Middle Rio Grande Conservancy District Drought Contingency Plan Development

WaterSMART Drought Contingency Planning Grants for FY 2016

Funding Opportunity Announcement: R16-FOA-DO-005
4/8/2016

Applicant
Middle Rio Grande Conservancy District
1931 Second Street, SW
Albuquerque, NM 87103

Project Manager
Mike Hamman, P.E.
CEO and Chief Engineer
Middle Rio Grande Conservancy District
1931 Second Street, SW
Albuquerque, NM 87103
mikeh@mrgcd.com
(505) 247-0234 office
(505) 243-7308 fax

Table of Contents

Technical Proposal and Evaluation Criteria

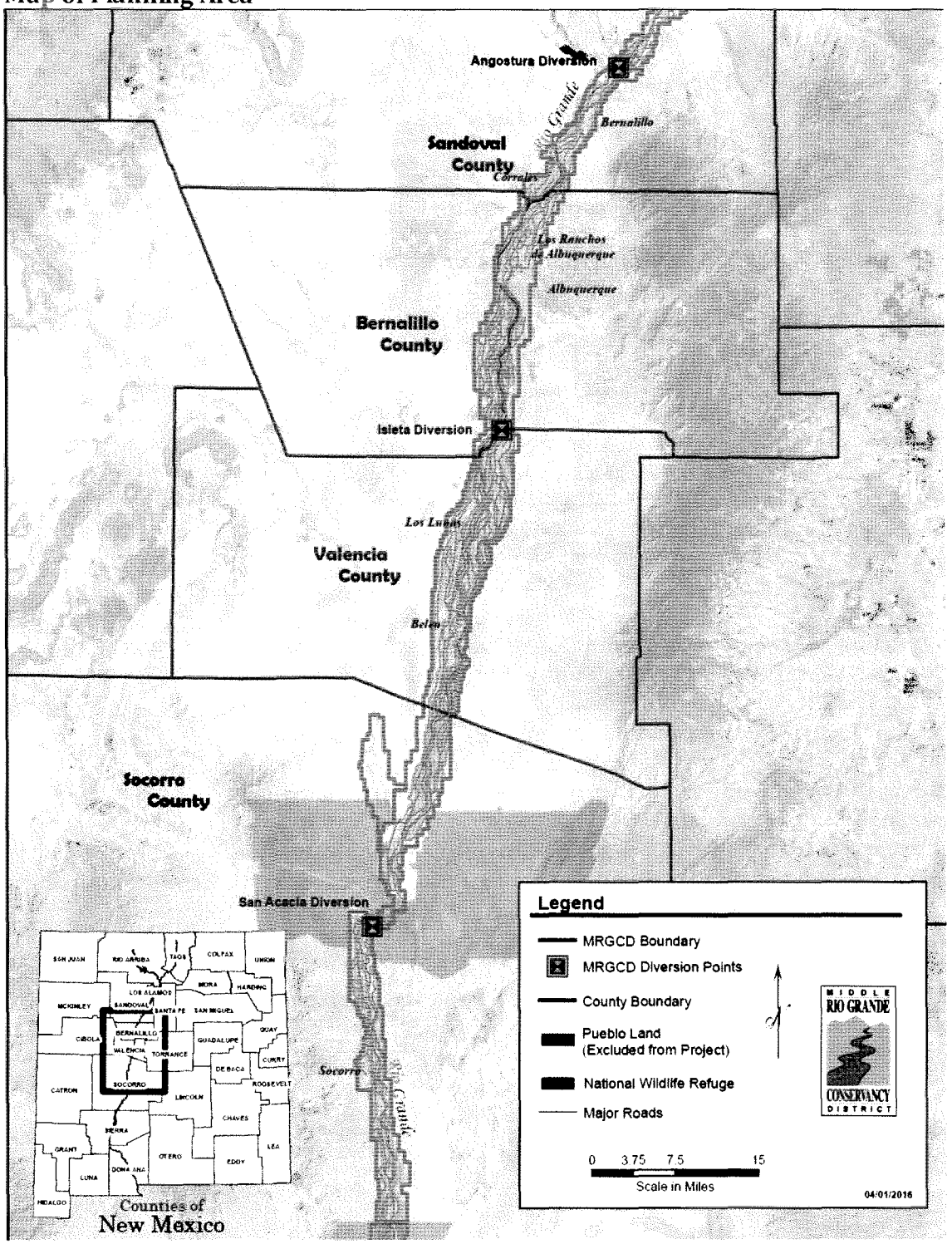
Executive Summary

Date:	April 8, 2016	
Applicant Name:	Middle Rio Grande Conservancy District Albuquerque, Bernalillo County, New Mexico	
Project Title:	*Middle Rio Grande Conservancy District Drought Contingency Plan Development*. FOA: R16-FOA-DO-005	
Project Financing:	Applicant Share: Reclamation Share: Total Project Cost:	$200,013.30 $200,000.00 $400,013.30
Project Timeline:	Start date: Estimated completion date:	August 30, 2016 June 30, 2018
Nexus to Reclamation:	Middle Rio Grande Project San Juan-Chama Project Middle Rio Grande Endangered Species Collaborative Program Tribal Trust Responsibilities Integrated Water Management in the Rio Grande Basin	

This application requests funding for the Middle Rio Grande Conservancy District (MRGCD or District) to carry out **Task A: the development of a drought contingency plan (Plan)**. As the project lead, the District will provide all matching cash contributions. The District and the Drought Contingency Planning Task Force will provide all in-kind contributions. Funding for Plan development is critical because no drought contingency plan exists that specifically addresses issues regarding water efficiency and water management during drought periods. Regional and statewide plans are helpful, but to garner the support and water efficiency efforts within the confines of the District, the MRGCD requires a specific plan. In addition, the MRGCD has been unable to store significant supplemental water supplies at El Vado Reservoir due to Rio Grande Compact (Compact) restrictions. Water shortages from long-term and persistent drought have created intense challenges for the organization to balance its responsibilities. Through a collaborative approach, the MRGCD will mobilize area resources to identify and prioritize actions to continue to provide a dependable water supply while reducing the area's exposure and vulnerability to prolonged or permanent water shortages, supporting requirements of the 2016 new Biological Opinion, and assisting the state in carrying out its Rio Grande Compact delivery obligations. The District has worked closely with federal agencies including the U.S. Bureau of Reclamation (Reclamation) following the authorization of the Flood Control Acts of 1948 and 1950. Reclamation's Middle Rio Grande Project and San Juan Chama Project enable the District to utilize the Rio Grande as its primary water supply.

Background Data

Map of Planning Area



General Description of Area to be Addressed

Sources of water supply

The MRGCD is a local government organization established by state law under the Conservancy Act of 1923, giving it broad authority to acquire lands and water rights, assess taxes and water service charges, design, construct and maintain facilities for the purposes of providing flood protection from the Rio Grande, and drain swamplands and provide irrigation water to farmland to the four counties and six Pueblos within the middle Rio Grande valley (MRG) -- all without the requirement of the traditional procedures used for adjudication. This authority included the consolidation of 70 separate headings and community acequias (ditches) that served lands throughout the MRG. The service area, which is home to the state's population and economic center, encompasses 150 miles of mostly riparian land and historic flood plain along the Rio Grande in central New Mexico -- from Cochiti Dam in the north to Bosque del Apache Wildlife Refuge in the south, running through the counties of Sandoval, Bernalillo, Valencia and Socorro. The District has worked closely with federal agencies, particularly Reclamation and the U.S. Army Corps of Engineers (USACE), following the authorization of the Flood Control Acts of 1948 and 1950. Reclamation's Middle Rio Grande Project and San Juan Chama Project provide supplemental storage and contract water as well as river maintenance that assist the District in utilizing the Rio Grande as its primary water supply.

Water rights involved

The MRGCD holds permits to divert water to serve up to 132,114 acres. As part of the total water rights associated with the diversion permits, the six Middle Rio Grande Pueblos collectively have statutorily recognized water rights for a total of 8,847 acres of Prior and Paramount (priority) lands along with 11,951 acres of newly reclaimed lands for the six Middle Rio Grande Pueblos within and serviced by the MRGCD. Permit 1690 allows the District and the U.S. to store supplemental water at El Vado Reservoir. The District also holds a contract to 20,900 AF of San Juan-Chama Project water. In addition, the MRGCD holds some pre-1907 water rights in the MRG while Permit 0620 entitles the District to divert and utilize "reclaimed" water associated with drainage of lands within the benefitted area. There are other private land owners that hold pre-1907 water rights that are the only water rights in this un-adjudicated and over-allocated basin that may be sold, leased or transferred for uses other than irrigation on the original lands. The District is studying the potential of offering a water bank for these water right holders to utilize in lieu of severing the water rights from the land.

Current water uses

The District currently serves approximately 60,000 acres. In addition to serving irrigators, the MRGCD's system of ditches and drains support a number of critical environmental services including 30,000 acres of a unique and contiguous riparian forest known as the Rio Grande Bosque (bosque). These lands are owned by the District and include existing and future high quality habitat for endangered, threatened and sensitive species, shallow groundwater recharge, urban open space, air pollution and heat island mitigation, and agricultural habitats. In the MRG basin, the U.S. Fish and Wildlife Service administers the Valle de Oro National Wildlife Refuge, Sevilleta National Wildlife Refuge and Bosque del Apache National Wildlife Refuge. The basin is home to endangered species including the Rio Grande silvery minnow and southwestern willow flycatcher, and portions of the basin soon will support critical habitat for the western yellow-billed cuckoo.

Recreation has become an important benefit provided by the District. This is especially true in the Albuquerque metropolitan area, where 73% of the 316 miles of water conveyance channels are used recreationally. Of the nearly 1,200 miles of waterways, 414 miles are classified as having recreational use: 56% of these miles are in the Albuquerque division; 35% in Belen; 7% in Cochiti; and 2% in Socorro. As the District becomes increasingly urban, the undeveloped ditches and the riverbank create a natural preserve with connecting trails within and between communities.

Over time, the District has become the owner of some of the most valuable assets in the MRG. These natural assets are the source of high quality recreation, environmental and ecological activity that provide regional economic returns. They also comprise a regional savings account of water and land -- two natural resources that have become increasingly valuable over time. Growth in the MRG has increasingly impacted the Rio Grande, putting significant pressure on water transfers from agriculture to municipal uses. The District's priority is to do all it can to preserve the agricultural economy and culture of the communities along the Rio Grande.

During the 1930s and 1940s, the MRGCD absorbed 70 community ditches and local acequias which had their own headings from the Rio Grande. Today, in many MRG communities, traditional farming continues because the District's ditches provide the services that the old headings could not provide. In turn, farmers have been sheltered from the changes in the river, the rising cost of maintaining an irrigation system, and the competition for water in a complicated and urbanizing region.

Number of water users served

The MRGCD currently delivers water via gravity to over 10,000 irrigators in the MRG. The average annual diversion (2009-2013) to meet these needs is approximately 330,000 AF. This provides an annual farm delivery estimated at about 210,000 AF (65% conveyance efficiency). Actual consumptive use of water by agricultural crops is estimated at around 150,000 AF (70% application efficiency). The majority of water diverted but not consumed is returned to the river system through wasteways and drains. Some water evaporates directly from the surface of canals (estimated 12,000 AF annually) or may be consumed by riparian vegetation along canals. Most canals are earthen and incur some seepage loss. Seepage loss may be intercepted by drains and returned to the river, or may recharge local shallow aquifers which in turn may support additional riparian consumption or non-MRGCD water users (domestic wells).

Current and projected water demand

Assuming no impacts related to climate change, projected water demand within the District for the next 15 years shows no substantial changes but perhaps a slight decrease in demand for agricultural water, and that losses or development of farmland will continue to be somewhat balanced by new farms and domestic wells in both the urban and rural areas within the MRGCD. However, if evapotranspiration continues to rise due to increasing average temperatures, as is currently predicted in the region by the Bureau's *West-Wide Climate Risk Assessment: Upper Rio Grande Impact Assessment*, an increase of up to 20% in depletions on the riparian and agricultural lands may occur during this period.

The Bureau of Business and Economic Research (BBER) estimates that the state population will reach 2.5 million people by 2020 and 3.7 million by 2060, with the fastest growing regions located in and around the major urban centers along the middle and lower Rio Grande. In the past, increased needs for municipal and industrial uses were met by retirement of irrigated agriculture. Today, the state's largest water utility, ABCWUA, is shifting its water development policy toward preserving irrigated agriculture in the MRG.

Major crops and total acres served

Agricultural production on District lands is estimated to generate $35 to $70 million per year. The District serves approximately 60,000 acres. Major crops include alfalfa hay, other hays and grasses (75% of all crops). The remaining 25% includes fruit trees, oats, barley, chile and corn.

Past Working Relationships with Reclamation

Middle Rio Grande Project

At the time of the 1941 flood, the District lacked the tax base to make the necessary repairs and improvements to the irrigation and flood control infrastructure, so in 1951 it entered into a rehabilitation and construction contract with Reclamation. The contract allowed Reclamation to assume the District's debt and -- for a ten year period -- handle operations and maintenance in exchange for a security interest (lien) in the form of property rights in the District's works. It also required the District to repay the non-federal portion of the costs. Reclamation and USACE jointly planned the comprehensive development of the project. El Vado Dam/Reservoir and its four main stem diversion dams were rehabilitated along with the irrigation system and drains. Kellner or "Jetty" jacks were installed to channelize 127 miles of the Rio Grande to restrict the flood plain, protect the levees and more efficiently convey water. The District repaid the contract in 1999 but the title to District facilities remains unresolved. Reclamation retains a role in water management and river channel maintenance in the middle Rio Grande valley through federal authority associated with the Middle Rio Grande Project and a close relationship with the District. Reclamation operates El Vado Dam for the District. In turn, the District maintains and operates the diversion dams, 1,200 miles of canals, laterals, drains and ditches throughout the benefitted area. Reclamation, District staff and other agencies coordinate daily during the irrigation season on water operations and closely on development of annual water management plans.

San Juan Chama Project

Supplemental water is provided for irrigation in the District through the San Juan-Chama Project. This project consists of a system of diversion structures and tunnels for trans-mountain movement of water from the San Juan River Basin to the Rio Grande Basin. A primary purpose of the San Juan-Chama Project is to furnish a water supply to the MRG for municipal, domestic, and industrial uses as well as provide supplemental irrigation water and incidental recreation and fish and wildlife benefits. The San Juan-Chama Project water has become increasingly important to assist in meeting ESA obligations.

Middle Rio Grande Endangered Species Collaborative Program

In 1994, as a result of the listing of the silvery minnow and the southwestern willow flycatcher, the MRGCD began working closely with Reclamation to meet Section 7 requirements of the Endangered Species Act (ESA) under the 2003 BO. The MRG is home to endangered species including the Rio Grande silvery minnow, southwestern willow flycatcher, New Mexico

meadow jumping mouse and western yellow-billed cuckoo. Reclamation and the District worked as partners in the preparation of the 2015 Biological Assessment and currently are key members of the Middle Rio Grande Endangered Species Collaborative Program (MRGESA or Collaborative Program). Reclamation funds the implementation of the ESA obligations for species recovery. The Collaborative Program is a partnership involving 16 signatories from federal, state and local agencies, sovereign Pueblos and other organizations that work to protect and improve the status of endangered species along the MRG while simultaneously protecting existing and future regional water uses. Since 1996, the MRGCD has reduced direct river diversions by over 30% through better water management and timing of reservoir releases. These actions helped improve spring spawn and recruitment events, minimized river drying, and improved maintenance of refugial habitats. In addition, the District was a full partner in the preparation of a new Biological Assessment (BA) as a 2016 BO is finalized.

Tribal Trust Responsibilities

Tribal trust responsibilities to the six Middle Rio Grande Pueblos has necessitated that Reclamation and the Bureau of Indian Affairs (BIA) coordinate closely with the MRGCD to ensure that water delivery commitments to the Pueblos are met. The District also is a partner to the Pueblos as they undertake improvements to infrastructure on Pueblo facilities and associated lands to increase irrigation efficiencies. A review of the condition of District facilities on Pueblo lands has already been performed by BIA that will add value to this important effort. The District is committed to this planning process by participating in the drought planning task force and appropriate stakeholder meetings, providing baseline data, and providing an equivalent of up to $20,000 as in-kind services.

Integrated Water Management in the Rio Grande Basin

Water operations in the MRG rely on the multi-reservoir and river operations actions that are centralized through a coordinated effort by Reclamation, USACE, New Mexico Interstate Stream Commission (NM ISC) and the MRGCD. An operational model, Upper Rio Grande Water Operations Model (URGWOM), provides the technical underpinning for daily, monthly and annual river management and forecasting that assists water managers to coordinate daily to achieve the multi-purpose operational plan. On the upper Chama River, managers are balancing downstream deliveries requirements with fishery support and recreational (boating) flows. In the MRG, flows are managed to meet irrigation demands for both Native American Pueblos' and other MRGCD farmers, municipal diversions, flood control, river sediment transport, Rio Grande Compact deliveries, and endangered species in-river targets and habitat maintenance. It is essential that integrated water management is performed directly with Reclamation due to our joint management role at El Vado Dam/Reservoir where the District pays Reclamation to operate on its behalf.

Technical Project Description

Six Required Elements

1. *Drought Monitoring*

The Plan must establish a process for monitoring near and long-term water availability, and a framework for predicting the probability of future droughts or confirming an existing drought.

The District currently utilizes all measurement and index tools established by federal and state drought task forces to monitor water supplies and drought potential in the short-term and mid-term. These include water supply forecasting tools provided by the Natural Resources Conservation Service (NRCS), and analyses of how these forecasts and index gauges have contributed to snow-melt runoff scenarios based on historical analytical tools such as URGWOM and internal models run to meet irrigation forecasting. Other sources include the National Weather Service (NWS) and the New Mexico State Drought Monitoring (performed under the New Mexico Governor's Drought Task Force) to determine drought persistence and associated impacts, and general modeling efforts to look up to six months ahead to determine weather trends in order to make informed operational decisions. The District also coordinates with the Colorado Department of Water Resources on the San Juan-Chama Project and Rio Grande deliveries at the Colorado border.

Each relational forecasting method and associated data are and will continue to be utilized for predicting water availability in a given month, quarter and season. MRGCD staff are working with federal and state forecasters to look at water supply trends based on modeling trends from El Niño-Southern Oscillation (ENSO) forecasts to determine developing trends and indices beyond seasonal outlooks in order to plan water storage carryover goals. These factors and all available forecasting tools will be incorporated into the Drought Contingency Plan. The result will be a systematic approach to managing current seasonal trends and planning for following year water supplies. Specific triggers have been developed and will be enhanced relative to the MRGCD water bank operations given that this system is predominantly a run-of-the-river water supply with only supplemental storage available 150 miles to the north. Reservoir modeling and operational and institutional constraints are factors that are utilized in determining the drought mitigation and contingency strategy from year to year.

2. *Vulnerability Assessment*

The Plan must include a vulnerability assessment evaluating the risks and impacts of drought.

The District will conduct a baseline assessment of risks to inform the design and development of mitigation measures and response actions. Assets and resources will be catalogued in the planning area and across sectors. The MRG area is unique in that the Conservancy Act provides a system of shared shortages based on the run-of-the-river. This approach spreads the economic pain of water shortages across the spectrum of all water users, making it difficult to determine gross economic losses. However, through this effort the District will work to quantify the potential that drought will inflict economically throughout the Basin. The District will utilize the most current climate change analysis for the Rio Grande Basin to determine range of impacts associated with future climate change models and provide a range of potential impacts due to

increased depletions in the MRG, such as Rio Grande Compact deliveries and related impacts to water shortage.

The District also includes a significant land mass -- part of the last remaining contiguous cottonwood forest within the U.S. -- that is vulnerable to wildland fire damage associated with long-term drought. Fire damage has a countervailing effect on habitat development and maintenance for endangered species and adds significant federal, state and local expense.

The District will follow a rigorous process of determining risks and impacts of drought associated with specific areas of concern including: bosque forest (30,000 acres), constructed habitat (5,000 acres), Tribal Pueblo lands (30,000 acres) and ecological/agricultural tourism.

3. Mitigation Actions

The Plan must identify, evaluate and prioritize mitigation actions and activities that will build long-term resiliency to drought and that will mitigate the risks posed by drought.

A key component of the Plan will be the assessment of infrastructure, water management practices and water user outreach and education. These will be analyzed and prioritized in terms of the highest efficiency improvement based on the investment required for each mitigating action. Examples of actions and activities to investigate include:

- expanded use of the Decision Support System to achieve full utilization of the irrigation schedule and utilization of the existing URGWOM for optimizing reservoir operations
- review of water bank effectiveness and impacts
- implementation of a water leasing (or other) program that allows for the owners of senior pre-1907 water rights to have an alternative to outright sale to land developers of this valuable asset and keep water available for agricultural and environmental purposes
- installation of off-stream storage and small scale aquifer storage and recovery projects to optimize system operations in areas where aquifer recharge and recovery potential exists and where sites for off-stream/off-system storage features could be used in equalizing flows for meeting irrigation demands and routing flows to valued habitat sites and drain outfalls
- installation of water efficiency and measurement devices that improve operation flexibility as well as contribute to habitat protection for endangered species through increased water discharge to the Rio Grande that will be included within the out-year capital improvement plan to develop a funding plan for implementation
- working with NRCS and County Extension Offices to develop an appropriate water user outreach and education plan that leverages resources to help on-farm water efficiency installation and metrics

The MRGCD is concurrently submitting a proposal for a FY 2016 WaterSMART Drought Resiliency Project entitled *Socorro Main Canal South Distribution Hub*, which involves the installation of water measurement devices and re-distribution infrastructure that would provide the ability to discharge water to salvage drain returns for reuse and discharge to endangered species habitat within the adjacent Rio Grande. Pumped water would, for the first time, enable regulation of the Socorro Main South to a precisely desired rate of flow for all lands south of the

project. This mitigating action will increase streamflow to levels that are biologically compatible with endangered species, enhance backwater habitat for endangered species, and improve water quality through decreased temperatures and increased dissolved oxygen levels.

4. Response Actions

The plan must identify, evaluate and prioritize response actions and activities that can be implemented quickly during a drought.

The Plan will outline a suite of actions to implement based on the above metrics and triggers that provide a staged drought response based on level of severity or, conversely, that minimize or prevent shortages through proper planning for management of supplemental storage during seasonal and multi-year drought. Given the process of shared shortages based on run-of-the-river water supplies, a matrix of triggers based on selected indices will be utilized to curtail water bank users and plan irrigation scheduling for other users. The Plan will include modifications to the MRGCD water management policies as well as formal adoption of drought planning procedures that will include agreed upon practices with stakeholders for plan implementation.

5. Operational and Administrative Framework

An operational and administrative framework must be developed to identify who is responsible for undertaking the actions necessary to implement each element of the plan, including communicating with the public about those actions.

The operational and administrative framework development process will be led by the MRGCD, whose current framework involves close coordination with stakeholders throughout the irrigation season and at other critical times. The District's drought responsibilities will include:

- coordinating all water operations throughout the District
- providing general notification to all water users regarding water conditions
- leading initiatives and securing resources during drought response
- coordinating with state and local fire response and prevention teams on District lands

The Plan will include a matrix that identifies roles, procedures and resources of the MRGCD relative to other water users and stakeholders. The matrix will clarify the overall drought response in terms of roles, procedures and resources.

6. Plan Update Process

The Plan must describe a process and schedule for monitoring, evaluating and updating the Plan.

The Plan will include detailed procedures to ensure both ongoing and post-drought evaluations occur so that the Plan is responsive to the community's needs. The Plan will include evaluation best practices such as those outlined by the National Drought Mitigation Center in its *10-Step Drought Planning Process*. Triggers for evaluation will be defined.

Three Required Planning Steps

Following the finalization of the financial assistance agreement, signed agreement and before Plan development begins, these three steps must be followed. This section describes how the steps will be followed.

1. *Establishment of a Drought Planning Task Force*

As the team lead, the District will appoint the initial members of the Drought Planning Task Force. The District will provide overall direction to organize stakeholder involvement and develop the Plan, balancing the many and varied interests and needs. Smaller work groups will be developed to work on specific tasks. These work groups will report to the Drought Planning Task Force.

Drought Planning Task Force participants will represent a wide and diverse set of interests. Many participants already work closely with the District, including the six Middle Rio Grande Pueblos (represented by the MRG Pueblos' Coalition), four counties, and the key municipal jurisdictions of Albuquerque, Bernalillo, Los Lunas, Belen and Socorro. The membership will include other diverse water resources and environmental interests in the region. See Evaluation Criteria B for this list.

For stakeholders who are interested but not seeking an active role, the Drought Planning Task Force will ensure there are ways to provide input and seek information. An outreach and communication plan will be created to provide all interested stakeholders opportunities for input at key stages of the planning process and to keep them informed of progress as the plan is developed.

2. *Development of a Detailed Work Plan*

Soon after award but prior to initiation of major work items, the District will work closely with Reclamation to draft a detailed work plan that includes major tasks (including evaluation/plan update), schedules and stakeholder responsibilities. The Drought Planning Task Force will modify the Plan to incorporate any additional interests. The Plan will include major sections such as introduction, planning approach, documentation and reporting, schedules and communication and outreach plan. It also will include tasks and subtasks for each section. Tasks and subtasks will include estimated completion times and be linked to other tasks to form a schedule of tasks to be completed within two years. Methods for tracking projects and work schedules will utilize internal District management programs and accounting tools. The work plan schedule will include the requirement for the draft Plan to be submitted to Reclamation for review and approval at least 30 days prior to the end of the two year period. See Evaluation Criteria C for details.

3. *Development of a Communication and Outreach Plan*

The Plan will include a communication and outreach component that describes how stakeholders and the public will be involved in the drought contingency planning process. The District will provide the Drought Planning Task Force with access to the District's web page, email list serves and other mailing lists. The MRGCD's public information officer will be an integral part of the communication and outreach plan.

Evaluation Criteria

Criterion A -- Need for a Drought Contingency Plan or Plan Update

Describe the severity of the risks to water supplies that will be addressed in the Drought Contingency Plan.

The existing and potential drought risks affect five major sectors: agriculture/irrigators, compact deliveries, municipal, environment/riparian, and forestry/wildland fire.

The Plan will address risks to water supplies for water users and other District constituents that include 10,000 irrigators, the six MRG Pueblos and municipalities that benefit from the operation from the District. The magnitude and frequency of water supply shortages are currently severe, with water shortages up to 50% in a given year based on recent hydrology, increased fire risk due to persistent drought, impacts to the ecosystem and associated endangered species due to water shortages and fire risk, and socioeconomic consequences related to these events.

The MRG is highly dependent on Rio Grande Compact deliveries to the Middle Rio Grande Project. During persistent drought, the Middle Rio Grande Project places the MRG in a status associated with Article VII of the Rio Grande Compact, which limits and prohibits supplemental storage in El Vado Reservoir. This further exacerbates water shortages in the MRG.

The cities of Albuquerque and Santa Fe recently began diverting water from the Rio Grande. This new activity requires ongoing coordination with the MRGCD to ensure the entire system is optimized so that municipalities meet their diversion permit conditions, and that low flow conditions and impacts are mitigated. A key outcome of the Plan will be to quantify existing and potential drought risks in the MRG to specific sectors and create a set of mitigation and response actions to address those risks.

The Plan will help define the extent and vulnerabilities within the MRG to wide variations in water supplies and to persistent drought that is projected to continue in the desert southwest. The District survives on the run-of-the-river as its primary water supply. This means the MRGCD is interconnected with multiple municipal entities that either direct divert or indirectly utilize surface water through relational ground water pumping. Supplemental supplies such as native storage in El Vado Reservoir have been significantly restricted due to Rio Grande Compact requirements and the San Juan-Chama Project water supplies have, for the first time since the project's construction in the early 1970s, experienced shortages for 18 separate project contractors including the MRGCD, ABCWUA and other MRG communities.

The current drought has already produced impacts resulting in economic losses during shortage operations in three of the past ten years, and it has impacted municipalities that have made heavily invested in surface water use strategies to reduce groundwater pumping throughout the region. The Plan will analyze future water supply scenarios based on climate change modeling and other available tools to determine system-wide vulnerabilities and ranges of impacts.

Recognizing the strong link between economic development and water supply, the New Mexico Legislature in 2013 passed Senate Memorial 8, the purpose of which was to bring together representatives from governmental jurisdictions, agencies, tribes and acequias to discuss how to maximize the MRG's water supply. The final report, *Middle Rio Grande Council of Governments, 2014*, identified supporting efficiency improvements as one of five significant ways to maximize the water supply.

In 2014, Senator Udall introduced the New Mexico Drought Bill (S.1936 NM Drought Preparedness Act of 2015) which focuses on development of a federal, state, tribal and MRGCD partnership toward improving water management and system efficiencies to help the region cope with short-term drought and long-term effects of climate change.

The report, *West-Wide Climate Risk Assessment: Upper Rio Grande Impact Assessment*, presents median projections of climate change models that show flows resulting from typical high mountain snowmelt runoff in the Rio Grande at Otowi gauge will decrease by approximately 30% by 2100, and that extreme rain (monsoon period) events are likely to increase, potentially keeping a similar annual volume but providing less predictability as to timing and location of flows in the MRG. This could lead to fewer water rights being served during the peak irrigation season from June to September. Further, the observed trends in average temperature rises will increase evapotranspiration rates for both the riparian vegetation and crops potentially resulting in a higher demand for the same number of acres over time if these trends continue. Given these projected dire scenarios, it is critical for the MRGCD to develop a plan that addresses mitigation and response actions for water efficiency and water management during drought periods.

Over the past decade, the MRG has experienced levels of drought ranging from abnormally dry to exceptional drought. Appendix A includes U.S. Drought Monitor graphs (2010-2015) for the month of June, illustrating that the water supply storage conditions are at an all-time low even with the availability of imported water from the San Juan-Chama Project. In fact, the San Juan-Chama Project experienced shortages for the first time since its inception in 1970.

The last four years featured severe to exceptional drought conditions, leading to significant water shortages for the MRGCD during the July to September timeframe. In two of those years, no significant storage was available to meet the shortages due to drought impacts on the Rio Grande Project (Elephant Butte Irrigation District, El Paso Water Improvement District #1 and treaty obligations to Mexico). As a result, El Vado Reservoir is under storage restrictions as required under Article VI of the Rio Grande Compact, minimizing the use of spring runoff (if available) for storage.

The severity of the drought has led to significant wildland fires occurrence and potential of occurrence. The situation has strained the District and other local, state and federal resources in responding to fires. The resulting damage has affected watershed health, wildlife habitat and water quantity/quality for decades. The MRGCD is a partner with a number of state and local governments in developing emergency response plans and actions as well as preventative treatments of the bosque, which is owned primarily by the MRGCD. The bosque forest and its flora and fauna suffered many fire events and other impacts due to prolonged drought, causing untold losses to scarce government resources, lost opportunity costs within the surrounding

communities, and significant and perhaps irretrievable impacts to the cottonwood-dominated environment.

In addition, summer monsoon events on the burned watersheds of the Jemez and Sangre de Cristo mountain ranges -- which bracket the MRG -- were the site of numerous debris flows and ash which made their way into streams, reservoirs and the Rio Grande. This caused fish kills, flow blockages, levee damage and higher levels of sedimentation. These factors are on-going and will likely require much investment to manage the impacts and restore the watersheds.

Describe existing or potential drought conditions to be addressed in the Drought Contingency Plan.

The MRG and New Mexico have experienced drought conditions and low river flows for the last twenty years, with few exceptions. The last five years were marked by moderate to extreme drought. See Appendix A. While the Rio Grande Basin, the Upper Rio Grande Basin and the Lower Rio Grande Basin all have been featured in numerous studies looking at climate-related risks to water supplies, the MRG continues to lack an in-depth analysis that is useful for stakeholders in this area. Long-term and persistent drought have created a number of intense challenges to manage competing interests that include the demands of the riparian system from Cochiti Dam to Elephant Butte, meeting 60,000 acres of irrigation demands of a broad constituency that includes the six Middle Rio Grande Pueblos, assuring that Rio Grande Compact delivery requirements are met annually, and operating in a manner that keeps sufficient water within the Rio Grande for environmental and endangered species purposes.

In three of the last ten years, the District depleted its supplemental storage by the end of irrigation season and was short 20,000-50,000 AF of having a full irrigation season in those years. With the exception of 2015, the District hasn't stored water normally (i.e., without Rio Grande Compact relinquishments or credits) since 2010. This has posed a serious threat to the District's ability to meet water demand. The District has always attempted to store water to ensure some supply for the following season, but in 2015 the District began the irrigation season March 1 with no storage in El Vado Reservoir and only a minimal amount of its San Juan-Chama allocation. In several cases, the District had to borrow San Juan-Chama water from the City of Albuquerque to meet irrigation demand, and Reclamation leases water each year from San Juan-Chama contractors to help meet Biological Opinion (BO) flow targets in areas of river drying within the critical habitat for the endangered Rio Grande silvery minnow.

Shortages resulting from Rio Grande Compact Article VII restrictions and from the San Juan-Chama Project significantly impact the District. To address this, reservoir operations must be optimized using the best forecasting and modeling tools available. To minimize impacts of wildland fires, the District is working with local governments to develop land treatment plans and fire response programs to deal with the impacts of drought. Working through the Collaborative Program, the District will optimize resources to protect endangered species through development of improved water and land management policies.

Describe the status of any existing planning efforts.

No drought contingency plan exists that specifically addresses issues regarding water efficiency and water management during drought periods within the MRG. While the Rio Grande Basin,

the Upper Rio Grande Basin and the Lower Rio Grande Basin all have been featured in numerous studies looking at climate-related risks to water supplies, the MRG continues to lack an in-depth analysis for stakeholders in order to make informed water management decisions for severe drought mitigation in the MRG. The report, *West-Wide Climate Risk Assessment: Upper Rio Grande Impact Assessment*, provides important information about baseline risks to water supplies and demands as a result of climate change; however, this document states that its purpose is to establish a foundation for more in-depth analyses and the development of adaptation strategies for long-term trends due to climate change risk but does not discuss year-specific actions that will be necessary to implement to moderate effects of severe drought within the planning area.

Although the District itself has not developed and adopted a formal drought plan, the staff works closely with Reclamation, the New Mexico Interstate Stream Commission (NMISC), the New Mexico Office of the State Engineer (NM OSE), and other land management agencies to develop water operations plans and wildland fire management plans as part of its drought contingencies. Drought-related activity of the MRGCD has been guided by several plans including:

- NM OSE's *State Water Plan* (2003)
- NM Drought Task Force's *New Mexico Drought Plan* (2006)
- *Recommendations from the Governor's Drought Task Force* (2008)
- NM OSE's *Middle Rio Grande Regional Water Plan* (2016-- update to 2004 *Middle Rio Grande Regional Water Plan 2000-2050*)

The above documents provide general guidance for planning water-year operations and out-year planning regarding managing for drought and potential effects of long-term climatic variability. These efforts were performed with multiple groups of stakeholders ranging from the economic development sector, farming and ranching, recreation and tourism, and environmental interests. In addition, the MRGCD is teaming with Reclamation to perform an Upper Rio Grande Basin Study under the WaterSMART authority in order to address water predictive temperature increases and associated with higher potential for climate variability that has been observed over the last decade or longer.

Criterion B -- Inclusion of Stakeholders

Describe the stakeholders to be involved in the planning process. Please address the following:

All sectors of water users will be represented. The initial list of stakeholders for the Drought Planning Task Force will include the following organizations. All organizations will contribute in-kind support through participation on the Drought Planning Task Force, its subcommittees and/or other activities relating to Plan development. See Appendix B for Letters of Support. Please note that the Coalition of Six Middle Rio Grande Basin Pueblos is very interested in participating on the Drought Planning Task Force. Their Letter of Support is forthcoming.

- Albuquerque Bernalillo County Water Utility Authority (ABCWUA)
- City of Albuquerque
- City of Socorro
- Bernalillo County Public Works

- Sandoval County
- Bernalillo County
- Valencia County
- Socorro County
- Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA)
- Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA)
- Coalition of Six Middle Rio Grande Basin Pueblos
- New Mexico Acequia Association
- New Mexico State Forestry Division
- The Nature Conservancy New Mexico
- Audubon New Mexico
- Middle Rio Grande Water Assembly
- New Mexico Interstate Stream Commission (NMISC)

This list includes water users and other stakeholders representing municipal and industrial, stormwater and flood control, agricultural, tribal, cultural heritage, environmental and/or policy. Many stakeholders represent multiple interests. The District will work with Drought Planning Task Force members to ensure participation is as broad and inclusive as possible. In addition to the general public, new stakeholder groups may include recreation, business and research/academia.

Drought Planning Task Force kickoff event and subsequent meetings will be publicized to encourage all water sectors to engage in the planning process either through Drought Planning Task Force participation or through less formal avenues such as providing input to the MRGCD or other Drought Planning Task Force members, or in an advisory capacity. Stakeholders will be invited to public input meetings, starting with an initial kickoff of the Drought Planning Task Force. Meetings will be publicized using a range of media (e.g., newspaper, radio, electronic and social media).

Criterion C -- Project Implementation

Describe the approach for addressing the six required elements of a Drought Contingency Plan within the two year timeframe.

Project implementation will be completed within the 24 month period. The award date is estimated to be August 2016. Major tasks, milestones and dates are as follows.

Through mid-October 2016
Contract signed between the MRGCD and Reclamation.

- Develop Detailed Work Plan
- Hire consultants
- Develop Drought Planning Task Force
- Develop Communications and Outreach Plan

November 2016
Project Kickoff

Through December 2016
Conduct drought monitoring.

- Inventory and assemble data about existing operations/infrastructure, water supplies, water demands.
- Evaluate the need for additional kinds of monitoring.
- Identify drought triggers.

Through February 2017
Conduct vulnerability assessment.

- Identify needs in terms of water supply and demand relating to all stakeholders.
- Identify gaps in delivering water during times of drought.

February 2017
First semiannual financial (SF-425) and interim report due.

Through July 2017
Identify and prioritize mitigation actions

- Identify and describe actions for curtailing water us during drought.
- Identify triggers, actions and water rationing implementation schedules for each stakeholder.
- Prepare cost estimates, schedules, implementation requirements, permitting, environmental compliance, responsible parties, stakeholder involvement and prioritization of actions.

Through July 2017
Identify and prioritize response actions.

- List and describe based on drought monitoring information.
- Prepare cost estimates, schedules, implementation requirements, permitting, environmental compliance, responsible parties, stakeholder involvement and prioritization of actions.

August 2017
Second semiannual financial (SF-425) and interim report due.

Through December 2017
Prepare draft report of vulnerabilities and actions.

- Reviewed by stakeholders
- Comments and concerns addressed

Through February 2018
Develop the operational and administrative framework for Plan implementation.

Through February 2018
Describe plan evaluation and how the plan will be updated.

- Define the triggers that will initiate updates

February 2018
Third semiannual financial (SF-425) and interim report due.

Through May 2018
Draft Final Plan Report.

- 30 day review by Reclamation and stakeholders.

June 2018
Finalize Plan Report.

- Obtain stakeholder approvals and submit final report to Reclamation.
- **Final financial (SF-425) also due.**

The District regularly utilizes the NRCS's water supply forecast, National Drought Mitigation Center's monitoring tools, and URGWOM. Members of the Drought Planning Task Force will review and select hydrologic models, operational models (such as the 10-Step Drought Planning Process), climate data (including NOAA) , water demand data or projections, water quality data, recreational water needs, environmental water needs, demographics, and economic data and models (e.g., Bureau of Business and Economic Research).

The MRGCD will provide in-kind and cash match for the grant in the form of staff time, contractor services, meeting space and equipment, communications and outreach tools, and other logistics that support Plan development. The following staff will be involved:

Mike Hamman -- CEO & Chief Engineer
David Gensler -- Hydrologist
Ray Gomez – Engineer Supervisor
Tom Thorpe -- Public Information Officer
Yasmeen Najmi -- Planning Specialist
Judy McSweeney -- Grants Accountant
Melín Villegas-Vargas -- Accountant Supervisor

The MRGCD will contract with a meeting facilitation consultant and communications/outreach consultant to help carry out Plan development activities.

Criterion D -- Nexus to Reclamation

Is there a Reclamation project, facility, or activity within the planning area?

Yes. The planning area includes Reclamation's Middle Rio Grande Project, the San Juan-Chama Project and the Middle Rio Grande Endangered Species Collaborative Program. Other Reclamation activities involving the MRGCD include Tribal Trust Responsibilities and Integrated Water Management in the Rio Grande Basin.

Is the planning area in the same basin as a Reclamation project, facility, or activity?

Yes. The planning area is located in the Middle Rio Grande Basin.

In what way will the proposed plan or plan update benefit a basin where a Reclamation project, facility, or activity is located?

Development of a Drought Contingency Plan in the MRG is critical because no drought contingency plan exists that specifically addresses issues regarding water efficiency and water management during drought periods. The regional and statewide plans are helpful, but to garner the support and water efficiency efforts within the confines of the District, the MRGCD requires a specific plan. An outcome of the Plan will be to quantify existing and potential drought risks in the MRG to specific sectors and create a set of mitigation and response actions to address those risks.

Does the proposed plan or plan update support implementation of a relevant Department of the Interior initiative?

Yes. The proposed plan supports implementation of Department of Interior initiatives including:

- WaterSMART's SECURE Water Act (WaterSMART grants, water basin studies)
- Youth Initiative
- Natural Resource Investment Center
- Wildland Fire Resilient Landscapes Program
- Middle Rio Grande/Albuquerque Urban Waters Federal Partnership
- West-wide Climate Risk Assessments

Existing Drought Contingency Plan (if applicable)

No specific drought contingency plan exists for the MRGCD.

Required Permits or Approvals

No permits or approvals are required for developing the Plan.

Letters of Support

See Appendix B.

Official Resolution

RESOLUTION OF THE BOARD OF DIRECTORS
OF THE MIDDLE RIO GRANDE CONSERVANCY DISTRICT

REGARDING THE SUBMISSION OF AN APPLICATION TO THE US BUREAU OF RECLAMATION WATERSMART PROGRAM for DROUGHT CONTINGENCY PLANNING

M-03-14-16-141

WHEREAS, the Middle Rio Grande Conservancy District (MRGCD) currently delivers water to 11,000 irrigators on approximately 70,000 acres for a broad constituency that includes the six Middle Rio Grande Pueblos; and

WHEREAS, water shortages from long-term and persistent drought have created intense challenges for the MRGCD to balance competing water management interests that include the riparian demands along 150 miles of the Rio Grande, annual Rio Grande Compact delivery requirements, and the needs of environmental and endangered species; and

WHEREAS, the U.S. Bureau of Reclamation (Reclamation) has made available funds through its WaterSMART grant program for the purpose of supporting Drought Contingency Planning through collaborative planning efforts that use a proactive approach to build long-term resilience to drought and the impacts of climate change to water supplies; and

WHEREAS, the Middle Rio Grande Conservancy District (MRGCD) does hereby commit to cost share and being a local sponsor for development of a Drought Contingency Plan if the MRGCD is awarded a grant. This includes the cost share of up to $200,000 in cash and/or in-kind services that the Board of Directors will accordingly budget for in the District's FY17 and FY18 operating budgets; and

WHEREAS, the MRGCD will be the lead agency under this grant in developing partnerships with other state, local and tribal entities within the mid-Rio Grande Region for drought contingency planning; and

WHEREAS, the MRGCD will work with Reclamation to meet established deadlines for entering into a cooperative financial agreement and completing the work schedule within the designated timeframe from the date of award; and

WHEREAS, the WaterSMART grant procedures requires a resolution of the governing body authorizing the submission of an application to Reclamation.

NOW THEREFORE, BE IT RESOLVED that the MRGCD Board of Directors does hereby authorize the CEO/Chief Engineer to submit an application to the US Bureau of Reclamation requesting consideration for a grant for the development of a Drought Contingency Plan

DATED AND RESOLVED this 14th day of March 2016.

MIDDLE RIO GRANDE CONSERVANCY DISTRICT

Derrick J. Lente, Chairman

ATTEST:

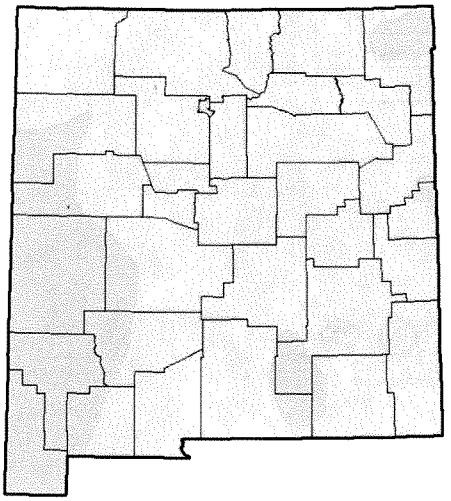
David Fergeson, Secretary/Treasurer

Appendix A -- Graphs

U.S. Drought Monitor: New Mexico Six Year Period

U.S. Drought Monitor

New Mexico



March 29, 2016

(Released Thursday, Mar. 31, 2016)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.36	99.64	22.34	0.00	0.00	0.00
Last Week 3/22/2016	4.86	95.14	18.57	0.00	0.00	0.00
3 Months Ago 12/29/2015	73.76	26.24	0.00	0.00	0.00	0.00
Start of Calendar Year 12/29/2015	73.76	26.24	0.00	0.00	0.00	0.00
Start of Water Year 9/29/2015	56.70	43.30	7.94	0.00	0.00	0.00
One Year Ago 3/31/2015	19.45	80.55	62.11	18.75	0.00	0.00

Intensity

D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought

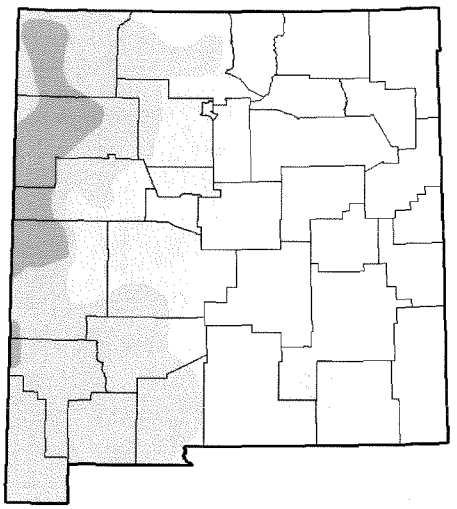
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Brad Rippey
U.S. Department of Agriculture

http://droughtmonitor.unl.edu/

U.S. Drought Monitor

New Mexico



June 16, 2015

(Released Thursday, Jun. 18, 2015)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	49.21	50.79	33.85	8.82	0.00	0.00
Last Week 6/9/2015	47.71	52.29	35.14	11.60	0.00	0.00
3 Months Ago 3/17/2015	12.81	87.19	72.76	19.94	0.00	0.00
Start of Calendar Year 12/30/2014	12.01	87.99	65.39	29.10	3.70	0.00
Start of Water Year 9/30/2014	16.70	83.30	62.57	30.04	8.09	0.00
One Year Ago 6/17/2014	0.00	100.00	98.09	84.56	29.24	0.42

Intensity

D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought

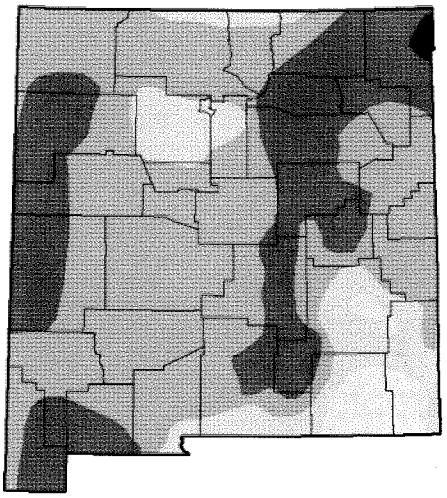
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Richard Tinker
CPC/NOAA/NWS/NCEP

http://droughtmonitor.unl.edu/

U.S. Drought Monitor

New Mexico



June 17, 2014

(Released Thursday, Jun. 19, 2014)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	99.09	84.56	29.24	0.42
Last Week 6/10/2014	0.00	100.00	99.57	84.54	29.24	0.42
3 Months Ago 3/18/2014	0.49	99.51	95.60	64.87	23.44	0.00
Start of Calendar Year 12/31/2013	0.39	99.61	75.21	32.68	3.96	0.00
Start of Water Year 10/1/2013	1.66	98.34	74.92	37.81	3.39	0.00
One Year Ago 6/18/2013	0.00	100.00	100.00	98.49	90.18	44.13

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Eric Luebehusen
U.S. Department of Agriculture

http://droughtmonitor.unl.edu/

U.S. Drought Monitor

New Mexico

June 18, 2013

(Released Thursday, Jun. 20, 2013)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	98.49	90.18	44.13
Last Week 6/11/2013	0.00	100.00	100.00	98.72	82.10	44.70
3 Months Ago 3/19/2013	0.23	99.77	98.47	89.85	49.95	4.25
Start of Calendar Year 1/1/2013	0.00	100.00	98.83	94.05	31.88	0.97
Start of Water Year 9/25/2012	0.00	100.00	100.00	62.56	12.25	0.86
One Year Ago 6/19/2012	0.00	100.00	99.64	81.29	25.17	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

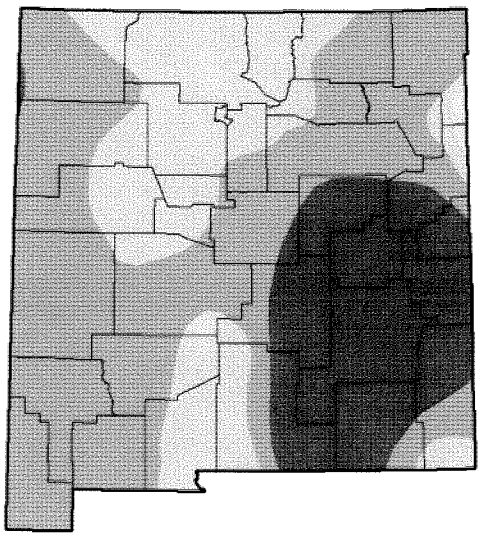
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Mark Svoboda
National Drought Mitigation Center

http://droughtmonitor.unl.edu/

U.S. Drought Monitor

New Mexico



June 12, 2012

(Released Thursday, Jun. 14, 2012)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	99.64	73.03	23.46	0.00
Last Week 6/5/2012	0.00	100.00	99.64	69.34	23.46	0.00
3 Months Ago 3/13/2012	11.31	88.69	81.79	60.06	24.94	9.13
Start of Calendar Year 1/3/2012	8.63	91.37	87.60	72.13	23.37	7.57
Start of Water Year 9/27/2011	0.00	100.00	96.40	88.99	69.51	35.13
One Year Ago 6/14/2011	0.75	99.25	93.98	87.35	67.86	44.90

Intensity:

D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought

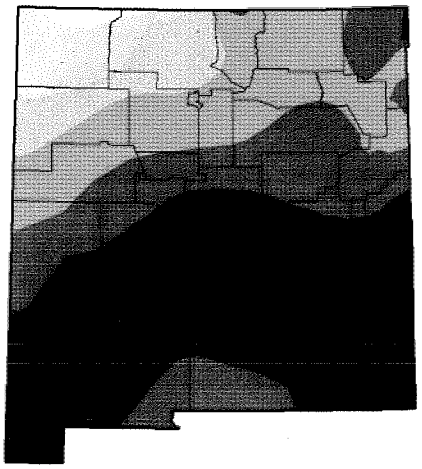
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
David Miskus
NOAA/NWS/NCEP/CPC

http://droughtmonitor.unl.edu/

U.S. Drought Monitor

New Mexico



June 14, 2011

(Released Thursday, Jun. 16, 2011)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.75	99.25	93.98	87.35	67.86	44.90
Last Week 6/7/2011	0.75	99.25	93.98	87.35	67.91	44.53
3 Months Ago 3/15/2011	7.79	92.21	84.02	33.82	9.25	0.00
Start of Calendar Year 1/4/2011	6.34	93.66	40.44	0.00	0.00	0.00
Start of Water Year 9/28/2010	76.66	23.34	0.00	0.00	0.00	0.00
One Year Ago 6/15/2010	50.50	49.40	17.27	0.00	0.00	0.00

Intensity:

D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought

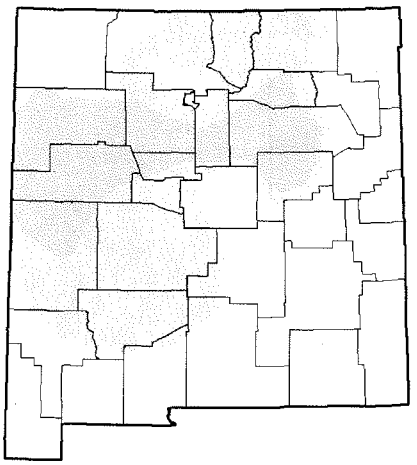
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Brian Fuchs
National Drought Mitigation Center

http://droughtmonitor.unl.edu/

U.S. Drought Monitor

New Mexico



June 15, 2010

(Released Thursday, Jun. 17, 2010)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4			
Current	50.60	49.40	17.27	0.00	0.00	0.00
Last Week	81.91	18.09	0.02	0.00	0.00	0.00
3 Months Ago	76.26	23.74	0.00	0.00	0.00	0.00
Start of Calendar Year	56.91	43.09	10.11	2.26	0.00	0.00
Start of Water Year	73.10	26.90	2.98	0.00	0.00	0.00
One Year Ago	38.10	61.90	37.13	9.99	0.00	0.00

Intensity:

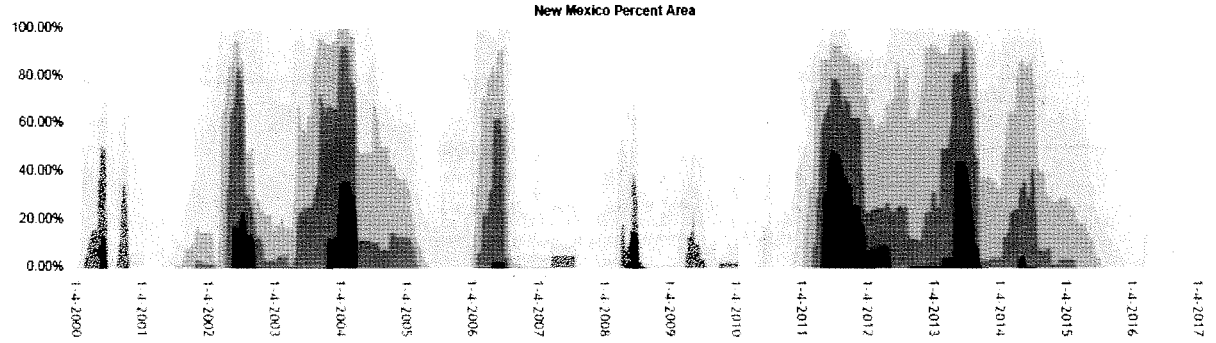
D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Mark Svoboda
National Drought Mitigation Center

http://droughtmonitor.unl.edu/

New Mexico Percent Area



Appendix B -- Letters of Support

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority
2600 Prospect N.E., Albuquerque, NM 87107
Phone: (505) 884-2215 Fax: (505) 884-0214
Website: www.amafca.org

April 1, 2016

Dear Bureau of Reclamation:

Albuquerque Metropolitan Flood Control Authority (AMAFCA) fully supports the Middle Rio Grande Conservancy District's (DISTRICT) application for a Drought Contingency Planning Grant made available through the U.S. Bureau of Reclamation's WaterSMART Program.

AMAFCA builds and maintains flood control structures and addresses stormwater quality to protect residents in the urban area and aquatic habitat in the Rio Grande. The drought contingency plan proposes the analysis and recommendation of mitigation and response actions that build long-term resiliency to drought and climate change for the DISTRICT and its constituents that include a portion of AMAFCA's jurisdiction.

Existing irrigation system features will be assessed to determine their functionality so that technical and operational strategies are developed and prioritized to meet irrigation demands in the face of drought induced water shortages while managing supplies to additionally meet the requirements of the Middle Rio Grande Endangered Species Act Biological Opinion and Rio Grande Compact delivery schedules for New Mexico. This will include a review of water storage and release options that could result from operational and institutional changes for developing reservoir system flexibilities within the Middle Rio Grande (MRG).

AMAFCA was created over 50 years ago to protect lives and property from flooding. While this is still our primary focus, we constantly evaluate how best to accomplish this. Our recent efforts have been directed at ways to slow down stormwater and think more holistically about the role stormwater plays in the management of all water resources in the region.

There are unique challenges facing AMAFCA and we are pleased the DISTRICT is undertaking this effort, as we are equally concerned about future water availability and system resiliency. AMAFCA's contribution towards the acquisition of the nation's first National Wildlife Refuge, Valle de Oro, in the western United States is part of a larger effort to provide flood protection for the urban area, but also to protect, restore and enhance important wetland, riparian and associated upland habitat needed to address storm water quality before runoff enters the Rio Grande.

AMAFCA will continue to protect life and property through the construction of flood control projects that will be integrated into the planning process by our participation in the drought planning task force and as an appropriate stakeholder. As we did for an EPA-sponsored charrette,

April 1, 2016
Bureau of Reclamation
Letter of Support for the Middle Rio Grande Conservancy District's application for a Drought Contingency Planning Grant

AMAFCA will provide technical expertise at neighborhood charrettes and help clarify what is possible from an engineering and regulatory standpoint. We will also work closely with DISTRICT staff to provide maps and other tools needed for meetings with community leaders and other stakeholders as an in-kind contribution to this planning effort.

If you have any questions or require additional information, please call me at (505) 884-2215.

Sincerely,
AMAFCA

Jerry M. Lovato, PE
Executive Engineer

CC: Mike Hamman, CEO MRGCD
Katie Babuska

CITY OF SOCORRO

Ravi Bhasker
Mayor

111 School of Mines Road
P.O. Box K
Socorro, NM 87801
Phone: (575) 835-0240
Fax: (575) 838-4027
www.socorronm.gov

March 29, 2016

Dear Bureau of Reclamation:

The City of Socorro is providing this letter of support for the Middle Rio Grande Conservancy District's (District) application for a Drought Contingency Planning Grant made available through the U.S. Bureau of Reclamation's WaterSMART Program.

The drought contingency plan proposes the analysis and recommendation of mitigation and response actions that build long-term resiliency to drought and climate change for the District and its constituents. Existing irrigation system features will be assessed to determine their functionality so that technical and operational strategies are developed and prioritized to meet irrigation demands in the face of drought induced water shortages while managing supplies to additionally meet the requirements of the Middle Rio Grande Endangered Species Act Biological Opinion and Rio Grande Compact delivery schedules for New Mexico. This will include a review of water storage and release options that could result from operational and institutional changes for developing reservoir system flexibilities within the Middle Rio Grande (MRG).

The MRG and New Mexico have experienced drought conditions resulting in below normal spring runoff periods and low summer river flows over the last decade, with a number of years at well below long-term averages. The resultant water shortages from long-term and persistent drought have created a number of intense challenges in the MRG in meeting the competing water management interests that include the demands of the riparian system from Cochiti Dam to Elephant Butte, meeting 60,000 acres of irrigation demands, assuring that Rio Grande Compact delivery requirements are met annually, and operating in a manner that keeps sufficient water within the river for environmental and endangered species purposes.

There are unique challenges facing the City of Socorro and we are pleased the District is undertaking this effort as we are equally concerned about future water availability and system resiliency. Work the City of Socorro is currently undertaking that may add to this important effort includes the creation of a comprehensive water conservation plan and the continued use of well water for irrigation purposes. We are committed to this planning process by participating in the drought planning task force and appropriate stakeholder meetings, providing pertinent baseline data, and potentially providing an equivalent of $5,000 as in-kind services.

If you have questions or need additional information, please feel free to contact me at 505-480-6172 or rbhasker@socorronm.gov.

Sincerely,

Ravi Bhasker, Mayor
City of Socorro

Southern Sandoval County Arroyo Flood Control Authority

1041 Commercial Dr. S.E. • Rio Rancho, New Mexico 87124
(505) 892-RAIN (7246) • FAX (505) 892-7241

March 31, 2016

Dear Bureau of Reclamation:

The Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA) is providing this letter of support for the Middle Rio Grande Conservancy District's (District) application for a Drought Contingency Planning Grant made available through the U.S. Bureau of Reclamation's WaterSMART Program.

The drought contingency plan proposes the analysis and recommendation of mitigation and response actions that build long-term resiliency to drought and climate change for the District and its constituents. Existing irrigation system features will be assessed to determine their functionality so that technical and operational strategies are developed and prioritized to meet irrigation demands in the face of drought induced water shortages while managing supplies to additionally meet the requirements of the Middle Rio Grande Endangered Species Act Biological Opinion and Rio Grande Compact delivery schedules for New Mexico. This will include a review of water storage and release options that could result from operational and institutional changes for developing reservoir system flexibilities within the Middle Rio Grande (MRG).

The MRG and New Mexico have experienced drought conditions resulting in below normal spring runoff periods and low summer river flows over the last decade, with a number of years at well below long-term averages. The resultant water shortages from long-term and persistent drought have created a number of intense challenges in the MRG in meeting the competing water management interests that include the demands of the riparian system from Cochiti Dam to Elephant Butte, meeting 60,000 acres of irrigation demands, assuring that Rio Grande Compact delivery requirements are met annually, and operating in a manner that keeps sufficient water within the river for environmental and endangered species purposes.

There are unique challenges facing SSCAFCA and we are pleased the District is undertaking this effort as we are equally concerned about future water availability and system resiliency. Work SSCAFCA is undertaking includes researching the effects of climate change on future flood event frequency and intensity that may add to this important effort. We are committed to this planning process by participating in the drought planning task force and appropriate stakeholder meetings, providing pertinent baseline data, and potentially providing an equivalent of $60,000 as in-kind services.

If you have questions or need additional information, please contact me at 505-892-7246 or cthomas@sscafca.com.

Sincerely,

Charles Thomas, P.E.
Executive Engineer
SSCAFCA

www.sscafca.com

Town of Bernalillo

"The City of Coronado"

March 30, 2016

Dear Bureau of Reclamation:

The Town of Bernalillo is providing this letter of support for the Middle Rio Grande Conservancy District's (District) application for a Drought Contingency Planning Grant made available through the U.S. Bureau of Reclamation's WaterSMART Program.

The drought contingency plan proposes the analysis and recommendation of mitigation and response actions that build long-term resiliency to drought and climate change for the District and its constituents. Existing irrigation system features will be assessed to determine their functionality so that technical and operational strategies are developed and prioritized to meet irrigation demands in the face of drought induced water shortages while managing supplies to additionally meet the requirements of the Middle Rio Grande Endangered Species Act Biological Opinion and Rio Grande Compact delivery schedules for New Mexico. This will include a review of water storage and release options that could result from operational and institutional changes for developing reservoir system flexibilities within the Middle Rio Grande (MRG).

The MRG and New Mexico have experienced drought conditions resulting in below normal spring runoff periods and low summer river flows over the last decade, with a number of years at well below long-term averages. The resultant water shortages from long-term and persistent drought have created a number of intense challenges in the MRG in meeting the competing water management interests that include the demands of the riparian system from Cochiti Dam to Elephant Butte, meeting 60,000 acres of irrigation demands, assuring that Rio Grande Compact delivery requirements are met annually, and operating in a manner that keeps sufficient water within the river for environmental and endangered species purposes.

There are unique challenges facing the Town of Bernalillo and we are pleased the District is undertaking this effort as we are equally concerned about future water availability and system resiliency. Work the Town of Bernalillo is undertaking includes improvements to infrastructure, and implementing our Water Conservation Plan; both of which may add to this important effort. We are committed to this planning process by participating in the drought planning task force and appropriate stakeholder meetings, providing pertinent baseline data, and potentially providing in-kind services.

If you have questions or need additional information, please contact me at 505-867-3311 or mayortorres@townofbernalillo.org.

Sincerely,

Jack Torres, Mayor
Town of Bernalillo

P.O. Box 638 829 Camino del Pueblo Bernalillo, NM 87004 (505) 867-3311 *FAX (505) 867-0481

Audubon NEW MEXICO

P.O. Box 9314
Santa Fe, NM 87504-9314
Tel: 505-983-4609
Fax: 505-983-2355
http://nm.audubon.org

April 7, 2016

BOR WaterSMART Drought Contingency Planning

Dear Bureau of Reclamation:

Audubon New Mexico (Audubon) is providing this letter of support for the Middle Rio Grande Conservancy District's (District) application for a Drought Contingency Planning Grant made available through the U.S. Bureau of Reclamation's WaterSMART Program.

The drought contingency plan proposes the analysis and recommendation of mitigation and response actions that build long-term resiliency to drought and climate change for the District and its constituents and will include measures important to the District's ability to meet its commitments to mitigate, maintain, and enhance habitat under the Middle Rio Grande Endangered Species Act Biological Opinion (BO). This grant will allow the District to examine the functionality of existing irrigation system features in order to develop and prioritize technical and operational strategies to meet irrigation demands in the face of drought-induced water shortages while managing supplies to additionally meet the requirements of the BO and Rio Grande Compact delivery schedules for New Mexico. Of particular interest to Audubon is the proposed review of water storage and release options that could result from operational and institutional changes for developing reservoir system flexibilities within the Middle Rio Grande (MRG).

Water shortages from long-term and persistent drought have created a number of intense challenges in the MRG in meeting several, competing demands: the riparian system from Cochiti Dam to Elephant Butte; irrigation; assuring annual Rio Grande Compact deliveries; and operating in a manner that keeps sufficient water within the river for environmental and endangered species purposes.

Audubon is pleased the District is undertaking this effort as we are equally concerned about future water availability and system resiliency. Audubon's work in the MRG includes collaborations with several stakeholders for improving environmental flows to benefit habitat that may add to this important effort. Audubon is committed to this planning process by participating in the drought planning task force and appropriate stakeholder meetings, providing pertinent baseline data, and potentially providing an equivalent of $5,000 as in-kind services.

If you have questions or need additional information, please contact Sharon Wirth at 505-492-1399 or swirth@audubon.org.

Sincerely,

Sharon Wirth

Freshwater Program Manager
Audubon New Mexico

County of Bernalillo
State of New Mexico

Infrastructure Planning Geo Resources Department
2400 Broadway SE, Building N
Albuquerque, New Mexico 87102
Office (505) 848-1500 Fax (505) 848-1510
www.bernco.gov/infrastructure-planningand-geo-resources-3225/

Dear Bureau of Reclamation:

The County of Bernalillo is providing this letter of support for the Middle Rio Grande Conservancy District's (District) application for a Drought Contingency Planning Grant made available through the U.S. Bureau of Reclamation's WaterSMART Program.

The drought contingency plan proposes the analysis and recommendation of mitigation and response actions that build long-term resiliency to drought and climate change for the District and its constituents. Existing irrigation system features will be assessed to determine their functionality so that technical and operational strategies are developed and prioritized to meet irrigation demands in the face of drought induced water shortages while managing supplies to additionally meet the requirements of the Middle Rio Grande Endangered Species Act Biological Opinion and Rio Grande Compact delivery schedules for New Mexico. This will include a review of water storage and release options that could result from operational and institutional changes for developing reservoir system flexibilities within the Middle Rio Grande (MRG).

The MRG and New Mexico have experienced drought conditions resulting in below normal spring runoff periods and low summer river flows over the last decade, with a number of years at well below long-term averages. The resultant water shortages from long-term and persistent drought have created a number of intense challenges in the MRG in meeting the competing water management interests that include the demands of the riparian system from Cochiti Dam to Elephant Butte, meeting 60,000 acres of irrigation demands, assuring that Rio Grande Compact delivery requirements are met annually, and operating in a manner that keeps sufficient water within the river for environmental and endangered species purposes.

There are unique challenges facing the the County of Bernalillo, including implementation of the MS4 Permit which has Interstate Stream Compact implications as well as our continuing our role in regional water planning activities. We are pleased the District is undertaking this effort as we are equally concerned about future water availability and system resiliency. Work the County is undertaking includes improvements to infrastructure through green infrastructure / low impact measures, joint projects with other entities engaged in flood reduction infrastructure, evaluation of stormwater discharges to the MRGCD system, homeowner education regarding pollution reduction, and increased water conservation opportunities for our small drinking water system suppliers, that may add to this important effort. We are willing

and committed to this planning process by participating in the drought planning task force and appropriate stakeholder meetings, providing pertinent baseline data as available, and potentially providing an equivalent of up to 24 hours of professional staff time valued at $1,500 as in-kind services.

If you have questions or need additional information, please contact Daniel McGregor at 505-848-1578 or dmcgregor@bernco.gov.

Sincerely,

Daniel L. McGregor
Interim Director
Infrastructure Planning and GeoResources
Bernalillo County Public Works

NEW MEXICO INTERSTATE STREAM COMMISSION

BATAAN MEMORIAL BUILDING, ROOM 101
POST OFFICE BOX 25102
SANTA FE, NEW MEXICO 87504-5102
(505) 827-6160
FAX: (505) 827-6188

April 5, 2016

Re: BOR WaterSMART Drought Contingency Planning

Dear Bureau of Reclamation:

The NM Interstate Stream Commission (ISC) is providing this letter of support for the Middle Rio Grande Conservancy District's (District) application to the U.S. Bureau of Reclamation for the WaterSmart Drought Contingency Planning Grant summarized below.

We understand the District's drought contingency application proposes the analysis and recommendation of mitigation and response actions that build long-term resiliency to drought and climate change for the District and its constituents. Existing irrigation system features will be evaluated to assess their functionality to meet irrigation demands in the face of drought induced water shortages while managing supplies to additionally meet the requirements of a new Middle Rio Grande Water Operations and River Maintenance Biological Opinion as well Rio Grande Compact delivery schedules for New Mexico. Technical and operational strategies will be developed and prioritized including a review of water storage and release options that could result from operational and institutional changes for developing reservoir system flexibilities within the Middle Rio Grande (MRG).

The Middle Rio Grande (MRG) and New Mexico have experienced drought conditions resulting in below normal spring runoff periods and low summer river flows over the last decade, with a number of years at well below long-term averages. The resultant water shortages from long-term and persistent drought have created a number of intense challenges in the MRG in meeting the competing water management interests that include the demands of the riparian system from Cochiti Dam to Elephant Butte, meeting irrigation demands, assuring that Rio Grande Compact delivery requirements are met, and operating in a manner that keeps sufficient water within the river for environmental and endangered species purposes.

These are unique challenges facing the ISC and the District and we are pleased the District is undertaking this effort. The ISC is currently undertaking a number of work activities that may add to this important proposed effort. In addition, some of the ISC activities might be available to provide in-kind services to the proposed project. We look forward to talking with you and the District about such opportunities.

Should you have questions or require additional information, please contact Rolf Schmidt-Petersen at 505-383-4052 or Rolf.schmidt@state.nm.us.

Sincerely,

Deborah K. Dixon, P.E.
Director
NM Interstate Stream Commission

Coalition of Six Middle Rio Grande Basin Pueblos
c/o Stuart Paisano, Chairman
Pueblo of Sandia, 481 Sandia Loop, Bernalillo, New Mexico 87004
(505) 867-3317, Fax (505) 867-9235

April 11, 2016

US Bureau of Reclamation
Albuquerque Area Office
555 Broadway Blvd NE STE 100
Albuquerque, NM 87102

Re: Letter of Support for WaterSMART Drought Contingency Planning

Dear Bureau of Reclamation:

The Coalition of Six Middle Rio Grande Basin Pueblos (Coalition) writes in support of the Middle Rio Grande Conservancy District's (District) application for a Drought Contingency Planning Grant made available through the U.S. Bureau of Reclamation's WaterSMART Program.

As we understand the District's drought contingency planning initiative, it seeks to assess the functionality of its existing irrigation system features in order to develop technical and operational strategies that can help ensure that irrigation demands are met while also addressing endangered species, environmental, and Rio Grande Compact delivery concerns. The Coalition supports the District's drought planning efforts. The Middle Rio Grande valley has experienced significant drought conditions over the last decade, with river flows consistently well below average. The resultant water shortages from long-term and persistent drought have created a number of intense challenges in the Middle Rio Grande basin. These challenges will require careful planning and management as water supplies remain scarce into the future.

The Coalition Pueblos intend to offer their assistance and work closely with the District in its planning process. While the District does not have jurisdiction over Pueblo lands, and Pueblos may eventually choose to develop their own drought management plans, there is no question that cooperative efforts in drought planning serve the interests of all water users in the Middle Rio Grande. We encourage the BOR to fund the District's waterSMART drought contingency planning grant application.

Sincerely,

Stuart Paisano, Chairman, Lt Governor of the Pueblo of Sandia

cc: Representatives of the Six Middle Rio Grande Basin Pueblos

NEW MEXICO INTERSTATE STREAM COMMISSION

BATAAN MEMORIAL BUILDING, ROOM 101
POST OFFICE BOX 25102
SANTA FE, NEW MEXICO 87504-5102
(505) 827-6160
FAX: (505) 827-6188

April 5, 2016

RE: Reclamation's WaterSMART Drought Resiliency Project

Dear Bureau of Reclamation:

The NM Interstate Stream Commission (ISC) is providing this letter of support for the Middle Rio Grande Conservancy District's (District) application for a Drought Resiliency Project Grant made available through the U.S. Bureau of Reclamation's (Reclamation) WaterSMART Program. The MRGCD has been a long-time partner of ISC, working together on numerous projects including, but not limited to, Middle Rio Grande Endangered Species Collaborative Program projects.

The District is proposing the installation of a water distribution hub near its southern boundary in Socorro County New Mexico. The ISC believes operation of a hub in the area could aid the District in its local operations and endangered species management efforts in the river near and downstream of the District's southern boundary.

This project, which we propose be conducted in coordination with Reclamation and the Bosque del Apache National Wildlife Refuge who are each planning projects in the area, could provide critical support for San Acacia reach water operations and, consequently, the new Middle Rio Grande Water Operation and River Maintenance Biological Opinion and proposed Recovery Implementation Program.

The Middle Rio Grande (MRG) and New Mexico have experienced drought conditions resulting in below normal spring runoff periods and low summer river flows over the last decade, with a number of years at well below long-term averages. The resultant water shortages from long-term and persistent drought have created a number of intense challenges in the MRG in meeting the competing water management interests that include the demands of the riparian system from Cochiti Dam to Elephant Butte, meeting irrigation demands, assuring that Rio Grande Compact delivery requirements are met, and operating in a manner that keeps sufficient water within the river for environmental and endangered species purposes. These are unique difficult challenges facing Reclamation, the ISC, the District, and the Bosque Apache. We are pleased the District is undertaking this effort as we believe it can result in improved river operations that will address a number of critical challenges.

Should you have questions or require additional information, please contact Rolf Schmidt-Petersen at 505-383-4058 or Rolf.schmidt@state.nm.us.

Sincerely,

Deborah K. Dixon, P.E.
Director
NM Interstate Stream Commission

cc: Mike Hamman, MRGCD CEO
Jennifer Faler, Albuquerque Area Manager of Reclamation
Kevin Cobble, Bosque del Apache Manager