Quality Assurance Project Plan

Understanding Depressional Wetlands and Mineral Soil Flats Wetlands in New Mexico CWA Section 104(b)(3) Wetlands Program Development Grant CD# 02F04101

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Submitted by: New Mexico Environment Department Surface Water Quality Bureau

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ACRONYMS

EPA	United States Environmental Protection Agency
FTP	file transfer protocol
GIS	Geographic Information Systems
GPS	Global Positioning System
HGM	Hydrogeomorphic
LLWW	Landscape Position, Landform, Waterbody Type, Water Source
NHNM	Natural Heritage New Mexico
NMED	New Mexico Environment Department
NWI	National Wetlands Inventory
QA	Quality Assurance
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QC	Quality Control
SOP	Standard Operating Procedures
SWQB	New Mexico Environment Department Surface Water Quality Bureau
US EPA	United States Environmental Protection Agency
WPC	Wetlands Program Coordinator
WPO	Wetlands Project Officer
WPS	Watershed Protection Section

1.0 PROJECT MANAGEMENT

1.1 Distribution List

The Wetlands Program Project Officer will distribute copies of this approved Quality Assurance Project Plan (QAPP) and any subsequent revisions to the project personnel listed below.

New Mexico Environment Department Surface Water Quality Bureau

Wetlands Program Project Officer: Tiffany Anders (505) 470-4774 Wetlands Program Coordinator: Maryann McGraw (505) 819-9832 Program Manager: Kathryn Lacey (505) 946-8863 QA Officer: Miguel Montoya (505) 819-9882

Natural Heritage New Mexico

Division Leader and Ecology Coordinator: Esteban Muldavin (505) 277-3822 x228 Riparian Ecologist: Elizabeth Milford (505) 277-3822 x227 Botanist: Yvonne Chauvin (505) 277-3822 x227 Research Technician: Amy Urbanovsky (505) 277-3822 x229 Research Scientist: Grace McCartha (505) 277-3822 x222

U.S. Environmental Protection Agency Region 6

Chief: Nelly Smith, State and Tribal Programs Section, (214) 665-7109 Project Officer: Kyla Chandler Water Quality Protection Division, (214) 665-2166

1.2 Project Organization

This section lists the roles and responsibilities of persons that will collect and/or use the information gathered to characterize mineral soil flats and depressional wetlands in New Mexico. A project organizational chart on page 7 displays hierarchy of the project. The Project Officers will ensure that any staff responsible for conducting work in accordance with this QAPP will be provided a copy to read and acknowledge the QAPP requirements by signing **Appendix III. Understanding Depressional Wetlands and Mineral Soil Flats Wetlands in New Mexico QAPP Acknowledgement Form.** The Wetlands Program Project Officers will maintain the acknowledgement forms with the project files, as applicable to each project area.

Name	Organizati	Role	Responsibilities	Contact Information		
	on					
Tiffany Anders	SWQB	Wetlands Program Project Officer	Manage progress of project, serve on Technical Advisory Committee, QAPP distribution, file management for the project, assist in Pilot Study and field data collection, data transfer and distribution activities, prepare semi-annual and final project reports.	(505) 470-4774 tiffany.anders@env.nm.gov		
Maryann McGraw	SWQB	Wetlands Program Coordinator	Review and approve QAPP, serve on Technical Advisory Committee, participate in planning meetings, review and submit reports to EPA	(505) 819-9832 maryann.mcgraw@env.nm. gov		
Miguel Montoya	SWQB	Acting QA Officer	Review QAPP, approval of QAPP, and periodic audits	(505) 819-9882 <u>miguel.montoya@env.nm.g</u> <u>ov</u>		
Esteban Muldavin	Natural Heritage New Mexico (NHNM)	Division Leader and Ecology Coordinator	Assessment Team Leader, serve on Technical Advisory Committee, assessment design, site selection, protocol and data management, multi-metric analysis, data transfer and distribution activities, contribute to Technical Guide	505-277-3822 x228 <u>muldavin@unm.edu</u>		
Elizabeth Milford	NHNM	Riparian Ecologist	Project Coordinator, Assessment Team, serve on Technical Advisory Committee, management of NHNM contributing staff compilation of GIS layers for site selection, assist in site selection, protocol and data management, data transfer and distribution activities, Pilot Study details, contribute to Technical Guide, GIS management.	505-277-3822 x227 emilford@unm.edu		
Yvonne Chauvin	NHNM	Botanist	Field data collection and daily QA crew leader	505-277-3822 x227 chauvin@unm.edu		
Amy Urbanovsky	NHNM	Research Technician	Assist in field data collection	505-277-3822 x229 aurbanovsky@unm.edu		
Grace McCartha	NHNM	Research Scientist	Assist in literature review and field data collection	505-277-3822 x222 gmccartha@unm.edu		
Kyla Chandler	U.S. EPA	EPA Project Officer	QAPP review and approval	(214) 665-2166 chandler.kyla@epa.gov		
Nelly Smith	U.S. EPA	EPA Management	QAPP review and approval	(214) 665-7109 smith.nelly@epa.gov		

Table 1. Project Roles and Responsibilities

1.3 Line of Authority Description

The SWQB Quality Management Plan (NMED/SWQB 2023) documents the independence of the QA Officer from this project. The organizational structure for this project is presented in Figure 1.





1.4 Problem Definition/Background

The NMED Surface Water Quality Bureau (SWQB) Wetlands Program is studying depressional wetlands and mineral soil flats wetlands in New Mexico. Depressional wetlands and mineral soil flats wetlands are poorly understood in New Mexico and the southwest but are common and numerous throughout the state. The NMED SWQB Wetlands Program is using New Mexico's mapping and classification products to conduct preliminary research and collect field data to locate suites of similar depressional wetlands and mineral soil flats wetlands and characterize them by geology, vegetation, soils, and hydrology.

This Quality Assurance Project Plan (QAPP) covers the field pilot studies and field data collection that will be conducted for this project. Preliminary vegetation data, soils sampling, determining water sources, and sources of disturbance at wetlands will be noted at each site for a Pilot Study Report. Notes will be taken to develop field data collection needs. Sample Areas will be identified for the different wetland suites and types, and after the Pilot Study, field data will be collected at 25 sites around the state that represent as many suites of depressional wetlands and mineral soil flat wetlands as possible. Sample data will include floristic characterization, soils sampling, photographs, and other data deemed necessary to characterize the wetland. UNM Natural Heritage staff will obtain sampling supplies, assemble data collection team, and prepare for fieldwork.

This project area comprises the southern Counties of Chaves, Eddy, Dona Ana, Grant, Hildago, Lea, Luna, Otero, and Sierra which span across the Permian Basin, Lower Rio Grande, and Bootheel areas of New Mexico. Mineral soil flats and depressional wetlands are hydrogeomorphic classifications defined as the following by Smith et al. (1995):

Mineral soil flats are most common on interfluves, extensive relic lake bottoms, or large floodplain terraces where the main source of water is precipitation. They receive virtually no groundwater discharge which distinguishes them from depressions and slopes. vertical fluctuations. Dominant hydrodynamics are They lose water by evapotranspiration, saturation overland flow, and seepage to underlying groundwater. They are distinguished from flat upland areas by their poor vertical drainage, often due to spodic horizons and hardpans, and low lateral drainage, usually due to low hydraulic gradients. Mineral soil flats that accumulate peat can eventually become the class organic soil flats.

Depressional wetlands occur in topographic depressions with a closed elevation contour that allows accumulation of surface water. Dominant sources of water are precipitation, groundwater discharge, and interflow from adjacent uplands. The direction of water movement is normally from the surrounding uplands toward the center of the depression. Depressional wetlands may have any combination of inlets and outlets or lack them completely. Depressional wetlands may lose water through intermittent or perennial drainage from an outlet, by evapotranspiration, and, if they are not receiving groundwater discharge, may slowly contribute to groundwater. Dominant hydrodynamics are vertical fluctuations, primarily seasonal. Peat deposits may develop in depressional wetlands.



Figure 2. Sample Project Area

1.5 Project/Task Description

The scope of this project is to better understand depressional wetlands and mineral soil flats wetlands in Southern New Mexico (Figure 2). Project tasks include acquiring imagery (i.e. NAIP, LiDAR) and background data (i.e. wetland mapping, geology, soils, hydrology, plants, and related literature), assembling a geodatabase, performing pilot studies, and field data collection.

Project timelines, including completion dates for each task, are specified in EPA-approved project workplans and will be completed in the order listed in Table 2 of this QAPP. Semi-annual progress reports from SWQB Wetlands Program to EPA will be used track progress.

Task	Products
Preliminary Steps	Meeting completed, images acquired, wetlands mapping transferred, literature search
Complete QAPP	Complete Project Quality Assurance Project Plan ensuring measures are in place to collect quality data
Assemble geodatabase	Confirmation of geodatabase assembly
Field Review and Data Collection	Pilot Study Report, Trained Data Collection Team, Data Collection at 25 Sample Areas

Table 2. Tasks and Products

Quarterly reports and final version	Quarterly	reports	and	final	report	from	Contractor	to	NMED.	Semi-annual
of map, report on methodology	reports ar	nd final re	eport	from	NMED 1	to EPA	•			

Natural Heritage New Mexico (NHNM) and SWQB Wetlands Program staff will develop a geographic information system (GIS) geodatabase of analysis layers including surface hydrology, watersheds, land use, digital elevation model, and infrastructure such as towns, roads, gas wells, & other available information. National Wetland Inventory (NWI) maps, Landscape Position, Landform, Waterbody Type, Water Source (LLWW) classification, functional correlation tables and hydrogeomorphic (HGM) classification data will be used to identify mineral soil flats and depressional wetlands and create initial boundaries of suites of wetland types. A current, draft copy of the statewide wetland mapping geodatabase produced from the Mapping and Classification projects in New Mexico will also be transferred to NHNM.

The geodatabase and wetland mapping data will be reviewed to develop a plan, construct a series of questions, and determine a route for 2 four-day pilot studies to look at depressional wetland suites and mineral soil flats wetlands. Preliminary vegetation data, soils sampling, determining water sources, and sources of disturbance at wetlands will be noted at each site for a Pilot Study Report. Notes will be taken to develop field data collection needs.

Members of a volunteer Technical Advisory Committee (TAC) will be identified and sent requests to participate in on-line after the Pilot Study and again after data collection to request input and share results of this preliminary acquisition of data to further understand these wetland types. The Pilot Study Report will be shared with the TAC to obtain input from the results of the pilot study and to prepare for field data collection.

A search of relevant literature and research will be conducted by WPC and NHNM to help with initial understanding of mineral soil flats and depressional wetlands. A Research Summary Report white paper with references will be developed. The information search will include information gathered from TAC members. Background information on natural environments, land uses, actual/potential human-caused environmental impacts will be included in the white paper.

Sample Areas will be identified for the different wetland suites and types, and field data will be collected at 25 sites around the state that represent as many suites of depressional wetlands and mineral soil flat wetlands as possible. Sample data will include floristic characterization, soils sampling, photo points, and other data deemed necessary to characterize the wetland. NHNM will obtain sampling supplies, assemble data collection team and prepare for fieldwork. Field packets will be prepared for each site including SQUID-compatible field sheets, maps and directions to properties. Landowner information will be kept on file for future data collection and participation time will be tracked as project match. NHNM and WPC will conduct a field training day for field data collection team and others listed in the QAPP to ensure that all protocols are clearly understood and are consistent with the QAPP.

Field data will be reviewed by the NHNM and WPC along with the geodatabase, and other research to describe and characterize the different wetland types. A Final TAC meeting will be conducted to share the results of the analyses and for input from experts on the wetland types. NHNM will prepare a draft Technical Guide for review by experts, WPC, WPO and the TAC. After review and input, NHNM will prepare a final version of the Technical Guide for posting onto

Wetlands Program website and for printing by SWQB.

NHNM will also assist in evaluating, modifying and testing NMRAM for Playas of SHP against proposed narrative standard developed by the Wetlands Program; review technical documents and data that support narrative standard and update QAPP for NMRAM for Playas of the SHP (QTRAK 17-406) for tasks under this project; conduct data analyses of all playas of SHP data sets to date to be correlated to wetland proposed designated uses; review stressor data to correlate to causes of impairments (pollutants and pollution); modify NMRAM for Playas of SHP as necessary to support standards attainment; and test proposed changes through data collection using NMRAM at three select sample areas. The results will be presented to the SWQB Standards Coordinator and EPA Region 6 for technical review.

1.6 Quality Objectives and Acceptance and Performance Criteria

This section describes the data quality objectives of the project, identifies the targeted action limits and levels, and defines the measurement performance or acceptance criteria deemed necessary to meet those objectives.

The purpose of this project is to expand the knowledge of depressional wetlands and mineral soil flats wetlands in New Mexico. Data quality will be measured against the quantitative and qualitative data quality indicators described below and in accordance with the Quality Objective and Criteria for Measurement Data Section of the SWQB QAPP (SWQB, 2021).

Data Quality Indicator	Data Acquisition						
Precision	Precision will be ensured by consistently assigning the same staff the responsibilities of						
	collecting, recording and analyzing data.						
Accuracy	Accuracy based on the use of methods determined to be reliable and tested through the						
	pilot and subsequent field inventory components.						
Bias	Bias will be reduced by using professional and experienced staff to collect and analyze						
	data.						
Representativeness	Sample Area selection is representative of the varied continuum of reference conditions						
	needed to develop the methodology.						
Comparability	Methods for data collection are standardized and reproducible from the development						
	and adherence to this QAPP.						
Completeness	All known sites within the subclass were selected to assess the range of conditions. All						
	identified metrics will be collected for each of the Sample Areas to ensure completeness.						
Sensitivity	Sensitivity of the metrics used will be analyzed during the analysis and recalibrated as						
	applicable to develop the methodology.						

Table 3. Data Quality Indicators

1.7 Special Training/Certification

SWQB has qualified and experienced scientific staff that have applicable skills and scientific background to help carry out and administer this project. In addition, the Wetlands Program will use qualified and experienced contractors to concurrently carry out this project. Contractors must be skilled in wetland delineation in the Arid West, including skills in botany, soils, and hydrology. Contractor qualifications are documented through resume and professional references.

The qualifications of key personnel are described below.

NHNM/Division Leader and Ecology Coordinator is Dr. Esteban Muldavin. Dr. Muldavin joined Natural Heritage New Mexico as the Senior Ecologist in 1991 and became its Director in 2008. Dr. Muldavin received his B.S. and M.S. in Natural Resources from Humboldt State University in 1982 and a Ph.D. in Biology from New Mexico State University, Las Cruces NM in 1988 with a focus on forest ecology. Dr. Muldavin has spent his career as an ecologist in the Southwest applying multidisciplinary approaches to broad range of issues in ecology and conservation biology. As Director, he leads a staff committed to inventory, monitoring, and assessment of New Mexico's ecosystems, and building a comprehensive database and modeling program on sensitive species and ecosystems for the state.

NHNM/Riparian Ecologist, Elizabeth Milford, joined Natural Heritage New Mexico (NHNM) as a student employee in 1992, became an ecology research technician in 1997, and a research scientist in 2000. She received her B.A. in Biology from Smith College in 1988, and her M.S. in Ecology from the University of New Mexico in 1996. She has always had an interest in the natural world, fostered by her early adventures in the wilds of northern New Mexico and along the Rio Grande with her father. She began work in riparian ecology while completing her Master's thesis on ant communities in the Middle Rio Grande Bosque. She continues to have an interest in entomology, but the focus of her work at NHNM has been riparian and wetland vegetation monitoring, assessment and mapping.

NHNM/Botanist, Yvonne Chauvin, grew up in Albuquerque and joined Natural Heritage New Mexico in 1993, when she graduated from the University of New Mexico with her Bachelor's degree. Since then, she has worked as the lead botanist for the Ecology group on many projects throughout New Mexico including vegetation mapping, ecological monitoring, and rare plant surveys.

NHNM/Research Technician, Amy Urbanovsky, received her B.S. in Biology from Oklahoma Christian University in 2011 and an M.S. in Environmental Science with a minor in Spatial Science from Stephen F. Austin State University in 2016. Throughout her time in graduate school, she worked as a GIS mapping analyst and research assistant on a variety of natural resource and wetland monitoring projects. Amy joined Natural Heritage New Mexico as an ecology research technician in 2017 where she has worked to develop the New Mexico Riparian Habitat Map and evaluate riverine wetland conditions throughout New Mexico using the Rapid Assessment Method.

NHNM/Research Scientist, Grace McCartha, joined Natural Heritage New Mexico as a Research Scientist in 2022. She was raised in South Carolina and earned a B.S. in Biology from Furman University in 2018. During her undergraduate years, she studied hyperaccumulating plants with Dr. Joe Pollard. She also spent a semester in the Gila National Forest of New Mexico where she fell in love with the state's landscape. After college, she moved to Los Alamos, New Mexico to work as a Fire Effects Monitor at Bandelier National Monument for two seasons. In 2020, she moved to Arkansas to pursue an M.S. in Biology, with a focus in Botany, from Arkansas State University. Her research focused on the plant communities of Lower Mississippi River islands, and she graduated in 2022.

Maryann McGraw is the Wetlands Program Coordinator (WPC) with the Surface Water Quality

Bureau based in the Santa Fe Office. She received her Bachelor's and Master's Degrees in Geology from University of Texas at Austin. Ms. McGraw has ACOE Wetlands Delineation Training and has been performing routine wetlands delineations, and wetlands hydrology, soils and plant identification since 1994. Ms. McGraw will ensure consistency of this project with other wetland characterization projects, participate in planning meetings and Technical Advisory Committee meetings, and review and submit reports to EPA.

Tiffany Anders is a Wetlands Program Project Officer (WPO) with the Surface Water Quality Bureau based in the Santa Fe Office. She received a Master of Applied Geography, Resources and Environmental Studies from Texas State University-San Marcos in 2009 and a Bachelor of Arts and Applied Science from the University of North Texas in 2005. Ms. Anders will manage the progress of the project, distribute the QAPP, assist in field data collection, data transfer, distribution activities, and preparation of semi-annual and final project reports to EPA. Ms. Anders is also a Professional Wetland Scientist with experience in wetland delineation and wetland functional assessment.

1.8 Documents and Records

Copies of this QAPP and any subsequent revisions will be provided to all individuals included on the distribution list by the SWQB WPC. Signed Acknowledgement Statements will be kept in the project file by the File Manager.

The WPC will also distribute all applicable protocol documents and subsequent revisions used throughout the project to the appropriate contractors. NHNM will prepare and submit quarterly project reports. These will be submitted to NMED, in accordance with the approved QAPP. The QAPP, protocol documents and reports will be maintained on the SWQB Wetland Program Coordinator's hard drive, SWQB server (File Depot) and in the project file at SWQB Santa Fe, at NHNM, and at the EPA Region 6 Wetlands Program.

This QAPP includes references to protocols for the development and testing of written procedures for all methods, metrics and procedures or protocols related to the collection, processing, analyses, reporting and tracking of environmental data. All data generated from this project and covered by this QAPP will be of sufficient quality to withstand challenges to their validity, accuracy and legibility. To meet this objective, data are recorded in standardized formats and in accordance with prescribed procedures.

The documentation of all environmental data collection activities will meet the following minimum requirements:

1. Data, data collection and analytical methods, and associated information must be documented directly, promptly, and legibly.

2. All reported data must be uniquely traceable to the raw data. All data reduction/transformation formulae must be documented.

3. All original data records include, as appropriate, a description of the data collected, units of measurement, unique sample identification (Request Identification [RID] number), station or location identification (if applicable), name and signature or initials of the person collecting the data, and date of collection.

Any changes to the original (raw data) entry must be clear and not obscure the original entry. Taxonomic refinements and translational typographic errors will be corrected on the field datasheets and in the database, with clear documentation of what and by whom those changes were made.

2.0 DATA GENERATION AND ACQUISITION

2.1 Sampling Process Design

The selection of depressional wetlands and mineral soil flats wetlands will be based on input from SWQB and NHNM meetings prior to the start of pilot studies. The individual sites representing the depressional wetland and mineral soil flat wetlands subclasses will be selected by visually inspecting wetland data from SWQB's mapping and classification projects, National Wetlands Inventory (NWI) map layers, and other GIS-based collateral data layers.

2.2 Sampling Methods

Surveys will be GPS-located for future data collection efforts to ensure repeat survey data collection are recreated accurately. Photographs of land use and/or wetland characteristics will be obtained for reference purposes. The New Mexico Rapid Assessment Method for Playa Wetlands Field Guide Worksheet Packet will be available for reference during field work (Appendix A). Field Data Forms will be completed for selected Pilot Study sites, including the NHNM Vegetation Survey form (Appendix B), Soil Core Worksheet (Appendix C), and Photo Point Log (Appendix D). Data collection includes plant identification and soil profiling. Field trip reports and Field Data Forms will provide documentation of the field data collection efforts.

To prevent the spread of aquatic diseases and nuisance species, it is imperative that field team members follow procedures to clean and sterilize field equipment. Outside the wetland, at the staging area before entering the wetland and upon leaving, boots, waders, and field equipment (e.g., shovels) that come in contact with surface waters must be hosed or washed off. This must occur away from wetlands and surface waters. All porous material (including felt-soled shoes, which are not recommended due to concerns about didymo (Didymosphenia geminata)) must be immersed in a 2% bleach solution for five minutes or until thoroughly soaked, then rinsed or dried thoroughly. Any remaining solution must be poured away from vegetation.

2.3 Sampling Handling and Custody

GPS data and digital photography collected during field reviews will be stored on a portable laptop. During the field review, these digital data will be backed-up on a portable hard drive nightly for safe storage. After the field review, upon arrival at the NHNM's office, GPS data and digital photography will be transferred to corporate servers for permanent storage in project files. Corporate servers are backed up on a nightly basis. The NHNM/Division Leader will retain custody of all Field Data Forms, GPS data, digital photography, and draft hard copy, maps during the field reviews. These data will later be submitted to the Wetlands Project Officer as project deliverables in accordance with the project workplans.

2.4 Analytical Methods

The project does not include sampling that will require the use of analytical methods for the sample analysis.

2.5 Quality Control

Quality control (QC) activities are technical activities performed on a routine basis to quantify the variability that is inherent to any environmental data measurement activity. The purpose for conducting QC is to understand and incorporate the effects the variability may have in the decision-making process. Additionally, the results obtained from the QC analysis, or data quality assessment, may identify areas where variability can be reduced or eliminated in future data collection efforts, thereby improving the overall quality of the project being implemented. Many of the proposed metrics consist of observation data including plant species lists and soils. To ensure quality control for these observational data, the data collection team will have subject matter experts. For example, the team will include a trained or degreed botanist to eliminate errors.

Field sheets will be organized, reviewed for completeness, and placed in a labeled file folder by the team leader. Contractor trained support staff will enter the data into Contractor database other than the individual who filled out the field sheet. Should any questions arise, the data entry personnel will add a note to the field sheet and contact the field team member to answer that question. When each data point from a page has been addressed, the data entry staff person will sign and date the field sheet. NHNM and the WPC will review all data, using standardized exported reports that identify missing values and outliers.

2.6 Instrument/Equipment Testing, Inspection, and Maintenance

The equipment used to collect physical measurements for this project will include the following:

- GPS Navigator
- Laptop Computer
- GPS Receiver
- Digital Camera
- Soil Spade
- Munsell Color Chart
- Vegetation Field Guides

All field equipment will be inspected each morning prior to commencing data collection. All instruments and equipment will be tested, inspected and maintained in accordance with the manufacturer's specifications as included in the associated instrument/equipment manual. The NHNM staff will use their own equipment. Results of equipment inspections will be noted in the maintenance log and/or project file. Any deficiencies in equipment will be noted and reported immediately. If condition of equipment is in doubt, it will not be used. In the event of equipment failure, the SWQB Wetlands Program Project Officer will be notified, and the Contractor will correct the problem, rejecting the resultant data or accepting the data with notations.

2.7 Instrument Calibration and Frequency

None of the instruments used in this project require calibration.

2.8 Inspection/Acceptance for Supplies and Consumables

There are no supplies or consumables that could affect the quality of data related to this project.

2.9 Non-direct Measurements

Printed or digital field maps for each data collection site will be prepared by the NHNM Team Coordinator. Maps will indicate land ownership and encompass the wetland of interest. PLSS data will also be available on the field maps.

2.10 Data Management

Data obtained for this project are maintained in GIS electronic files and digitized NWI Field Data Forms. All data will be delivered by the NHNM to the Wetlands Program Project Officer as soon as practical following data collection events. Once delivered, these data are maintained on SWQB shared network server and as paper copies in the Wetlands Program files that are maintained by the Wetlands Program Project Officer for the project. NHNM will provide summary reports to the Wetlands Program Project Officer. All data and summary reports will be compiled into the semiannual and final project report and provided to U.S. EPA.

3.0 ASSESSMENT/OVERSIGHT ELEMENTS

3.1 Acquisition and Response Actions

The SWQB Wetlands Program Project Officer provides project oversight by reviewing data collection efforts.

Any problems encountered during the course of this project will be immediately reported to the SWQB Wetlands Program Project Officer who will consult with appropriate individuals to determine appropriate action. Should the corrective action impact the project or data quality, the SWQB Wetlands Project Officer will alert the Quality Assurance Officer and WPC. All problems will be documented for inclusion in the project file, semi-annual and final report. The SWQB Wetlands Project Officer will assess project progress to ensure the QAPP is being implemented, including periodic audits by the QAO, as needed.

3.2 Reports to Management

Semi-Annual Reports are submitted by the Wetlands Program to U.S. EPA and include progress of project implementation and any available data. Status reports or special reports for SWQB or U.S. EPA will be prepared on request. A report detailing the findings will be provided in the final project report. Any deviations from what is specified in the work plan for this project will be documented and reported to the Wetlands Program Project Officer.

4.0 DATA VALIDATION AND USABILITY

4.1 Data Review, Validation, and Verification

Data review and verification are key steps for ensuring the integrity, suitability and usability of the data. Validation and verification will be conducted during the course of this project. Data are compiled from field sheets, reviewed and verified by NHNM staff that did not enter those data, and re- verified and validated by NHNM. Errors will be corrected where possible and rejected and reported upon by the NHNM if questions about those data cannot be satisfactorily answered. Additional review, verification, and validation will be completed by SWQB WPC. Standardized and randomized checks of data entry, field calibration of instrumentation, and technician training will be conducted and reported upon by NHNM, and data error levels above 1% will not be accepted. These data review, verification, and validation efforts will ensure NHNM provides high quality assessment data to SWQB.

4.2 Validation and Verification Methods

Defining the data verification and validation methods helps ensure that project data are evaluated in an objective and consistent manner. For the current project, such methods have been described in this section above for information gathered and documented as part of the field measurement activities.

4.3 Reconciliation with Data Quality Objectives

NHNM, in collaboration with the SWQB and the Technical Advisory Committee, will use the assembled pilot study data to clarify issues related to protocol adequacy, completeness, and efficiency. The data assembled through the larger inventory and assessment will be used to further those analyses, and to address questions about depressional and mineral soil flat wetlands in New Mexico. Where variation from data quality objectives is identified by these review processes, NHNM will make every effort to address issues in a timely and comprehensive manner.

5.0 REFERENCES

NMED/SWQB 2023. Quality Management Plan for Environmental Data Operations. https://www.env.nm.gov/surface-water-quality/protocols-and-planning/.

Smith, D. R., Ammann, A., Bartoldus, C., and Brinson, M. M. (1995). "An approach for assessing wetland functions using hydrogeomorphic classification, reference wetlands, and functional indices," Technical Report WRP-DE-9, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. NTIS No. AD A307 121.

6.0 **APPENDICES**

APPENDIX A

NMRAM Playa Wetlands Field Guide Worksheet Packet

APPENDIX B

NHNM Vegetation Survey Form

NHNM VEGETATION SURVEY - Standard Data Form

A Isk □ Map Luit Field Pt ID A Comment SURVEXVORS URVEX SITE MONUMENT URVEX SITE MONUMENT URVEX SITE PREC OUNTY NM/MAP NAME OR Datum: NA083 NAD27 Other ISEPTINE AZM Patum: NA083 / NA027 Notes Notes T1: ExpTine: AZM AZM Foct on Notes Notes T1: ExpTine: AZM ANDFORM: ////////////////////////////////////
A Comment
URVEY SITE
<pre>NIRECTIONS OUNTY NM_ MAP NAME</pre>
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ndfrm/Geol/Soil Notes: UMMARY DESCRIPTION: □ Site □ Veg □ Adjacent Com □ Disturb/Frag □ Animals □ Disease □ Management □ Condition LUTDIM(M)L/R_W_EO Size_Ha_/Ac_Est□ Map □ Comments: cound Surface Cover (*) Soll Grav Rock Litter BCC Wood Micro Water=100% otaniet: CITCLE YOUR YOUCHER NUMBERS henology: * = Flowering; @ = fruiting; X = Geed annual Cover Scale or Percent Cove TEEES Total Cov % [P Cov Bt (m) GRAMINOIDS Tot Cov %; Green % [P Cov Bt (m) GRAMINOIDS Tot Cov %; Green % [P Cov Bt (m) GG T1
UMMARY DESCRIPTION: □ Site □ Veg □ Adjacent Com □ Disturb/Frag □ Animals □ Discase □ Management □ Condition Image: Distance of the state of the stat
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round Surface Cover (%) Soil Grav Rock Litter HCC Wood Micro Mater=100% otanist: Grave CIRCLE YOUR VOUCHER NUMBERS henology: * = Flowering: @ = fruiting: X = dead annual Cover Scale or Percent Cove %; Green % IP [Cov Ht (m) GRAMINOIDS Tot Cov %; Green % IP [Cov Ht (m) GRAMINOIDS Tot Cov %; Green % IP [Cov Ht (m) GAMINOIDS Tot Cov %; Green % IP [Cov Ht (m) GAMINOIDS Tot Cov %; Green % IP [Cov Ht (m) GG T2
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henology: * = Flowering; @ = fruiting; X = dead annual [Cover Scale or Percent Cove
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T1
T2
T3
T4
T5
SHRUBS >.5m Total Cov% IP Cov IHE (m) G6
S1
S2
S3
S4
S5
S6
S7
S8
DWARF SHRUBS < .5m Tot.Cov
DS1 I
DS2
DS3
DS4
DS5
DS6
DS7 I
t= species modal height (trees nearest m, shrubs nearest .5m, grasses & forbs nearest dm), recorded in meters over: +0=outside plot, in stand 2=scattered, <1% (.5m² & <4m²)
over: +0=outside plot, in stand 2=scattered, <1% (.5m² & <4m²)
cale +=solitary/very few(<0.2m²/400m²)
1=very scattered (0.2m² -<.5m/400m²)
ercent: +0=outside plot, in stand 0.5%= scattered, <1% (.5m ² & <4m ²) 30-100% to nearest 10% cale +=solitary/very few(<0.2m ² /400m ²) 1-10% to the nearest 1% (each % equals 4m ² /400m ²) 0.1%=very scattered (0.2m ² -<.5m/400m ²) 10-30% to the nearest 5%
cale +=solitary/very few(<0.2m²/400m²) 1-10% to the nearest 1% (each % equals 4m²/400m²) 0.1%=very scattered (0.2m² -<.5m/400m²)
0.1%= very scattered (0.2m ² -<.5m/400m ²) 10-30% to the nearest 5%

Trees Soils Quadrats Point/Line Intercept EO Assessment Form Site Evaluation (May 2006)

APPENDIX C

Soil Core Worksheet

SA Code:

A2 – Wetland Organic Soil

Worksheet A2.a. Soil Core Data. For each 50cm soil core, record the Core #, Level 1 Veg Zone #, location along the transect to the nearest tenth of meter, wetland type (WL or WM), depth to water table, and photo number (if applicable). For each soil horizon layer, record the top and bottom distances, soil texture, soil color using the Munsell Soil Color Chart, gley presence, and % redox. Record the size (= Bottom - Top) in the respective texture box for each soil horizon layer, then sum the total layer size of OM and Mineral layers for each soil core.

	Transect: Upper / Lower													
		Laver	Layer	Layer	Layer	Layer Size	Soil		Soil Color		Glev	Redox	Depth to	
Core		#	Top (cm)	Bottom (cm)	Size OM (cm)	Mineral (cm)	Texture	Hue	Value	Chroma	(Y/N)	%	Water Table (cm)	Horizon Comments
Core #		1												
L1 Zone #		2												
Loc (m)		3												
Туре		4												
Photo		5												
S	um of La	ayer Size	by Textur	re Type →										
Core #		1												
L1 Zone #		2												
Loc (m)		3												
Туре		4												
Photo		5												
S	um of La	ayer Size	e by Textur	re Type →										
Core #		1												
L1 Zone #		2												
Loc (m)		3												
Туре		4												
Photo		5												
S	um of La	ayer Size	by Textur	re Type →										
Core #		1												
L1 Zone #		2												
Loc (m)		З												
Туре		4												
Photo		5												
S	um of La	ayer Size	by Textur	re Type →										
Core #		1												
L1 Zone #		2												
Loc (m)		3												
Туре		4												
Photo		5												
S	um of La	ayer Size	by Textur	re Type →										

Texture classes: P = Peat, MP = Mucky Peat, M = Muck, Cl = Clay, Lo = Loam, Sa = Sand

Peat classes: Peat (>75% volume of fibers visible after rubbing), Mucky Peat (17%-75% volume of fibers visible after rubbing), Muck (<17% volume of fibers visible after rubbing).

APPENDIX D

Photo Point Log

SA CODE :

SA Name :

Surveyor Initials :

Date :

	Photo Point Log . AZM = azimuth compass direction of photo; GPS UTM northing and eating location.										
Photo PT File	AZM	Northing	Easting	Latitude	Longitude	Description	Initial				

APPENDIX E

Acknowledgement Form



New Mexico Environment Department Surface Water Quality Bureau

Understanding Depressional Wetlands and Mineral Soil Flat Wetlands in New Mexico

Quality Assurance Project Plan Cooperator Acknowledgement Statement

This is to acknowledge that I have received a copy of the Understanding Depressional Wetlands and Mineral Soil Flat Wetlands in New Mexico Quality Assurance Project Plan.

As indicated by my signature below, I understand and acknowledge that it is my responsibility to read, understand, become familiar with, and comply with the information provided in the document to the best of my ability.

Signature

Name (Please Print)

Date