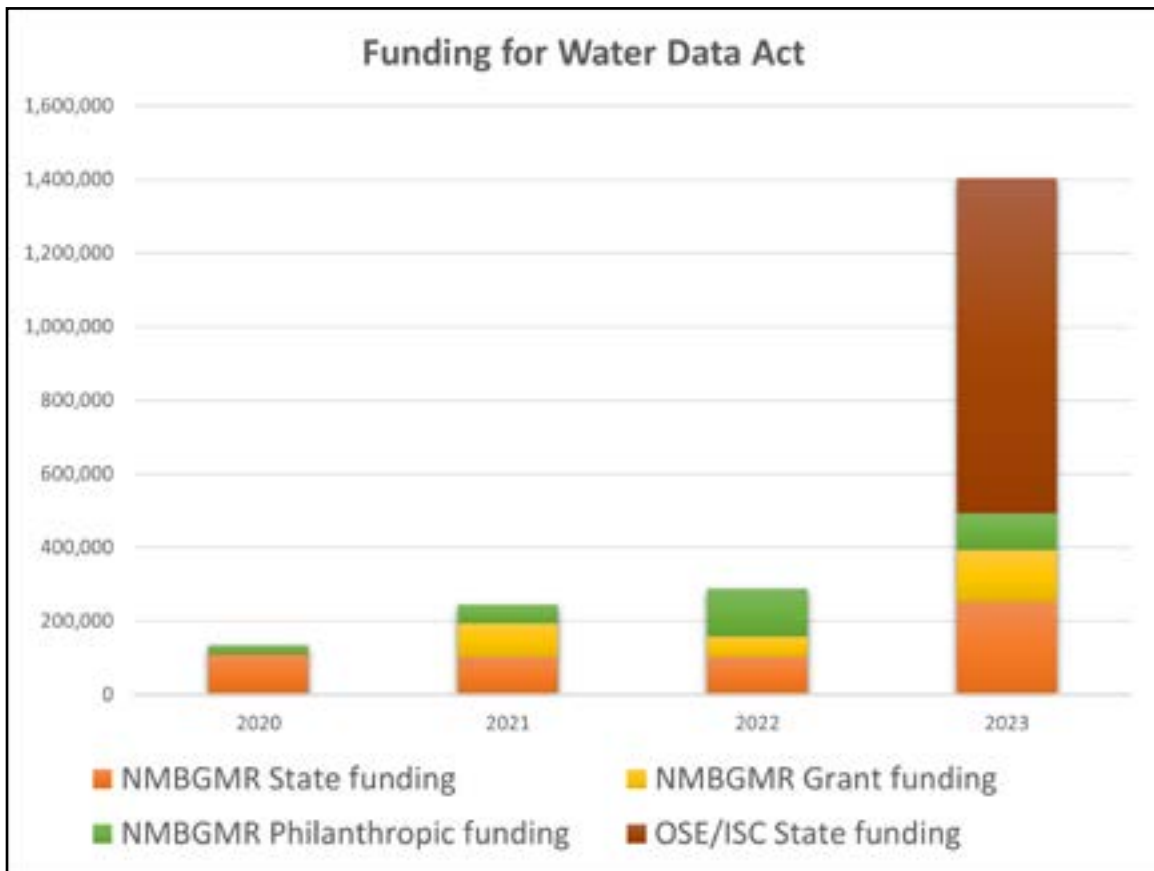


Figure 1. Funding chart for the Water Data Act in New Mexico. The OSE/ISC has received \$910,000 in funding for FY23. See Table 1 for one-time and recurring funding breakdown.

We estimate a total of \$2.65 million in recurring funding is needed to distribute among the state agencies involved in the Water Data Act (Table 1). Approximately \$6.5 million is needed over the next 5 years for non-recurring expenses such as database improvements, software licensing, and hardware upgrades. Most annual recurring cost needs are dedicated to staffing and building agency technical capacities. However, some recurring costs also include annual project support such as licensing or data storage.

More detail is provided in Appendix 1. It is expected that state agencies may request these funds as expansion requests in their annual budgeting process. If funding is acquired, agencies will work with WDI to follow current best practices and data models. Additionally, state agencies will undoubtedly need to obtain additional grant funding for specific water data projects and improvements, including federal funding through the U.S. Environmental Protection Agency or state funding in the C2 program.

Table 1. Agencies’ one-time and recurring funding estimates. More detail for each agency is provided in Appendix 1.

State Agency	Annually Recurring Funding Need	Non-Recurring Funding Need	Annually Recurring Funding Acquired	Non-Recurring Funding Acquired	Staffing Needs
NMED	\$725,000	\$1,000,000	None	None	5 FTEs <i>2 FTEs in IT section; 2 FTEs in Water Protection Division; 1 FTE in Resource Protection Division</i>
EMNRD	\$250,000	\$1,900,000	None	None	2 FTEs <i>In IT section, plus other contract or temporary staff</i>
OSE/ISC	\$1,175,000	\$3,300,000	\$410,000	State funding = \$500,000	10 FTEs <i>3 FTEs in IT section starting in FY23; 7 FTEs needed in management divisions</i>
NMBGMR (convening WDI)	\$500,000	\$300,000	\$250,000	Non-state grant funding = \$509,000	6 FTEs <i>2 FTEs starting in FY23; 4 FTEs in IT services, support, and management positions</i>
GRAND TOTAL	\$2,650,000	\$6,500,000	\$660,000	\$1,009,000	23 NEW state jobs

Note: FTE = Full-time equivalent

NEW MEXICO WATER DATA ACT

Collaborative Funding Goals

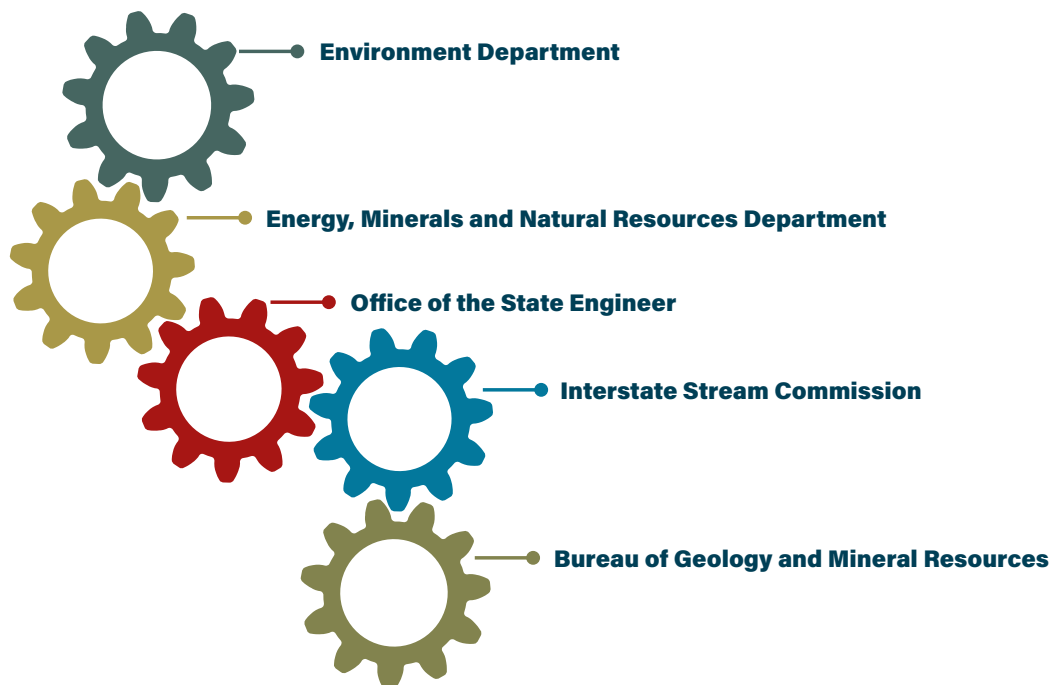
With the passage of the Water Data Act in 2019, New Mexico became a national leader in addressing climate and water challenges by making water data a priority. The goal of the act is to make finding water data simple by coordinating the efforts of multiple agencies in the state. We are building collaborations and working groups, cataloging data, and establishing data standards. And yet, there is significant work ahead to complete our digital transformation, improve the accessibility of New Mexico's water data, and increase the efficiency of New Mexico's water agencies.

Meeting the expectations of the 2019 Water Data Act requires adding a new state agency priority and a significant expansion of duties. At the time of passage, \$110,000 in annual recurring funding was appropriated to the NMBGMR to act as the convening agency. Subsequent legislative sessions have provided some additional resources to the NMBGMR and OSE/ISC; however, all of the partnering state agencies require additional, sustained funding to meet and maintain the objectives of this ambitious statute. The time has come to fully invest in New Mexico's water security by supporting state water agencies to modernize and better serve their constituents. This multi-agency funding summary outlines the general needs of each agency, with more detailed information to come through each agency's budget request.

For the five agencies in the Water Data Act

Total Annual Recurring Funding Needed: \$2.65M

Total Non-Recurring Funding Needed: \$6.5M





Environment Department

The NMED plans to develop, implement, and support technology infrastructure to improve the agency's water data collection, data management, data documentation, and data access through application programming interfaces. This work will be supported by five divisions within the NMED that collect or maintain water data.

Staffing Need

5 FTEs (2 in IT section, 2 in Water Protection Division, 1 in Resource Protection Division)

Funding Requirements

Annual recurring estimate: \$725K
2-year non-recurring estimate: \$1M



Energy, Minerals and Natural Resources Department

The EMNRD plans to make improvements to automate data compilation/collection; build structured, standardized databases; and develop/maintain data access points using application programming interfaces. This work will be supported by three divisions of EMNRD that collect water data.

Staffing Need

2 FTEs (IT section), plus other contract or temporary staff

Funding Requirements

Annual recurring estimate: \$250K
5-year non-recurring estimate: \$1.9M



Office of the State Engineer/Interstate Stream Commission

In order to fully engage in the Water Data Act, the OSE/ISC, with a shared IT department, needs to develop, implement, and support improvements in water data collection, data management upgrades, and data sharing capabilities. New funding is essential to expand staff capacity, get paper data in an electronic and accessible format, and support essential technology infrastructure to improve inter- and intra-agency water work within numerous bureaus and district offices.

Staffing Need

10 FTEs (in IT services and OSE/ISC management positions)

Funding Requirements

Recurring funding received for FY23: \$410K
Non-recurring funding received for FY23: \$500K
Additional annual recurring estimate: \$1.175M
Additional 5-year non-recurring estimate: \$3.3M



Bureau of Geology and Mineral Resources (under Higher Education/NMT)

The NMBGMR serves as the convening agency of the Water Data Act, coordinating all the water data agencies, working with regional and national water data efforts, reporting and planning, and hosting numerous data services. Additionally, the NMBGMR collects and maintains water data about streams, springs, and aquifers as part of the Aquifer Mapping Program. This funding estimate includes both roles: convening the Water Data Act and acting as a data provider.

Staffing Need

6 FTEs (in IT services, support, and management positions)

Funding Requirements

Recurring funding received for FY23: \$250K
Additional annual recurring estimate: \$500K
2-year non-recurring estimate: \$300K

Big IT projects such as large database replacements and multiyear data digitization efforts will be directed through the C2 (NM DoIT) computer system funding process and are not included here.

Impact

One of the largest benefits to New Mexico related to implementing the Water Data Act is improved transparency of the state agencies and increased efficiency. By taking steps to modernize and transform our data management and data sharing, state agencies can spend less time searching for data and more time addressing the needs of the state or public inquiries. Communities facing water challenges can more easily receive the help they need to make data-informed decisions as they face climate-related issues and investments. By making changes in how our state data are managed and shared, we can provide water managers and water planners with tools to be nimble and resilient.



Appendix 1

Summary of Agency Implementation Plans



Each of the directing agencies was asked to provide an outline or plan to describe how their agency will participate in the Water Data Act in the upcoming year and to provide estimates for budgetary requirements that would expedite the goals of the Act. This information is presented here for the purpose of estimating what an agency needs to meet the requirements of the Act and should not be considered an official budget request.

It is critical that meeting this need does not take away from directing agencies' ability to conduct their current missions and goals. Funding the Water Data Act will require expansions to agency budgets. However, due to the increased agency efficiency that will result from funding this effort, this investment will pay for itself in the coming years.

Agency goals from the 2021 Annual Plan are included below for reference.

Goal 1: Increase efficiency of communications about water data with the directing agencies.

Action: Each directing agency will designate a staff member to be the designated POC for the Act. This person will work among the WDI teams and periodically check in with their agency to evaluate progress on goals and data sharing or to set plans for future years.

Target: Improved communication and understanding of the steps needed; designating a consistent person responsible for communication/action in each agency.

Metric: Each of the directing agencies will name one person by December 2021 to act as POC for the agency.

Goal 2: Each directing agency establishes its own plan for implementing the Act.

Action: Each of the directing agencies will develop a Water Data Act implementation plan or outline to describe how the agency will accomplish the goals of the Act over the next 5 years. This includes specifying budget and staff requirements.

Target: Directing agencies will set water data as an internal priority and will create a plan to engage. By making a plan, budget requests can be made and agency staff will know what to expect.

Metric: In lieu of the annual questionnaire from WDI, each of the directing agencies will submit the agency's Water Data Act implementation outline or plan, including agency goals, budget, and staff requirements, to WDI by April 1, 2022. Budget requests will be included in agency requests for FY24.

Goal 3: Each directing agency begins sharing, continues sharing, or shares new water data by web services (computer/machine-readable format and API).

Action: Agency POC works with staff in agency to select which water data features align with key data, as discussed internally or with the implementation team. The POC works with the WDI team to set up a process for data sharing and seeks help as needed.

Target: To ensure progress on data sharing, while a plan is being developed in Goal 2, the agency will focus internally on working through the data sharing process for one dataset, with complete metadata and mapping to SensorThings API data format.

Metric: At least one dataset per agency is available by public web service and the agency has listed data on the WDI data catalog by June 2022.

New Mexico Environment Department

The following provides a status update summary of NMED activities related to the 2021 Water Data Plan and outlines goals and budget projections for 2022 Water Data Plan.

Goal 1: Increase efficiency of communications about water with the directing agencies.

NMED appointed John Rhoderick, Deputy Director (currently Acting Director) of the Water Protection Division, as the designated POC for the Act.

Goal 2: Each directing agency establishes its own plan for implementing the Act.

NMED has moved forward to actively implement the Act by identifying major tasks, key personnel, and critical needs to implement and maintain the Act.

Goal 3: Each directing agency begins sharing, continues sharing, or shares new water data by web services (computer/machine-readable format and API).

NMED has actively engaged in developing APIs for data sharing and continues to identify data that need to be included and shared by API.

MAJOR TASKS – 2021–2022

- Inventory and evaluate available data/database applications.

NMED-IT has made significant progress in inventorying and evaluating existing data and will continue to inventory as time and resources allow.

- Acquire and implement new databases for the Ground Water Quality Bureau and Surface Water Quality Bureau.

The Ground Water Quality Bureau, in collaboration with IT, is working on developing a new Microsoft Power Platform database. The development is part of an effort to move all NMED databases onto the same standardized platform. NMED hopes to launch the new database by the end of calendar year 2022.

- Provide additional IT support for the Safe Drinking Water Information System (SDWIS) and Drinking Water Watch.

NMED-IT has completed uploading all of Drinking Water Bureau's SDWIS/State water sample data as of March 1, 2022, to the Water Data Initiative's SensorThings API server. This is over 2.8 million samples, but there are over 100 new samples being added to SDWIS per day, so the next task is to create a process that automatically uploads new daily samples to the WDI server so the data are always current. That will be done before mid-year, and then we will give a presentation on how we did it to California so they can hopefully benefit from our tools. This has been our main activity for the past 10 months or so.

- Continue work on water data features to share by API.

After the SDWIS data is fully published and continuously updated, NMED-IT will move on to do the same for the Surface Water Quality Bureau. Currently we have a link to the NPDES permits layer and assessed/impaired waters layer that is shown on the web maps. SWQB's SQUID database has data pertaining to the EPA's Integrated Report for our obligations under the Clean Water Act sections 303d and 305b, but those data are only submitted every 2 years. NMED would like to publish all the data from SQUID that contributes to the report continuously through the WDI's server.

- Include new data features on current web mapping services.
This activity has not been started yet.
- Initiate paper data digitization.
Not started yet pending funding.
- New staff requirements in IT, Ground Water, and Surface Water.
No staffing has been added due to funding constraints.
NMED-IT continues to work on the API management platform, the Google-software-based Open Data Portal. The portal is currently in staging. Once it moves to production, it can be filled with APIs as fast as we can build them. The platform will not only host water data and mapping; it will house everything that NMED can publish, and non-IT staff will be able to publish and access it as well.

PROPOSED TASKS - 2022 (FY23)

- Continue ongoing inventory of available data and database applications.
- Acquire and implement new databases for Ground Water Quality, Surface Water Quality, and Petroleum Storage Tank Bureaus.
- Complete development of the process to automatically upload daily sampling data from the SDWIS and Drinking Water Watch. Once completed and operational, share the developed process with other states.
- Continue work on water data features to share by API.
- Include new data features on current web mapping services.
- Initiate paper data digitization.
- Build capacity by adding staff in IT Bureau, Ground Water Quality Bureau, Surface Water Quality Bureau, Drinking Water Bureau, and Petroleum Storage Tank Bureau to develop, maintain, and expand NMED's ability to make data available to the public.
- Explore funding sources to cover ongoing costs of developing, implementing, and maintaining necessary staff and resources to fully implement the Water Data Act.

BUDGET CONSIDERATIONS AND NMED FUNDING PLAN

The NMED estimates it would need \$4,625,000 over 5 years for the agency to develop, implement, and support technology infrastructure to improve the agency's water data collection, data management, data documentation, and data access through application programming interfaces to fulfill its responsibilities under the Water Data Act. NMED expects that ongoing funding after the first 5 years of development and implementation will be necessary to meet the requirements of the Water Data Act. NMED estimates that ongoing maintenance and upgrade costs will be approximately \$725,000 per year. An estimated funding breakdown over 6 years to reach a maintenance level is provided in the table below.

	FY23	FY24	FY25	FY26	FY27	FY28	Total
	Maintenance						
Non-Recurring Costs	\$ 530,000	\$ 470,000					\$ 1,000,000
Recurring Costs - Cloud Based Services - IT staff (2 FTEs)	\$ 425,000	\$ 425,000	\$ 425,000	\$ 425,000	\$ 425,000	\$ 425,000	\$ 2,550,000
Recurring Costs - Division Staff (3 FTEs)	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 1,800,000
Total	\$ 1,255,000	\$ 1,195,000	\$ 725,000	\$ 725,000	\$ 725,000	\$ 725,000	\$ 5,350,000

PLAN NARRATIVE

- FY23 Recurring: Web hosting services, data integration, database maintenance, 2 FTEs in IT, 2 FTEs in Water Protection Division, and 1 FTE in Resource Protection Division to manage data coordination and IT interface

Non-recurring: Database acquisitions, integrations, digitizing services
- FY24 Recurring: Web hosting services, data integration, database maintenance, 2 FTEs in IT, 2 FTEs in Water Protection Division, and 1 FTE in Resource Protection Division to manage data coordination and IT interface

Non-recurring: Digitizing services, database customizations
- FY25 Recurring: Web hosting, maintenance, 2 FTEs in IT, 2 FTEs in Water Protection Division, and 1 FTE in Resource Protection Division to manage data coordination and IT interface

Non-recurring: none
- FY26 Recurring: Web hosting, maintenance, 2 FTEs in IT, 2 FTEs in Water Protection Division, and 1 FTE in Resource Protection Division to manage data coordination and IT interface

Non-recurring: none
- FY27 Recurring: Web hosting, maintenance, 2 FTEs in IT, 2 FTEs in Water Protection Division, and 1 FTE in Resource Protection Division to manage data coordination and IT interface

Non-recurring: none
- FY28 Long-term recurring costs: Web hosting, maintenance 2 FTEs in IT, 2 FTEs in Water Protection Division, and 1 FTE in Resource Protection Division to continue data coordination and interface
- Ongoing NMED estimates that approximately \$725,000 per year going forward will need to be allocated to maintain IT infrastructure and staff to ensure continued implementation of the Water Data Act.

NMED will be seeking funding from multiple sources including legislative appropriations, federal grants, and ICIP appropriations to meet the financial requirements of implementing the Water Data Act.

New Mexico Energy, Minerals and Natural Resources Department

The following provides a status update summary of the EMNRD activities related to the 2021 Water Data Plan. It also outlines funding needs and goals of the agency for FY24 and beyond. To date, EMNRD has received no funding to implement the Water Data Act.

Goal 1: Increase efficiency of communications about water with the directing agencies.

EMNRD has met Goal 1 by naming a POC, Kevin Myers in the Mining and Minerals Division, for the agency before December 2021. Communication focuses primarily on the potential for funding and estimating a budget. Without funding, EMNRD staff have limited time and resources to devote to refining the plan.

Goal 2: Each directing agency establishes its own plan for implementing the Act.

Goal 2 has been met through the budget estimates prepared by EMNRD staff and managers for FY23 outlined in the table below. Since this was not funded during the January–February regular legislative session, the estimates made earlier in 2022 form the basis for the agency’s FY24 request. The EMNRD Information Technology Office (ITO) developed a business case that estimated total cost of ownership (TCO) using recurring and non-recurring costs that considered new and existing data projects, mostly involving Oil Conservation Division (OCD) data. The Mining and Minerals Division’s (MMD) Coal Program also estimated costs necessary to update and transition its coal water quality data set. Any funding will require further assessment of priorities and next steps to begin implementation through the procurement process and assign tasks within EMNRD for projects selected. Part of the assessment will set boundaries on the extent of paper and electronic data that is not yet in a findable, searchable, and usable form for API-accessible data.

Goal 3: Each directing agency begins sharing, continues sharing, or shares new water data by web services (computer/machine-readable format and API).

Goal 3 has not been met, yet the new OCD Water Use by Categories for hydraulic fracturing has been operating since October 2020. As new data infrastructure projects develop, EMNRD-ITO will implement projects with consideration of the Water Data Act goals.

The table below describes a current list of primary tasks, potential activities, and water data projects for consideration, assuming EMNRD receives funding.

TCO: EMNRD	FY24	FY25	FY26	FY27	FY28	Total
Non-Recurring Costs – OCD	\$ 400,000	\$ 300,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 1,000,000
Non-Recurring Costs – MMD	\$ 500,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 900,000
Recurring Costs – ITO	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 1,250,000
Total	\$ 1,150,000	\$ 650,000	\$ 450,000	\$ 450,000	\$ 450,000	\$ 3,150,000

Key project activity areas include:

- Identify key data for water management and planning.
- Develop data standards and definitions, especially for data feeds primarily provided by EMNRD.
- Design and implement IT infrastructure required to support APIs.
- Evaluate data system.
- Develop an agency-data-specific water data plan.
- Build data API/data stream.
- Develop data tools, analytics, and applications for public and partners.
- Address historic/paper data digitization.
- Improve, update, and refine various water datasets, tools, and applications.

EMNRD data feeds identified as part of the WDI and planned to be in scope for API implementations:

- Oil Conservation Division
 - ◊ Produced water volumes
 - ◊ Injected and disposed water volumes
 - ◊ Water dispositions (related to oil and gas properties)
 - ◊ Recycled water volumes
 - ◊ Hydraulic fracturing volumes
 - Water use reports
 - Hydraulic fracturing chemical disclosures (e.g., list of chemicals used in each frack)
 - ◊ Daily water injection reports for injection wells affected by induced seismicity
 - ◊ Remediation-related water quality test reports (C-141)
 - ◊ Water data associated with groundwater abatement plans
 - ◊ Water data associated with discharge permits
- Mining and Minerals Division
 - ◊ Coal water quality data
- State Parks
 - ◊ Weekly reservoir water level data
- More data feeds are expected.

Primary tasks for IT personnel supporting the Water Data Act implementation:

- Development of automated/paperless processes related to water data collection to replace current unstructured/manual processes and which result in data in structured databases and not disorganized files in non-standard formats
- Development and support of multiple public-facing APIs, including geospatial capabilities, that support programmatic inquiry into all of EMNRD's water data

New Mexico Office of the State Engineer and Interstate Stream Commission

The following provides a status update summary of OSE/ISC activities related to the 2021 (FY22) Water Data Plan and outlines goals and budget projections for 2022 (FY23).

Goal 1: Increase efficiency of communications about water with the directing agencies.

Rodney McKnight has been serving as the POC for the Act for OSE/ISC until staff funded to focus on this effort can be brought on board. In the 2022 legislative session, OSE/ISC obtained funding to create a full-time Water Data Act Liaison position. We expect this position to be filled early in FY23 and, once up to speed, the liaison should provide OSE/ISC significantly more capacity for internal and external communications related to the Water Data Initiative. The expansion funding from the legislature also allows for additional IT support positions related to the Act.

Goal 2: Each directing agency establishes its own plan for implementing the Act.

In advance of receiving dedicated funding, OSE/ISC's ability to plan has been limited. OSE/ISC's initial efforts have been focused on delivering the WATERS Database PODs in the form of a data dump and creating an API and web services for its RealTime Measurement system. In FY23 the agency will have available to it the funding appropriated from the 2022 legislative session to hire additional IT staff and to cover initial plan implementation costs. OSE/ISC is currently in the process of reevaluating and revising its OSE/ISC Water Data Plan in light of the funding it received.

Goal 3: Each directing agency begins sharing, continues sharing, or shares new water data by web services (computer/machine-readable format and API).

OSE/ISC is currently engaged in developing APIs for data sharing and continues to identify data that need to be included and shared by API.

MAJOR TASKS - 2021 (FY22)

- Inventory and evaluate available data/database applications.
OSE/ISC-IT has made significant progress in inventorying the agency's databases. Completion of the process will accelerate with the additional resources and funding.
- Acquire and implement new databases for the OSE Legal Adjudication Program (LAP).
OSE/ISC requested DoIT C2 project funding and received partial funding to start developing the new application in FY23 and FY24. The project is called the WRATS Modernization Project. The agency is currently finalizing the phase-I scope of work for replacement of the existing WRATS database with a new agency-standard, web-based database application. The development is part of an effort to move all OSE/ISC databases onto the same standardized platform.
- Continue to work on water data features to share by API.
This activity has been occurring on a very limited basis pending the receipt of funding and numerous other competing priorities.
- Include new data features on current web mapping services.
This activity has not been started yet.
- Initiate paper data digitization.
Limited digitization of water data contained in paper documents only using existing staff has been ongoing in the agency. In its out-year funding request, OSE/ISC envisions the potential for developing a significant one-time digitization effort of agency documents by a contract firm in order

to advance this extensive need. Without this support and at current staffing levels, this effort may take a decade or more to complete.

- Meet new staff requirements in IT; Program Support; OSE, including LAP and the Water Resources Allocation Program (WRAP); and ISC.

No staffing was added in FY22 due to funding constraints. However, funding received out of the 2022 session will allow the agency to hire the first staff dedicated to the IT portion of the effort starting in FY23.

PROPOSED TASKS - 2022 (FY23)

- Using funding received out of the 2022 legislative session, post and hire positions to help develop, maintain, and expand OSE/ISC's internal data management capacities, which will support both significantly increased agency efficiency and the agency's ability to make water-related data easily available to the public.
- Continue ongoing inventory of agency data and database applications.
- Commence the agency's WRATS database modernization project to update one of the agency's two largest water database applications using phase-I C2 funding received through the DoIT computer system funding process.
- Continue work on identifying and prioritizing needed API interfaces and begin to work on development.
- Continue to identify and prioritize potential new data features on current web mapping services.
- Continue limited digitization of documents using existing staff. Explore potential for a significant one-time digitization effort of agency documents by an external contract firm, as contemplated in the out-year funding request.
- Explore opportunities to expand data collection efforts and streamline processes for data access and use.
- Explore potential for data integration that could ultimately support hydrologic modelling for planning and interstate compact compliance purposes.

BUDGET CONSIDERATIONS AND OSE/ISC FUNDING PLAN

The OSE/ISC currently estimates it would need approximately \$12 million dollars through FY28 for its activities in support of Water Data Act implementation. These activities may include but are not limited to the development, implementation, and support of technology infrastructure including GIS to improve and expand the agency's water data collection and sharing capabilities. Activities may also include improving and expanding agency data management, development, and integration; data documentation; digitization of records; and data access through application programming interfaces to fulfill OSE/ISC's responsibilities under the Water Data Act. *(This estimate does not include the funding needs associated with replacing antiquated databases that are instrumental to agency operations and will be primary contributors to the agency's Water Data Act data sharing. This funding for phase II of the WRATS replacement and funding for replacement of WATERS will be sought through the DoIT C2 computer system funding process, which the agency estimates may cost \$20 million.)* Estimated ongoing maintenance and upgrade costs after the first 5 years may be approximately \$2 million per year. An estimated funding breakdown over 6 years to reach a maintenance level is provided in the table below.

Type of Cost		FY23	FY24	FY25	FY26	FY27	FY28	Total
Non-Recurring Costs	OSE	\$ 500,000	\$ 500,000	\$ 1,000,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 3,500,000
	ISC		\$ 100,000	\$ 100,000	\$ 100,000			\$ 300,000
	<i>Subtotal</i>	\$ 500,000	\$ 600,000	\$ 1,100,000	\$ 600,000	\$ 500,000	\$ 500,000	\$ 3,800,000
Recurring Costs – Cloud-based Services, Software Licensing, Digitization, Contracts	OSE – services		\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 2,000,000
	ISC		\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 375,000
	<i>Subtotal</i>	\$ 0	\$ 475,000	\$ 475,000	\$ 475,000	\$ 475,000	\$ 475,000	\$ 2,375,000
Recurring Costs – Staff	OSE		\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 2,500,000
	OSE IT	\$ 410,000	\$ 410,000	\$ 410,000	\$ 410,000	\$ 410,000	\$ 410,000	\$ 2,460,000
	ISC		\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 1,000,000
	<i>Subtotal</i>	\$ 410,000	\$ 1,110,000	\$ 1,110,000	\$ 1,110,000	\$ 1,110,000	\$ 1,110,000	\$ 5,960,000
TOTAL		\$ 910,000	\$ 2,185,000	\$ 2,685,000	\$ 2,185,000	\$ 2,085,000	\$ 2,085,000	\$ 12,135,000

- FY24 Non-recurring: Database acquisitions, integrations, digitizing services, and database customizations

Recurring: Web hosting services, data integration, database maintenance and software licensing, data collection, and staffing
- FY25 Non-recurring: Database acquisitions, integrations, digitizing services, database customizations, and one-time document digitization push

Recurring: Web hosting services, data integration, database maintenance and software licensing, data collection, and staffing
- FY26 Non-recurring: Database acquisitions, integrations, digitizing services, and database customizations

Recurring: Web hosting services, data integration, database maintenance and software licensing, data collection, and staffing
- FY27 Non-recurring: Database acquisitions, integrations, digitizing services, and database customizations

Recurring: Web hosting services, data integration, database maintenance and software licensing, data collection, and staffing
- FY28 Non-recurring: Database acquisitions, integrations, digitizing services, and database customizations

Recurring: Web hosting services, data integration, database maintenance and software licensing, data collection, and staffing
- Ongoing OSE/ISC estimates needing an allocation of approximately \$2,000,000 per year going forward to maintain IT infrastructure and staff to ensure continued implementation of the Water Data Act.

New Mexico Bureau of Geology and Mineral Resources

The following provides a status update summary of NMBGMR activities related to the 2021 (FY22) Water Data Plan and outlines goals and budget projections for 2022 (FY23). Data at NMBGMR include groundwater level measurements, stream flow measurements, spring characteristics, water quality data, environmental tracers and age data on water, precipitation data, and interpretations such as mapping of aquifers with geology.

Goal 1: Increase efficiency of communications about water with the directing agencies.

Stacy Timmons has been serving as the NMBGMR's liaison for the Water Data Act implementation as well as the lead person convening the overall Water Data Act for New Mexico. Additionally, to improve communications on the WDI, periodic meetings are convened when needed for input or training opportunities. Using a newsletter, website/social media, and established/automated blog posts has provided added efficiency to the program.

Goal 2: Each directing agency establishes its own plan for implementing the Act.

Funding at the NMBGMR has been entirely dedicated to use for the overall effort of the Water Data Act and not specifically to work on water data from NMBGMR. Staff within NMBGMR help maintain water data from the Aquifer Mapping Program (hydrogeology) for New Mexico. These data have been used for testing several API features and data end points; however, the overall database needs some support and upgrades. Implementing the Water Data Act has also been successful in providing additional funding and projects to demonstrate the need for usability of water data in specific regions.

Goal 3: Each directing agency begins sharing, continues sharing, or shares new water data by web services (computer/machine-readable format and API).

Utilizing in-house staff resources, the Aquifer Mapping Program database groundwater well locations and groundwater level data have been mapped to the SensorThings API endpoint hosted on a cloud-based server.

MAJOR TASKS - 2021 (FY22)

- Evaluate data system.

The NMBGMR Aquifer Mapping Program database is the primary database for water data. It requires improvements for data collection, data input, and data reporting needs to comply better with the program and the Water Data Act.

- Build data API/data service.

This activity has been slowly progressing, as currently the groundwater level data in the Aquifer Mapping Program database is provided to an API endpoint in a robust, automated workflow. Additional datasets including water quality need to be worked through.

- Address historic data and paper data digitization.

No new digitization projects have been initiated at NMBGMR. New projects are just starting as of June 2022; these focus on digitizing well depth and formation information in the Pecos Valley.

- Improve, update, and refine various water datasets, tools, and applications.

No staffing was added in FY22 due to funding constraints. However, funding received out of the 2022 session will allow the agency to hire the first staff dedicated to the IT portion of the effort starting in FY23.

- Convene the Water Data Act, as required in statute.

With limited funding to support the agency's needs for data management support, as well as the overall effort of convening the Water Data Act for the state, NMBGMR has utilized grants and philanthropic contributions to begin this work. Currently, 2.5 FTEs are supported at NMBGMR to implement the Water Data Act convening and various water data projects on soft funding.

- Continue grant-funded projects to leverage state and external funding and improve access to water data.

Cooperative grant funding from the U.S. Bureau of Reclamation WaterSMART applied science program has helped NMBGMR build regional data projects that can affect how data are utilized for specific regional challenges.

PROPOSED TASKS - 2022 (FY23)

- Using funding received out of the 2022 legislative session, develop and hire a Water Data Program Manager position to help with supporting the agencies involved with the Water Data Act, convening meetings/workshops, and other management support.
- Continue ongoing inventory of agency water data and database applications.
- Explore limited digitization of documents using existing staff or student support from NMT.
- Continue Pecos Valley Water Data Pilot Project data integration and visualization, in collaboration with Pecos Valley Artesian Conservancy District and the Internet of Water Coalition and with support from several contractors. Funding is from the U.S. Bureau of Reclamation cooperative agreement with NMBGMR.
- Initiate Rio Grande data project to improve data service to ISC staff or contractors for modeling work needed. Funding is from the U.S. Bureau of Reclamation cooperative agreement with NMBGMR.
- Complete groundwater monitoring data evaluation, identify data gaps, and provide recommendations in support of the Water Data Act for New Mexico. Funding is from the Thornburg Foundation.
- Support building the WDI for New Mexico through staffing, contract support, training, convening workshops and meetings, and numerous reporting/newsletter exercises. Funding is from the New Mexico state legislature and Healy Foundation.

BUDGET CONSIDERATIONS AND NMBGMR FUNDING PLAN

The NMBGMR is the convening agency of the Water Data Act, tasked with providing support of Water Data Act implementation including coordinating directing agencies, as well as building, implementing, and supporting IT infrastructure for data service, data transformation, and reporting. Additionally, the NMBGMR must improve its own water data collection, data management and documentation, and data access through automation of APIs, particularly related to the Aquifer Mapping Program.

The NMBGMR requires increased staffing and significant technical data upgrades for successfully implementing the Water Data Act. The NMBGMR estimates needing an annually recurring total of \$750,000 to support the Water Data Act and agency needs. Of this total, the NMBGMR has already received \$250,000 in annual recurring funding from the state, bringing the remaining need for funding to \$500,000 in recurring costs. This funding is needed largely to support full-time positions in program management of the Water Data Act, developer positions in IT, a data manager for NMBGMR, and technical support positions. Additional remaining recurring funds are required to maintain data services and cloud-based storage, as well as periodic contract services for application development and annual software licenses.

WATER DATA ACT FUNDING NEEDS

NMBGMR	FY23	FY24	FY25	FY26	FY27	Total
Non-Recurring Costs – Data management service/upgrades over 5 years		\$ 300,000				\$ 300,000
Recurring Costs – 6 FTEs*		\$ 750,000	\$ 750,000	\$ 750,000	\$ 750,000	\$ 3,000,000
FUNDING RECEIVED**	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 1,250,000
Remaining Total Needed		\$ 800,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 2,300,000

* FTEs needed (full-time regular preference): 1 coordinator for Water Data Act, 2 full stack developers (one for Water Data Act, one for NMBGMR water data), 1 data manager for NMBGMR water data, 1 Water Data Act technical support staff, and 1 water data liaison.

** Funding annually varies with NMT/NMBGMR cuts or increases

PLAN NARRATIVE

- FY23 Recurring: Web hosting services and data integration to support WDI; funding for 1.5 FTEs in program management and IT services

- FY24 Recurring annually: Web hosting services; data integration; database maintenance; and FTEs for 1 coordinator for Water Data Act, 2 full stack developers (one for Water Data Act, one for NMBGMR water data), 1 data manager for NMBGMR water data, 1 Water Data Act technical support staff, and 1 water data liaison

 Non-recurring: Database upgrades, data collection improvements, and data integration

- Ongoing NMBGMR as a water research state agency and convenor of the Water Data Act estimates that approximately \$750,000 per year going forward will need to be allocated to maintain internal and external IT infrastructure and staff to ensure continued functioning of the Water Data Act.