H.C.I.D. 2 River Pumping Plant Discharge Headwall, Feeder Canal, and Discharge Pipes Improvements Project

February 19, 2024

APPLICANT:
Hidalgo County Irrigation District No. 2
P.O. Box 6
San Juan, TX. 78589

May 27, 2021. HCID 2 River Pumping Plant. In the background visible are the ten 42-inch welded steel discharge pipes and corresponding flap gate. The District's crew was busy repairing flap valve No. 5

PROJECT MANAGER:
Anthony Stambaugh
General Manager
Hidalgo County Irrigation District No. 2
326 N. Standard Avenue
San Juan, TX 78589
PH: (956) 787-1422
astambaugh@hcid2.org

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D.2.2.2. TECHNICAL PROPOSAL

February 19, 2024

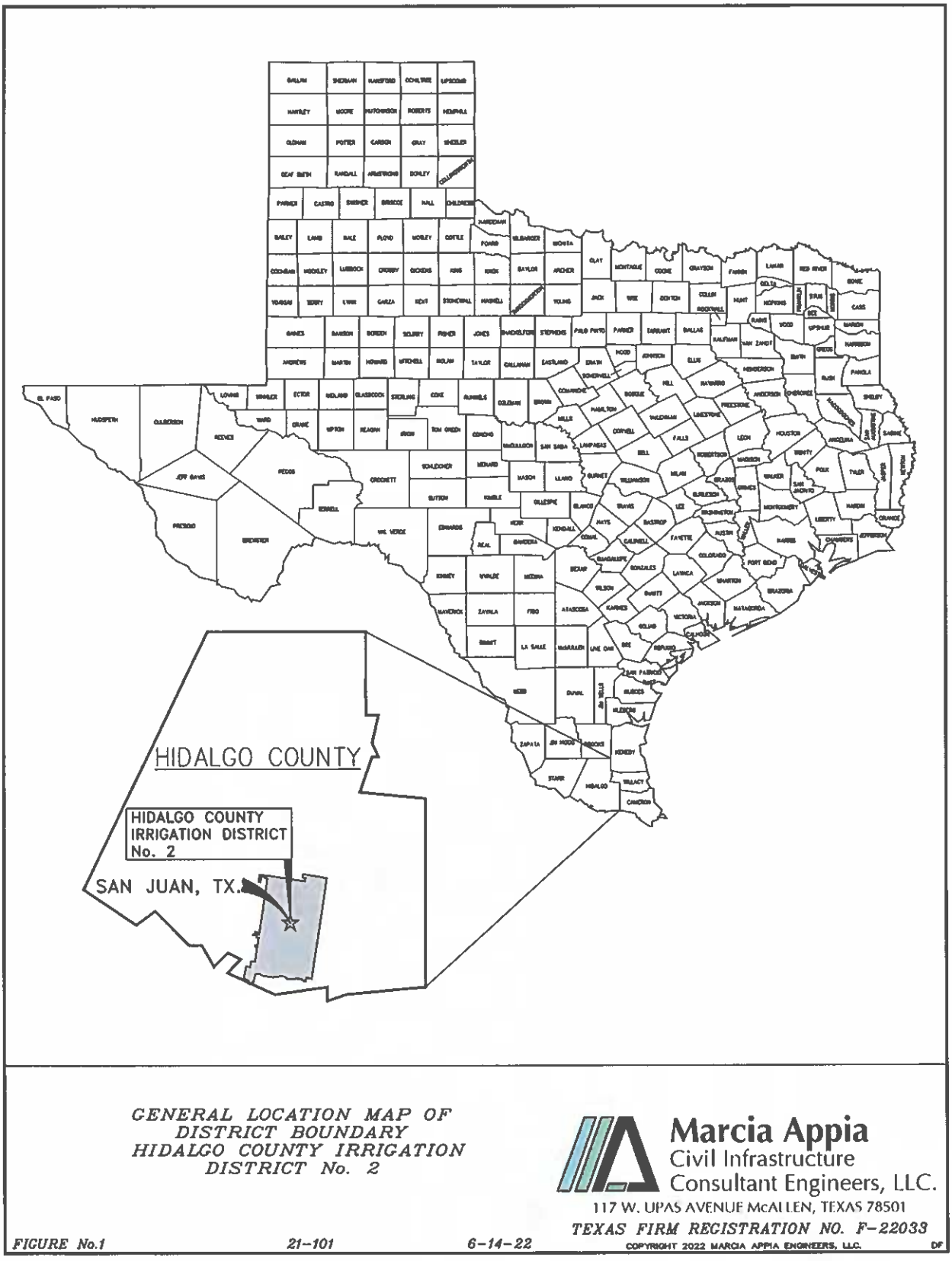
D.2.2.2.3 Executive Summary

The Hidalgo County Irrigation District No.2 encompasses approximately 71,000 acres of land in the Lower Rio Grande Valley within the south-central portion of the Hidalgo County, Texas; refer to the District's General Location Map Figure 1. The District is an active member of the Rio Grande Regional Water Planning Group, Rio Grande Regional Water Authority (RGRWA), Lower Rio Grande Water District Managers' Association, Texas Irrigation Council, Texas Water Conservation Association, Lower Rio Grande Water Committee, Inc., and the Rio Grande Watermaster Advisory Committee. The Hidalgo County Irrigation District No.2, hereinafter the District, seeks approval for its application for federal funding **under Section B.2.2. Funding Group II of NOFO R24AS00052.** If awarded, the District will implement the funds towards a water conservation project.

The District, a **Category A applicant**, proposes to improve the discharge headwall, feeder canal, and discharge pipes of the River Pumping Plant. The project scope encompasses the construction of reinforced concrete isolation bays on the headwall and feeder canal, and replacement of the pump discharge pipes and flap valves with Ductile Iron Pipe and rubber check valves respectively to eliminate backflow and improve the system efficiency. The District uses the River Pumping Plant to divert an average annual volume of **75,000** ac-ft of water from the Rio Grande. The River Pumping Plant is located at approximately 1.8 miles south of U.S. 281 and 1.7 miles west of TX 115 Spur near Hidalgo, Texas; refer to Figure 2. The project will conserve **1,233 ac – ft / yr** of water and **76,446 KWH / YR** of electrical power not needed from the grid. The District's project meets Section C.4.1. "Water Conservation Projects" criteria by offering a solution that will provide water conservation, support water supply reliability, and improved energy efficiency. Project funds will be applied towards the total project cost including but not limited to materials, construction services, professional fees, and incidentals needed for the completion of the project.

The District proposes to undertake the project without the assistance from any partners in a single phase to reduce administrative and mobilization costs involved with construction services procurement policy. To accomplish the goal, the District will have to begin construction by September 2025 and complete the project by July 2026. The total estimated project cost is **$5,918,760.00.** The District has capability to commit $3,918,760, corresponding to **66.21%** of the of total project cost, using funds from the District's Capital Improvements Fund. If the project is awarded, the District will apply **$2,000,000.00** from Federal Funds towards the project's total cost.

The project is located within the District's right of way and complies with all environmental and cultural resources requirements.



GENERAL LOCATION MAP OF DISTRICT BOUNDARY HIDALGO COUNTY IRRIGATION DISTRICT No. 2

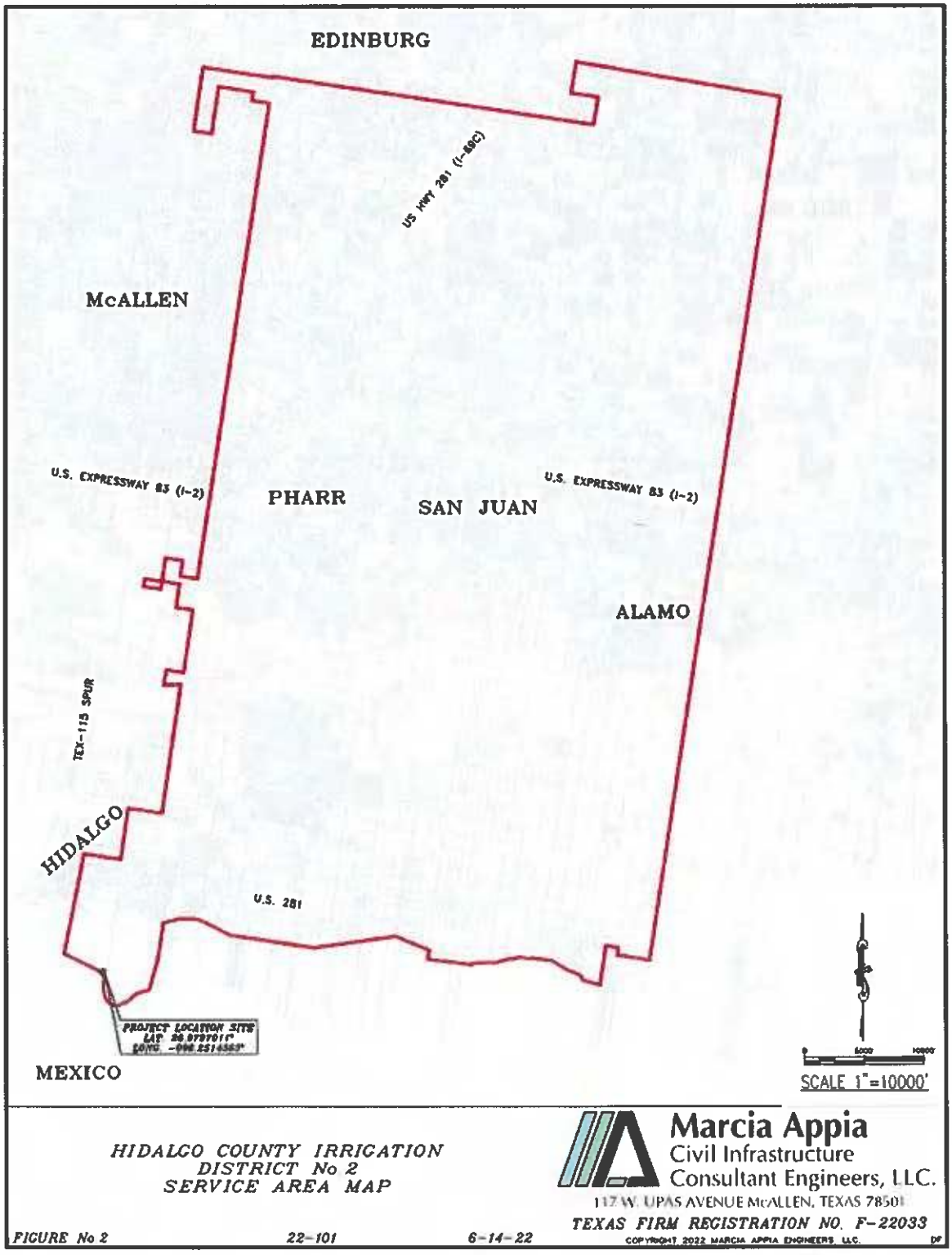
Marcia Appia
Civil Infrastructure Consultant Engineers, LLC.
117 W. UPAS AVENUE McALLEN, TEXAS 78501
TEXAS FIRM REGISTRATION NO. F-22033

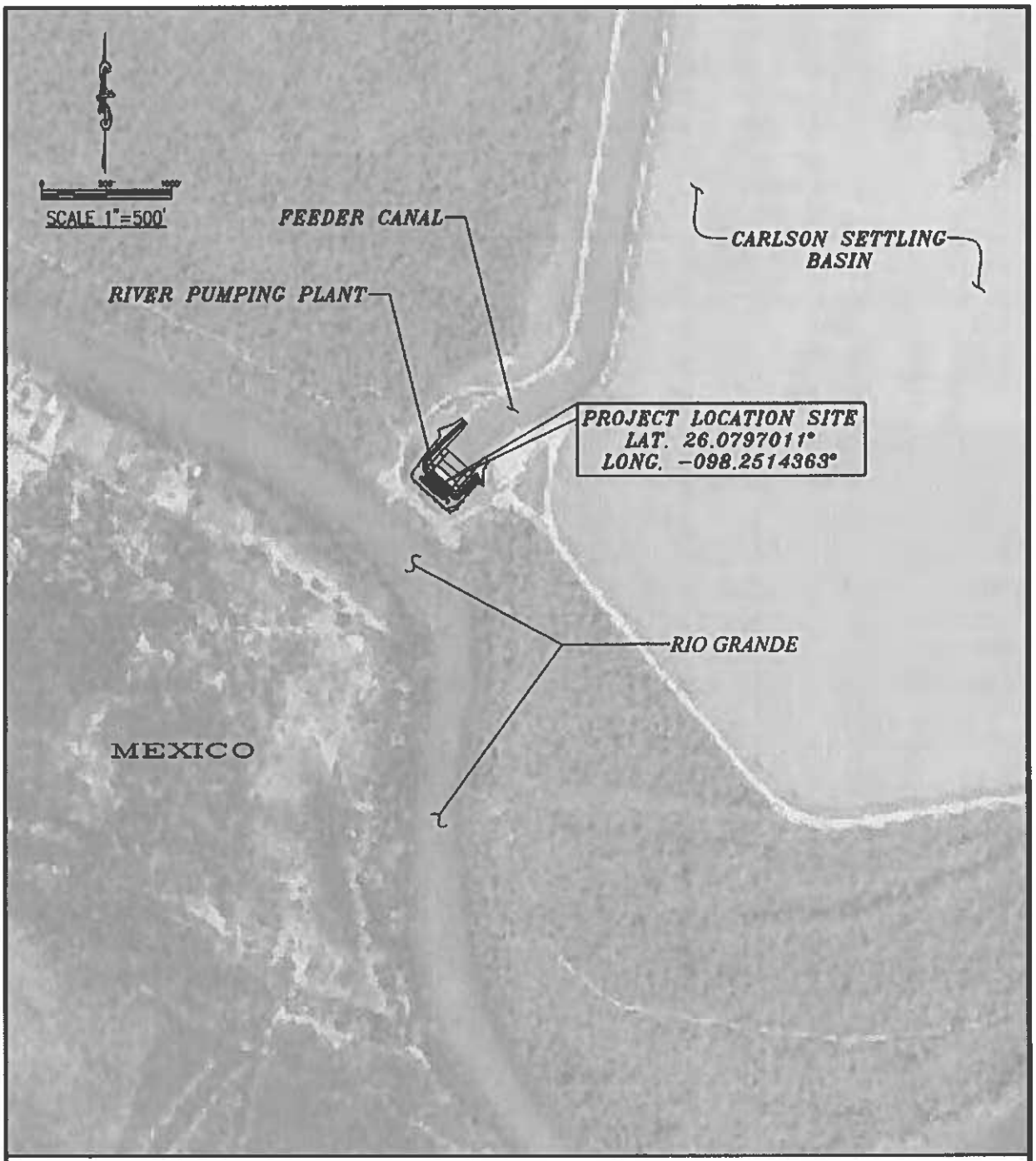
FIGURE No.1 *21-101* *6-14-22*

 DF

D.2.2.2.4 Project Location

The River Pumping Plant is located southeast of the City of Hidalgo, Hidaglo County, Texas at approximately 1.8 miles south of U.S. 281 and 1.7 miles west of TX 115 Spur; refer to Figure 2 below. The project latitude is 26.0797011 decimal degrees North and longitude is -098.2514363 decimal degrees West as illustrated by **Figure 2** below and **Figure 3 in page 4**.





PROJECT LOCATION MAP

HIDALGO COUNTY IRRIGATION DISTRICT No. 2
HIDALGO COUNTY, TEXAS

Marcia Appia
Civil Infrastructure
Consultant Engineers, LLC.
117 W. UPAS AVENUE McALLEN, TEXAS 78501
TEXAS FIRM REGISTRATION NO. F-22033

FIGURE No 3 21-101 6-14-22

D.2.2.2.5 Project Description

The River Pumping Plant is the principal component of the entire conveyance system. As its name implies, the River Pumping Plant is employed by the District to divert water from the Rio Grande. On average the District diverts an annual volume of **75,000 ac-ft** of water from the Rio Grande. The River Pumping Plant is equipped with ten (10) vertical axial flow pumps. Each pump is powered by a four-hundred (400) horse power electric motor and each pump has capacity to deliver 25,000 gallons per minute. Each pump discharges through its respective 42-inch welded steel discharge pipe. Each 42-inch discharge pipe is approximately forty (40) feet long and it is equipped with a heavy flap valve on the discharge side as illustrated by **Exhibit A-1 and A-2 found in page 34 and 35 respectively**. Hereinafter the 42-inch pipes will be referred to as **the discharge pipes.**

The river diversions pumped by the River Pumping Plant are stored in the "Carlson Settling Basin" a 334.9 acre reservoir with 1,800 ac-ft storage capacity. The Carlson Settling Basin, **hereinafter the Carlson Basin**, is owned and operated by the District. The District withdraws water from the Carlson Basin as needed to meet the daily demand. The River Pumping Plant discharges directly to a Feeder Canal. The Feeder Canal conveys the River Pumping Plant diversion flows to the Carlson Basin. Both the Carlson Basin and the **Feeder Canal** are called out in **Figure 3 in page 4 above**. The discharge pipes are structurally supported by a reinforced concrete headwall in the Feeder Canal side as illustrated by **Exhibit A-2 in page 35.** Hereinafter the reinforced concrete headwall will be **referred to as the headwall.**

Water Losses

Water losses are attributed to backflow. The pumps' discharge pipes stretch from the pump building to the Feeder Canal as illustrated by **Exhibit A-1 and Exhibit A-2**. The discharge pipes have reached its service life; corrosion has compromised the pipes' wall beyond repair. Most of the corrosion damage is present on the Feeder Canal side where the pipes are submerged below the water surface year-round within the oxygenation zone. Numerous holes have opened in the pipes' wall. The water from the Feeder Canal backflows thru the pipe holes. **Pictures 1 to 3 in pages 6 to 7 corroborate visual support for continuous backflow discharge.**

Backflow is also attributed to flap valve leakage and sporadic flap valve detachments. Though, the flap valves are maintained, these lose its watertightness. Corrosion wears out the hinge pin mechanism that allows the flap to open/close freely resulting in the flap to shift position or detach completely. The last valve detachment of record occurred on May 16, 2021. The District was forced to interrupt diversion pumping to address the problem immediately. The District responded two hours after the detachment of flap valve No. 5 was reported. Throughout the subsequent days, the District worked on lowering the level of the Carlson Basin. After eleven days, on May 27, 2021 the water level in the Feeder Canal was reasonably low to access the exposed discharge pipes and respective flap valves. Consequently, the District crew was able to retrieve valve No. 5 from the bottom of the Feeder Canal. The District resolved to make the best out of the low water level and decided to assess the condition of all ten flap valves. The District crew found the hinge mechanism of flap valve No.9 was damaged and decided to remove the valve to repair it. The entire repair work was completed in three (3) days resulting in fourteen (14) days of downtime. **Pictures 4 to 7 attest to the May 27, 2021 events.**

Proposed Improvements

The District proposes to improve the Discharge Headwall and Feeder Canal by constructing **reinforced concrete isolation bays for each of the discharge pipes, replace the flap valves with**

rubber check valves, and replace the discharge pipes. The isolation bays will provide safe access to the discharge pipes from the Feeder Canal. The isolation bays will be equipped with stainless steel guide and frame to slide stop logs. The District will have two sets of stainless steel stop logs on standby stored in the River Pumping Plant. In case of valve failure or other anomality, backflow will be checked with the stop logs. The response time will be dramatically improved. The discharge bay will be pumped down, and personnel will be able to conduct the needed repairs, without disrupting normal operation.

The existing reinforced concrete headwall will have to be retrofitted to add the isolation bays. The isolation bays will have to be cast in place on the water side of the headwall. Reinforced concrete wingwalls will be constructed on the exterior side of discharge pipe No. 1 and discharge pipe No. 10. **Exhibit A-3 to A-4** in pages 36 and 37 respectively illustrate the proposed improvements. **The proposed isolation bays will allow the District to safely access each valve without need to interrupt diversion pumping.**

The District also proposes to **replace the flap valves with rubber check valves.** The advantage of rubber check valves over flap valves is that the rubber check valves do not have moving parts, and rubber is non corrosive. The District proposes to install inline rubber check valves with thimble insert. The thimble insert will house the rubber check valve to provide a water tight seal.

The District proposes to replace the welded steel discharge pipes **with AWWA C151 Ductile Iron pipe or AWWA C900 PVC pipe** Ductile Iron pipe has been in the market since the late 1940's. Ductile Iron is a proven material and is the pipe of choice in water treatment for its corrosion resistance, durability, and high impact resistance. Ductile Iron pipe is manufactured in the United States of America and is commonly produced in large nominal size diameters ranging from 30 inch to 64 inch. Ductile Iron Pipe offers a life expectancy of 100 years. Polyvinyl Chloride (PVC) has proven to be a reliable noncorrosive material. PVC pipe is traditionally commercialized for municipal use in small nominal size diameters ranging from 6-inch up to 20-inch. In recent years, the PVC pipe manufacturers have attained capacity to manufacture large nominal size diameter pipe ranging in size from 24 inch to 60 inch. The District would like to have the opportunity to bid PVC as an alternative material, and evaluate the option. Ductile Iron pipe offers two advantages over PVC. Ductile Iron is ultraviolet radiation resistant. Second, Ductile iron pipe has a thinner wall than PVC pipe; therefore, a larger inner diameter than PVC pipe which translate to higher pumping efficiency.

The Feeder Canal will have to be dewatered to construct the isolation bays, replace the existing discharge pipes, and install the rubber check valves. In order to maintain diversion capacity, a water manage plan will be required to by-pass the construction site. The District has explored solutions to by-pass the construction site. By far, the safest and most reliable approach is to construct a temporary coffer dam at approximately 125 linear feet downstream the headwall. The District has determined that during construction, five pumps will have to remain in service to meet the demand. This can be accomplished by temporarily extending the designated pumps' discharge pipe across the coffer dam as illustrated by **Exhibit B in page 38 of this document**. This action will free up five discharge pipes on which construction work can be conducted. Once the five new pipes and corresponding isolation bays are constructed, the temporary pipe extensions can be connected to the new discharge pipes to complete the construction work on the remaining five pumps' discharge pipe.

Picture 1. October 18, 2021. Visible backflow from discharge pipe No. 9. The District had remove Pump No. 9 for maintenance. At the time the backflow was directed back to Pump No. 9's base plate opening with the aid of a corrugated metal panel.

Picture 2. October 18, 2021. The neon green light in the center of the picture corresponds to the water gush coming from the Feeder Canal thru a couple of holes in discharge pipe No.9. The picture was obtained standing next to the corrugated metal panel. Also visible is the stream of backflow in the pipe's barrel.

Picture 3. October 18, 2021. Close-up view of the water gush coming from the Feeder Canal thru a couple of holes in discharge pipe No.9.

Picture 4. May 27, 2021. The District's crew repairing the hinge of flap valve No.5.

Picture 5. May 27, 2021. Left. The District's crew conducting repair work on flap valve No. 5.

Picture 6. May 27, 2021. Two visible holes in discharge pipe No. 3 and numerous holes in discharge pipe No. 4. The red lead arrows were inserted to point to the hole location. Text boxes were inserted to indicate the Feeder Canal's operational levels. The blue line indicates the mean operational level corresponding to elevation 107.00.

Picture 7. May 27, 2021. Single visible hole in discharge pipe No. 8. The red lead arrow was inserted to point to the hole location. Flap Valve No. 9 was installed the following day. The holes in pipes 9 and 10 are overshadowed and camouflaged.

E.1.1. EVALUATION CRITERION A - Quantifiable Water Savings

1.) Estimated Water Savings

The estimated volume of water expected to be conserved as direct result of this project is **1,233 ac-ft / yr.**

2.) Current Losses

Current losses are directly proportional to the volume of water lost to backflow.

- Where current losses are going? Water system losses return to the stream (Rio Grande).
- How current losses are being used? Unknown.
- Are there any known benefits associated with where the current losses are going? There are no know benefits associated with where the current losses go.

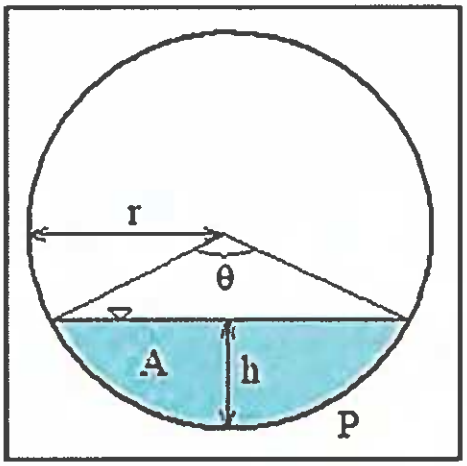
3.) Support Documentation of Estimated Water Savings

The District has recorded a consistent backflow depth of two (2) inches in all ten (10) discharge pipes; refer to pictures 1 to 3. The backflow depth is measured when a pump is removed for maintenance. The estimated water savings were calculated using Manning's equation for partially full pipe with roughness coefficient (n) of 0.013 where h = 2in corresponds to the measured backflow depth.

Manning Equation $Q = (1.49/n)(A)(R^{2/3})(S^{1/2})$

Where: $R = A/P$

$r = D/2$



Partially Full Pipe Flow Parameters
(Less Than Half Full)

$$\theta = 2\arccos\left(\frac{r - h}{r}\right)$$

$$A = \frac{r^2(\theta - \sin\theta)}{2}$$

$$P = r * \theta$$

Pipe Diameter, **D** =	42	in	Pipe Diameter, **D** =	3.5	ft
Depth of flow, **h** =	2	in	Pipe Radius, **r** =	1.75	ft
			Circ. Segment Height, **h** =	0.166667	ft
Manning roughness, n_{full} =	0.013		Central Angle, θ =	0.88	radians
			Cross-Sect. Area, **A** =	0.167	ft²
Pipe Slope, **S** =	0.0020	ft/ft			
			Wetted Perimeter, **P** =	1.54	ft

Calculations

		Hydraulic Radius, **R** =	0.11	ft
y/D =	0.048	Discharge, **Q** =	**0.17**	**cfs**
n/n_{full} =	1.17	Ave. Velocity, **V** =	**1.00**	**ft/sec**
n =	0.015	pipe % full [$(A/A_{full})*100\%$] =	1.74%	

Equation used for n/n_{full}: $n/n_{full} = 1 + (y/D)^{0.54} - (y/D)^{1.20}$

The above calculated backflow discharge Q of 0.17 cubic feet per second (cfs) corresponds to the estimated backflow per discharge pipe. The total estimated annual backflow discharge for ten discharge pipes is calculated as follows:

Total Backflow = 0.17 cfs X 86,400 s/day X 365 days/yr X 10 pipes X acre/43,560 sf = **1,231 ac-ft/yr**

In thirty-nine (39) years, the District has recorded four (4) flap valve detachments. The normal response time to plug the pipe opening is two (2) hours. The estimated volume of water lost to a valve detachment is **21 ac-ft;** hand calculations can be found in **EXHIBIT C page 39 of this document.** The calculations were performed assuming a Feeder Canal mean water surface elevation of 107.0 feet. The total estimated annual water losses attributed to flap valve detachments is calculated as follows:

Total losses to flap valve detachments = (21 ac-ft X 4) ÷ 39 years = 2 ac-ft/yr.

The total estimated water savings were calculated as follows:

Total Water Savings = Total Backflow + Total losses to flap valve detachments

= 1,231 + 2 = 1,233 ac-ft/yr

4) Questions according to the type of infrastructure.

The District's project meets section.C.4.1 as a water conservation project which will provide quantifiable and sustained water savings by improving leaky pipes with modern corrosion resistant materials. The District's project is comparable to a canal piping project. Below are answer to section E.1.1.4.

a. The estimated average annual water servings were estimated as outlined in the prevous section E.1.1.3. above.

b. The average annual losses were determined from actual field measurement; please refer to section E.1.1.3. pages 10 to 12 above.

c. The expected post project leakage losses are zero. The pipe, fittings, and rubber check valves are rated for higher than actual operational pressure; therefore, the District does not expect post project water losses. All material to be specified for the project will be made of non-corrosive materials. Rubber check valves are simple and don't have mechanical components. It is well documented that rubber check valves offer a watertight seal. The isolation bays will provide the needed flexibility for the District to access and address immediately any issues with the discharge pipes.

d. NOT APPLICABLE

e. The actual loss reductions can be verified by removing a pipe coupling on the pump side to confirm the discharge pipe is dry. The coupling is easy to remove. The verification process can be performed annually.

f. Below is a list of the main material components to be specified for the project.

- AWWA C151 Ductile Iron CL 150 Pipe or AWWA C 900 PVC Pipe.
- AWWA C 219 Fabricated Couplings.
- Ductile Iron Wall Collars.
- Flanged Duckbill Rubber Check Valves.
- Cast-in-place Reinforced Concrete.

E.1.2. EVALUATION CRITERION B – Renewable Energy

E.1.2.1. Subcriterion No. B.1: Implementing Renewable Energy Projects to Water Management and Delivery.

NOT APPLICABLE.

E.1.2.2. Subcriterion No. B.2: Increasing Energy Efficiency in Water Management.

Energy Efficiencies that are expected to result from implementation of the water conservation project.

- Quantifiable energy savings are expected to result from the project in the form of reduced pumping. The District will save energy by not having to pump the water lost to backflow. The District used an average of 4,524,721 KWH/year to divert water from the Rio Grande for the period beginning on fiscal year 2013 ending 2017. The District diverted an average water volume of 72,907 ac-ft/year for the respective period. Based on hard data of record, the average power used to divert an ac-ft of water is 62 KWh/ac-ft. **The expected annual energy savings to result from the project are 76,446 KWH / YR which was calculated as follows:**

Energy Savings (KWH/Yr) = Yearly water savings (ac - ft) X KWH / ac - ft

Energy Savings = 1,233 ac – ft / YR X 62 KWH / ac – ft = **76,446 KWH / YR**

Power usage data and corresponding pumped volume for the periods 2013 to 2017 may be furnished upon request.

- The energy savings to result from the water to be conserved will combat/offset the impacts of climate change by reducing the greenhouse gas emissions. In the State of Texas, a fuel mix is used to generate electric power. In accordance with EPA, ERCT, the regional power grid, emits the 818.6 lbs/MWh of CO_2, 0.525 lbs/MWh of SO_2, and 0.452 lbs/MWh of NOx. Based on the EPA's Power Profiler calculator the District may offset the following amounts of greenhouse emissions if the project is implemented.

  - **66,006 pounds of CO_2**
  - **42.3 pounds of SO_2**
  - **36.4 pounds of NOx**

  Exhibit D in page 40 of this document contains the annual greenhouse emission results as obtained from EPA's online Power Profiler calculator.

- The project will result in reduced pumping. The River Pumping Plant is equipped with ten (10) 42-in vertical axial flow pumps. Each pump has capacity to deliver 25,000 gallons per minute and powered by a four-hundred (400) horse power electric motor. Water losses to backflow are irrecoverable; therefore, the energy used to pump (divert) these from the river (source) results in a direct energy loss.

- How would the proposed project impact the current pumping requirements and energy usage? It will reduce the current pumping requirements and energy usage.

- Indicated whether your energy savings estimate originates from the point of diversion, or whether the estimate is based upon an alternate site of origin? The energy savings estimate originates from the point of diversion.

- Does the calculation include any energy required to treat water, if applicable? Not applicable.

- Will the project result in reduced vehicle miles driven, in turn reducing greenhouse gas emissions? The project does not offer reduced vehicle miles.

- Describe any renewable energy components that will result in minimal energy savings/ production. The project does not offer renewable energy components.

E.1.3. EVALUATION CRITERION C – Other Project Benefits

Resilience and Sustainability Benefits. Will the project address a specific water and/or energy sustainability concern?

- Explain and provide detail of the specific issues in the area that impact water sustainability.
    - Describe recent, existing, or potential drought or water scarcity conditions in the project area.

      Located at approximately 70 miles downstream the Falcon International Reservoir, the communities of the Rio Grande Valley and neighboring Mexican communities fully depend on the availability of surface water from the Rio Grande. The regional surface water reliability is driven and impacted by multiple factors and interest with the most influential being availability of alternate water resources, binational water use agreement, over appropriations, watershed yield, population and demand, stakeholder conflicts, and climate risk and vulnerability.

      Availability of alternate water resources
      Far exceeding the quality of groundwater, the surface water from the Rio Grande is the primary source of water for agricultural, municipal, domestic, and industrial use in Region M. Based on quoted information obtained from Chapter 3 of the State approved 2021 Rio Grande Regional Water Plan "The TWDB initiated a study of the groundwater resources in the Rio Grande Valley under the Brackish Resources Aquifer Characterization System (BRACS). Most of the groundwater in the study area (parts of Cameron, Willacy, Hidalgo, and Starr Counties) has concentrations of dissolved solids greater than 1,000 milligrams per liter (mg/L TDS) and does not meet drinking water standards." Local stakeholders are convinced of the need to resource brackish water but hesitate to act due to the higher treatment costs involved in treating brackish groundwater compared to surface water treatment.

      Binational water use agreement
      Flows within the Rio Grande are dependent upon reservoir operations and surface run-off emanating from both the U.S. and Mexico. The waters of the Rio Grande are shared between the United States and Mexico in accordance with the 1944 U.S.-Mexico Water Treaty. The international reservoirs in the Rio Grande are managed by the International Boundary and Water Commission (IBWC) in charge of administering the U.S. corresponding volumes in the reservoirs. The Texas Commission and Environmental Quality (TCEQ) Rio Grande Watermaster Office in Harlingen, Texas is responsible for allocating, monitoring releasing flows, and controlling the use of surface water in the Rio Grande basin from Fort Quitman in Hudspeth County, Texas to the Gulf Coast. Water allocations rules and regulations for the Lower Rio Grande Valley are laid out in Subtitle B Chapter 11 of the Texas Water Code. Different from the rest of the State of Texas, the Rio Grande allotments below the Amistad International Reservoir are prioritized for municipal, industrial, and domestic uses over all other adjudicated water rights, including those for agriculture. "For water rights outside of the municipal, industrial, and domestic uses allocation, the water management plan apportions water in the Rio Grande below

Amistad Reservoir according to a water right holder's total acreage and based on two classes of irrigation rights. The Rio Grande Valley is unique in Texas in that it has a thriving water market based on correlative surface water rights. Correlative rights are based on the fact that all rights are from the same water storage areas and are reduced proportionally if there is a shortage, rather than allocated based on priority."; quoted directly from A Texan's Guide To Water and Water Rights Marketing, published by the Texas Water Development Board.

Over appropriation

The waters of the Lower Rio Grande are over appropriated. "It is common knowledge that the Middle and Lower Rio Grande basins are over-appropriated with regard to existing water rights in Texas. The estimated firm annual yield of the United States share of Amistad and Falcon Reservoirs is not sufficient to fully supply the authorized diversions of existing water rights, should a severe drought occur such as that experienced throughout much of Texas during the 1950's. Certainly, the critical state of the currently available water supply in the Rio Grande reservoirs, for both the United States and Mexico, and the continuing extremely dry conditions in much of the watershed have caused municipal and irrigation water users in the Middle and Lower Rio Grande basins of Texas to be especially concerned with regard to water availability in the immediate future." Obtained from THE INTERNATIONAL RESERVOIRS OPERATIONS AND DROUGHT CONTINGENCY PLANNING STUDY FOR THE MIDDLE AND LOWER RIO GRANDE VALLEY prepared in 1998 for the Water Policy and Management Council of the Lower Rio Water Committee, Inc. prepared by R. J. BRANDES COMPANY Austin, Texas in association with MICHAEL SULLIVAN & ASSOCIATES, INC. Austin, Texas.

Watershed Yield

The Rio Grande watershed encompasses approximately 182,200 square miles spread in parts of Colorado, New Mexico, and Texas in the United States side of the border and in the Mexican states of Chihuahua, Coahuila, Nuevo Leon, and Tamaulipas. For what corresponds to the Texan watershed it encompasses approximately 49,387 acres. Despite being the largest river basin in Texas, the Lower Rio Grande Basin has relative small water shed yield with approximately 645,500 acre-feet per year. According to the Texas Water Development Board "The Rio Grande Basin has an extremely low average annual water-shed yield due to arid or semiarid climate conditions throughout much of the basin"; obtained from the TWDB webpage, http://www.twdb.texas.gov/surfacewater/rivers/river_basins/index.asp

Population and Demand

Based on projections provided in the State approved 2021 Rio Grande Regional Water Plan, the population Region M is expected to grow from 1,960,738 in 2020 to 4.029,338 in 2070. The water plan also identifies that the combined water demand (municipal, domestic, agricultural, and industrial) or water user group demand will increment from 1,783,993 ac-ft/yr in 2020 to 1,853,358 ac-ft/yr in 2070. Based on these projections it was determined that there are current and future water needs (deficiencies) in the region as follows: **936,894 ac-ft in 2020 and 969,629 ac-ft in 2070.** Per Table 4-2 "Needs by County (ac-ft/yr)" in Chapter 4 of the approved plan

the current and future water needs in Hidalgo County are as follows: **440,889 ac-ft in 2020 and 511,851ac-ft in 2070.**

Stakeholder Conflicts

In recent years several disputes have flared. The International Boundary and Water Commission (IBWC) emitted an official statement in January 2016, that Mexico had paid off a water debt for the period beginning October 2010 ending October 2015. In accordance with the 1944 Treaty between the U.S. and Mexico, the United States is entitled to one third (1/3) of the Rio Grande waters emanated from Mexican tributaries for a total volume of 1.75 million ac-ft in a period of 5 years or 350,000 ac-ft/year equivalent. During that period Mexico was short approximately 400,000 ac-ft. The deficit stressed the local farming community. The growers and communities of the Lower Rio Grande Valley were affected directly. The water user groups of the Lower Rio Grande Valley made a formal request to the IBWC and U.S to act. In 2013, the District pass a resolution requesting the IBWC and U.S. Department of State to pursue through appropriate Minute Orders and formal agreements restoration of corresponding water volume.

In 2018, Texas filed a complaint in the U.S. Supreme Court against New Mexico and Colorado alleging that New Mexico violated the terms of the Rio Grande Compact to which all three states are party. The United States subsequently moved to intervene in the proceedings citing both claims under the Rio Grande Compact and federal reclamation law. It is not clear how this issue will be resolved, and it may require many years in court to resolve it.

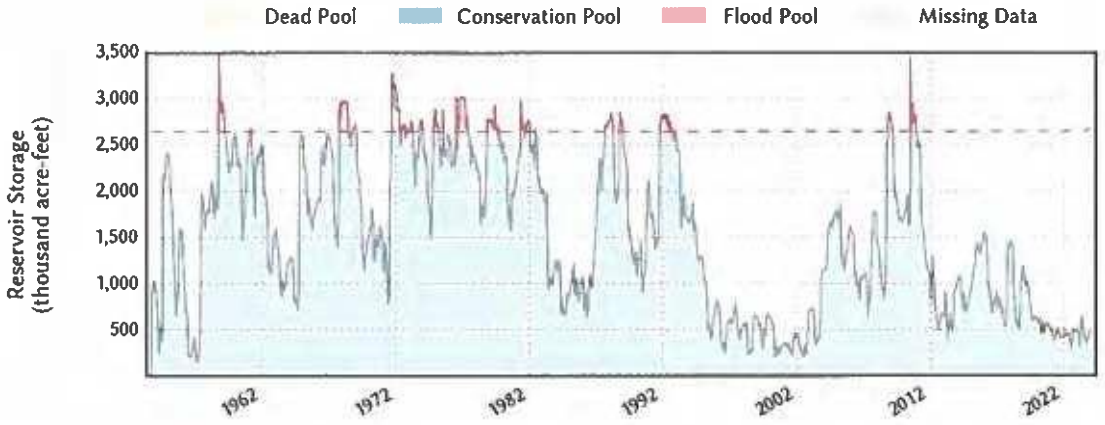
Climate Risk and Vulnerability

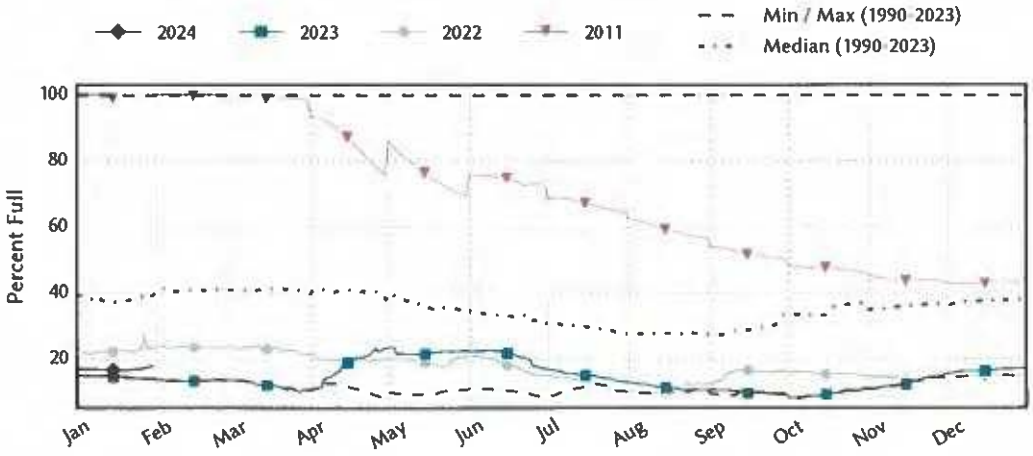
The regional water shortage is a well-documented fact that has capture the attention of stakeholders at all levels and it has served as catalysis to organize a plan of action in collective effort that will bring about assurance of water sustainability. The Rio Grande Regional Water Authority and the Rio Grande Regional Water Planning Group along with other stakeholders invested significant resources to develop strategies, plans, and agreements that will facilitate water sustainability. In 2013 the U.S. Bureau of Reclamation in collaboration with the Rio Grande Regional Water Authority completed a basin study titled "**2013 Lower Rio Grande Basin Study**", and on which the Hidalgo County Irrigation District 2 participated as a cost share partner. A copy of the study can be found at: https://www.usbr.gov/watersmart/bsp/docs/finalreport/LowerRioGrande/LowerRioGrandeBasinStudy.pdf

The study documents and provides account of the water availability within the river basin and provides projections of the impact of climate risk and vulnerability can have over the future water resources. Climate vulnerability is a serious concern and in combination with a higher demand the projected effects look unfavorable for the region. "The magnitude and frequency of water supply shortages within the study area are severe, even before projecting the effects of climate change." The previous quotation is a direct abstraction from the 2013 LRG Basin Study. The Basin Study determined that climate change may likely increase the regional water shortage by an additional 86,438 ac-ft/yr.

- Is the project in an area that is experiencing, or recently experienced, drought or water scarcity? Yes, the project is in an area experiencing water scarcity.

  The average annual rainfall in the Lower Rio Grande Valley is 24-inches. The Flacon International Reservoir's storage has hovered at 20% capacity since late 2021 with the lowest storage recorded at 10.7% capacity on October 2023. As of January 30, 2024 the reservoir is 17.6% full. The graphs below, published in the Texas Water Development Board's webpage, provide the historical reservoir storage.





- Describe any projected increases to the severity or duration of drought or water scarcity in the project area? It is projected that the duration of the water scarcity in the project area will prevail. In accordance with the 1944 U.S and Mexico Treaty, Mexico is behind 668,010 acre-feet to the U.S. as October 25, 2023. It is projected the severity of the water scarcity will aggravate to climate risk; Refer to the *Climate Risk and Vulnerability* paragraph in page 17 above.

- Explain and provide detail of the specific issue(s) in the area that is impacting energy sustainability.

  The State of Texas currently is experiencing a population migration attracted by economic opportunity. In accordance with the 2022 ERCOT System Planning Report, the forecast corresponds to a 1.9% average annual growth rate demand for energy from 2022 to 2031. ERCOT forecasts a demand of 423,333 GWh in 2022 and 502,357 GWh in 2031. Energy in the State of Texas is produced with a fuel mix with hydrocarbon fuels making 64% of the composition. Renewable energy makes 25% of the fuel composition with wind the dominant renewable energy component consisting of 23% of the fuel mix.

  Winter Storm Uri in February 14, 2021 stressed the Texas power grid forcing rolling black outs. **The project will reduce the power demand and strengthen the power grid reliability.**

- Please describe how the project will directly address the concern(s) stated above.
  By reduced pumping.

- Will the project directly result in more efficient management of the water supply?
  Yes. The project will reduce the Carlson Basin losses; therefore, resulting in a more efficient management of the water supply.

- Please address where any conserved water as a result of the project will go and how it will be used.

  The conserved water will remain in the river system.

  - Indicate the quantity of conserved water that will be used for the intended purpose(s).

  1,233 ac-ft/yr

  - Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use.

  Non-Needed. The conserved water will remain in the river basin available for all water users.

- Will the project assist States and water users in complying with interstate compacts?
  Not Applicable.

- Will the project help to prevent a water-related crisis or conflict?
  Yes. The project will help mitigate the existing water related crisis and conflict.

  The Lower Rio Grande water user groups on both sided of the border support water conservation projects. The water conserved by the project will relieve tension in the basin since it will leave the conserved water in the basin available for other users.

- Is there frequently tension or litigation over water in the basin? Yes.
  Please refer to the *Stakeholder Conflicts* paragraph in page 17 above.

Ecological Benefits.

- Will the project benefit species (e.g., federally threatened or endangered, a federally recognized candidate species, a state listed species, or a species of particular recreational, or economic importance). Please describe the relationship of the species to the water supply, and whether the species is adversely affected by a Reclamation project or is subject to a recovery plan or conservation plan under the Endangered Species Act.

  The Jaguarundi (Felis Yagouaroundi Cacomilti), a native cat species federally recognized as an endangered species since the mid seventies, is believed to have inhabited the shrub lands of the Lower Rio Grande Valley before land was cleared for agricultural use. The U.S. Fish and Wildlife (FWS) Recovery Plan Action Status updated December 2013. (http://www.fws.gov/southwest/es/Documents/R2ES/GulfCoastJaguarundi_FinalRecoveryPlan_Dec2013.pdf)

  The Recovery Strategy involves the assessment, protection, reconnection, and restoration of sufficient habitat to support viable populations of the Gulf Coast jaguarundi in the borderlands of the U.S. and Mexico;

  The ocelot (*Leopardus pardalis*) is listed as endangered throughout its range in the western hemisphere where it is distributed from southern Texas and southern Arizona through Central and South America into northern Argentina and Uruguay. The ocelot is also listed as endangered by the State of Texas. In south Texas, the ocelot inhabits dense thornscrub communities on Laguna Atascosa National Wildlife Refuge (LANWR) and on private lands in three Texas counties. The ocelot requires dense vegetation. Habitat conversion, fragmentation, and loss comprise the primary threats to the ocelot today. Human population growth and development continue throughout the ocelot's range. The Draft Recovery Plan by FWS is similar to the jaguarondi.
  https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/Ocelot/Ocelot_Final_Recovery_Plan_Signed_July_2016_new.pdf

  The water required to create dense habitat necessary for the recovery of both species is delivered by the irrigation district in the area. **The Santa Ana National Wildlife Refuge** is a 2,000 acre tract of brush land that connects with the wildlife corridors that the U.S. Fish and Wildlife Service (USFWS) has along the banks of the Rio Grande. Wildlife corridors are tracts of land or habitat that are linked and allow wildlife to travel from one location to another to find food, shelter, a mate and a place to raise offspring. The Santa Ana National Wildlife Refuge is located outside and adjacent to the District's south boundary, and it stretches from U.S. Hwy. 281 to the banks of the Rio Grande . This USFWS refuge is home to approximately 400 bird species, 450 types of plants, half of all butterfly species found in North America, and such rarities as the indigo snake and Altamira oriole. The Santa Ana Wildlife refuge website states "Santa Ana is strategically located where subtropical climate, gulf coast, great plains and Chihuahuan desert meet. Here, next to the Rio Grande, you will find Sabal palms growing alongside prickly pear cactus, habitat for the ocelot and jaguarundi, two endangered cat species known to still prowl the deep forest."
  http://www.fws.gov/refuge/Santa_Ana/wildlife_and_habitat.html

  Other endanger species in Hidalgo County TX, are:
  Northern aplomado falcon (E) Falco femoralis septentrionalis

Ocelot (E) Leopardus pardalis
Star cactus (E) Astrophytum asterias
Texas ayenia (E) Ayenia limitaris
Walker's manioc (E) Manihot walkerae

The refuge's staff states that water is critical to sustain the Jajuarundi's prey species. The District delivers on average 600 ac – ft / yr of water to the Santa Ana Wildlife Refuge from the Carlsons Basint via the Lateral A Canal. The water is used to maintain three ponds located within the Refuge. Water is needed to provide a stable habitat for prey species and as a result improve the habitat for the Jaguarandis' recovery. **Water conserved within the river basin assures sustainability for the U.S. Fish and Wildlife Service recovery efforts.**

- Will water remain in the system for longer periods of time?
  Yes. The Carlson Basin is operated at specific water surface elevation level (108.0 high and 106.0 low) to maintain pressure in the conveyance system. When water drops at a set low level corresponding to elevation 106.0, the District replenishes the Carlson Basin to maintain the operational level. The Carlson Basin will remain charged for longer periods of time maintaining the operational levels.

- Will the proposed project reduce the likelihood of a species listing or otherwise improve the species status? The project will improve the species status.

- Please describe any other ecosystem benefits as a direct result of the project.
  The Carlson Basin, a 334.9 acre waterbody, supports native aquatic wildlife and migratory bird species.

Climate Change.

- Describe how the project addresses climate change and increases resiliency.
  The District's project will strengthen supply sustainability. Surface water is in high demand in the Lower Rio Grande Valley, and most ground water is brackish. The Rio Grande Valley receives on average 24 inches of rainfall per year, and the average annual pan evaporation is approximately 60 inches. The District's project will reduce water losses in the conveyance system to strengthen the supply sustainability to increase resilience to climate change.

  The project will improve water resiliency during disastrous events. The Carlson Basin offers an active pool of 1000 ac-ft below elevation 106. This storage can be available to supply municipal flow in case of a regional disaster.

- Does the project seek to improve ecological resiliency to climate change? Yes.

- Does the proposed project seek to reduce or mitigate climate pollutions such as air or water pollution?
  Yes. The project seeks to reduce the emission of greenhouse gases as outlined in **E.1.2.2. Subcriterion No. B.2 in pages 13 and 14.**

- Does the proposed project include green or sustainable infrastructure to improve community climate resilience? No.

- Does the proposed project contribute to climate change resiliency in other ways not described above? No.

E.1.4. EVALUATION CRITERION D – Disadvantaged Communities, Insular Ares, and Tribal Benefits:

E.1.4.1. Subcriterion D.1. Disadvantaged Communities.

- White House Council on Environmental Quality's interactive Climate and Economic Justice Screening Tool (CEJST).

  In accordance with the CEJST map viewer, 92% of the District's service area encloses communities that are disadvantaged; refer to **Figure 4 in page 23**.

- If applicable, describe how the proposed project will serve or benefit a disadvantaged community?

  The project will address water supply shortages to increased population and demand, over-allocation, watershed yield, and arid climate. The water conserved can be available for all uses including domestic, municipal, mining, industrial, agricultural (irrigation), ecological preservation as wild life refuges, and recreational.

E.1.4.2. Subcriterion D.2. Tribal Benefits.

NOT APPLICABLE

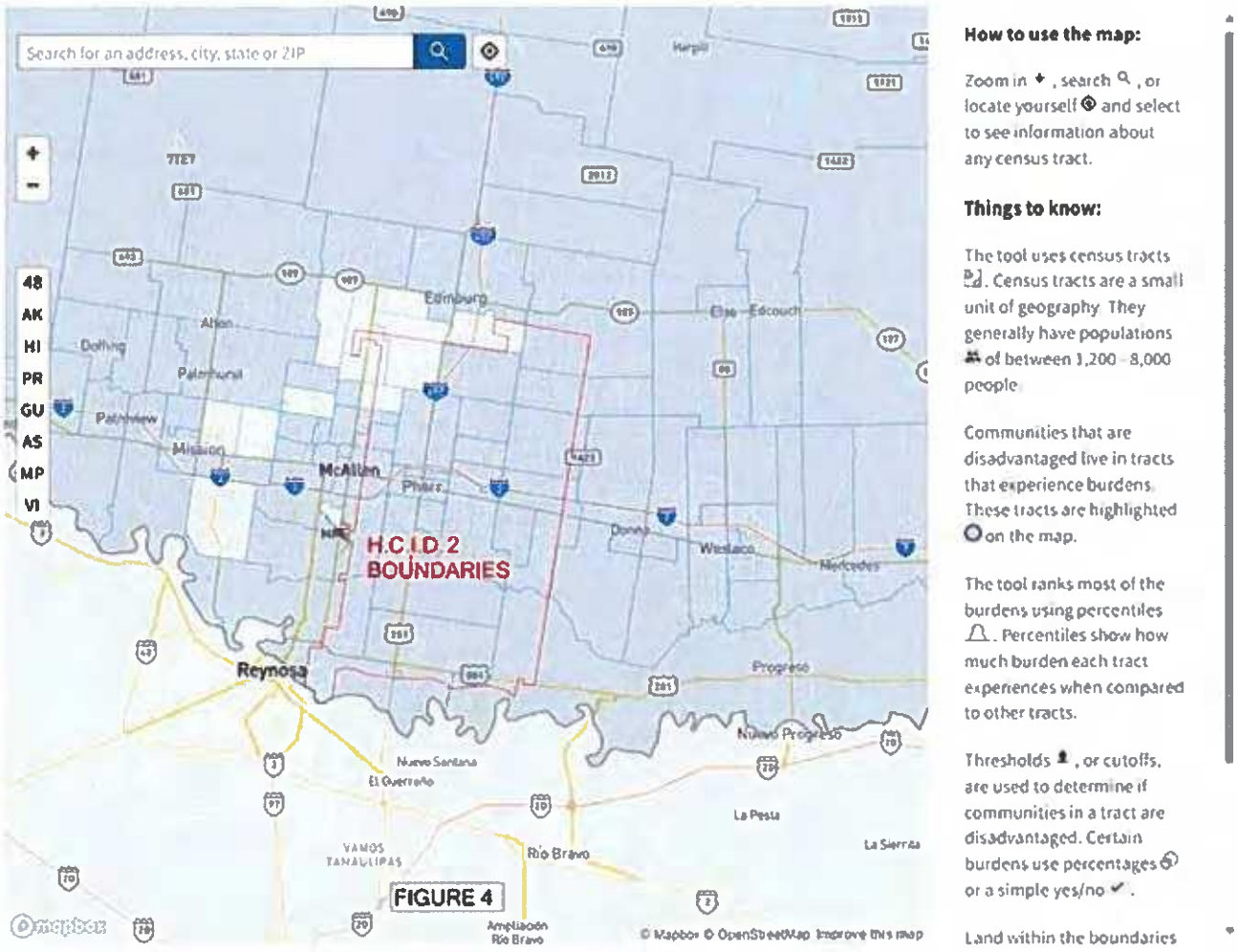


Figure 4. District boundaries traced over the CEJST map.

E.1.5. EVALUATION CRITERION E – Complementing On-Farm Irrigation Improvements

- Describe any planned or ongoing projects by framers/ranchers that receive water from the applicant to improve on-farm efficiencies

  - Provide a detailed description of the on-farm efficiency improvements.

    Local farmers rely on push water to irrigate. By far, local on-farm efficiency practices consist of poly-pipe use which rely on sustained system pressure to be effective. Poly-pipe is used in lieu of open earthen field canals where serious water losses occur. Most common poly-pipe sizes are 12" to 15". The Carlson Basin is the principal reservoir in the District's water conveyance system. The volumes of water released from the Carlson Basin are conveyed through the Main Canal which feeds smaller lateral canals. The Carlson Basin is operated at specific water surface elevations (high and low) to sustain the operational pressure in the conveyance system. Poly-pipe is connected to farm outlets which are fed by open canals or lateral pipe-lines. If the pressure is maintained in the

conveyance system, then irrigation with poly-pipe is effective. This is how farmers/ranchers can benefit from sustained system pressure.

- Have the farmers requested technical or financial assistance from NRCS for the on-farm efficiency projects, or do they plan to in the future?

  Based on information furnished by the local NRCS office most local applicants apply for irrigation pipe and land leveling assistance.

- If available, provide documentation that the on-farm projects are eligible for NRCS assistance, that such assistance has or will be requested, and the number or percentage of farms that the plan to participate in available NRCS programs.

- Applicants should provide letters of intent from farmers/ranchers in the affected project areas.

- Describe how the proposed WaterSMART project would complement any ongoing or planned on-farm improvement.

  - Will the proposed WaterSMART project directly facilitate the on-farm improvement? If so, how?

    Indirectly; see next bullet.

  - Will the proposed WaterSMART project complement the on-farm project by maximizing efficiency in the area? If so how?

    The project will improve the Carlson Basin's operation by reducing water losses to backflow, and the expected result is reliable hydrostatic pressure. Sustained hydrostatic pressure in the conveyance system facilitates the use of poly-pipe and in some cases drip irrigation. When the conveyance system consisting of open canals and pipelines is operated at optimum hydrostatic pressure, irrigation water is used more efficiently. The District is able to deliver a higher volume of water for the user, and the user is able to push the water faster thru the field resulting in a reduced volume of water lost to subsurface seepage.

- Describe the on-farm water conservation or water use efficiency benefits that are expected to result from any on-farm work.

  - Estimate the potential on-farm water savings that could result in acre-feet per year. Include support or backup documentation for any calculations or assumptions.

    NOT APPLICABLE

- Provide a map of your water service area boundaries.

  Please refer to Figure 2 in page 3.

E.1.6. EVALUATION CRITERION F – Readiness to Proceed

- Identify and provide a summary description of the major tasks necessary to complete the project.

  The major tasks necessary to complete the project in chronological order are as follows:

  1. Receive award notification.
  2. Obtain NEPA clearance and execute grant agreement.
  3. Bid and Procure Construction Services.
  4. Award the Construction Contract.
  5. Construct the Project.

- Describe any permits that will be required, along with the process for obtaining such permits.

  All construction will take place within District right of way without need to request permits from political subdivisions of the state or private entities.

- Identify and describe any engineering or design work performed specifically in support to the proposed project.

  On early October 2021, the District awarded professional engineering to proceed with the concept, design, engineering plans, and preparation of the construction documents. Engineering plans and contract documents are complete.

- Describe any new policies or administrative actions required to implement the project.

  There are no policies or administrative actions required to implement the project. The District will contract services from the local Reclamation Office to receive assistance with NEPA clearance.

- Describe the current design status of the project.
  The engineering design is 100% complete. The project is ready to bid.

- Include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.

  REFER TO TABLE 1 in page 26.

Table 1. – Project Schedule.

DURATION	TASK / MILESTONE
June 1, 2024 to September, 2024	Receive award notification.
October, 2024 to February, 2025	Obtain NEPA clearance and Execute Federal Funding Agreement.
March 3, 2025 to March 21, 2025	Public Bid Advertisement.
March 27, 2025 to April 17, 2025	Received Bids and Award Contract.
April 17, 2025 to May 22, 2025	Execute Contract and Issue Notice to Proceed.
September 1, 2025	Construction Begins.
July 31, 2026	Construction Ends.

E.1.7. EVALUATION CRITERION G – Collaboration

- Is there widespread support for the project? Please provide specific details regarding any support and/or partners involved in the project. What is the extent of their involvement the process?

  Water conservation efforts as the Replacement of the River Pumping Plant Discharge Pipes have full support from all members of the RGRWPG and the Rio Grande Regional Water Authority (RGRWA) which was created by the Texas Legislature in 2003 as a conservation and reclamation district to serve a public use and benefit by bringing together regional water interests to accomplish projects and services within Willacy, Cameron, Hidalgo, Starr, Zapata, and Webb counties (excluding the City of Laredo).

  The District will undertake the project without assistance from others. Should the District's project be selected and approved for funding, the District will apply the grant resources towards the total sum for all amounts required for project completion as summarized in **Table 3 "Budget Summary"** in page 31.

- What is the significance of the collaboration/support?

  The District's project will promote and encourage collaboration among parties in a way that will help increase the reliability of the water supply. The Hidalgo County Irrigation District 2 is an active member of the Rio Grande Regional Water Planning Group, the local body responsible to provide comprehensive regional water planning and to carry out the related responsibilities placed on regional water planning groups consisting of municipalities, rural water suppliers, irrigation districts, ecological conservation groups, private groups, and other political subdivisions of the state. The Rio Grande Regional Water Planning Group, hereafter RGRWPG, was established by the Texas Water Development Board (TWDB) on February 19, 1998. The RGRWPG encompasses eight counties stretching from the shores of the Gulf of Mexico at Cameron County along the Rio Grande to Maverick County. The regional planning area is known as Region M; refer to **Figure 5** in page 28. The waters of the Rio

Grande with its tributaries and international water reservoirs are the primary source of water in Region M for the foreseeable future. **The District's project is consistent with the TWDB Approved 2021 Rio Grande Regional Water Plan as water conservation projects are recommended water management strategies to meet current and future water needs in the region.** The 2021 Rio Grande Regional Water Plan can be downloaded form: https://www.twdb.texas.gov/waterplanning/rwp/plans/2021/index.asp#region-m

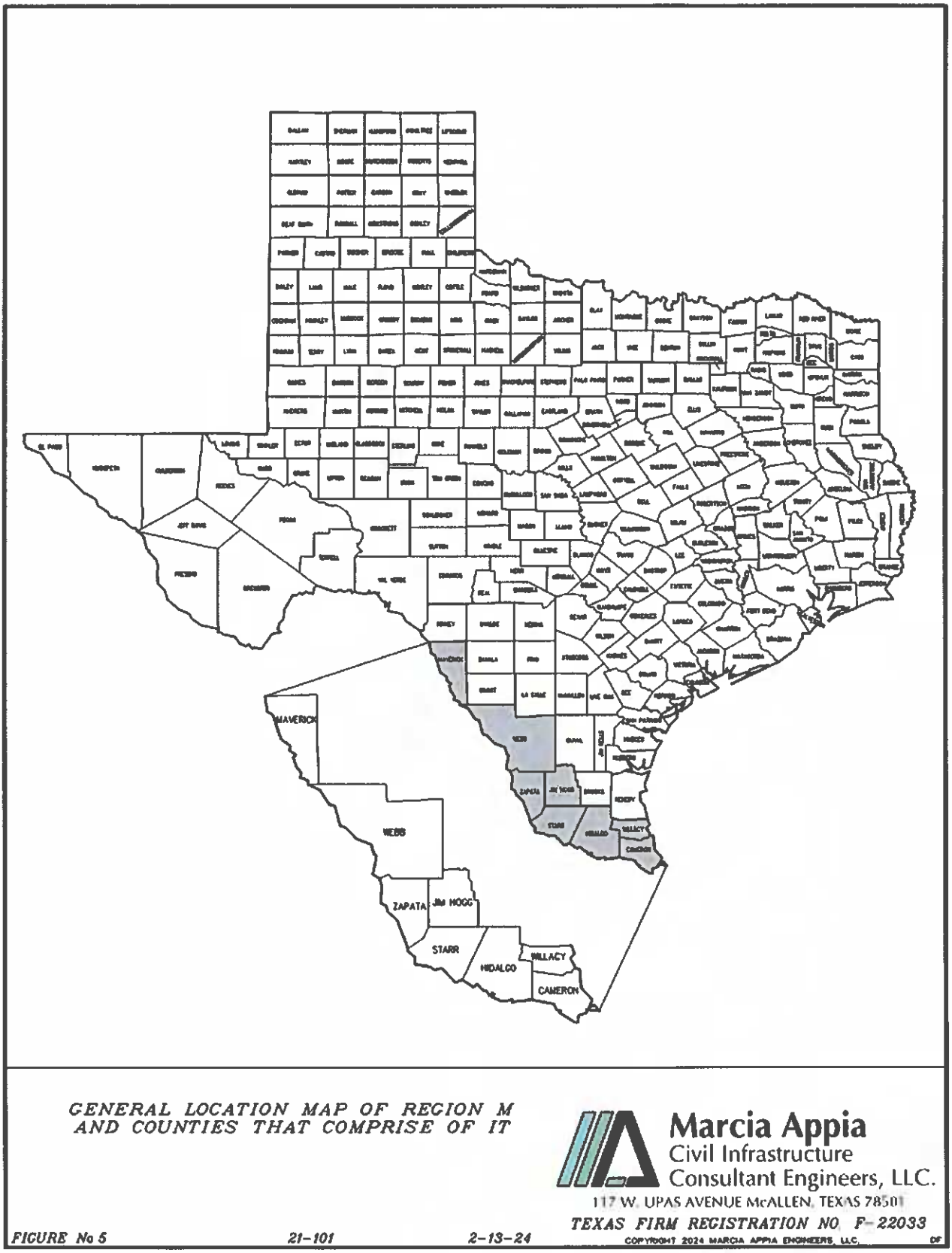
- Will this project increase the possibility/likelihood of future water conservation improvements by other water user? YES.

  In the course of nineteen (19) years the District has completed six innovative water conservation projects consisting of canal lining and automation. These projects of record completed with supplemental funding from WaterSMART grants and Reclamation LRGV Program have proven to be effective and have met the expected results. These model water conservation practices have been adopted and implemented by other water users. The District is confident that the proposed improvements will increase the possibility/likelihood of future water conservation improvements by other water users as it has resulted in previous water conservation projects.

- Please attach any relevant supporting documents.

  Letters of support from the following organizations are attached to this document. These can be found at the referenced page number.

  - North Alamo Water Supply Corporation; page 42.
  - City of Alamo, Texas; page 43.
  - U.S. Dept. of Interior, Fish and Wildlife Service, South Texas Refuge Complex, Santa Ana National Wildlife Refuge; page 44.



GENERAL LOCATION MAP OF REGION M AND COUNTIES THAT COMPRISE OF IT

Marcia Appia
Civil Infrastructure
Consultant Engineers, LLC.
117 W. UPAS AVENUE McALLEN, TEXAS 78501
TEXAS FIRM REGISTRATION NO. F-22033

FIGURE No 5 *21-101* *2-13-24*

E.1.8. EVALUATION CRITERION H – Nexus to Reclamation

Describe the nexus between the proposed project and a Reclamation project or Reclamation activity.

- Does the applicant have a water service, repayment or operation and maintenance (O & M) contract with Reclamation? NO.
- If the applicant is not a Reclamation contractor, does the applicant receive Reclamation water through a Reclamation contractor or by any other contractual means? NO.
- Will the proposed work benefit a Reclamation project area or activity? NO.
- Is the applicant a Tribe? NO.

D.2.2.2.7 Performance Measures

Upon completion of the project, the District will remove the coupling on the pump side of each pipe to verify for any backflow. If present, backflow will be measured and compared to pre-project backflow. The efficiency will be evaluated as follows:

Post-project Eff. = [1 – (post project backflow/pre-project backflow)] X 100%

i.e.: measured post project backflow = 0.015cfs

then, %Eff. = [1 – (0.015/0.17)] X 100% = 91.18%

D.2.2.3 Budget Narrative

NEPA Environmental Clearance
Prior to construction begins, the District will secure professional services from the U.S. Bureau of Reclamation Oklahoma-Texas Area Office (OTAO) to assist with NEPA environmental and cultural compliance requirements. The District contacted OTAO to obtain an estimate and determined that services fees should not **exceed $5,500.00.**

Construction Services
After the grant agreement is in place and the project has cleared NEPA, the District will solicit construction services following the State of Texas competitive procurement laws. The District will publically solicit competitive seal bids from qualified contractors that demonstrate capacity to furnish the specified work and services. The District proposes to undertake the project in a single phase to eliminate administrative and mobilization costs involved in subsequent phases. The construction duration is estimated to last **330** calendar days.

Exhibit E in page 41 contains the itemized construction services budget for the District's River Pumping Plant headwall, feeder canal, and discharge pipes improvements project. The construction services budget was prepared employing as reference benchmark the unit price work bif amounts

from a project bid August 5, 2021. Herein after the project bid August 5, 2021 will be referred to as the **project of record.** The project of record entailed installation of 42-inch AWWA C151 Class 150 Ductile Iron Pipe and fittings, construction of a cast in place reinforced concrete headwall, installation of 42-inch pipe couplings, installation of 42-inch rubber check valves, installation of vent pipe, and site work. The project of record is consistent with the District's River Pumping Plant headwall, feeder canal, and discharge pipes improvements project in material, work, services, and nature. The unit price work bid amounts sourced from the project of record were averaged to obtain the mean unit price amount used in the elaboration of the **itemized construction services budget in page 41**. The composition of the unit price work bid amounts sourced from the project of record include, but not limited to, profits, overhead, supplies, materials, equipment, tools, fuel, construction equipment, rentals, freight, salaries, wages, commissions, payment and performance bond, general liability insurance fees, workers compensation insurance fees. Each unit price amount comprises the unit price work needed to complete the contract work in accordance with the engineering plans and contract documents.

Professional Engineering Services

The District will retain professional engineering services from a qualified consultant engineer to prepare the construction contract bidding documents and provide construction oversight and inspection. During the bidding phase, the engineer will coordinate the bid, pre bid meeting, answer questions and issue addenda as deem necessary, conduct the bid opening, prepare the bid tabulation, verify references, and issue the recommendation to award. During the construction phase the engineer will conduct construction management services which consists of, but are not limited to, coordinating construction meetings, conducting field inspection, reviewing equipment and material submittals, responding to requests for information, reviewing field changes, reviewing payment applications, issuing the certificate of substantial completion, preparing the record plans, and issuing the final acceptance. **Professional engineering services fees are itemized in Table 2 below and shall not exceed $106,400.00**

Table 2. – Professional Engineering Fee Schedule

Billing Class	Qty.	Unit	Hourly Rate	Total Amount
Principal Engineer	160	Hour	$ 150.00	$ 24,000.00
Construction Inspector	480	Hour	$ 90.00	$ 43,200.00
Project Manager	300	Hour	$ 90.00	$ 27,000.00
CADD Technician	40	Hour	$ 80.00	$ 3,200.00
Administrative	20	Hour	$ 50.00	$ 1,000.00
Clerical	200	Hour	$ 40.00	$ 8,000.00
			Total Professional Engineering Services:	**$ 106,400.00**

Construction Materials Testing Services

Quality control / quality assurance to verify the construction materials furnished by the contractor meet the engineering technical specifications in accordance with the contract documents will be performed by a qualified engineering firm. These professional services are known as Construction Material Testing (CMT) services. The engineer estimates the District's project will be constructed within 330 days, and he **estimates CMT service fees for the Project shall not exceed $12,000.00.** The reference benchmark is the project of record which was constructed in 270 calendar days and the CMT fees amounted to $8,100.00.

Table 3 below provides an outline of the entire project budget amounts and corresponding Federal and Non-Federal cost share participation towards the entire project budget. The total project budget amount of **$5,918,760.00** was fully allotted to Object Class Category 6.f. (Contractual) in Section B-Budget Categories of Standard Form 424A.

Table 3. – Budget Summary

Sect B. Budget Category	Service Description	Total Cost	Federal Estimated Amount	Non-Federal Estimated Amount
f. Contractual	NEPA Environmental Clearance	$ 5,500.00		
f. Contractual	Construction Services	$ 5,794,860.00		
f. Contractual	Professional Engineering Services	$ 106,400.00		
f. Contractual	Construction Material Testing Services	$ 12,000.00		
	Total Costs	**$ 5,918,760.00**	**$ 2,000,000.00**	**$ 3,918,760.00**
	Cost Share Percentage		**33.79%**	**66.21%**

The District has capability to commit 66.21% of the total project cost using resources from the District's Capital Improvements Fund. The District will advertise and solicit bids from private general construction contractors for complete in place construction services all in accordance with the engineering plans and contract documents. There will be no other Federal, State, Local, and or third party(ies) partnering with the District to contribute funds towards the District's **66.21%** percent cost share.

D.2.2.4 ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

Below are direct answers to the outline of questions found under Section H.1. Environmental and Cultural Resources Considerations.

- Will the proposed project impact the surrounding environment?

  The construction activities will have no impact to the surrounding environment. Construction work will take place within the District's property. Minimum ground disturbance will be needed to excavate and remove the existing discharge pipes which were installed in the early 1980's. The isolation bays will be constructed on the existing reinforced concrete discharge headwall. Earthen material to be used for the construction of the isolation coffer dam will be hauled from offsite. There is no expected animal habitat disturbances or alterations. All construction work will take place on man made structures.

- Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area?

  The construction work will have no impact to known species listed or proposed to be listed as a Federal threatened or endangered species or designated critical habitat. Construction work will be confined within the discharge headwall of the existing River Pumping Plant.

- Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?

  There are no wetlands or other surface waters inside the project boundaries that potentially fall under Federal Clean Water Act jurisdiction as "Waters of the United States".

- When was the water delivery system constructed? 1983.

- Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)?

  NOT APPLICABLE.

- Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?

  The District is listed on the National Register of Historic Places.

- Are there any known archeological sites in the proposed project area?

  There are no archeological sites in the proposed project area.

- Will the proposed project have a disproportionate and adverse effect on any communities with environmental justice concerns?

  The project will not have a disproportionate and adverse effect on any communities with environmental justice concerns.

- Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on Tribal Lands?

  The project will not limit access to ceremonial use of Indian sacred sites or result in other impacts on Tribal Lands.

- Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

  The project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native species known to occur in the area

D.2.2.5 REQUIRED PERMITS OR APPROVALS

All work will be performed within the District's right of way; therefore, no necessary permits or easements will be required for completion of the work.

D.2.2.6 OVERLAP OR DUPLICATION OF EFFORT STATEMENT

No overlap exists between the proposed project and any other active or anticipated proposal(s) or projects in terms of activities, costs, or commitment of key personnel.

D.2.2.7 CONFLICT OF INTEREST DISCLOSURE STATEMENT

The District does not have any actual or potential conflict of interests.

D.2.2.8 UNIFORM AUDIT REPORTING STATEMENT

The District did not receive federal funding in the most recently closed fiscal year.

D.2.2.9 CERTIFICATION REGARDING LOBBYING

Signed SF424 is enclosed with this document.

D.2.2.10 SF-LL: DISCLOSURE OF LOBBYING ACTIVITIES

NOT APPLICABLE.

D.2.2.11 LETTERS OF SUPPORT

Copies of letters of support can be found in **pages 42 to 44** of this document.

D.2.2.12 LETTERS OF PARTNERSHIP

NOT APPLICABLE.

D.2.2.13 OFFICIAL RESOLUTION

A copy of the **Official Resolution** can be found in **page 45** of this document.

D.2.2.14 LETTERS OF FUNDING COMMITMENT

NOT APPLICABLE.

NORTH ALAMO WATER SUPPLY CORPORATION
3/8 MILE S OF SH 107 ON DOOLITTLE ROAD
420 S DOOLITTLE RD EDINBURG TX 78542-9707

TELEPHONE 956-383-1618
FAX 956-383-1372

February 5, 2024

RE: Letter of Support of HCID No. 2's FY2024 WEEG Application NOFO R24AS00052

To Whom It May Concern:

The Hidalgo County Irrigation District No.2 (District) is applying for federal grant funding with the United States Department of Interior – Bureau of Reclamation through its WaterSMART (Sustain and Manage America's Resources for Tomorrow) program. If awarded its proceeds will be used towards improving the River Pumping Plant's Headwall and Feeder Canal to conserve water and attain energy efficiencies.

The District supplies approximately 3,000 acre-feet of water annually to North Alamo Water Supply Corporation (NAWSC). NAWSC is committed to safe, clean, dependable water for residents of northeast Hidalgo, Willacy, and northwest Cameron Counties. NAWSC relies heavily upon the District for delivery of water for treatment for its approximate 180,000 customers.

In addition, this project will conserve water and energy, resulting in the lowest possible water rates for our customers while having a positive impact on the environment.

The Lower Rio Grande Valley has experienced worsening drought conditions in recent past which have stressed our water supply and placed significant demands on the limited resources in the area. Any water savings achieved by this project will directly benefit NAWSC's future water supply.

Please consider this correspondence as support for the District's success in its grant application process and successful completion of its water savings projects.

Respectfully,

North Alamo Water Supply Corporation

Steven P. Sanchez
General Manager
ssanchez@nawsc.com

February 5, 2024

RE: Letter of Support of HCID No. 2's FY2024 WEEG Application NOFO R24AS00052

To Whom It May Concern:

The Hidalgo County Irrigation District No.2 (District) is applying for federal grant funding with the United States Department of Interior – Bureau of Reclamation through its WaterSMART (Sustain and Manage America's Resources for Tomorrow) program. If awarded its proceeds will be used towards improving the River Pumping Plant's Headwall and Feeder Canal to conserve water and attain energy efficiencies.

The District supplies approximately 2,000 acre-feet of water annually to the City of Alamo (Alamo). Alamo is committed to safe, clean, dependable water for residents of this thriving City. Alamo relies upon the District as its sole source for delivery of water for treatment for its approximate 20,000 residents.

In addition, this project will conserve water and energy, resulting in the lowest possible water rates for our customers while having a positive impact on the environment.

The Lower Rio Grande Valley has experienced worsening drought conditions in recent past which have stressed our water supply and placed significant demands on the limited resources in the area. Any water savings achieved by this project will directly benefit Alamo's future water supply.

Please consider this correspondence as support for the District's success in its grant application process and successful completion of its water savings projects.

Sincerely,

Robert L. Salinas
City Manager

420 N. Tower Road • Alamo, Texas 78516 • (956) 787-0006 •(956) 787-6807 fax
"This institution is an equal opportunity provider and employer"

United States Department of the Interior

FISH AND WILDLIFE SERVICE

South Texas Refuge Complex
Santa Ana National Wildlife Refuge
Lower Rio Grande Valley National Wildlife Refuge
3325 Green Jay Road, Alamo, TX 78516
(956) 784-7500; (956) 787-8338 Fax

RE: Letter of Support of HCID No. 2's FY2024 WEEG Application NOFO R24AS00052

To Whom It May Concern:

The Hidalgo County Irrigation District No.2 (District) is applying for federal grant funding with the United States Department of Interior – Bureau of Reclamation through its WaterSMART (Sustain and Manage America's Resources for Tomorrow) program. If awarded its proceeds will be used towards improving the River Pumping Plant's Headwall and Feeder Canal to conserve water and attain energy efficiencies.

The District supplies approximately 600 acre-feet of water annually to the Santa Ana Wildlife Refuge (Refuge). The delivered water is used to maintain 200 surface acres of oxbow lakes and floodplain forests (wetlands) providing optimal breeding, nesting, brood rearing and feeding habitats for resident water birds, wading birds, invertebrates, amphibians, reptiles, and water dependent wildlife within the Refuge. These wetlands are the star attraction to over 150,000 annual visitors that come to the Refuge for wildlife viewing, photography, and general recreation.

The District also currently supplies approximately 200 acre-feet of water annually to a Cooperative Farmer that farms on Refuge land. The delivered water is used for crop irrigation.

The Refuge is home to approximately 400 species of birds, 450 different types of plants, and half of all butterfly species found in North America. Any water savings project that the District can accomplish assures sustainability for the efforts of the U.S. Fish & Wildlife Service.

Please consider this correspondence as support for the District's success in its grant application process and successful completion of its water savings projects.

Sincerely,

BENJAMIN DE LA FUENTE
Digitally signed by BENJAMIN DE LA FUENTE
Date: 2024.02.13 07:09:06 -06'00'

RESOLUTION

WaterSMART
Water and Energy Efficiency Grants

WHEREAS, the Hidalgo County Irrigation District No. 2 (District) is applying with the United States Department of Interior-Bureau of Reclamation for grant financial assistance through the WaterSMART (Sustain and Manage America's Resources for Tomorrow) program, Funding Opportunity Announcement No. R24AS00052; and,

WHEREAS, Anthony Stambaugh, General Manager of the District, is hereby authorized to submit an application and enter into agreement on behalf of the District for the WaterSMART: Water and Energy Efficiency Grants; and,

WHEREAS, the District's Board of Directors supports the application submitted; and,

WHEREAS, the District has sufficient funds in its Capital Improvements Fund to satisfy its portion of the cost share as specified in the funding plan; and,

WHEREAS, the District is committed to cooperate with the United States Department of Interior-Bureau of Reclamation to meet established deadlines for entering into cooperative agreements.

NOW, THEREFORE, BE IT RESOLVED that the Hidalgo County Irrigation District No. 2 prays it is awarded the WaterSMART: Water and Energy Efficiency Grant and is fully committed to executing the Replacement of the River Pumping Plant Discharge Pipes as expeditiously as possible to conserve energy and water and help increase future water supplies for agriculture, municipal uses, and the environment.

Passed and adopted this 15th day of February, 2024.
HIDALGO COUNTY IRRIGATION DISTRICT No.2

Frank John Schuster, President

Marcus Forthuber, Secretary