

**Mapping and Classification of Wetlands,
Southwestern New Mexico
Assistance Agreement CD# 01F10901-E (FY2016)**



Near Reserve NM. Photo by GSS

**New Mexico Environment Department
Surface Water Quality Bureau
Wetlands Program**

**Final Report
December 2021**

**Mapping and Classification for Wetlands Protection,
Southwestern Region, New Mexico
December 2021**

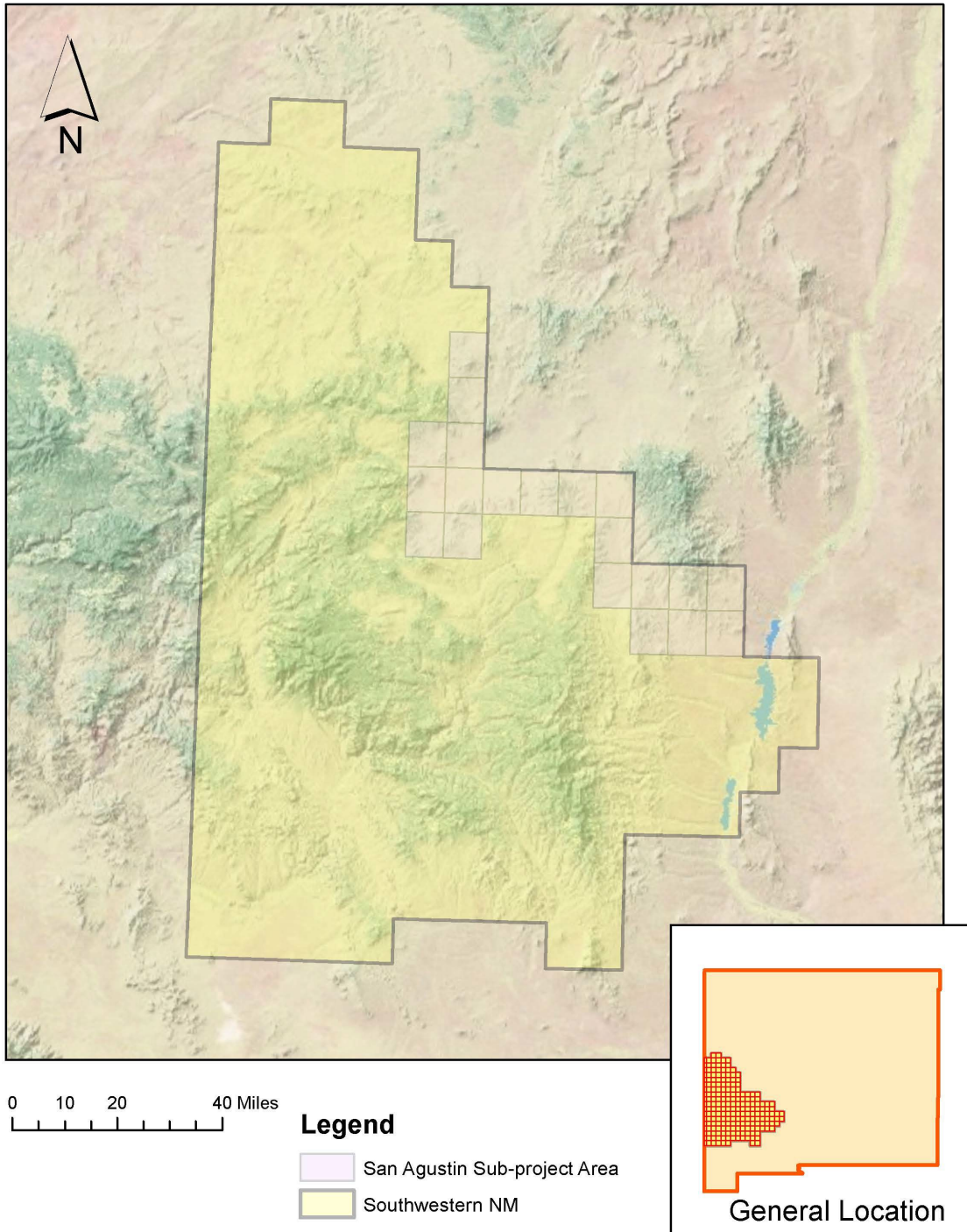
Project Goals and Objectives

The New Mexico Environment Department Surface Water Quality Bureau (SWQB) Wetlands Program mapped and classified wetlands covering 204 quadrangles (DRGs) in a southwestern portion of New Mexico also known as the Gila Region, as part of our Landscape Level 1 Assessment strategy. Mapping and classification followed the Federal Geographic Data Committee (FGDC) standards to update the US Fish and Wildlife Service National Wetlands Inventory (NWI). For this update, wetlands were classified using the *Classification of Wetlands and Deepwater Habitats of the United States*, (Cowardin et al. 1979), and *System for Classification of Riparian Areas in the Western United States* (USFWS 2009). In addition, the wetlands were coded in accordance with the Landscape Position, Landform, Waterflow Path, and Waterbody Type (LLWW) mapping classification developed by Ralph Tiner (2014) which includes descriptors for arid lands wetlands. The LLWW classification provided data for assigning Hydrogeomorphic (HGM) wetland subclasses (Brinson 1993) to wetlands throughout the mapping area. The classifications also facilitated the modeling of a landscape level functional assessment and assigning functions to HGM classified wetlands. A final step was to define and apply wetland assessment unit codes for wetlands water quality standards development.

Project tasks also included the assembly of a technical advisory committee (TAC) to review the mapping information and provide their input and expertise through mapping TAC meetings pre- and post- mapping; on-the-ground pre- and post-mapping field reviews by mapping contractors, US Fish and Wildlife NWI staff and Wetlands Program staff; participation in the New Mexico Geospatial Advisory Committee; and the development of a Story Map and other transfer of results and products activities.

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Project Outputs

Through this project five major objectives were accomplished:

- 1) Approximately 204 quadrangles in southwestern New Mexico are mapped and classified using various classifications to further the completion of a landscape level assessment of all wetlands in New Mexico;
- 2) A landscape level functional assessment model was applied that assigns and rates functions for all HGM classified wetlands in the project area. These data can be used by the State, public land managers, regional and local planners, and communities to identify protection and restoration priorities.
- 3) These mapping and classification products provide the necessary information for SWQB, state and federal agencies, land managers and local decision makers to integrate wetlands protection and restoration into land management and watershed planning. Local agencies and communities were targeted for presentations and involvement in the TAC.
- 4) Continued participation in the NM Geospatial Advisory Committee shared resources and increased awareness, partnerships, and funding opportunities for future mapping projects and priorities.
- 5) Mapping and classification of wetlands in New Mexico was critical to the development of classified segments for wetlands water quality standards by wetland subclass in the project area.

Project Outcomes

- A gap in New Mexico wetlands mapping was completed in a major recreational area and wildland-urban interfaces. The area is composed of private and public lands where water resources are at risk from ground water extraction, urban and rural development, grazing and agriculture, and a high risk of catastrophic wildfire.
- A landscape level functional assessment was developed utilizing the wetland mapping and classification data, relying on the New Mexico functional correlation tables and the assistance of the Technical Advisory Committee. Mapping, classification and functional assessment information will help land managers, local watershed groups, and the public regarding the identification and location of wetland resources for protection and/or restoration.

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| Table 1 |
|--|
| Possible Functions for Assessment |
| <i>For wetland subclasses that provide these functions, the functions are also rated as moderate or high</i> |
| Surface Water Detention |
| Streamflow Maintenance |
| Energy Dissipation |
| Subsurface Water Storage |
| Shoreline Stabilization |
| Nutrient Transformation |
| Carbon Sequestration |
| Sediment and Other Particulate Retention |
| Fish and Aquatic Invertebrate Habitat |
| Waterfowl Habitat |
| Waterbird Habitat |
| Other Wildlife Habitat |
| Conservation of Biodiversity |

- The mapping and classification data was used to inform the creation of classified segments for Water Quality Standards based on the wetland subclasses described through the mapping process which is furthering the development of water quality standards for New Mexico’s wetlands as well as creating an example for other states. This project provides the supporting data and information needed to take the next steps for developing water quality standards for subclasses of New Mexico’s wetlands resources.
- The SWQB Wetlands Program and partners now have mapping data for landscape level wetlands resource analysis and monitoring capabilities that will assist with better wetlands protection, restoration and mitigation.
- This project creates improved tools for assessing and evaluating the condition of New Mexico’s Wetlands in the project area. Mapping and classification projects are used to identify New Mexico’s wetlands resources, assisting with targeting wetlands in need of special protection, wetlands that are particularly impacted and wetlands that can be restored.
- Mapping and classification projects are filling a critical data gap for an integrated and comprehensive approach to wetlands protection by SWQB and its partners.
- As future wetlands mapping and classification projects are completed, an iterative monitoring program linked to water quality assessments by watershed will continue to be developed and will increase the capacity and understanding of ecological linkages, natural variability and changes that result from human activities.

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- Through our development of an integrated SQUID database at SWQB, wetlands identification, classification and assessment data will be available for inclusion in CWA Section 305(b) reports, increasing access to stakeholders and decision makers to improve their knowledge and understanding of wetlands issues.
- The oversight of mapping and classification wetlands data at NMED will provide the capability to combine wetlands analysis and results with other SWQB water quality programs that will result in overall improvement to water resources of the State.
- The inclusion of up-to date mapping of New Mexico in the National Wetlands Inventory improves that dataset by providing more accurate map data than older mapped data and areas mapped by the Scalable Mapping initiative.

Project Location

The project is located in the southwestern portion of the State of New Mexico including all of the Gila and San Francisco watersheds within the State. The project area also includes portions of the Mimbres and Lower Colorado Basins, and a small portion of contiguous areas of the Rio Grande Basin in New Mexico. All of the Gila National Forest and portions of the Apache-Sitgreaves and Cibola National Forests were also mapped. (Figure 1).

The 8-digit HUC's of Southwestern New Mexico included in this project are: 15020004 (Zuni), 15020003 (Carrizo Wash), 13020206 (North Plains), 15020002 (Upper Little Colorado), 15020001 (Little Colorado Headwaters), 15040004 (San Francisco), 13020208 (Plains of San Agustin), 15040001 (Upper Gila), 15040002 (Upper Gila-Mangas), 13020211 (Elephant Butte Reservoir), 13030202 (Mimbres), 13030101 (Caballo), 13030102 (El Paso-Las Cruces) and 13030103 (Jornada Draw).

Original Timeframe

The Award for this grant CD #01F10901, includes five projects that originated in October 2015. The Notice of Award for this project (Cooperative Agreement CD #01F10901-E) was issued on May 10, 2016. On January 5, 2018, EPA approved a no-cost grant extension for the Award to September 30, 2020. In September 2019, a no-cost grant extension was requested specifically to accommodate two other projects in the Award but affected the end date for all projects in the Award and the new end date of April 30, 2021, was approved on October 4, 2019. On October 2020 the Wetlands Program requested a no cost extension to September 30, 2021 because NMED was experiencing project delays due to COVID-19, and for this project to also complete mapping changes required by USFWS NWI staff to implement NWI 2.0 for acceptance.

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Partners Involved

Saint Mary's University of Minnesota, GeoSpatial Services Program (GSS) is the principal contractor in partnership with SWQB Wetlands Program in performing the mapping, classification and modelling exercises for this project. The principal mappers at GSS included John Anderson, Dave Rokus, Eric Lindquist and Kevin Stark (GSS GIS Analysts) and Andy Robertson (GSS Director). NMED IT staff (Phillip Polzer and Zachary Stauber) were integral to data review and acceptance; and were invaluable in their support. USEPA Region 6 (Sharon Daugherty, Leslie Rauscher and Kyla Chandler) provided project progress guidance and technical assistance.

SWQB Wetlands Program was involved in every aspect of project, participating in the Technical Advisory Committee meetings, pre-mapping and draft map review field mapping trips, review of mapping products and reports.

The Project involved a Technical Advisory Committee whose members are as follows:

***Mapping and Classification for Wetlands Protection, Southwestern New Mexico, Gila Region
Technical Advisory Committee Members***

| Name | Organization |
|--------------------|--|
| A.T. Cole | Pitchfork Ranch, Burro Cienega, New Mexico |
| Donna Stevens | Upper Gila Watershed Alliance |
| Dave Menzie | Silver City Watershed Keepers |
| Ellen Soles | Private Contractor |
| Ondrea Hummel | Tetra Tech, Inc. |
| Matt Ramey | CEHMM, Inc. |
| Mercedeiz Fabok | Western New Mexico University |
| Susan Wahl | Isleta Pueblo |
| Misha Larriche | Grant County, New Mexico |
| Daniel Arrey | Grant County, New Mexico |
| Carolyn Koury | Gila National Forest |
| Emily Pollom | Gila National Forest |
| Amanda Gehrt | Gila National Forest |
| Jony Cockman | US BLM Safford, Arizona Field Office |
| Cindy King | US Geological Survey – New Mexico Water Resources Center |
| Gary Hunt | US Fish & Wildlife Service, Regional Wetlands Coordinator |
| Angel Montoya | US Fish & Wildlife Service, Partners for Fish & Wildlife Program |
| Athena Cholas | USDA National Resources Conservation Service |
| Gar Clarke | NM Department of Information Technology |
| Colleen Cunningham | New Mexico Interstate Stream Commission |
| Susan Styer | NMED/SWQB Non-Point Source Field Team |

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| | |
|----------------|---|
| Emile Sawyer | NMED/SWQB Wetlands Program |
| Maryann McGraw | NMED/SWQB Wetlands Program |
| Andy Robertson | Saint Mary's University of Minnesota, Geospatial Services |
| John Anderson | Saint Mary's University of Minnesota, Geospatial Services |
| Eric Lindquist | Saint Mary's University of Minnesota, Geospatial Services |
| Kevin Stark | Saint Mary's University of Minnesota, Geospatial Services |

Southwestern Region Field Team (Pre-map and Draft Map Reviews)

| | |
|----------------|---|
| Gary Hunt | US Fish & Wildlife Service, Regional Wetlands Coordinator |
| Andy Robertson | Saint Mary's University of Minnesota, Geospatial Services |
| John Anderson | Saint Mary's University of Minnesota, Geospatial Services |
| Eric Lindquist | Saint Mary's University of Minnesota, Geospatial Services |
| Kevin Stark | Saint Mary's University of Minnesota, Geospatial Services |
| Maryann McGraw | NMED/SWQB Wetlands Program |
| Emile Sawyer | NMED/SWQB Wetlands Program |



Figure 1. Southwest Region Field Team at check-site during Pre-mapping Field Review September 2018. Pictured L to R, John Anderson, Gary Hunt, Emile Sawyer, Maryann McGraw, Andy Robertson.

Funding

The original Federal amount budgeted for this project was **\$279,218.00** and **\$95,109.00** match. The **final federal amount** spent was **\$248,102.81** and the **final match amount** was **\$95,735.73 (\$626.73 overmatched)**. See semi-annual reports for details.

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Major Project Highlights and Chronology

- SWQB Wetlands Program was awarded federal assistance for this project. Signatures on the Cooperative Agreement between NMED and EPA were completed on May 10, 2016.
- Emile Sawyer (Wetlands Program Project Officer (WPO)) is assigned to administer and carry out this project.
- The SWQB Financial Section established subaccounts and completed budgeting funds on August 29, 2016.
- The WPC initiated the Determination of Services for a contractor Scope of Work to develop a Request for Proposals for this project.
- The WPC initiated a Statewide Procurement Agreement for Mapping and Classification Services for a contractor to perform the imagery analysis required for this project. The RFP was issued on April 20, 2017.
- The SWQB Wetlands Program received three responses to a Request for Proposals for Mapping and Classification of Wetlands in New Mexico.
- GeoSpatial Services of Saint Mary's University of Minnesota (GSS) was selected as the mapping and classification contractor for this project.
- On October 24-25, 2017, the WPC participated in and gave a webinar presentation at a meeting titled *Discussion and Application of a landscape-scale Western U.S. Wetland Functional Assessment*.
- On November 15, 2017, the WPO traveled to Truth or Consequences, NM to attend the Nonpoint Source Workgroup meeting conducted by the SWQB Watershed Protection Section to network with people from Southwestern New Mexico to solicit participation in the technical advisory committee for the project.
- On January 5, 2018, EPA approved a no-cost grant extension for the Award to September 30, 2020.
- The contract with Saint Mary's University of Minnesota, GeoSpatial Services (GSS) Program received its final signature by the NM Department of Finance Authority on February 22, 2018.
- Contractor tasks were assigned at a preliminary review meeting, and image acquisition and geodatabase assemblage were completed by Andy Robertson, John Anderson and Dave Rokus of GSS in the Summer of 2018.
- A QAPP to cover all concurrent mapping and classification projects was submitted to EPA Region 6 on April 2, 2018, and approved on April 5, 2018 (QTRAK #18-283).
- The NMED Wetland Program initiated development of content for an ESRI Story Map education and outreach tool that will provide a foundation for a statewide wetlands mapping and classification Story Map.
- The WPO initiated the acquisition of LiDAR aerial photography from NRCS and Springs data from the Cibola National Forest as collateral data for the mapping project in early 2018.
- Initial wetland data production began on July 1, 2018.
- The New Mexico Project Status Web application became accessible on August 1, 2018. Mapping status and review was available to Wetlands Program staff here throughout the project.

<https://smumn.maps.arcgis.com/apps/webappviewer/index.html?id=065224034e164e20a4056bdeac1eb215>

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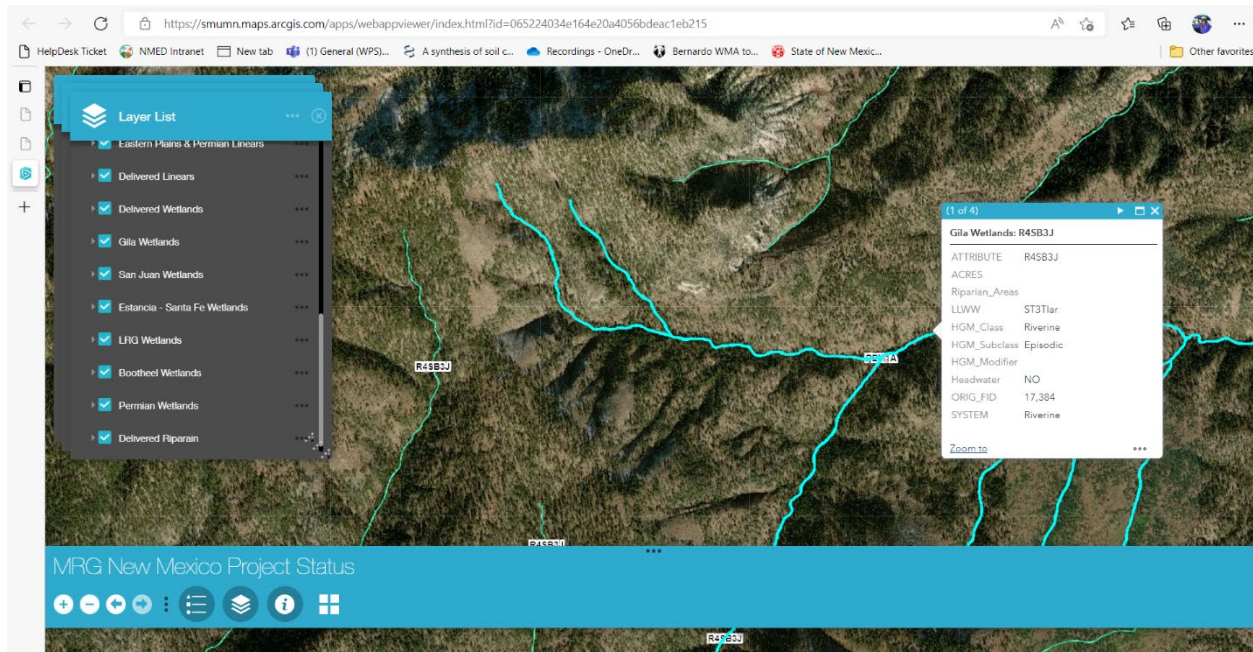


Figure 2. Screen shot of New Mexico Project Status Web application.

- The Pre-mapping field review was conducted from August 26 to September 1, 2018 where more than 200 sites were visited by the Southwest Region Field Team to verify wetland features and non-wetland features so that a selective key of preliminary image signatures could be created.
- A Pre-mapping Field Trip Summary Report was submitted by GSS to the SWQB Wetlands Program in May 2018. The report included baseline information to serve as a guide for identifying and classifying features (as interpreted from the project imagery) within the National Wetland Inventory (NWI) (Cowardin classification), the Riparian Classification System, NWI Plus (LLWW - Landscape Position, Landform, Water Flow Path, and Waterbody Type), and HGM Classification Systems. The Report includes over 150 photos of check-sites and corresponding map signatures collected during the Pre-mapping Field Trip.

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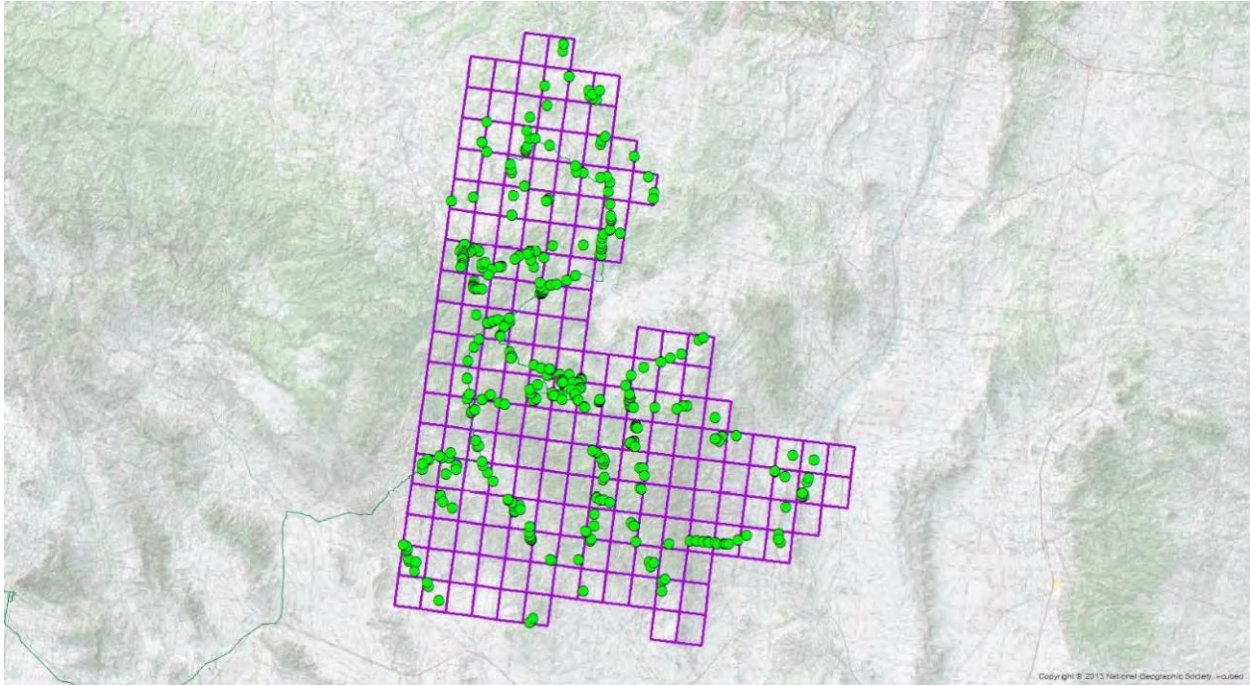


Figure 3. Locations of check sites for the Pre-mapping Field Trip in 2018.

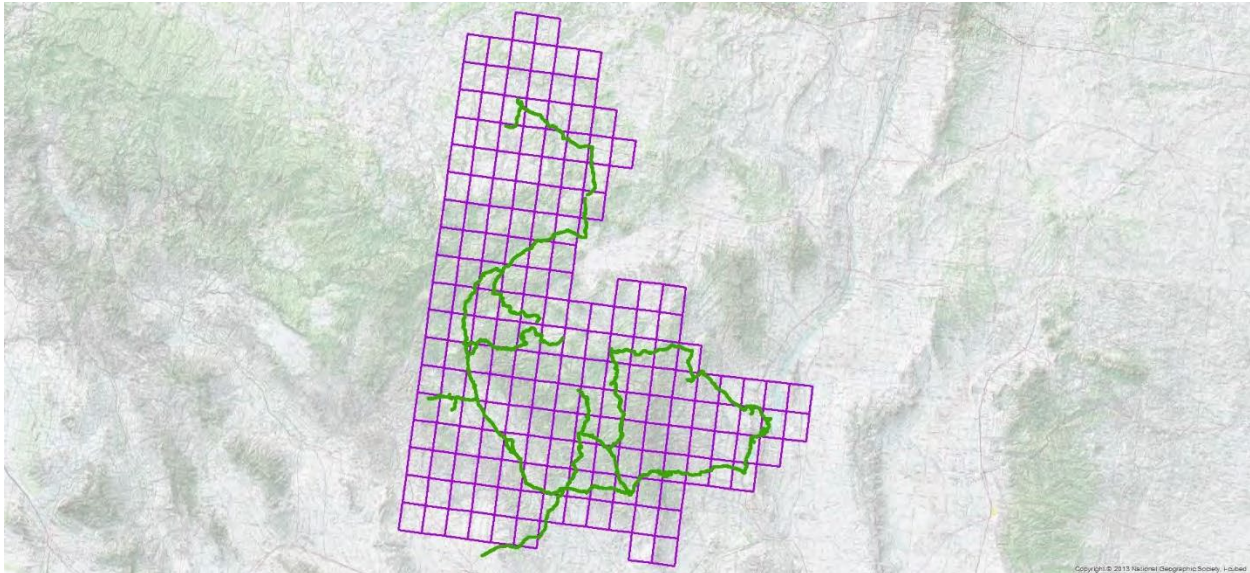


Figure 4. GPS Route (green line) recorded during field verification during the Pre-mapping Field Trip in 2018.

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Figure 5. Example check-site. PEM1A (Cowardin classification) Palustrine, Emergent, Persistent, Temporarily Flooded) wetland area adjacent to the Gila River. Looking south from “Iron Bridge” near Silver City (Check-site #74).

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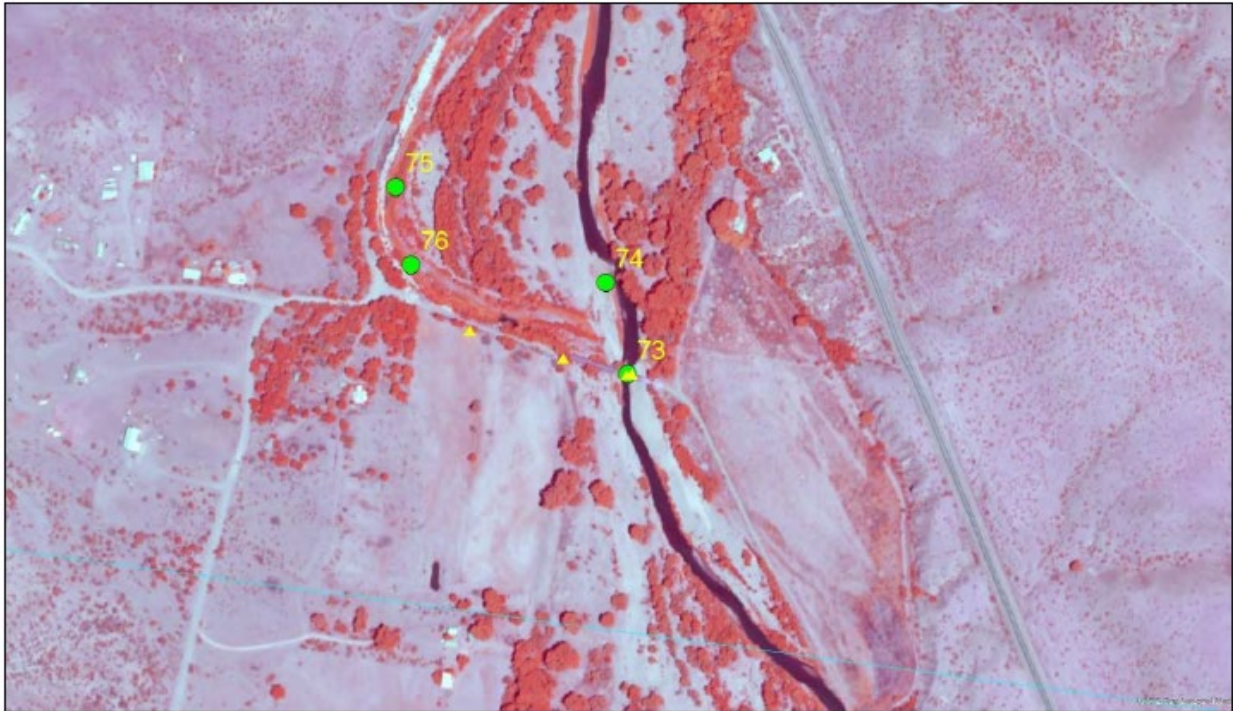


Figure 6. NAIP Map signature for Check-site #74. Smooth texture, magenta color, adjacent to open water in river channel.



Figure 7. Plant and soils identification in Gila National Forest by Southwestern Region Field Team during Pre-Mapping Field Trip.

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- The first Technical Advisory Committee meeting was held in Silver City, NM on August 28, 2018, and broadcast on the internet via Zoom. A total of 16 participants were in attendance.
- The Draft Map Review field trip was conducted from April 11 – April 17, 2019, and a total of 222 sites were visited by the Southwestern Region Field Team. The goals for the trip were to determine whether draft wetland data were consistent with both national standards and with conventions established during the pre-mapping field trip conducted in August 2018. The second goal was to field check pre-mapping sites that were not previously visited due to road closures and time constraints. The third purpose was to field verify wetlands, deep-water habitat, and riparian area imagery signatures and make any necessary adjustments to final wetland mapping in the project area. Check-sites were selected in advance to confirm whether mapped polygons were in fact wetland, to determine that the polygon boundaries accurately reflect on-the-ground conditions, and to assess classification accuracy.

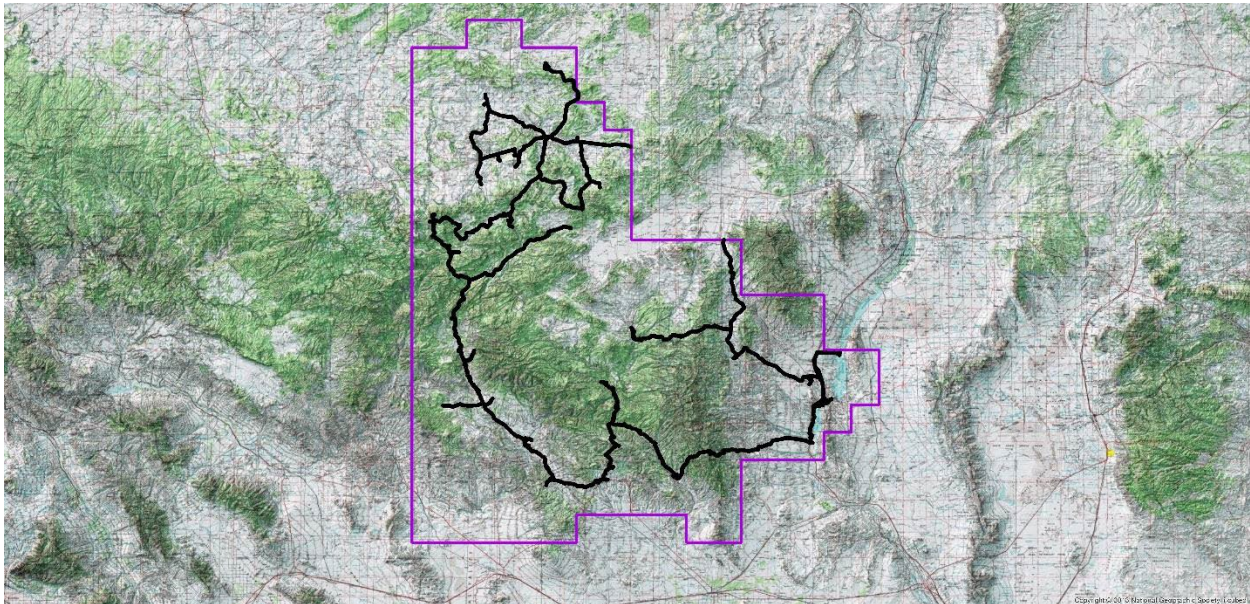


Figure 8. GPS Route (black line) recorded during field verification during the Draft Map Review Field Trip in April 2019.

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Figure 9. Draft Map Review *Check-site #192*. PUBGx (Palustrine, Unconsolidated Bottom, Intermittently Exposed, Excavated) with PEM1Cx (Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated) patches. Farther outside the excavation is PEM1A (Palustrine, Emergent, Persistent, Temporarily Flooded) and PEM1J (Palustrine, Emergent, Persistent, Intermittently Flooded) complex around the perimeter.

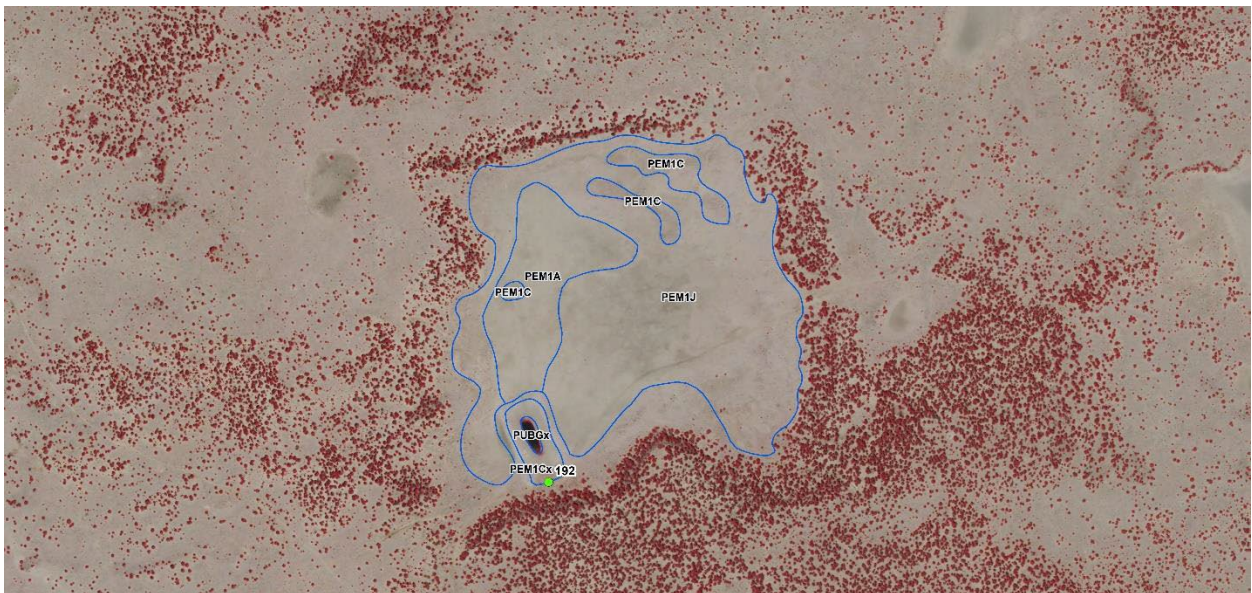


Figure 10. Draft Map Review *Check-site #192*. PUBGx (Palustrine, Unconsolidated Bottom, Intermittently Exposed, Excavated). Open water is dark black and smooth textured. PEM1Cx

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(Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated), PEM1A (Palustrine, Emergent, Persistent, Temporarily Flooded), and PEM1J (Palustrine, Emergent, Persistent, Intermittently Flooded); the vegetated features are smooth textured pink-beige color and dotted with intermittent smokey-grey features, and all are uniform in distribution. 108°29'43.414"W 34°39'45.315"N



Figure 11. Draft Map Review *Check-site #209*. R4SB3J (Riverine, Intermittent, Streambed, Cobble Gravel, Intermittently Flooded).

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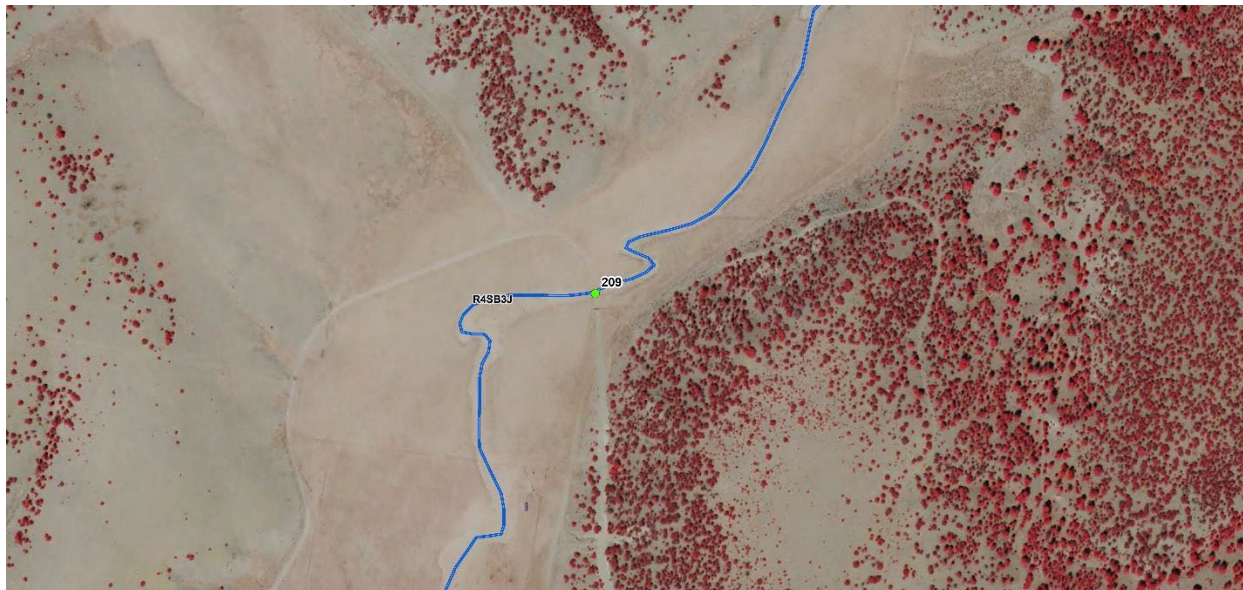


Figure 12. Draft Map Review *Check-site #209*. R4SB3J (Riverine, Intermittent, Streambed, Cobble Gravel, Intermittently Flooded). Feature is bright white to light beige in color and contained in a long narrow channel indicating an intermittent flow with rock and sand mixed bed. 108°42'17.58"W 33°59'37.256"N

- A Draft Map Review Field Trip Summary Report was submitted to SWQB Wetlands Program by GSS which included over 100 figures of check site photos and NAIP imagery.
- The second Technical Advisory Committee meeting was held in Silver City, NM on April 15, 2019 and also broadcast via Zoom. Fourteen participants were in attendance.
- Amendment #2 for 18-667-2060-0018 to include the Plains of San Agustin sub-project was approved May 29, 2019. The Wetlands Program Team and contractors realized a gap in the quadrangles being mapped between the “Mapping and Classification of Wetlands in the Middle Rio Grande Basin (MRG) Project (CD #01F10901-B) project and this project, centered around the Plains of San Agustin. This resulted in adding 20 quadrangles in the Plains of San Agustin area to this project to close the mapping gap (Figure 12).

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New Mexico Wetlands Program Mapping and Classification, Southwestern New Mexico Project Adjustment Plains of San Agustin Sub-project

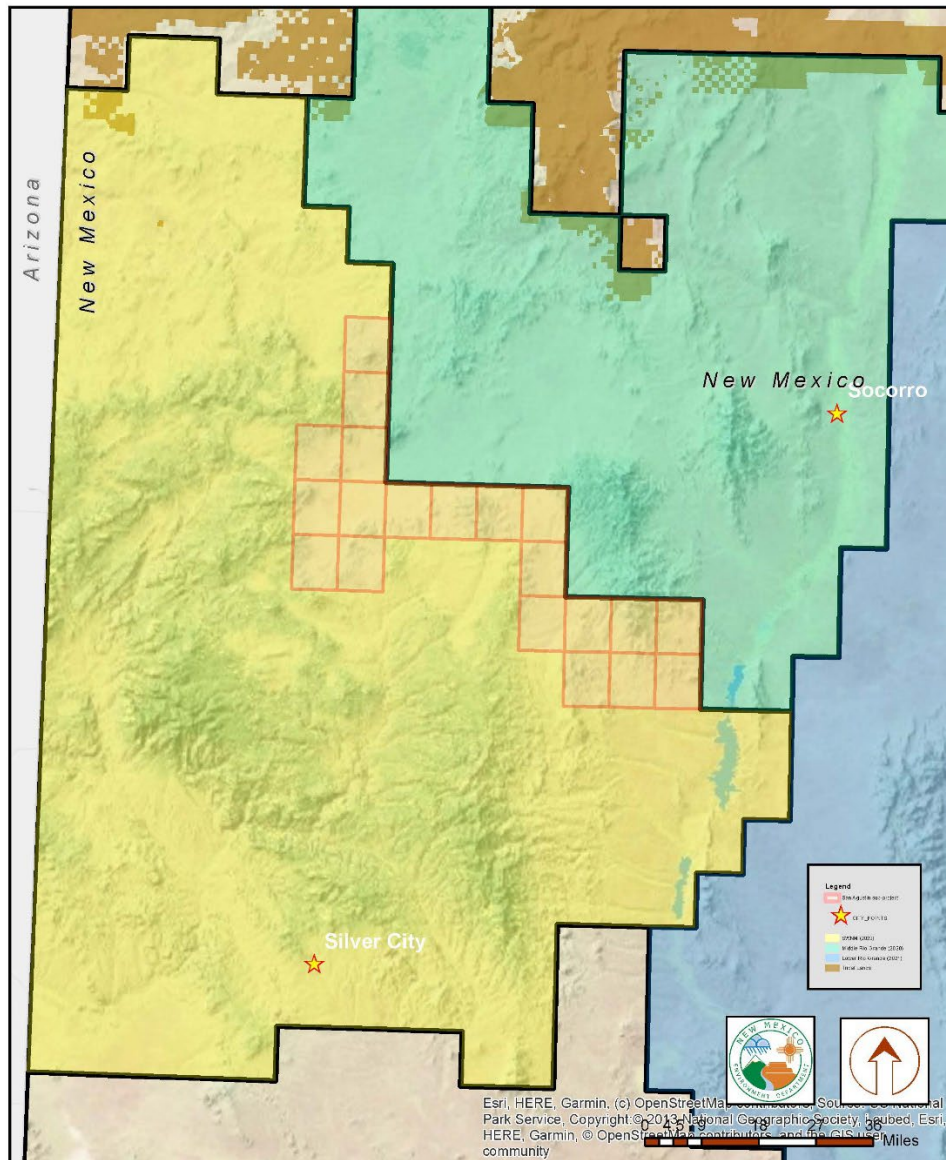


Figure 13. Plains of San Agustin sub-project shown as light orange quadrangles filling the gap between the Middle Rio Grande subproject and this project.

- By May 2019, approximately 40% of the initial mapping of the project area is complete.

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- A spatial layer of New Mexico Arid Land Spring Cienegas was provided to the project team from the *Wetlands Action Plan for Arid Land Spring Cienegas* by Bob Sivinski (December 2018) and incorporated into the mapping layer.
- The Plains of San Augustin sub-project mapping was completed on July 2, 2019, and the data submitted to Gary Hunt, USFWS for review and submittal to NWI.
- A review of tribal lands coverage was conducted in late September, 2019. Concerns were raised that GSS was using an older version of the tribal lands layer and was missing some wetland mapping as a result. The tribal lands spatial layer was updated for the project.
- Statewide Wetland Story Map discussions and development are ongoing.
- A no-cost grant extension to extend the project end date to April 30, 2021, was approved on October 4, 2019.
- An additional 25 quads of completed draft mapping were sent to Gary Hunt and WPO for review in late February 2020.
- In March 2020, SWQB switched to teleworking in response to Covid-19 restrictions.
- An QAPP update was submitted for QTRAK #18-283 to add new subprojects. The updated QAPP was approved by EPA on March 24, 2020 and changed to QTRAK #20-178 which expires on March 17, 2022.
- In May of 2020, the NWI Program indicated that the Gila project would not be accepted into the NWI without new requirements being added to connect disjunctive linear wetlands as required by NWI 2.0.
- On October 20, 2020 EPA approved no cost extension to September 30, 2021 because NMED was experiencing project delays due to COVID-19, and for this project to also complete mapping changes required by USFWS NWI staff to implement NWI 2.0 for acceptance.
- In November 2020, mapping continues with 90% of mapping now completed except for any new requirements for NWI 2.0 that should be provided in a Guidance Document. Without acceptance of the mapping provided to the NWI, additional application of classifications and functional assessment is pending.
- In December 2020, NWI 2.0 Guidance continues to be revised and provided to GSS and WPO by the National Wetlands Inventory staff for linear surface hydrography and other required revisions. The revised NWI 2.0 draft guidance has required the dissection of plains and playas within the sub project area lending itself to further delaying the overall draft data delivery date.
- The WPO attended the NM Geospatial Advisory Committee (GAC) meetings on January 12, February 23, and March 9, 2021. The WPO discussed updates about the NWI data status for the project and ongoing activities of the New Mexico Wetlands Program.
- Statewide Storymap meetings occurred with GSS and an internal staff meeting on March 2, 2021. Two templates of a draft version were reviewed and discussed.
- A no-cost contract amendment for Saint Mary's University of Minnesota GeoSpatial Services was approved on May 17, 2021 to include NWI 2.0 mapping updates and to remove the requirements for hard copy map book deliverables and focus more on the Statewide Story Map. The SWQB Wetlands Program has in-house capabilities to produce map books if needed and during Covid-19 restrictions in-person outreach activities have been curtailed.

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- In May 2021, the project continues to be delayed due to the prior focus on NWI 2.0 densification and additional validation of Riparian and LLWW coding. Final draft submission of completed mapping to NWI and NMED expected July 2021.
- Landscape level LLWW functional assessment now 90% completed.
- Final draft submission of Cowardin Classification mapping completed and accepted by USFWS NWI Program. NMED reviewed the database submitted in September, 2021.
- Review and final changes were made by GSS to mapping data, in particular edge mapping, before final invoices were paid in December, 2021.
- Landscape level LLWW and functional assessment now 100% completed.
- HGM now 100% completed.
- Wetlands Identification; draft Naming and Assessment Unit data generation were completed by WPO and NMED IT geospatial staff in cooperation with GSS after the database was accepted for the project from GSS.

List of Major Deliverables

- Request For Proposal for acquiring a mapping Contractor.
- Evaluation Committee Report
- Proposal Acceptance Letter
- Draft Advisory Committee list
- Signed contract
- Quality Assurance Project Plan and updates.
- Pre-mapping Field Review Summary Trip Report
- Technical Advisory Committee agenda, sign-in sheet, presentations
- Plains of San Agustin Sub-project boundary change map
- Contract Amendment #4 that includes Task changes for GSS
- GSS Quarterly Reports
- Draft Guidance Document for NWI 2.0 from NWI
- NM GAC Meeting Agendas
- Finalized Story Map Template Accepted
- Letter for additional match contributed by Contractor
- Wetlands Assessment Unit Identification List

Lessons Learned

This project is a continuation of New Mexico Wetlands Mapping and Classification Projects already completed in the Canadian Basin, Jemez Mountains and Sacramento Mountains Areas. During the project period, a new data technology was made available to us in the form LiDAR (Light Detection and Ranging), which the Wetlands Program intends to use as collateral data for all mapping and classification data being developed for the entire State going forward.

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Figure 14. Romero Creek, Gila National Forest during Draft Map Review Field Trip, April 2019.

We also learned that two data review field trips may not be enough to cover a very expansive mountainous project area with minimal road coverage. An additional field trip may be attempted for future mapping and classification projects.

Changes in requirements by the National Wetlands Inventory for NWI 2.0 delayed the completion and acceptance of the base map on which other classifications were then applied. This delayed all of the work that followed the acceptance of NWI, delayed review of mapping products, changed the mapping from previous mapped areas, and compromised edge matching between subprojects across New Mexico. Because New Mexico is the fifth largest state, changes in mapping protocols may be inevitable during the years it takes to complete the mapping projects covering a large state.

What made the project successful?

This project has been an overall successful in achieving its goals including additional quadrangle mapping coverage of the Plains of San Agustin.

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The project was successful in the quality of the products that were produced. Mapping coverage was 1.7 times the area anticipated when the project started. This was in part due to the efficiency and expertise of the mapping contractors, despite problems that arose with understanding the new NWI mapping requirements for 2.0. Habitat (Cowardin), hydrogeomorphic (LLWW) and (HGM), and Western Riparian classifications were applied to all wetlands.

All HGM subclasses were mapped in the project area. This is important for identifying the extent of the reference domain for each subclass, and for identifying sites to appropriately use the NMRAM for assessment of the subclass. Another important use of HGM classification is that it is easier to communicate with the public compared to the codes of Cowardin and LLWW.

In addition, the NWI and LLWW classifications allowed for the modeling of a landscape level functional assessment for these data,. The model evaluates moderate and high functioning wetlands for each of up to 12 different wetlands functions. LiDAR data enabled flow modeling to be used by GSS to identify likely flooding and improve riverine wetlands and riparian polygonal feature mapping and classification.

A state-wide Story Map draft continues to be developed. The Story Map shows the diversity of wetlands in New Mexico, highlights their functions and highlights where important and accessible wetlands are located. The HGM classification page provides an easily understandable introduction to the broad classes of wetlands with images such as those in the figures above to illustrate wetlands by HGM class and subclass. The Wetlands Functions page explains why wetlands are important, what functions they serve, and which wetlands perform which functions in simple terms. Future iterations may include additional sections on wetland assessment, protection, and restoration.

These mapping products are used by watershed groups in New Mexico to better understand the wetland resources in their watershed and to prepare more comprehensive Wetlands Action Plans; by the US Forest Service as part of Forest Plan Revisions to better manage and protect wetland resources. The Wetlands Program continues participation in the NM Geospatial Advisory Committee to stay up-to-date on mapping initiatives, new products and partnerships that can be useful to the Wetlands Program.

The variety of applications in all aspects of the Wetlands Program - monitoring, restoration, standards and regulations, made this project that much more fruitful. The project demonstrates outstanding, innovative tools that the SWQB Wetlands Program, agencies, tribes and the public - on the local and national levels, that can be used for a variety of applications.

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What made the project not so successful?

The project was delayed by the need to complete changes in US FWS National Wetlands Inventory mapping standards protocols associated with NWI 2.0, for additional time to complete tasks and obtain the required match for the project. Additional time was also required due to Financial and Program Staff turnover; taking longer than anticipated to get contracts in place, needed accounting information, perform data review and final project completion activities.

Technical Transfer

What information can you pass along to other agencies, cooperators, or local landowners in other watersheds about this project?

Participation in the NM Geospatial Advisory Committee monthly meetings continues to provide information about the Wetlands Program's Mapping and Classification data as it develops to the wider New Mexico Geospatial Community.

A draft Story Map about the New Mexico Wetland Program data was produced and will be available for public viewing. The draft Story Map is available for review at the website: [Wading into Wetlands of New Mexico](#)

A revised interactive wetlands map with current New Mexico wetlands data from this project and the Middle Rio Grande Project, Wetlands Action Plan, Outstanding National Resource Waters, Watershed Boundaries (with HUC 2s, 4s, 6s, 8s, 10s and 12s) and potential Beaver Habitat modeling data, was improved and is available via the website:

<https://gis.web.env.nm.gov/oem/?map=wetlands>

The GIS tool used to label unique wetlands polygons (assessment units) that was developed by GSS for the Sacramento Mountains project was revised and improved to automate ArcGIS tool processes and has been used to develop a list and naming assessment unit wetlands polygons for the project area. The tool will continue to be improved and used for the identification of the remainder of wetlands polygons mapped within the State.

EPA Feedback Loop

What would you suggest that EPA do differently to improve the process in regard to this project?

EPA was very supportive in all aspects of this project during the project period, especially allowing grant period extensions to complete high quality and meaningful work.

Future Activity Recommendations

This project brings the State 10% closer to completing an update of the National Wetlands

Mapping and Classification for Wetlands Protection, Southwestern Region, New Mexico December 2021

Inventory for New Mexico, identifying and classifying additional wetlands and informing current mapping projects funded by EPA Wetlands Program Development Grants (WPDG), including the San Juan and Estancia Basins (SJE), the Lower Rio Grande (LRG), the Bootheel and Permian Basin, and the Eastern Plains projects; as well as one new WPDG Grants and one pending that will complete data gaps and develop techniques for the evaluation and assessment of wetlands conditions via remote sensing. The SWQB Wetlands Program continues to keep up to date with current technological innovations to make these future projects even more useful and successful. In addition, we continue our efforts to update and improve mapping for all wetlands in New Mexico under state jurisdiction.

Also, there are many follow-up activities that can be developed using the mapping products in the area of wetland standards development, protecting rare or high-quality wetlands identified from the map products, additional monitoring of wetland types, etc. We also intend to continue withoutreach and technical transfer activities to continue to make these map products useful for other applications and into the future.



Figure 15. The Southwestern Region Field Team John Anderson, Dave Rokus, Andy Robertson and Emile Sawyer, orders pie in Pietown, New Mexico during the Drat Map Review.