Elephant Butte Irrigation District
Water Conservation Project
Pipe Installation on Unlined Earthen Laterals

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General Criteria

1. Project Type

The proposed project is a water conservation project designed to replace 74,868 feet (14.18 miles) of existing open unlined earthen irrigation laterals with 48-inch diameter aluminized steel pipe throughout the District's three main irrigation systems over a three-year construction program.

2. Project Location

The project is located within the boundaries of the Elephant Butte Irrigation District (EBID) in portions of Sierra County and Dona Ana County in southern New Mexico. Elephant Butte Dam, located on the Rio Grande 85 miles north of Las Cruces, is the beginning of the Rio Grande Project authorized by Congress in 1906. Elephant Butte Dam can store 2,210,298 acre-feet of water for use by the Elephant Butte Irrigation District and the El Paso County Water Improvement District in Texas. Additional storage capacity is available at Caballo Dam and Reservoir, which are located on the Rio Grande 25 miles downstream of Elephant Butte Dam with a storage capacity of 343,990 acre-feet of water. Water discharged during the winter power generation at Elephant Butte Dam is impounded at Caballo Dam for irrigation use during the summer.

3. Project Description and Work Tasks

The EBID's irrigation system consists of three main irrigation systems; 1) The Rincon Valley System (Arrey System); 2) The Middle Mesilla Valley System; and 3) the Lower Mesilla Valley System. The existing system of irrigation canals and laterals can deliver irrigation water to the 90,640 water righted acres within the Rincon and Mesilla Valleys.

The Rincon Valley irrigation water is delivered through more than 76 miles of canals and laterals to more than 18,100 acres of farms and small tracts. Rincon Valley System is comprised of two irrigation units; Unit 1A and 1B. The Mesilla Valley is divided into ten irrigation units with units 2A, 2B, 3A, and 3 B supervising irrigation in the upper Mesilla Valley and units 4A, 4B, 5A, 5B, 5C and 6A supervising irrigation water in the lower Mesilla Valley.

The proposed project includes the replacement of 74,868 feet of open unlined earthen irrigation laterals with aluminized steel pipe, which has superior hydraulic characteristics compared to standard corrugated steel pipe and requires a simplified construction process as compared to concrete lining. The pipeline improvements will be designed by the EBID District Engineer and constructed by the EBID maintenance personnel.

The District will use this project as a pilot for a larger scale canal improvement plans. The piped canals will be metered and the quantity of water required to make deliveries into the service area will be compared with pre-improvement water requirements. As the District examines the return on investment in terms of water conserved and reduced maintenance, other canals will be prioritized for improvement.

Final Design for lateral improvements scheduled for years 2003 and 2004 is complete; design for year 2005 will be completed by the end of June. Bid documents for the purchase of materials are currently being developed and bidding scheduled to commence in July. Construction is anticipated to begin in September 2003, assuming project certification by BECC in June 2003.

4. Compliance with International Treaties and Agreements

The International Boundary and Water Commission (IBWC) is an independent bi-national public organization that ensures implementation of the International Treaty of 1906, which requires allocation to Mexico of a maximum of 60,000 acre-feet per year from the Rio Grande. In addition, the Project will comply with the Rio Grande Compact: a tri-state agreement between Colorado, New Mexico and Texas. The project supports the efforts of the District to continue meeting all surface water diversions from the Rio Grande in accordance with the agreements in place and the restrictions of the Treaty and the Compact. Project specifications will follow or agree with Bureau of Reclamation design criteria for irrigation practices.

Human Health and the Environment

1. Human Health and Environment

The human health impacts from this project are all positive from the sense that through water conservation, additional water will be made available for growing crops for human consumption and additional water will be available for municipal use in the future. This water conservation will partially offset water shortages during periods of drought. Through water conservation and a more efficient use of the allocated waters for irrigation and municipal use, a growing population of the region can be sustained over a longer period. In addition, to conserving water, the general community will benefit from enhanced air quality through fewer air borne aerosols and dust particles, reduction in use of herbicides to maintain weed control along laterals, reduced chances of contamination of water through protection from illegal dumping in laterals, increased safety, and new opportunities for recreation through conversion of right-of-ways to equestrian and pedestrian trails.

The entire Rio Grande Basin has in the past 7 years experienced a drought, which has limited the amount of surface water available for irrigation and municipal use. Furthermore, the EBID's distribution system is about 75 years old. Although the engineering design of this distribution system was sound at the time of construction for the demand on the water supply at that time, the system has been increasingly overtaxed in meeting today's modern agricultural demands. This capacity and operational problems plus the recent water shortage have created an economic hardship in the region through reduction of crops and subsequent reduced revenue. The proposed water conservation project will eliminate water seepage losses with resulting water savings. In addition, as a result of the water conservation measures to be implemented with the proposed project, any volume of water saved would be used either to maintain water-righted acres allocation in the district during adverse periods or for the implementation of more efficient surface water alternatives and water management strategies for municipal water use, which will become a critical issue in the future as population continue to grow.

2. Environmental Assessment

State and local law does not require EBID to perform additional environmental clearance processes for improvements to existing properties of EBID. The proposed project will replace existing unlined irrigation laterals with aluminized steel pipe within property currently sustaining constant traffic and operations related disturbance, therefore it was determined that a new environmental report is not required. However, EBID has initiated consultation with the New Mexico State Historic Preservation Office, in accordance with a Memorandum of Agreement, which describes this cooperating agency practice. This consultation will continue throughout the project. The EBID has also retained an

environmental consultant firm to aid in all environmental compliance issues related to the implementation of the project.

An Environmental Assessment, which resulted in the issuance of a Finding of No Significant Impact, was prepared in January 1996 at the time the lands and irrigation facilities of the Rio Grande Project of the United States Bureau of Reclamation (USBOR) were transferred to the Elephant Butte Irrigation District and the El Paso County Water Improvement District No. 1, respectively. The proposed transfer was actively coordinated with Federal, State, and local agencies and other interested public and private entities.

The overall direct, indirect and cumulative effects will be positive. Construction of the proposed water conservation measures through conversion of laterals to pipelines will have a direct impact through conserving water and thus making it more available for irrigation of crops for human consumption and use and making more water available for municipal use and sustaining a steady population growth while reducing the potential risks of diseases because of lack of adequate water supply to maintain sanitary conditions in a region with a high percentage low income residents. Through construction of the water conservation project, an indirect effect will be employment in an area with a high unemployment rate.

On the effect to local groundwater the overall cumulative effect will be positive. From an environmental aspect, the project will not pose any environmental hardship or have any negative effects on the project area. From a standpoint of soils, vegetation impacts, endangered and/or threatened species, disruption to wildlife habitat, wetlands and waterways, land use, farmlands, historical-cultural resources, air quality and acoustic impacts, hazardous materials, traffic hazards and disruptions, clearing, grubbing, and spoil disposal, and obstruction of views, the project will have a minimal to negligible effect with an overall positive result. In contrast the benefits results in several forms such as with the reduction in herbicide use, results in the enhancement of the water supply.

Additionally, the areas to be piped are particularly inefficient in terms of conveyance, and compounded with the seepage losses experienced, the proposed project make better management of the available water supply distribution. Since the conveyance system is generally considered to be a poor aquatic avian habitat because of the high velocities simple geometric sections and most importantly the intermittent flow through the system any impact to the habitat appears to be negligible. In summary the project will have a positive impact from the environmental, cultural, and socio-economic perspective.

The project will not pose any environmental hardship or have any unavoidable negative effects identified on the project area. No environmental risks or associated costs are anticipated in the project area due to the implementation of the proposed project improvements.

3. Compliance with Environmental and Cultural Resources Law and Regulations

As part of the preparation of the Final Environmental Assessment and Finding of No Significant Impact prepared during the transfer of lands and irrigation facilities from the Bureau of Reclamation to the Elephant Butte Irrigation District, comments were solicited from relevant Federal, State and local agencies, including: New Mexico Department of Fish and Game, Southwest Consolidated Sportsmen, Sierra Club, and others. The project improvements comply with all applicable regulations from the contacted agencies. The project is in compliance with all applicable environmental and cultural resource laws.

Technical Feasibility

1. Appropriate Technology

The proposed water conservation improvements to be constructed by the EBID involve replacing 74,868 linear feet (14.18 miles) of existing unlined irrigation laterals with aluminized steel pipe, which will virtually eliminate seepage and evaporation losses in the improved sections. All design and construction requirements are to adhere to EBID Design Criteria Guidelines. All technology used in the proposed improvements is appropriate based on local experience with similar projects, and sound engineering practices. All design and construction requirements are to adhere to EBID Design Criteria Guidelines. The District follows similar guidelines from USBOR for irrigation projects with similar operations and infrastructure.

Projected water savings are projected to increase the water efficiency operations of the District from the direct reduction of seepage and evaporation by about 5 percent from a current rate of 45% to 50% based on the amount of total water diverted in a full supply year, 495,000 acre-feet, versus the total delivery of 271,920 acre-feet at full allocation and the projected water savings of 9,561 acre-feet. However, the improved hydraulic characteristics of the aluminized steel pipe, when compared with concrete and corrugated metal pipes, will result in higher delivery efficiencies by as much as 15%. Thus potentially, the overall District efficiency resulting from water savings and improved delivery is approximately 20 percent. Thus the overall efficiency projected after the improvements would be about 65%.

The EBID initiated an overall system improvement program three years ago with the improvement of eight laterals already accomplished. The proposed project will complete the second phase of the program implemented during the next three years, 2003-2005. Funding from the Water Conservation Investment Fund (WCIF) will support the second phase. A third phase is planned for additional improvements in years 2006 through 2008. A total of 52 laterals, approximately 38 miles, are planned for improvements as a part of this program.

The table below lists the laterals to be improved during the second phase and supported by WCIF.

Year	*Canal Name*	*Length (ft)*	*Cost (USD)*
2003	*S-2*	*3389*	*424,476.54*
	Williams	*2585*	*215,559.98*
	Kerr	*3158*	*329,681.51*
	Kelso	*3915*	*472,727.66*
	McCrummen	*2687*	*436,831.48*
	O´Shea	*3425*	*327,891.90*
	Schaefer	*5813*	*569,295.12*
2004	*Vega*	*3423*	*364,039.90*
	Palmer	*7425*	*868,203.12*
	Crapps	*5230*	*500,893.98*
	Corralitos	*2075*	*220,797.10*
	Strout	*1852*	*122,628.23*
	Langford	*1300*	*161,122.27*
	Trujillo	*7199*	*791,689.54*

2005	*Moore*	*1630*	*260,667.01*
	Elwood	*5446*	*568,424.53*
	School	*4974*	*526,970.44*
	Utting	*1650*	*202,405.59*
	McKarry	*1766*	*198,832.52*
	Jiminez	*5926*	*680,193.81*
TOTAL		*74,868 ft.*	*$ 8,243,332.26*

2. Operation and Maintenance Plan

The proposed project does not require the development of a long term Operation and Maintenance (O&M) Plan for training or certification of operators. EBID has standard O&M procedures in place for the maintenance and operations of the irrigation systems. O&M documentation for equipment installed as a result of the proposed project shall be provided by vendors and shall be required in the project bid specifications.

The piped laterals will significantly reduce maintenance tasks, such as the need for dredging and other operations performed at the start of irrigation season, in comparison to the level of effort required for open ditches. Consequently, maintenance costs will be reduced providing an economic advantage and savings to EBID constituents resulting from less wear and tear on vehicles and equipment, less use of herbicides and the associated labor for mowing and dredging.

The superior hydraulic characteristics of the aluminized steel pipe, due to a better roughness coefficient and ease of construction, will result in faster delivery of irrigation water to croplands with subsequent higher application efficiencies by reducing the time for water to advance to the tail end of the field being irrigated.

3. Compliance with applicable design norms and regulations

The Project will comply with the design standards of the EBID, which are similar to the USBOR standards. The District has developed their own construction specifications and standard structures drawings and details that must be utilized within their District.

Financial Feasibility and Project Management

1. Financial Feasibility

The financial information concerning the project, EBID, and EBID's financial condition, was analyzed to obtain sufficient support of EBID's capability to sustain the proposed funding structure of the project, and the on-going operation and maintenance of the improvements. The project costs are as follows:

Cost of the Project for the Main Lateral Replacement

CONCEPT	*Funding Source*	*TOTAL (USD)*
Planning & Design	*EBID*	*226,236*

Construction Inspection	*EBID*	*25,137*
Construction	*WCIF/EBID*	*8,243,332*
TOTAL		*8,494,705*

Cost in Dollars. June 2003

The funding sources for the project are summarized in the table below. Based on the Water Conservation Infrastructure Fund (WCIF) Guidelines, the WCIF grant may support 50% of the project costs up to a maximum of $4,000,000. Because 50% of the project costs exceed this maximum allocation, the WCIF contribution will be limited to $4,000,000 or 47% of the project costs.

The funding sources for the project are as follows:

Financial Structure for the Project

Source	*Type*	*Amount (USD)*	*% of Phase Project Cost*
NADB	*WCIF- Grant*	*4,000,000*	*47.0*
EBID	*In-Kind Services*	*4,494,705*	*53.0*
TOTAL		*8,494,705*	*100.0*

EBID proposes to provide all services required to implement the improvement project including design, labor, heavy equipment, supervision and other tasks as needed. The WCIF funding will be allocated exclusively for the purchase of materials.

The BECC requested a third party review of the capability of EBID for supporting the initial investment and the sustainability of operations and maintenance for the project. BECC's financial consultant rendered an opinion concluding that EBID does provide this capability without an adjustment to the current Fee and Assessment Structure.

2. Rate Model

The rate model for this type of Project Sponsor is better described as a Fee and Assessment Structure. State law permits EBID to determine a tax assessment per acre required to meet the obligations, maintenance, and operating and current expenses for the ensuing year, without limitation on the amount of the tax assessment or on the annual increase in the tax assessment. The assessments are expressed as a flat rate for small accounts and a per acre rate for farm tract accounts (2.0 acres or greater).

The table below summarizes the historic and current assessment rate for the years 1998 through 2003.

1998 - 2003 Assessment Fee Structure

YEAR	*Average Flat Rate Small Accounts*	*Per Acre Flat Rate Farm Tract Account*
1998	*$ 93.75*	*$ 40.00*
1999	*$ 93.75*	*$ 40.00*
2000	*$ 103.13*	*$ 45.00*
2001	*$ 154.70*	*$ 50.00*
2002	*$ 174.50*	*$ 50.00*
2003	*$ 204.20*	*$ 50.00*

In addition, EBID earns operating revenues from Special Use Fees and Intergovernmental contracts as well as other non-operating income sources such as interest, rentals and sales of property.

The proposed project and funding source structure does not require an adjustment to the current Fee and Assessment Structure implemented by EBID. The review provided by the BECC's financial consultant also describes the reasonableness of the assumption for continued balancing in the EBID budget because of the long history of favorable financial results and the state law requirement for budget approval by the New Mexico Department of Finance and Administration.

3. Project Management

The project will be managed by Elephant Butte Irrigation District. The Treasurer/Manager oversees approximately 100 employees, who are divided into five major departments, including Engineering, General/Administration, Hydrology, Maintenance, and Operations. The current Treasurer/Manager and the Engineering Supervisor have over twenty years of experience, and the Controller has over eight years of experience. The EBID has performed construction services equal to that proposed as part of the in-kind services contribution and have managed projects of similar magnitude. Evidence of this ability is offered in the capital projects already completed for improving the EBID infrastructure and the planning completed for future efforts.

The EBID will operate in a self-sufficient manner, supporting itself through user fees. The project will not require additional staffing. Therefore, the existing organizational structure, which has been provided, will be sufficient.

Public Participation

1. Comprehensive Public Participation Plan

The Project Sponsor developed the Public Participation Plan and the steering committee formation meeting was held on October 28, 2002. The Plan elements included the formation of a steering committee, contacting local organizations, public access to project information and holding at least two BECC required public meetings.

2. Steering Committee

The steering committee was composed of Craig Runyan (Chairman) of New Mexico State University Gary Esslinger (Co-Chair) of EBID, Gail Norvell (Budget Oversight) of EBID, Rita King of Center for Environmental Science & Economic Management, John Papen of Wells Fargo Bank, Dave Church of City of Las Cruces (CLC) , Andy Hume of CLC Metropolitan Planning Organization, David King of Dona Ana County, Philip Arnold of Farm Bureau Center, Gary Arnold of EBID Water Resources Committee, Rudy Provencio of EBID Water Resources Committee, James Salopek of EBID Water Resources Committee, and Mack Sloan of EBID Water Resources Committee.

The technical support group developed in support of the committee was composed of Henry Magallanez (Engineering Supervisor-EBID), David Church (City of Las Cruces), Andy Hume (City of Las Cruces), Phil King (King Engineering/EBID), and Rita King (Center for Environmental Science & Economic Management). Valerie Beversdorf,

Resource/Engineering Specialist for EBID served as technical secretary to keep all meeting minutes.

3. Local Organizations

The Steering committee identified local organizations to be impacted by the project and other pertinent information. Information about the project was provided and/or specific presentations were made at the following:

- *Water Users Conference (Sponsored by NMSU)- Oct. 10,2002*
- *EBID Grower's Meeting Oct. 23, 2002*
- *Local Financial Institutions & Business Community Members Nov. 2, 2002*
- *General Public Media Exposure Nov. 2, 2002*
- *EBID Letter to Constituents Nov. 2, 2002*
- *Farm Bureau Center Nov. 2, 2002*
- *Caballo Soil & Water Conservation District Nov. 2, 2002*
- *Lower Rio Grande Water Users Org. Nov. 5, 2002*
- *Metropolitan Planning Org. Policy Committee Nov. 13, 2002*
- *Las Cruces City Council Nov. 18, 2002*

The Las Cruces City Council provided a Resolution of Support for the project, and letters of support were received from the Farm Bureau, Metropolitan Planning Organization, two Conservation Districts, and numerous business owners.

4. Public Information

The Project Plan and Preliminary Engineering Report was available for public viewing at the EBID Administrative Offices at 530 South Melendres, Las Cruces, New Mexico beginning thirty days (30) prior to the first BECC public meeting. In addition, notices of availability of project information were included in public meeting notices published in the Las Cruces Sun News, distributed in EBID mailings, and posted at EBID Headquarters. The public meetings notices were published in both English and Spanish.

The Steering committee and project sponsor carried out several activities to inform the Irrigation District members about the project and solicit their support. The public radio stations were contacted to broadcast public service announcements pertaining to the project and provide meeting dates. A fact sheet was developed as a colorful brochure and made available at the District offices, distributed at meetings, and hand delivered to landowners and business owners in the District by Steering Committee members. Several newspaper articles have been published over a six-month period disseminating information about the project to the general public. A MS Power Point presentation was developed and presented at a variety of public meetings. District farmers were encouraged to express their opinions on the project and offer their support.

5. Public Meetings

Three public meetings were held specifically to discuss the project per BECC requirements. All meetings were held in the EBID offices in Las Cruces. The BECC required public meetings were held on November 25, 2002 to present technical information (scope of project and benefits) and May 28, 2003 to provide the financial analysis information regarding grant ratio of the WCIF administered by the North American Development Bank (NADB). Another public meeting was held in November 26, which was general in nature covering technical aspects.

1. Definition and Principles

The project complies with BECC's definition of sustainable development. The proposed project is expected to be wholly positive in addressing the environmental needs and sustainable development principles. The proposed savings of water loss through seepage and evaporation, the project provides a positive impact on the overall environment by conserving and effectively using a limited water supply resource. Local residents will benefit from better agricultural yields within a sustainable development framework and from a better quality of life within a nature conservation scheme, being careful not to compromise water and soil resources for the future, considering that modernization and technical improvements within the District's operational system provide a project that will positively impact the area and sustainable life of the area residents through the conservation of water which is becoming a scarce resource and critical for sustainability of life and economic growth. Through elimination of water loss, through seepage and evaporation, the project provides a positive impact on the overall environment by conserving and effectively using a limited water supply resource. The required public review process ensures that residents in the project's influence area participate in the development process, and are fully aware that decisions they make will focus on the sustainable management of environmental resources to achieve better environmental and socio- economic improvements in their community.

2. Institutional and Human Capacity Building

The New Mexico Office of the State Engineer, through the Interstate Stream Commission, provides technical and financial assistance to entities responsible for regional water planning under the N.M. Statutes Annotated § 72-14-44. Section 2 of the Act, authorizes the Commission to make grants or loans for the purpose of regional water planning.

Accordingly, the Interstate Stream Commission provided technical and financial assistance to the Lower Rio Grande Water Users Organization (LRGWUO) to develop the Dona Ana Regional Water Plan (DARWP), which was developed in accordance to the Commission Regional Water Planning Template. The DARWP includes:

- *Analysis of the surface and groundwater supply available to the region.*
- *Demographic analysis*
- *Population Projections to 2040*
- *Current water use and project demand, and*
- *Strategies for future management of the region's water*

One of the strategies outline in the DARWP is water conservation in agricultural use. Proposed methods of conservation in water agricultural use include:

- *Installation of canal liners*
- *Control weeds and vegetation in conveyance structures*
- *Monitor flows to determine unaccounted water or losses*
- *Improve flow regulations structures/ monitor soil moisture*
- *Schedule water deliveries/ irrigation to meet crop demands*
- *Land leveling*
- *Optimum tillage*
- *Recover runoff and tail water*

- *Select/ improve proper application methods*

Started in 1994, the **Farm Water Conservation Reloan Program,** *in which EBID is a member, allows the District to administrate money from the Interstate Stream Commission. This is low interest money which is used for land leveling, lining of irrigation ditches and reservoirs, construction of irrigation return flow conservation systems, drilling and equipping irrigation wells, flow meter installation, and similar water conservation projects.*

The Interstate Stream Commission has also provided technical and financial assistance to EBID to develop the "Water Measurements Management Plan". This plan includes the voluntary metering program of on-farm wells. EBID provides meters and telemetry and the farmers pay only 50 dollars for the installation.

EBID in cooperation with the Natural Resources Conservation Service, New Mexico State University, and local Mesilla Valley farmers, started since 1994 the **Agricultural Water Demonstration Project**. *The aim of this Project was to determine the best uses for surface irrigation water by utilizing irrigation schedules, irrometers, and high flow turnouts. Following the 1995 irrigation season, farmers within the Mesilla Valley experienced a reduced irrigation water usage, shorter irrigation events, reduced fertilizer applications, in turn, reducing the amount of leaching into the aquifers, and a higher potential profit margin.*

Started in 1992, the **Las Nutrias Ground Water Project** *allows EBID to sponsor the Jornada Resource Conservation & Development, Inc. Under this project data is being collected in an effort to substantiate or disprove that agriculture is the biggest Non-Point Source Polluters. By analyzing captured tail water from a tile drain system in the field, researchers are in the process of determining the effects of various agricultural practices have on shallow groundwater tables.*

The **Mesilla Basin Ground Water Monitoring Program** *is a joint team effort program which, involves the United States Geological Survey Agency, New Mexico State Engineers Office, New Mexico State University Statistical Department, Las Cruces Water Department, El Paso Water Utilities, Jornada Resource Conservation & Development Inc., International Boundary and Water Commission-US section, and Elephant Butte Irrigation District. Through the use an observation well network and three piezometers stretching across the Mesilla Basin, are able to monitor the fluctuation of ground water due to pumping demands from municipal, industrial, and agricultural uses. In addition, water seepage from the Rio Grande and water quality is also analyzed in the monitoring program.*

The Bureau of Reclamation has provided financial and/or technical assistance to the EBID, through the "Water Conservation Field Services Program ", to develop the following plans and studies.

1. *Water Conservation Plan (Completed)*

2. *Drought Contingency Plan (On-going)*

3. *"Estimate of Seepage Losses from the Canals in the Paso Del Norte Region Using Ponding Tests".**

**This study was conducted by researchers from the Department of Civil and Geological Engineering, New Mexico State University, and the Texas A&M University Agricultural Research and Extension Center.*

As part of the strategies considered for management of water supply in the EBID Water Conservation Plan, the following work has been addressed at the District:

- *Established real-time flow acquisition systems on River, Diversions, and Deliveries.*
- *Coordinated surface and ground water demands with geographic information system application.*
- *Established link with ground water model to surface water demand and flows.*
- *Quantify surface and ground water use with crop and soil characteristics.*
- *Identified areas of surface and ground water losses and or gains.*
- *Developed automated database of District infrastructure, including parcels, canals, drains, water wells, utilities, and district structures.*
- *Established automated data base link with local agencies on water planning activities and other shared resources.*

The NADB Water Conservation Investment Fund (WCIF) will complement, with grant funds, the capital investments required by the District for construction of the project. The use of WCIF grant funds allows the District to fully finance and improve its infrastructure in order to reduce water conveyance losses.

The project will be managed by the District and will be constructed and operated in conformance with Federal, State and NADB requirements. The process for the development of the projects has followed a planning and public participation process that developed alternatives and associated costs, solicited public input, established priorities based on input of the stakeholders and proceeded according to the priorities established in the planning process.

The EBID will use the Pipe Installation on unlined earthen laterals project as a pilot for a larger scale canal improvements plan. The piped canals will be metered and the quantity of water required to make deliveries into the service area will be compared with pre-improved water requirements.

3. Conformance with Applicable Local/Regional Conservation and Development Plans

The proposed project is in conformance with local and regional conservation and development plans. In particular, the project complies with the Dona Ana Regional Water Plan, which recommends agricultural use water conservation, since the largest water demand in the planning region comes from agricultural use.

The Dona Ana Regional Water Plan has been developed according to Regional Water Planning Template, detailed in the Regional Water Planning Handbook of the New Mexico Interstate Stream Commission.

The EBID Water Conservation Plan was developed according to the U.S. Department of Interior, Bureau of Reclamation " Guidebook for Preparing Agricultural Water Conservation Plans".

The project is in conformance with local conservation efforts developed by the District. A water allocation plan (Drought Contingency Plan) is triggered in stages based on allotment or when demand is projected to exceed supply. The stages of the plan are:

a. Mild Drought Conditions
b. Severe Drought Conditions

c. Critical Drought Conditions

4. Conservation of Natural Resources

The objective of the project is to reduce the losses of an already scarce resource that do not benefit the water users or the environment. By means of replacing 14.18 miles of existing open unlined earthen irrigation laterals with 48-inch diameter aluminized steel pipe throughout the District's three main irrigation systems over a three- year construction program, it is expected to virtually eliminate seepage and evaporation losses in the improved sections.

The EBID system of irrigation canals and laterals provide delivery of irrigation water to 90,640 acres of land within the Rincon and Mesilla Valleys. Water delivery to constituents from the over 357 miles of canals and laterals is accomplished through ten irrigation units.

The EBID operates its irrigation system at an efficiency level of 45%. Through the proposed water conservation projects, the District's goals over the next five years are to increase the efficiency level to 50% on water savings alone. With increased delivery efficiency through turnouts due to higher and faster delivery, additional efficiency of 15% is anticipated for an overall efficiency increase of 20% to a total efficiency of 65%.

Researchers from the Department of Civil and Geological Engineering, New Mexico State University, based in the study "Estimate of Seepage Losses from the Canals in the Paso Del Norte Region Using Ponding Tests", estimated the annual water savings would be 9,561 acre-feet, with the implementation of the project, as shown in the following table.

Item	Description	Annual Water Savings (Acre-feet)
48" Pipeline replacing laterals	*Replacement of 74,868 feet of unlined earthen laterals with 48" diameter aluminized steel pipe*	*9,561*
Total Annual Water Savings		**9,561**

As the irrigation system works by gravity flow, no energy savings are expected as a direct benefit in the operation of canals and laterals.

Significant additional water savings are expected with the implementation of different strategies considered in the EBID Water Conservation Plan and the Dona Ana Regional Water Plan.

The development of projects and programs such as the Agricultural Water Demonstration Project, Las Nutrias Ground Water Project, an the Mesilla Basin Ground Water Monitoring Program, done jointly by EBID and other agencies, contributes to the conservation of the water resources in the region in terms of quantity and quality.

5. Community Development

The benefit obtained by the repair improvements to the irrigation laterals will directly impact agricultural production and will result in an increased income and an improved quality of life for the end users. Since agriculture is considered one of the largest segments of income in the region, this will provide for an improved economy of the region and allow residents to be active participants in their community development.

An improved quality of life equates to a favorable impact on the improvement in the health and education of the area residents.

List of available documents

1. *EBID's General Data and Information*
2. *Executive Summary—Drought Contingency Plan (Draft)*
3. *Executive Summary—Lower Rio Grande Water Users Organization – Dona Ana Water Regional Plan (Draft)*
4. *USBOR-EBID Redesign Study Feasibility Report (June 1976)*
5. *Final Report on Laboratory Calibration Testing of the Mag-Tube Flow Meter*
6. *EBID Water Conservation Plan (Sept. 2001)*
7. *Regional Water Planning Handbook (New Mexico Interstate Steam Commission)*
8. *USBOR Guidebook for Preparing Agriculture Water Conservation Plans (Second Edition, Sept. 2000)*
9. *Irrigation Systems in the Mesilla Valley – An Historical Overview (Sept. 1992)*
10. *Final Environmental Assessment and Finding of No Significant Impact – Transfer of Lands and Irrigation Facilities, Rio Grande Project to Elephant Butte Irrigation District and, El Paso County Water Improvement District No. 1 (January 1996)*
11. *Final Design and Construction Plans – First 3 years*
12. *Planning Documents – Second 3 years*
13. *Project Certification Document*