WaterSMART: Water and Energy Efficiency Grants for FY 2024 – Funding Group 1

Cameron County Irrigation District No. 2

Conversion of Lateral "C-2" from Open Canal to a Pipeline

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Project Number: 3762

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Executive Summary

Date: January 5, 2024
Applicant: Cameron County Irrigation District No. 2
26041 FM 510
San Benito, Texas 78586
Project Title: Conversion of Lateral "C-2" from Open Canal to a Pipeline

The Cameron County Irrigation District No. 2 (CCID2) is proposing to partner with the Bureau of Reclamation (Reclamation) for a Funding Group I Project to conserve water and energy. The proposed project consists of converting approximately 4,713 liner feet (lf) of the unlined open canal in a segment of Lateral "C-2" to underground pipeline. These improvements are expected to upgrade water deliveries by conserving approximately 280 acre feet per year of water. The conserved water is less water that will need to be pumped from the Rio Grande thus improving the reliability of the water supply for all users in the region. The resulting water conservation will reduce required pumping time needed to achieve the same water volume delivery thus increasing energy efficiency of the water delivery system by an estimated 11,520 kilowatt hours per year. The project is consistent with the established priorities of the Department of the Interior in that it utilizes science and best practices for managing land and water resources, modernizes existing infrastructure and greatly reduces maintenance demands. All of the proposed improvements are to be constructed on CCID2 property (none of the improvements will be located on a Federal Facility) and this project will be completed within 24 months. The construction phase of this project is estimated at 6 months, not considering schedule adjustments to accommodate necessary irrigation demands. The project can begin immediately upon execution of any grant agreement.

Background Data

Cameron County Irrigation District No. 2 (CCID2) is located in the Lower Rio Grande Valley Region with its main office located in San Benito, Texas (See Figure 1.1). CCID2 boundary encompasses 64,281 acres and currently serves 55,936.79 acres of irrigated farmland where farmers grow citrus, vegetables, sugar cane, sorghum, corn and hay (See Figure 1.2).

CCID2 receives its water from the District's San Benito River Pump Station located in Los Indios, Texas on the eastern side of the Rio Grande. Pumped water from the Rio Grande is transported via two main earthen canals that deliver the entire district's agricultural and domestic demand. The district's distribution system consists of 385 miles of canals and pipelines including: 188 miles of unlined canals, 18 miles of lined canals,

164 miles of pipeline, and 15 miles of resaca (oxbow lake). Of the 385 miles of canals, 144 miles are considered to be main canals and 241 miles are classified as lateral canals. In addition to the above list of open canals and pipelines, CCID2 has a storage reservoir with a capacity of 5,000 acre feet near the San Benito River Pump Station. Due to the large lengths of inefficient open unlined canals, CCID2's overall distribution conveyance efficiency is an estimated 60 %.

All water right holders along the Rio Grande below Amistad Dam are part of the Lower Rio Grande Valley Watermaster System. The system is currently over allocated and during the past few decades the semi-arid watershed has experienced several long term droughts. In addition, the supply is further compromised by 1944 US-Mexico Treaty where Mexico has not met the terms of the treaty by detaining upstream flows and defer water deliveries up to five years in the amount 350,000 acre feet per year. The result is a system vulnerable to extreme drought and other inconsistent weather patterns.

The Lower Rio Grande Valley Watermaster System provides water to irrigation water right holders after municipal and industrial water right holders have been accounted for. The US share of storage in the Amistad-Falcon System is currently at 21.77% of its 3,390,000-acre feet conservation capacity. This is slightly lower from 32.17 percent of normal conservation capacity a year ago at this time. However, inconsistent weather patterns can't be relied upon as a constant water source plus the area's population continues to grow, so water conservation improvements are crucial to long term water resource management.

Currently, CCID2's irrigation water right is a total of 151,536.15-acre feet per year. In addition to their irrigation water rights, the CCID2 holds municipal/domestic water rights of 8,805.82-acre feet per year, municipal water rights of 8,613.82-acre feet per year, and industrial water rights 192-acre feet per year. The average annual water diverted by the CCID2 from 2011 through 2022 for all users was roughly 82,494-acre feet per year. The CCID2's primary municipal customers include the East Rio Hondo Water Supply Corporation (3,003-acre feet per year), City of San Benito (4,420-acre feet per year) and the City of Rio Hondo (368-acre feet per year). The CCID2 is the sole source of water for these municipalities, which together include a total population of nearly 50,000 residents.

The CCID2 obtains its water from the Rio Grande at the CCID2 San Benito River Pump Station. This pump station, constructed in 2005, includes eight pumps (2 – 150Hp, 50 cfs pumps and 6 – 300Hp, 100cfs pumps) and is powered by both electricity and natural gas.

The CCID2 has completed several projects with Bureau of Reclamation in the past, including:

1. Pumping Plant Rehabilitation (03-FC-60-1799)
2. Canal Rehabilitation (04-FC-60-1871)
3. Water 2025 Challenge Grant- Gate Replacement (05-FC-60-2017)

4. Water 2025 Challenge Grant- Canal Piping (07FC602235)
5. Water 2025 Challenge Grant- Canal Flow Measurement & Control Improvements (08-FC-60-2330)
6. 2016 WaterSMART Grant - Lateral "J" Open Channel to Pipeline (R16-FOA-DO-004)
7. 2017 WaterSMART Grant – Lateral "JN-1" Open Channel to Pipeline (R17AP00141)
8. 2017 WaterSMART Grant – Lateral "8" Open Channel to Pipeline – Construction Completed (R17AP00138)
9. 2017 WaterSMART Grant – Lateral-"F" Open Channel to Pipeline – Construction Completed (R17AP00140)
10. 2017 WaterSMART Grant – Canal "E" Open Channel to Pipeline – Construction Completed (R17AP00139)
11. CCID2 is also a member of the Rio Grande Regional Water Authority that participated in the "Lower Rio Grande Basin Study", prepared by the Bureau of Reclamation in 2013.
12. 2018 WaterSMART Grant – Canal "F" Open Channel to Pipeline – Under Design (R17AP00139)
13. 2018 WaterSMART Grant – Canal "C" Open Channel to Pipeline – Under Design (R17AP00139)
14. 2018 WaterSMART Grant – Canal "8", "15", "LI-I", "C", "J" – Automated Gates (R17AP00139)
15. 2019 WaterSMART Grant – Canal "8" Open Channel to Pipeline – Construction Completed (R17AP00139)
16. 2021 WaterSMART Grant – Lateral "G2" Open Channel to Pipeline – Construction Completed (BOR-DO-21-F001)
17. 2021 WaterSMART Grant – Lateral "E" Open Channel to Pipeline – Construction Completed (BOR-DO-21-F001)

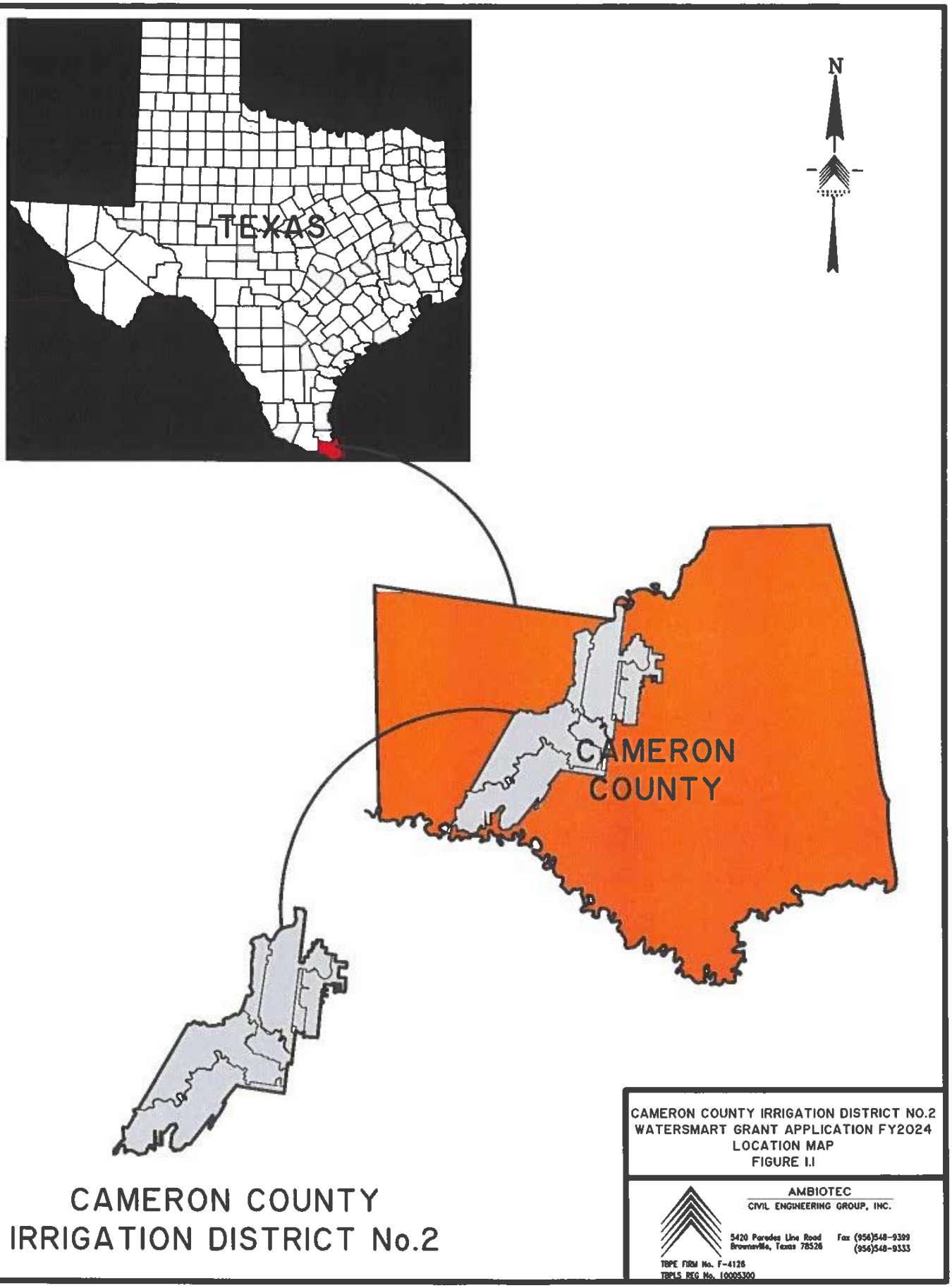
Through CCID2's financial partnership with the Bureau of Reclamation, the above projects are conserving roughly 45,460 acre feet of water per year (upon completion of all projects).

Project Location

The Lateral "C-2" project is located in Cameron County, Texas approximately 3.5 miles SW of San Benito, TX and approximately 7.75 miles SE of Harlingen, TX (Figure 1.2). The approximate latitude of the project center is 26°4'44.58"N and longitude is 97°41'56.44"W.

Project Description

The project consists of water savings, water supply reliability, and other components that meet the goals of the 2024 WaterSMART Notice Of Funding Opportunity No. R24AS00052. The proposed project includes converting approximately 4,713 lf of the open unlined canal to underground 36" PVC pipe. The location of Lateral "C-2" irrigation canal is shown in Figure 1.3. The conversion of Lateral "C-2" will conserve an estimated 301 acre-feet of water per year plus conserve 11,520 kilowatt hours per year of energy. The current unlined canal experiences water losses from seepage into the ground, evaporation from the surface, plant transpiration from canal bank and floating vegetation, and canal bank failures. Figures 1.4 and 1.5 shows the existing cross sections of the Lateral "C-2" and Figures 1.6 through 1.9 show pictures of the existing conditions of the irrigation canal. Replacing this open unlined canal with a pipe will require clearing and grubbing of the vegetation and canal debris, installing approximately 4,713 linear feet of 36" PVC piping and associated tees and valves, and replacing several individual service laterals. The proposed piping will connect to the existing canal East of Tilden Rd. and ends at Northwest of the intersection of Landrum Rd with Landrum Park Rd.


TEXAS
N
CAMERON
COUNTY
CAMERON COUNTY
IRRIGATION DISTRICT No.2
CAMERON COUNTY IRRIGATION DISTRICT NO.2
WATERSMART GRANT APPLICATION FY2024
LOCATION MAP
FIGURE 1.1
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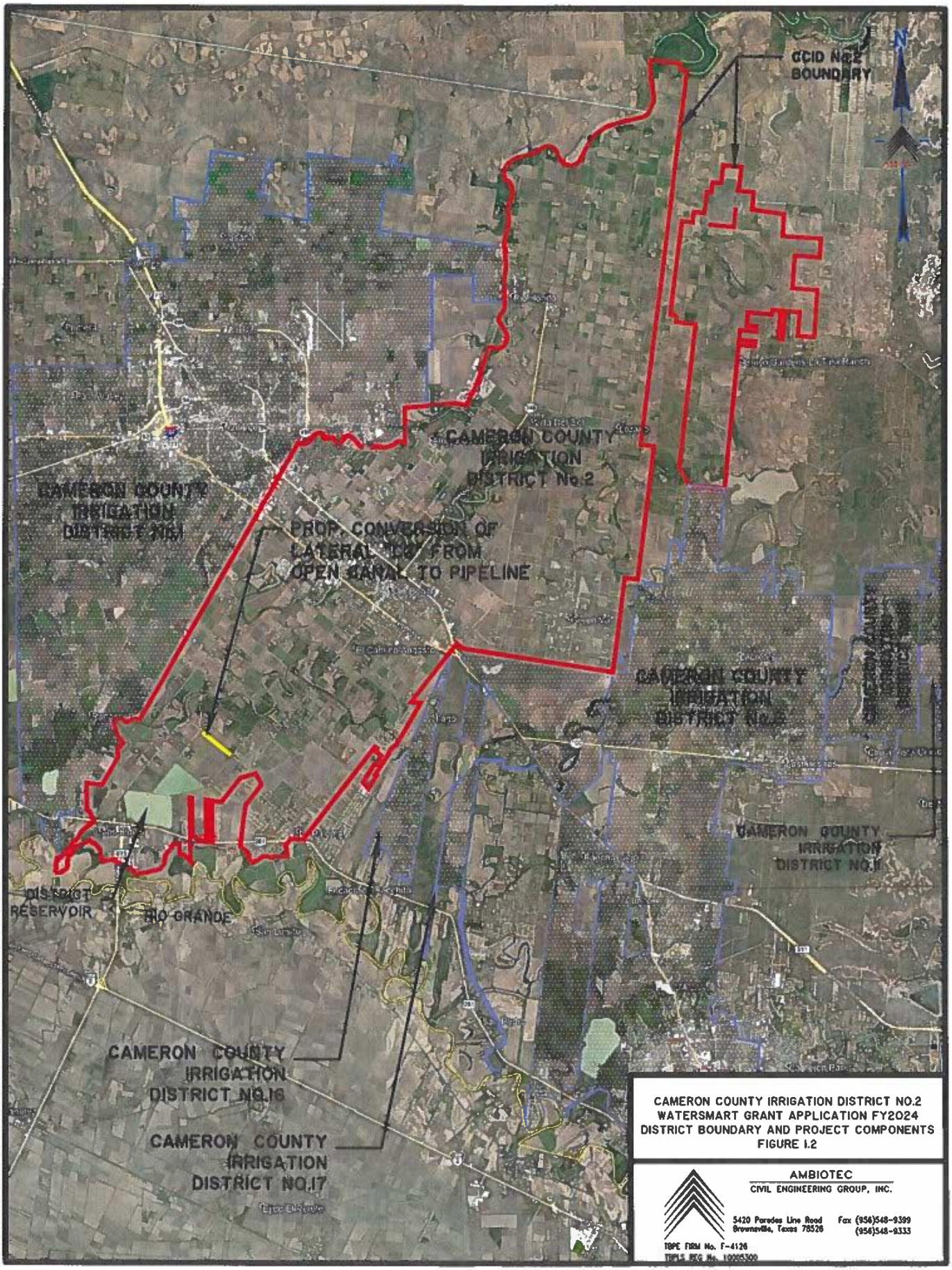

CAMERON COUNTY IRRIGATION DISTRICT NO.2
WATERSMART GRANT APPLICATION FY2024
DISTRICT BOUNDARY AND PROJECT COMPONENTS
FIGURE 1.2

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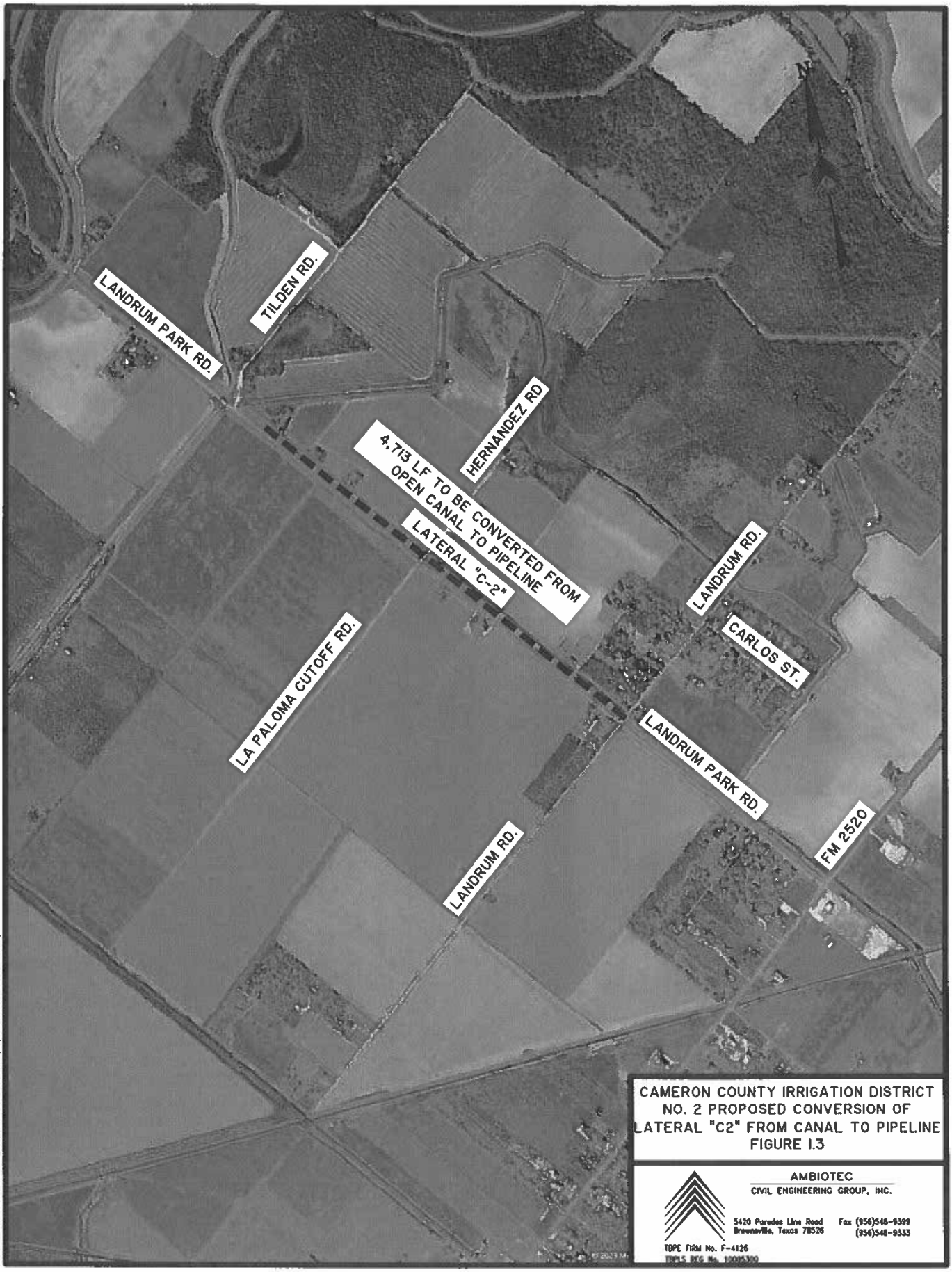
E.1 Evaluation Criteria

E.1.1 Evaluation Criterion A - Quantifiable Water Savings

The current unlined canal experiences water losses from seepage, evaporation, canal bank failures, and plant transpiration of which the significant quantifiable losses are caused by seepage, evaporation, and canal bank failures. By replacing the open unlined canal with PVC pipe (See Appendix A for products brochures), this project will nearly eliminate all of the water losses in this portion of Lateral "C-2".

Based on historical data, an average of three bank failures per year occurs in Lateral C-2, each resulting in complete water loss within the proposed section. This translates to a staggering annual loss of 20.56 acre-feet. Lateral C-2 seepage losses calculation employs the USDA soil survey web tool to determine the type of soils along lateral C-2. Soils along this area consist of Laredo Silty Clay Loam and Harlingen Clay. The seepage rate of each type of soil type is determined using a 1942 report by U. S. Department of Agriculture Bureau of Public Roads Division of Agricultural Engineering, titled "Estimate of Seepage Loss from Proposed Main Canal of Starr County Water Control and Improvement District No. One, by R. G. Hemphill (See appendix B). A weighted average for lateral C-2 resulted in a seepage rate of approximately 0.26 cubic feet per square foot per day (1.97 gallons). A crucial factor in seepage loss calculation, the wetted perimeter, is meticulously determined through a topographical survey and integrated with CAD software to generate a precise model of lateral C-2 geometry. These combined inputs yield an estimated annual seepage loss of 265.73 acre-feet. For evaporation loss, the study leverages annual mean evaporation data for the geographically closest station (Brownsville WB Airport, Texas) from the NOAA Technical Report NWS 34(See appendix B). The report calculated a yearly evaporation mean of 76.11 inches per year for free water surface in that region. Multiplying the exposed water surface area of Lateral C-2 by the station's 76.11 inches per year evaporation rate reveals an annual loss of 15.08 acre-feet.

Using the above information and reference guidelines, the conserved water volume was calculated at approximately 301-acre feet per year or an annual transit loss reduction of 320.40 acre-feet per mile. The water conservation calculation is shown in Table 1 below.



CAMERON COUNTY IRRIGATION DISTRICT NO. 2 PROPOSED CONVERSION OF LATERAL "C2" FROM CANAL TO PIPELINE
FIGURE 1.3

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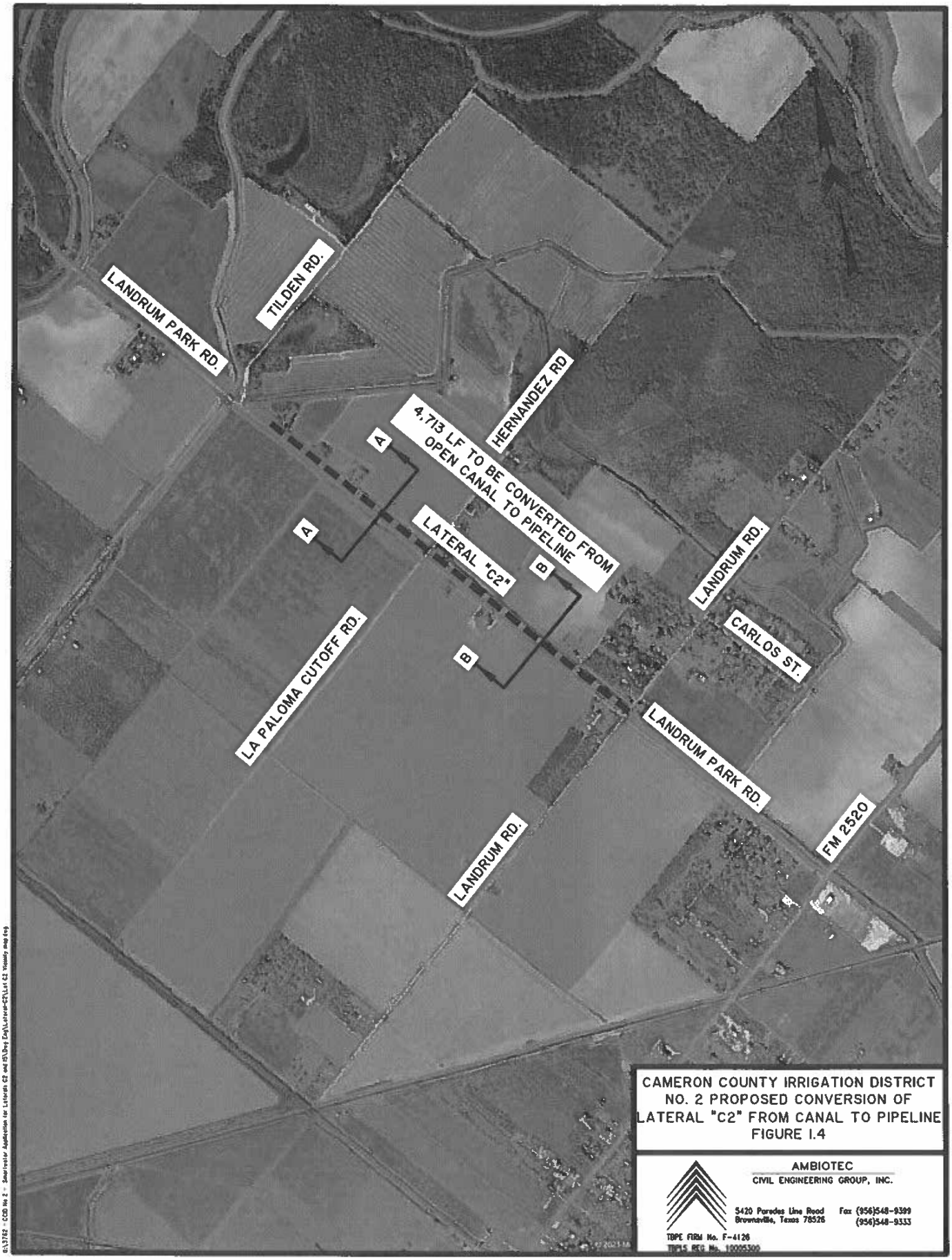

CAMERON COUNTY IRRIGATION DISTRICT NO. 2 PROPOSED CONVERSION OF LATERAL "C2" FROM CANAL TO PIPELINE
FIGURE 1.4

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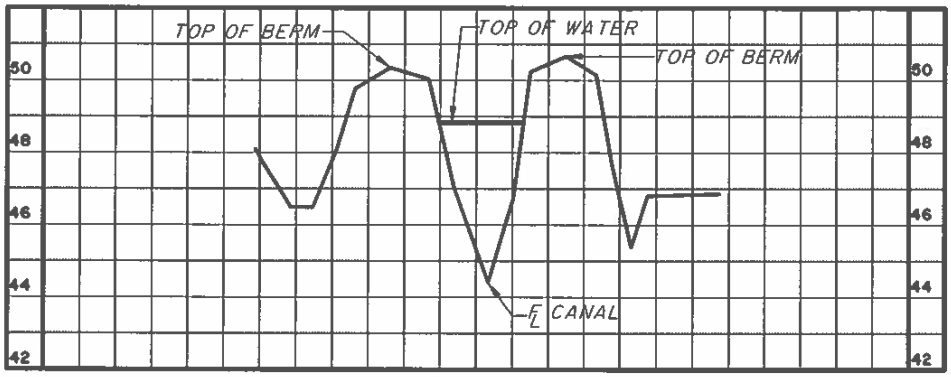

SECTION A-A
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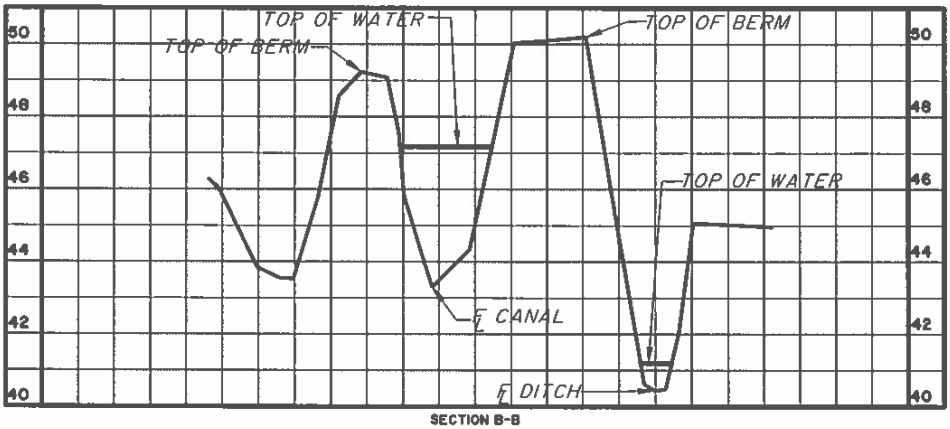

SECTION B-B
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CAMERON COUNTY IRRIGATION DISTRICT
NO. 2 EXISTING LATERAL "C2"
CROSS SECTIONS
FIGURE I.5

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CAMERON COUNTY IRRIGATION DISTRICT No.2

FIGURE I.4

FIGURE I.5

FIGURE I.6

FIGURE I.7

CAMERON COUNTY IRRIGATION DISTRICT NO. 2 EXISTING CONDITIONS LATERAL "C2"

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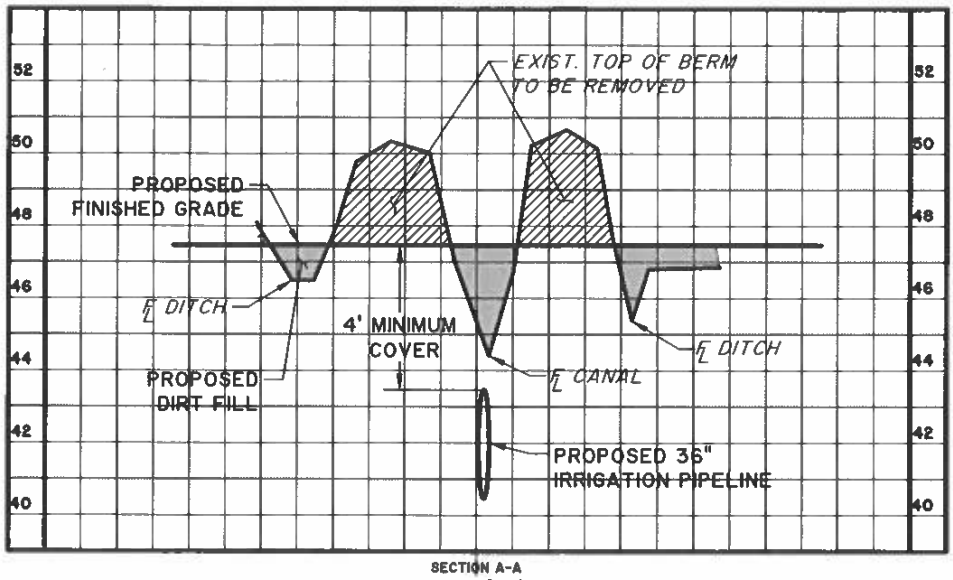
Table 1 Water Conservation Estimate		
Lateral C-2 Free Water Surface Area	2.54	Acres
Lateral C-2 Average Cross Sectional Area	63.35	Squared Feet
Lateral C-2 Subjected Segment Volume	6.85	Acre Feet
Lateral C-2 Average Wetted Perimeter	25.57	Feet
Average Depth	5.75	Feet
Seepage Rate	1.97	Gallons per Square Foot per Day
Estimated Seepage	**265.73**	Acre Feet per Year
Evaporation Rate for Cameron County	71.11	Inches per Year
Estimated Evaporation	**15.08**	Acre Feet per Year
Losses to Bank Failures	3	Events per Year
Full Irrigation Canal	6.85	Acre Feet
Estimated Bank Failure Losses	**20.56**	Acre Feet per Year
TOTAL WATER CONSERVATION ESTIMATED	**301.37**	Acre Feet per Year

By replacing the unlined canal with 36-inch diameter PVC pipe, the proposed piping system will decrease the measurable losses to less than 1% of the calculated water losses shown in Table 1. Also, the pipe system will require less push-water (hydraulic pressure head) to counteract the resistance from the canal debris and vegetative growth along the existing banks.

Lateral "C-2" proposed improvements will better manage the water delivered to the over 293 acres immediately served by the existing unlined open canal segment of Lateral "C-2". Figure 1.10 shows the existing unlined canal cross section with the proposed irrigation pipe cross section.

The unlined portion of Lateral "C-2" distribution system provides water to over 334 acres and the total estimated average annual demand for this system lateral is approximately 1424 acre feet. Adding the estimated 301-acre feet lost to seepage, evaporation, and bank failure for this canal segment results in 1725-acre feet of water being more efficiently managed as a result of the project.

CCID2 used to pump an average of 79,400-acre feet annually in a non-allocation year. However, for the couple past years the district has been in a water allocation situation due to an ongoing severe drought. As a result, the district currently pumps an average of 38,125 acre feet annually. Since the majority of the district's distribution system still relies on unlined and open earthen canals for delivery, the water losses in the distribution system are estimated at nearly 40 percent, or final delivery of only 47,640-acre feet per non-allocation year and currently at a water allocation, 22,875 acre feet of final delivery. When comparing the water savings for the proposed improvements for Lateral C-2, 301. acre feet, the annual water savings expressed as a percentage of the district's supply is 0.63%. When considering the 1424 of water delivered through Lateral 15, the approximate annual water savings percentage is 21.1%



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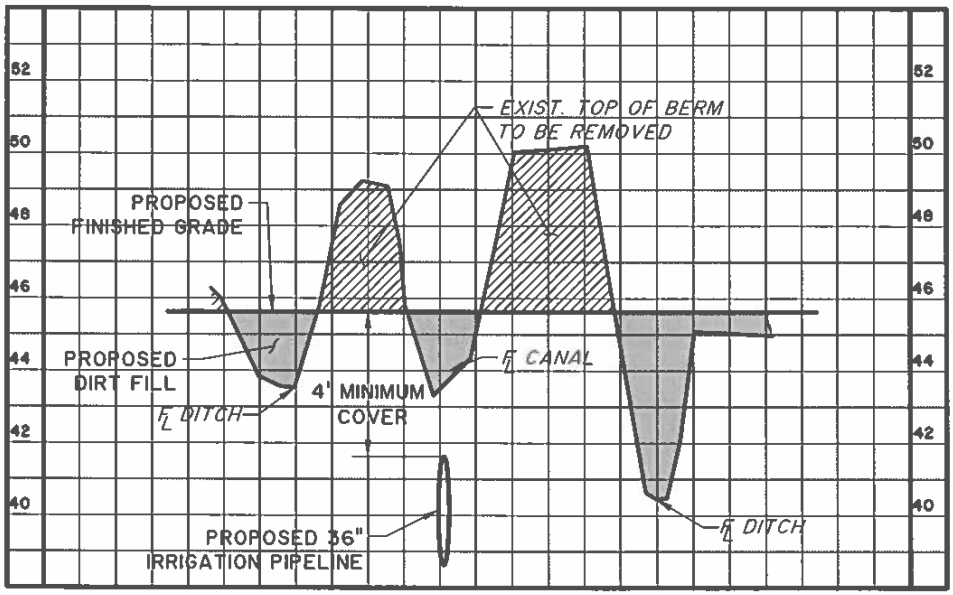

SECTION B-B
SCALE=1"=50'

CAMERON COUNTY IRRIGATION DISTRICT
NO. 2 PROPOSED LATERAL "C-2"
CROSS SECTIONS

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Upon completion of the proposed improvements, CCID2 will verify the water loss calculations by installing temporary flow metering devices at Lateral "C-2" influent canal gate structure and at individual customer's outlet structures. Water seepage and evaporation losses will be determined by subtracting the influent measurements with the delivered water and pipe volumes. CCID2 will prepare a final report, for submittal to the Bureau of Reclamation, on the findings of the water conservation measures resulting from the proposed improvements included in this project.

E.1.2 Evaluation Criterion B: Renewable Energy

E1.2.1 Subcriterion B.1 – Implementing Renewable Energy Projects Related to Water Management and Delivery

The proposed project does not include the implementation of renewable energy project related to water management and delivery.

E1.2.2 Subcriterion B.2 – Increasing Energy Efficiency in Water Management

The proposed project will result in quantifiable energy savings of 12,128 kilowatt-hours (kWh) per year. This estimate is based on the current energy usage of the irrigation system. The energy savings calculation is directly derived from current energy usage. The Rio Grande pumped an average of 79,400 acre feet of water per year, requiring an average energy consumption of 40.24 kWh per acre-foot. This translates to a total annual energy usage of 3,195,325 kWh. The proposed project is expected to conserve an estimated 301 acre-feet of pumped water, leading to a direct energy savings of 11,530 kWh per year. This reduces the overall pumping energy requirement and contributes to energy efficiency.

Table 2
Energy Conservation Estimate

Current Energy Usage at Rio Grande	3,195,325	Kwh
Total Water Pumped	79,400	Acre Feet
Average Energy per Acre Foot Pumped	40.24	Kwh/acre foot
Estimated Conserved Pumped Water	301.37	Acre Feet per Year
TOTAL ENERGY CONSERVATION ESTIMATED	**12,128**	Kwh/Year

Lateral "C-2" proposed improvements will also combat climate change by reducing greenhouse gas emissions associated with bank failure repairs. Currently, the canal experiences an average of three bank failures per year, requiring heavy machinery for maintenance and repair. Each event emits approximately 14.18 tons of CO2, resulting in a total of 42.55 tons of CO2 emissions annually. By eliminating bank failures through project

implementation, these emissions will be completely eliminated, contributing significantly to climate change mitigation.

Table 3 Estimate for Carbon Emissions for Canal Maintenance and Repairs			
	Number of Bank Repairs	3	Events/Year
Repair Equipment	**Estimated Hours/Repair**	**CO2 Emission (tons/hr)**	**CO2 Emission (tons/repair)**
Bulldozer	48	0.1773	8.5104
Dump Truck	16	0.1772	2.8352
Excavator	16	0.1773	2.8368
	Total CO2 Emissions per Repair	14.18	**tons/repair**
Annual CO2 Emissions for Lateral "C-2" Repairs		**42.55**	**tons**

The project is expected to indirectly impact vehicle miles traveled (VMT). The reduced need for maintenance and repair activities due to eliminating bank failures could potentially lead to a decrease in VMT associated with those activities. However, quantifying this reduction is difficult due to the variability of repair needs and travel distances.

The proposed project demonstrates a commitment to increasing energy efficiency in water management. By implementing these improvements, the project will achieve significant energy savings, combat climate change by reducing greenhouse gas emissions, and contribute to a more sustainable water management system.

E.1.3 Evaluation Criterion C: Other Project Benefits

The proposed project improves the reliability of the water supply for our local providers and users. The Lower Rio Grande Valley has been subject to periods of drought on several occasions over the last decade. Additionally, inefficiencies resulting from aged infrastructure combined with high rates of water loss from evaporation, infiltration and bank failures threaten the reliability of the water supply for all users in the region many of which live in rural and economically disadvantaged areas (32% of population is at or below the poverty line). As indicated in Section E.1.1, the proposed project along Lateral "C-2" would eliminate a loss of nearly 301 ac-ft of water per year. This is 301 ac-ft less of water that will need to be pumped from the Rio Grande that will instead be available for other users. This is one of many open canals that are utilized by local irrigation districts to deliver water to users and the combined impact of all the water lost through evaporation, infiltration and bank failures, in addition to the water being used by vegetation that grows along the canals, has a significant impact on the quantity of water available to South Texas users. The importance of water conservation through the conversion of canals to underground pipelines has been documented by several groups including the Region M Planning Group in association with the Texas Water Development Board. Implementation of this project in concert with other similar open

canals in the region could substantially increase the water available for the entire Lower Rio Grande Valley.

The project has strong support in the region including from the East Rio Hondo Water Supply Corporation (ERHWSC) and the City of San Benito. Both agencies support the efforts of the District to conserve water for all and both have provided a letter of support (attached). The project helps set an example for other water supply agencies in the region on how both water and money can be saved through the implementation of infrastructure upgrades such as described in this project. Additionally, it provides incentive for local farmers to implement additional water conservation measures through the Environmental Quality Incentives Programs (EQUIP) since any farmer applying for funding off of the proposed Cameron County Irrigation District No.2 7 2023 Bureau of Reclamation WaterSMART Application Lateral "C-2" project can enter into an agreement with the District to install their pipelines.

The project will also provide a benefit to threatened and endangered species in the Lower Rio Grande Valley. Specifically, much of the rural portion of Cameron County is prime habitat for both the Ocelot and Jaguarundi and the Department of the Interior has several wildlife areas throughout the County, including a USFWS refuge to the east of the project and a designated wetland area immediately south of the project area. Irrigation water is pumped from the Rio Grande into the natural Resaca network that traverses the County. These resacas are used by native wildlife, including the Ocelot and Jaguarundi, as a freshwater source for drinking and maintaining riparian habitat, so reducing water losses in the region improves the reliability of water supply not only for residents but also for critically threatened and endangered wildlife species.

The Ocelot and Jaguarundi, both federally listed as endangered species, find vital habitat in the areas surrounding Lateral C-2. The proposed improvements will boost water conservation efforts, creating a surplus for CCID2. This surplus will be channeled to resacas (oxbow lakes), replenishing vital water levels for the ecosystem. Riparian birds, small mammals, and reptiles that thrive here will, in turn, help sustain the endangered cats' food supply (see Appendix D for references). For these elusive felines, resacas also serve as safe corridors, allowing them to bypass urban areas and access a diverse variety of food resources. Ultimately, the project's impact will nurture an improved environment, fostering the restoration of these endangered cat populations.

E.1.4 Evaluation Criterion D: Disadvantaged Communities and Tribal Benefits

Lateral "C-2" Improvements is resolutely dedicated to advancing environmental justice, closely aligning with the strategic imperatives outlined in the Biden-Harris Administration's Executive Order 14008: Tackling the Climate Crisis at Home and Abroad. The project meticulously aligns with the core tenets of the Justice 40 Initiative, demonstrating a an approach to directly addressing the subcriteria of Disadvantaged Communities (D.1) and Tribal Benefits (D.2).

Using the Climate and Economic Justice Screening Tool (CEJST) developed by the White House Council on Environmental Quality, it is confirmed that Lateral "C-2" targets identified disadvantaged communities, including specific census tracts and the lands of Federally recognized Tribes.

Over the past two decades, Cameron County has grappled with the enduring repercussions of severe droughts. Exhaustive reports underscore the substantial economic implications, estimating a formidable loss of $394.9 million and the displacement of 4,840 jobs. Notably, 32% of the region's population currently resides at or below the poverty rate. (See Appendix E)

Lateral C-2's improvements will strategically make a substantial contribution towards alleviating the multifaceted impact of prolonged droughts. By conserving a minimum of 301 acre-feet of water, the initiative directly addresses economic and environmental challenges faced by disadvantaged communities. This endeavor is positioned to make a discernible impact on the economic resilience and environmental sustainability of the region.

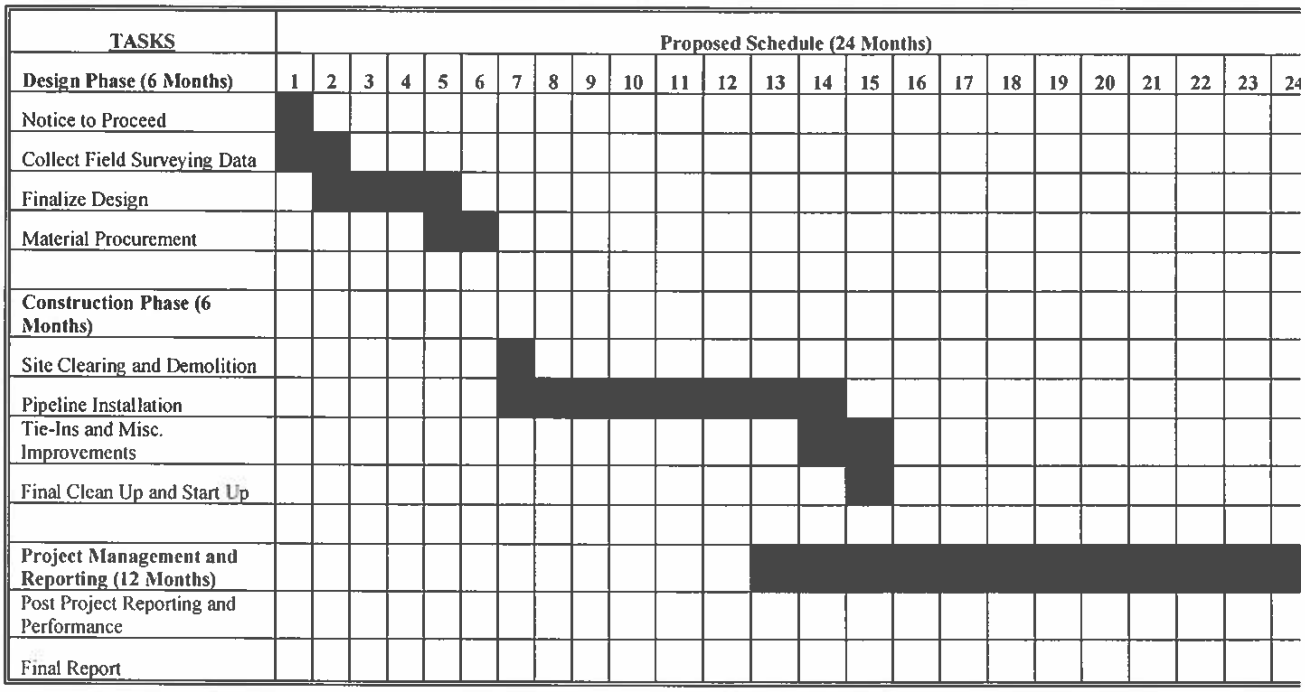
The ramifications of the water conservation efforts extend beyond immediate communities to the broader Rio Grande water users. The conservation of water within the watershed sets an example of sustainable practices. A notable beneficiary of this initiative is the Kickapoo Traditional Tribe of Texas, situated in Eagle Pass, Maverick County, Texas, within Region M. Given the integral role of the Rio Grande waters in sustaining this community, the project serves as a critical element in fortifying their resilience and well-being.

E.1.5 Evaluation Criterion E: Complementing On-Farm Irrigation Improvements

Lateral "C-2" distribution system provides water to over 293 acres of which farmers' grow vegetables, sugar cane, sorghum, corn and hay. On-Farm Improvements are controlled by the individual landowners. However, the placement of Lateral "C-2" into a pipeline will increase the water volume and pressure to allow landowners to install more efficient localized irrigation, drip irrigation, pumped sprinkler system or lay flat irrigation poly pipe. Additionally, any farmer applying for EQUIP funding off of our proposed projects can enter into an agreement with CCID2 to install their pipelines.

E.1.6 Evaluation Criterion F: Readiness to Proceed

The District is prepared to advance with the project, and all construction activities are planned to occur within the District's right of way. No permits from state political subdivisions or private entities are required, and there is no need to secure easements from private landowners. Initial engineering design and concepts have undergone thorough exploration. The District enlisted engineering consulting services to aid in determining the appropriate sizing for the proposed 36-inch PVC pipe and to investigate conceptual alignment and construction techniques, focusing on cost-effective alternatives. Implementation of the project does not necessitate the formulation of new policies or administrative actions. The District intends to engage the local Reclamation office for environmental compliance assistance.



E.1.7 Evaluation Criterion G: Collaboration

The proposed project is deeply rooted in collaboration and enjoys widespread support from key stakeholders in the region. The East Rio Hondo Water Supply Corporation (ERHWSC) and the City of San Benito have both expressed their strong endorsement for the project and have provided, as previously mentioned, official letters of support, underscoring the collective commitment to water conservation initiatives in Cameron County.

This collaborative support is of immense significance as it establishes a unified front towards the common goal of water conservation. The backing from ERHWSC and City

of San Benito not only validates the project's merit but also sets an example for other water supply agencies in the region. By showcasing the potential for water and cost savings through infrastructure upgrades, the project becomes a beacon of inspiration for similar initiatives.

The collaboration extends beyond water supply agencies to local farmers, who are vital stakeholders in water conservation efforts. The project aligns with the EQUIP program, providing an avenue for farmers to implement additional water conservation measures. Notably, farmers applying for funding off the proposed project can enter into agreements with the District, allowing them to install pipelines at no additional cost. This not only facilitates collaboration with the agricultural sector but also serves as an incentive for farmers to actively participate in and benefit from water conservation measures.

Beyond the immediate stakeholders, the project's impact is multifaceted, benefiting multiple sectors and users in Cameron County. The project's positive effects ripple across diverse domains, from agriculture and municipal and industrial sectors to environmental conservation, recreation, and more. This comprehensive approach ensures that the project's impact is not only far-reaching but also inclusive of the varied water needs and interests within the community.

Importantly, the project's positive outcomes extend to the natural environment, specifically benefiting threatened and endangered species in the Lower Rio Grande Valley. The rural areas of Cameron County, prime habitat for the Ocelot and Jaguarundi, are intertwined with the proposed project's water conservation efforts. By reducing water losses in the region, the project enhances the reliability of water supply not only for residents but also for critically threatened and endangered wildlife species. This underscores the project's broader commitment to environmental stewardship and biodiversity conservation.

The proposed water conservation project in Cameron County stands as a testament to effective collaboration, enjoying widespread support that transcends agency boundaries and engages diverse stakeholders. This collaborative spirit not only ensures the project's success but also paves the way for future water conservation improvements, setting a precedent for sustainable practices in the region. The attached letters of support from ERHWSC and City of San Benito further substantiate the robust collaboration and endorsement behind this impactful initiative.

E.1.8 Evaluation Criterion H: Nexus to Reclamation

The Bureau of Reclamation has funded numerous projects in the Lower Rio Grande Valley for several irrigation and municipal entities. All the projects directly and indirectly affect water conservation for the entire basin which transfers to benefits to all users in the Lower Rio Grande Valley Watermaster System. CCID2 experience with previously funded Bureau of Reclamation projects are listed in Background Data Section of this report. The Lower Rio Grande Basin Study was completed by the Bureau of Reclamation in December, 2013. The report was completed in partnership with the Rio Grande Regional Water Authority, including its 53 entity committee, the TCEQ Region M Planning Group, the Texas Commission on Environmental Quality, the Texas Water Development Board, and the International Boundary and Water Commission. The study evaluated future water demands, future water supply, weather inconsistencies and other factors impacting the supply and demand for water in the Lower Rio Grande Basin. The Rio Grande Regional Water Authority is made up of eight counties including Hidalgo, Willacy and Cameron Counties. CCID2 is an active member of the Rio Grande Regional Water Authority.

- Does the applicant have a water service, repayment, or operations 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? *Yes*
- Is the applicant a Tribe? *No*

Project Budget

Funding Plan and Letters of Commitment

CCID2 will fund the entire non-grant portion of this project, $456,351 or 51-percent of the project costs. No 3rd Party funds will be used on this project. CCID2 portion of the funds include $77,532 of in-kind contributions including labor and equipment costs. CCID2 cost associated with material and contractual costs will be compensated through the District's account reserve funds. Labor and equipment in-kind services will be paid for from the District's general operating budget. The District's accounting balance sheet (included in the Appendix I) shows that sufficient funds are available for the completion of this project. Table 4 below shows the Summary of Non-Federal Funding Sources.

Table 4
Summary of Non-Federal Funding Sources

Funding Sources	Funding Amounts
Non-Federal Entities	
Cameron County Irrigation District No. 2	$456,351
Non-Federal Subtotal:	**$456,351**
Other Federal Entities	
None	$0
Other Federal Subtotal:	$0
Requested Reclamation Funding:	**$438,455**
TOTAL PROJECT FUNDING:	**$894,806**

Budget Proposal

Table 5 shows the Project Budget Proposal.

Table 5
BUDGET PROPOSAL

	Unit Cost	QTY	Unit	Unit Extension	CCID 2	USBR	Total Cost
DISTRICT EXPENSES							
Salaries and Wages							
General Manager	$57.69	100	HR	$5,769	$2,942	$2,827	$5,769
Field Staff Supervisor	$25.99	120	HR	$3,119	$1,591	$1,528	$3,119
Crew #1	$41.96	320	HR	$13,427	$6,848	$6,579	$13,427
Crew #2	$36.92	320	HR	$11,814	$6,025	$5,789	$11,814
Secretary	$17.13	60	HR	$1,028	$524	$504	$1,028
Fringe Benefits (14.48%)							
General Manager	$8.35	100	HR	$835	$426	$409	$835
Field Staff Supervisor	$3.76	120	HR	$451	$230	$221	$451
Crew #1	$6.08	320	HR	$1,946	$992	$953	$1,946
Crew #2	$5.35	320	HR	$1,712	$873	$839	$1,712
Secretary	$2.48	44	HR	$109	$56	$53	$109
Equipment							
D6 Dozer	$46.89	140	HR	$6,565	$3,348	$3,217	$6,565
Excavator (JD 290)	$84.91	270	HR	$22,926	$11,692	$11,234	$22,926
Supplies/Materials							
stakes and spray paint	$400.00	1	LS	$400	$204	$196	$400
SUBTOTAL					**$35,751**	**$34,349**	**$70,100**
PROJECT EXPENSES							
Supplies/Materials							
36" PVC Pipe	$136.99	4730	LF	$647,963	$330,461	$317,502	$647,963
15" PVC Pipe	$19.60	176	LF	$3,450	$1,759	$1,690	$3,450
60" Reinforced Concrete Pipe	$256.56	160	LF	$41,050	$20,935	$20,114	$41,050
14" X 15" Alfalfa Valve	$329.90	8	EA	$2,639	$1,346	$1,293	$2,639
15" Draw Band	$10.00	16	EA	$160	$82	$78	$160
36" Fresno Gate	$4,599.00	5	EA	$22,995	$11,727	$11,268	$22,995
Concrete Ready Mix	$105.00	30	CY	$3,150	$1,607	$1,544	$3,150
Engineering Contractual							
Registered Professional Engr.	$200.00	40	HR	$8,000	$4,080	$3,920	$8,000
Sr. CAD Technician	$110.00	120	HR	$13,200	$6,732	$6,468	$13,200
CAD Technician	$100.00	160	HR	$16,000	$8,160	$7,840	$16,000
Administration Assistant	$65.00	40	HR	$2,600	$1,326	$1,274	$2,600
Registered Professional Surv.	$200.00	80	HR	$16,000	$8,160	$7,840	$16,000
Survey Crew	$200.00	180	HR	$36,000	$18,360	$17,640	$36,000
Other Contractual							
Environmental Compliance		1	LS	$5,000	$2,550	$2,450	$5,000
Geotechnical Testing		1	LS	$3,500	$1,785	$1,715	$3,500
Other							
Reporting	$3,000.00	1	LS	$3,000	$1,530	$1,470	$3,000
SUBTOTAL					**$420,600**	**$404,106**	**$824,706**
Total Direct Cost					**$456,351**	**$438,455**	**$894,806**
Total Indirect Cost					**$0**	**$0**	**$0**
TOTAL PROJECT COSTS					**$456,351**	**$438,455**	**$894,806**

Budget Narrative

Salaries and Wages

The district personnel involved in this project along with their salaries and fringe costs are detailed in Table 5. CCID2 has completed several Bureau of Reclamation improvement projects. The Field Supervisor for the proposed work will be Mr. Orlando Ramirez. Mr. Ramirez has 15 years of experience as a field supervisor and has been with CCID2 for 21 years. The district also plans to utilize two construction crews made up of 3 men. Both crews are able to complete the work needed for this project. The fringe benefits of 14.48%, as shown in Table 5, include Social Security, Retirement, Health Insurance, Paid Leave, Medicare, Unemployment and Workers Compensation. The project budget assumes two crews for nine and a half, 40-hour workweeks to construct the proposed improvements. The pipeline is roughly 5,207 feet long, the combined efforts of both work crews can lay roughly 600 feet per week, resulting in approximately 9 weeks of pipe installation. The other pipeline appurtenances will be installed as they are encountered and will take roughly two weeks to construct. The construction time for two crews is budgeted at nine, 40-hour workweeks or 720 hours and the Field Supervisor time is estimated at 15 hours per week during construction and an additional 37.5 hours for the managing of in-kind services provided by the district. The General Manager's (Sonia Lambert) time is budgeted at 100 hours for the length of the project to manage all phases of the project.

Fringe Benefits

The fringe benefits of 14.48%, as shown in Table 5, include Social Security, Retirement, Health Insurance, Paid Leave, Medicare, Unemployment and Workers Compensation.

Travel

There is no travel anticipated on this project.

Equipment

CCID2 plans on using two pieces of equipment included in Table 5, a D6 Bulldozer and JD 290 Excavator, already owned and maintained by the district. Equipment rates are based on the "Construction Equipment Ownership and Operating Expenses Schedule, Region VI" by the US Army Corps of Engineers, November 2011. The JD 290 excavator is estimated to be operating about 80% - 90% of the 270 hours budgeted and be on standby the other 10 - 20% of the time. For the 140 hours budgeted for the D6 Bulldozer, it is estimated to be operating 90% of the time and be on standby 10% of the time.

Materials and Supplies

The 36-inch and 15-inch PVC pipe unit pricing are based on a price quote from Contech Engineering Solutions of $136.99/LF and $19.60/LF respectively. The unit prices for the PVC tees and elbows were provided by Soileau Industries. The unit prices for the gates, alfalfa valves and draw bands were provided by Fresno Valve and Casting, Inc. The unit prices of $256.56/LF for 60-inch reinforced concrete pipe (RCP) and ready-mix concrete ($105.00/cubic yard), to be used for the irrigation wells and gate valves, were provided by CAPA. Supplies and Materials line item are too numerous to quantify; however, the estimate of $400 is based on previous project costs of similar size.

Contractual

Professional Services - Ambiotec Civil Engineering Group, LLC (Ambiotec) will provide surveying and engineering services to construct the project. Services include surveying the canal right of way for boundary and field topography. Designing engineering construction plans and specifications, construction stake-out for the proposed pipeline and assistance throughout construction. The Engineer will also assist with the request for proposals for material quotations and for construction material testing services for required soil and concrete tests. A flat rate of $3,500 has been estimated for construction material testing based on experience with previous projects at similar project sites. The total estimated cost for this contractual portion of the project is approximately $91,800 for surveying and engineering services plus $3,500 for construction material testing.

Material Supplies - CCID2 is a public entity operating under the Texas Water Code and subject to those procurement standards for construction proposals and materials over $25,000. It is assumed that three sets of materials quotations will be required. For contracts over $75,000, the public bidding process will be required which includes two public advertisements in a general circulated newspaper. It is assumed that two public request for bidders will be required to provide bids.

Environmental and Regulatory Compliance Costs

The District has included in its budget a flat rate of $5,000, cost for Environmental and Regulatory Compliance. While the amount of work that may be necessary for environmental clearance is difficult to predict and will be determined by initial notification of the regulatory agencies, previous experience working at similar sites supports the estimated rate of $5,000. Notification and required report costs are included in the $5,000.

Other Expenses

The anticipated project reporting costs are estimated at $3,000 which includes testing of the pipeline and evaluation of metered flow to verify and document the water savings.

Indirect Costs

There are no anticipated indirect costs on this project.

Environmental and Cultural Resources Compliance

The proposed project will be constructed by CCID2 staff. Staff will be instructed to minimize impacts to local environmental sensitive areas and adjacent landowners. All proposed improvements are to be constructed with in the CCID2 existing right-of-way (ROW) which has been previously disturbed. To protect against any environmental damages, CCID2 will coordinate with Federal, State and Local regulatory agencies to ensure all required environmental regulations are followed. Below are the responses to the ten (10) questions presented in Section H.1 of the Notice of Funding Opportunity No. R24AS00052.

1. Since the project will include soil excavation, the creation of dust is a strong possibility. CCID2 crews will sprinkle water to control dust creation during construction.

2. The current irrigation canal is routinely maintained by CCID2 maintenance crews and doesn't provide sufficient habitat for endangered species. The area is not designated as a protected habitat by the US Fish and Wildlife Service. In any case, CCID2 will work with all Federal, State and Local regulatory agencies to ensure the project follows any required federal environmental regulations.

3. There are no wetlands or surface waters that fall under CWA jurisdiction within the project boundaries. The Corps of Engineers does not regulate irrigation canals and drainage ditches.

4. Portions of the CCID2 water conveyance system was constructed 1903.

5. The project proposes to connect to an existing influent control structure and service laterals to adjacent farm land. These features were constructed, modified and improved on an as-needed basis over the last 60 years.

6. CCID2 doesn't own any structures that may qualify for the National Register of Historic Places. The Environmental Compliance Report will coordinate with the Texas State Historical Preservation Office for approval prior to the commencement of the construction work.

7. There are no known archaeological sites in the project area. The Environmental Compliance Report will coordinate with the Texas State Historical Preservation

Office and other applicable review agencies for approval prior to the commencement of the construction work.

8. This project will have indirect positive effect on low income or minority populations. The proposed project will conserve water and energy required to provide irrigation water to the area adjacent to Lateral "C-2". This results in a cost savings for the CCID2 and the public of which 32% is at or below the poverty rate.

9. There are no tribal lands in the project area.

10. The project will not contribute to the continued existence or spread of noxious weeds or non-native species.

Required Permits and Approvals

The Environmental Compliance Report will coordinate with and obtain approvals from multiple Federal and State environmental agencies prior to the beginning of the construction phase of this project. No permits are anticipated to be required, but any requested permit coming from the Environmental Compliance document will obtain approval prior to the beginning of construction. The project does not include the crossing of any TxDOT or Cameron County right-of-ways thus will not require any utility crossing permits.

Letters of Project Support

See Appendix H for the letter of support from East Rio Hondo Water Supply Corporation and the City of San Benito.

Official Resolution

CCID2 adopted a resolution for this Grant Application on October 12, 2023. A copy of the Resolution is included in Appendix I.

Unique Entity Identifier and System for Award Management

CCID2 is registered in the System for Award Management (SAM) and its unique entity identifier is: 048459937 / 6J2J5

CCID2 will maintain an active SAM registration with current information at all times during which it has an active Federal award or application plan under consideration by a Federal awarding agency.

October 30, 2023

Cameron County Irrigation District Number 2
P. O. Box 687
San Benito, TX 78586

Subject: Support of Proposed Piping of Canal C2

Dear Mrs. Lambert,

This letter is in support of your WaterSMART application to the U.S. Bureau of Reclamation for granting funding of a water conservation initiative. As a rural water supplier in Cameron County Irrigation District #2's jurisdiction, the City of San Benito supports improving the efficiency of irrigation water delivery and reducing water loss by replacing open canals with pipelines.

The City of San Benito hereby supports your proposed efforts to pipe your existing earthen Canal C2 as a water conservation initiative.

Sincerely,

Ricardo Guerra
Mayor

401 North Sam Houston Boulevard, San Benito, Texas 78586 • Telephone: (956) 361-3800 • Fax: (956) 361-3805

East Rio Hondo Water Supply Corporation
P.O. Box 621 * 206 Industrial Parkway * Rio Hondo, Texas 78583
Phone (956)-748-3633 * Fax (956)-748-3179 * www.erhwsc.com
"This Institution is an Equal Opportunity Employer and Provider"

October 27, 2023

Mrs. Sonia Lambert
General Manager
Cameron County Irrigation District #2
P. O. Box 687
San Benito, TX 78586

Subject: Support of Proposed Piping of Lateral C2

Dear Mrs. Lambert,

This letter is written in support of Cameron County Irrigation District #2's (CCID2) WaterSMART application to the U.S. Bureau of Reclamation for granting funding of a water conservation initiative. As a rural potable water supplier that receives all of its raw Rio Grande River water from CCID2, East Rio Hondo Water Supply Corporation (ERHWSC) supports improving the efficiency of irrigation water delivery and reducing water loss by replacing open canals with pipelines. This directly benefits ERHWSC in reducing its exposure to push water scenarios.

ERHWSC hereby supports your proposed efforts to pipe your existing earthen Canal Lateral C2 as a water conservation effort.

Sincerely,

Brian Macmanus, P.E.
General Manager

CAMERON COUNTY IRRIGATION DISTRICT NO. TWO

26041 FM 510 P.O. BOX 687 SAN BENITO, TEXAS 78586
Phone (956) 399-2484 Fax (956) 399-4721
Sonia Lambert- General Manager
Craig Harmon- Assistant General Manager

RESOLUTION

October 12, 2023
2023-006

LATERAL C2

APPLICANT'S NAME: Cameron County Irrigation District No. 2

WHEREAS, Cameron County Irrigation District No. 2 is an Irrigation District operating pursuant to Vernon's Texas Civil Statutes, Water Code, Chapter 58, and under Article XVI, Section 59, of the Texas Constitution; and

WHEREAS, the Cameron County Irrigation District No. 2, (District), is committed to water conservation, and;

WHEREAS, the District is seeking opportunities to implement projects that account for water use, and;

WHEREAS, Cameron County Irrigation District No. 2, San Benito, Texas, has identified a project that involves replacement of an open earthen canal to a pipeline.

WHEREAS, the District has sufficient resources to match available funds to complete such improvements;

NOW THEREFORE, BE IT RESOLVED that the Board of Directors of the Cameron County Irrigation District No. 2 agrees and authorizes that:

1. The Board authorizes its General Manager, Sonia Lambert, to submit an application for the WaterSMART Grant.
2. The Board or governing body has reviewed and supports the proposal submitted;
3. The applicant is capable of providing the amount of funding and/or in-kind contributions, specified in the funding plan; and
4. If selected, the applicant will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

DATED: 10/16/2023

Sam Simmons, President

ATTEST:

Buck Rhyner, Secretary

Board of Directors

Sam Simmons – President Brady Taubert – Vice President
Buck Rhyner – Secretary Lupe Argullin – Member