

Metropolis Water Irrigation District

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June 22, 2005

Mr. Bill Coughlin
Board for Financing Water Projects
Nevada Division of Water Resources
333 W. Nye Lane
Carson City, Nevada 89706-0851

Subject: **Letter of Intent, AB 237 Grant for
Final Engineering Design and Construction
Metropolis Irrigation Restoration Project**

Board for Financing Water Projects:

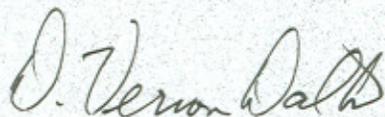
Metropolis Water Irrigation District (District) submits to the Board this Letter of Intent to apply for a second grant under the AB 198/237 Grant Program. The grant is intended to complete a Final Engineering Design and for Construction of the Metropolis Irrigation Restoration Project. The project is located near Metropolis, Nevada, about 7 miles north of Wells, Nevada. The information in this letter is provided pursuant to NAC 349.980.

The first grant of \$511,000 was provided to the District in 2003 for the purpose of preparing a Preliminary Design Report for the project. A Preliminary Design Report was completed in June 2005, which provides clear direction for restoration of the irrigation project. An executive summary of the Preliminary Design Report is included in Attachment A. A copy of the Preliminary Design Report will be included with the Application for Grant for Final Design and Construction.

We appreciate the opportunity to submit this request. This project is a serious concern for the water users involved, the City of Wells, Nevada, the central Elko County area, and for the state of Nevada. We are excited about the possibility of grant funding to help with the project. Please do not hesitate to call me at 775-752-3498, if you have questions.

Sincerely,

METROPOLIS WATER IRRIGATION DISTRICT



D. Vernon Dalton
Manager

A. Name, address and telephone number of the applicant.

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B. The date on which the publicly owned community water system began service. If the exact date is not known, the month and year must be provided.

The District became a legal entity on November 18, 2002, with the objective of improving the irrigation system. Authorization as a legal entity was provided to the Metropolis Water District by the Board of County Commissioners, Elko, County, Nevada. Full documentation of the District's authority was presented previously as part of the prior grant application.

The District is formed with three divisions. These Divisions are located within the Humboldt River Basin. The District was formed in an effort to restore and optimize the delivery of water for irrigation practices in an efficient and timely manner.

The District is a legal organization authorized to administer the storage and use of the waters of Bishop Creek and Bishop Creek Dam and lend a central voice to the users of the system. The District has the designation of a political subdivision of the State of Nevada.

C. The title or name, the location and brief description of the proposed capital improvement, including maps or preliminary plans.

The title of this project is "Final Engineering Design and Construction for the Metropolis Irrigation Restoration Project." The location of the project is represented on the drawing presented in Attachment B. Background information regarding the project is provided below. A summary of the project objectives is also described.

Background

The water system which has become known as the Metropolis Water Irrigation District (District) was operated for many years as the Pacific Reclamation Water Company. Bishop Creek Dam which is the primary component of the system, was constructed in 1912 and had a potential storage capacity of 30,000 acre-feet of water. The original intent of the project was a speculative venture by New York real estate interests designed to stimulate land sales. The development did not mature and the project subsequently dwindled to an irrigation project with limited use. Eventually, the land and water were sold to farming ventures which operated successfully for

several years. Eventually, conservation problems associated with the dam and canal system reduced the viability of the project.

In May of 1943 the State Engineer imposed a water gauge height limitation on the embankment structure (Bishop Creek Dam) of 55 feet. Subsequently, the Pacific Reclamation Water Company controlled the water level below this elevation. This limitation significantly reduced the efficiency of the storage system.

A dam safety inspection was prepared by the Corp. of Engineers for the structure in May of 1979 as part of the National Program for Inspection of Dams. The dam was classified as intermediate in size (80 feet high) with a high hazard classification. The dam was described as an "unsafe structure" as a result of the dam safety inspection in 1979 and it was recommended that the dam not be filled above the level (55 feet) previously recommended by the State Engineer. The Pacific Reclamation Water Company complied fully with this recommendation.

Because of a lack of storage, the facility eventually ceased to be a viable irrigation project. The dam continued to provide limited flood control, in that, it detained the peak runoff during storm events.

The outlet gate became bound and inoperable while partially open, early in 1984 because of limited use and deterioration. With the gate partially open, the runoff events of 1984 stored water to a depth of about 57 feet. As a result, the dam developed a major leak causing embankment failure. The primary area of the leak was at a height of about 42 feet. The dam eventually drained down without catastrophic failure.

With the gate inoperable and the embankment failure, no water can be stored in the facility. Except for routine inspection of the structure, there has been no work on the Bishop Creek Dam since the 1984 failure. The facility continues to deteriorate.

Because of reduced water availability, some of the original irrigation ditches have been abandoned. The irrigation season in the existing District is limited by the normal runoff season because there is no storage. Therefore, crop lands are reduced in size and are occasionally lost due to inadequate water supply.

There is no metering on the system. The head works are inoperable. The Dam is considered a "high hazard" structure by the State of Nevada Division of Water Resources.

In the spring of 2005, approximately 20 feet of water ponded behind the dam. This level is considered dangerous and raises concern about the existing facility. The District wishes to construct a new dam and rehabilitate the associated conveyance structures downstream to restore the project as a viable source of income and to improve safety for the community.

Preliminary Design Report

Dyer Engineering Consultants, Inc. completed a Preliminary Design Report for rehabilitation of the facility. The report included a study of option or alternatives for rehabilitation of the following facilities:

- Conveyance system
- Diversion structure
- Dam
- Recreation Facility

Included was an analysis of the project participates (irrigation users) "ability to pay" for the water. Costs of construction were prepared for the preferred rehabilitation alternatives. This request is for grant assistance to complete the final design and construction of the described facility.

An Executive Summary of the Preliminary Design Report is attached at the end of this Letter of Intent. A complete copy of the report is available at NDWR for review.

Project Objectives

Today, the dam remains nonfunctional, except to control small runoff events. The outlet gate cannot be raised or lowered. The extent of repairs required to bring the facility into safe operation is obviously extensive, but not well defined. Studies are needed to define the dam rehabilitation project.

The embankment is considered unsafe because of excessive leakage during high water. The integrity of the abutments and foundations has not been confirmed. Studies are needed to identify and characterize the overall engineering integrity of the facility. Studies are needed to quantify the volume of water available in the drainage basin and ultimately define the height to which the rehabilitated structure may be constructed.

The proposed rehabilitation includes the following items which coincide with the intent of Assembly Bill 237:

- Conservation of the waters of the State of Nevada
- Lining of an irrigation canal
- Recovery irrigation water
- Measurement or metering of water
- Improving the efficiency of irrigation operations; and
- Improving the efficiency of the operation of a facility for the storage of water, including, diverting water to such a facility.

General Items of Work

1. **Improving the efficiency of the operation of a facility for the storage of water, including, without limitation, efficiency in diverting water to such a facility.** The preliminary study defined the problems and identified the solutions for reconstruction or rehabilitation of the existing impoundment structure. Specific designs have been selected. Final design and construction is pending funding.

Additional final design engineering would include selected subsurface exploration drilling and engineering analyses, final construction drawings and specifications. Once the Final design is complete and environmental issues are determined, construction options can proceed.

An accurate construction cost estimate has been prepared. Environmental issues will be identified by US Bureau of Land Management (BLM), after review of the Preliminary Design Report. These must be addressed during the final design.

2. **Improving the efficiency of irrigation operations.** The Preliminary Engineering Design included assessment and preliminary design of a proposed irrigation system. Final design information is required before construction can proceed.

Some additional mapping is required for portions of the system. Aerial mapping may be required depending on comments from BLM. A study is needed of the downstream water distribution system.

Of the 20+ turnouts on the project, only about four are still functional. The proposed construction will include replacement all but one of the turnouts on the existing project.

3. **Lining of an irrigation canal.** The existing canal loses approximately 10 to 15% of the flow in the upper 3000 feet. The canal floor is irregular in grade and must be regarded to enhance delivery efficiencies. Channel lining is a proposed alternative for isolated reaches of the system. Final design of this lining is required. Construction could begin immediately upon completion of the plans and specifications.

Field locations of diversion structures is a requirement for final design. Much of this work will require walking the ditch with the water users to identify how they want to irrigate their lands.

4. **Measurement or metering of the use of water.** Presently there are no metering devices on the system. Metering locations have been selected and the devices have been designed. Final design should include a delivery schedule and written methodology for using the monitoring system.

D. The number of residential connections and people served and the number of non-residential connections served.

The irrigation system does not serve residential users. Additional potential uses of the irrigation water have been identified in the preliminary design. The water rights and delivery system will be completed in the Final Engineering Design. Construction of the new irrigable site will be the responsibility of the owners.

E. A preliminary estimate of the cost of the capital improvements and any additional costs necessary for financing the capital improvement.

Preliminary estimates indicate that the engineering studies to complete the project objects will cost between \$7,000,000 and \$7,500,000.

F. A description of future capital improvements planned by the applicant, if any, that are not part of the capital improvement for which the application for a grant is made.

The District anticipates the following capital expenditures:

- Continued capital improvements to the system in general.
- Continued operation and maintenance of the system.

G. A brief description of how the capital improvement makes the community water system comply with the requirements for public water systems.

The Bureau of Health Protection Services does not regulate the District; nevertheless, this project meets the intent of AB 198/237 by providing for water conservation through handling and scheduling efficiencies, proper measuring and improved inlet diversion to a storage facility.

H. Documentation concerning the inability of the applicant to finance the capital improvement. (Provide a statement demonstrating inability to finance).

The District has limited ability to pay for the required Final Design and Rehabilitation. There are nine registered water users. There are no current assessments to the users for this project. The District understands that a depreciation account will need to be established for any improvements funded by the AB198/237 program. Adjustments of the user fees will be made as necessary.

Funding for the Preliminary Design Report has been accomplished, in part, by applying a surcharge directly to the water uses taxes. This has proved secure and acceptable.

I. A brief demonstration, which includes any relevant financial information, that the community water system will be viable upon completion of the capital improvements.

Metropolis Water Irrigation District is filing this Letter of Intent with the Board for Financing Water Projects. We anticipate that the project will be funded through AB-237 grant funds and in-kind labor. Presently, we have no user fees nor assessments. The Preliminary Design Report recommends an ability to pay value of \$8.57 per acre. The District is willing to require this of its member if a grant is obtained. Assessment of the user fees will be made, as necessary.

The profitability of the existing system is not sufficient to fund this project without a grant. The District has solicited assistance from Elko County and the City of Wells. Both are presently participating by providing \$20,000, each, for financial support.

The District is preparing additional information relative to the cost of this project and the "ability to pay." Professional analyses are in progress and are expected to be available near the end of the first week in July. All users are eager to expand their water use and subsequently, their financial base.

J. A statement that the plan of water conservation adopted pursuant to NRS 540.131 will be filed with the Division before receipt of the grant.

Metropolis Water Irrigation District is not a public potable water system, and is not governed by NRS.131. However, the intent of this project is to provide agricultural water conservation.

ATTACHMENT A

METROPOLIS IRRIGATION RESTORATION PROJECT

PRELIMINARY DESIGN REPORT

EXECUTIVE SUMMARY

1.0 GENERAL INFORMANTION

On August 11, 2003, Dyer Engineering Consultants, Inc. (DEC) entered an agreement with Metropolis Water Irrigation District (District) to provide professional services for the Metropolis Irrigation Restoration Project. The Project would consist of evaluating the current condition of the Metropolis Water Irrigation System including the Major structures, verifying feasibility of the restoration project, and designing a new restored system. The Metropolis Water Irrigation system is located approximately 8 miles north of Wells, Nevada

2.0 CONVEYANCE

The main irrigation Canal for the Metropolis system is approximately 9.5 miles in length and receives surface water from Bishop Creek, Trout Creek and Spring Creek. The entire irrigation system can provide Irrigation to approximately 3455 acres in the Metropolis Water Irrigation District. There are two lateral canals, Lateral A which irrigates approximately 1,345 acres and Lateral B, which irrigates approximately 200 acres.

The main canal design has an estimated 27 turnouts (several are pending user placement), 5 culverts, a flume, and various diversion gates including the point of diversion. A geosynthetic clay lining was chosen for the Main Canal as the most effective cost efficient solution to reduce water loss during conveyance. The size of the rehabilitated Canal varies slightly with slope and flow, but in general the canal will be dimensioned as follows:

Depth	2.0 ft. minimum
Bottom width	2.0-6.0 ft.
Side slope	2 horizontal to 1 vertical
Freeboard	0.75 ft. minimum
Max. canal cap.	30 cfs

Construction repair of the existing structure will consist of excavating portions of the existing canal up to 1.5 feet in depth. Approximately 2000 feet of the upper canal will be lined with clay. All turnouts, with the exception of one, will be replaced with new

concrete structures. The total cost of Final Engineering Design and construction of the conveyance system is \$650,000. A contingency value of 15% was used for all cost estimating.

3.0 DIVERSION STRUCTURE

The Diversion Structure is located at 41.240° N, 114.951° W, approximately 2 miles downstream of the Bishop Creek Dam. The main function of the Diversion Structure is to divert water from Bishop Creek to the Metropolis Water Irrigation District canal system. The Diversion Structure consists of two parts: the Canal Inlet Structure and the Drop Structure.

The Canal Inlet Structure is a concrete structure with three aluminum gates. Two of the gates are for operation of the Main Canal. One gate is used to discharge flow back to the main channel of Bishop Creek and Lateral A. Metering near the head of the canal will be by a Parshall Measuring Flume. The canal is design to carry up to 30 cfs.

The 100-year storm peak flow used in the Drop Structure design is 1600 cfs. A chute spillway with a St. Anthony Falls (SAF) outlet structure was selected for the design due to cost benefits. The structure is 30 feet wide and accommodates 8 feet of vertical drop in the natural channel. The depth of flow as the water enters the SAF basin is 2.25 feet with a velocity of 29.0 fps. The depth of the hydraulic jump after dissipation will be 9.5 feet with a velocity of approximately 6.9 fps. Riprap with the rock size $D_{50} = 8$ inches, will be constructed to a depth of 12 inches at the inlet and outlet of the spillway.

The cost of Final Engineering Design and construction replacement of both the Canal Inlet Structure and the Drop Structure is \$1,100,000.

4.0 DAM

4.1 GENERAL

The current dam was evaluated and found complete inadequate and unsafe. The embankment will be replaced. There were two types of dams considered in the evaluation, an earth fill and a roller compacted concrete structure. An earth fill embankment was selected for the final design due to the availability of materials and the low cost of construction. A clay source was identified 4 miles east of the proposed new embankment.

The new embankment dam will be constructed immediately below the existing embankment on public land managed by the US Bureau of Land Management (BLM.) The new dam will impound approximately 18,000 acre-feet at normal pool, spillway crest Elevation=5923 feet. At normal pool, the facility will have a freeboard of 14 feet, Elevation=5937 feet.

The spillway will be located on the right abutment similar to the present spillway. It will be designed to pass the 100-year, 24 hour storm. The spillway combined with the 14 feet of freeboard will allow the facility to safely control the one-half of the probable maximum flood.

4.2 EMBANKMENT COST

The Dam height will be 79 feet above the natural ground level. The crest length is 408.7 feet and the crest width is 25 feet. The spillway can accommodate a routing design flood of 11,585 acre feet which is half the probable maximum flood. The outlet works for the outlet tunnel consist of a 36 inch conduit with a hydraulically operated throttling gate for control. The cost of the earthen embankment dam is estimated to be \$3,931,400 dollars.

5.0 RECREATION AREA

A recreation area is included in the overall design of the restoration project. The Bishop Creek Recreation Facility (BCRF), will be an area-wide multi-facility outdoor recreation destination, located on the south bank of the Bishop Creek Reservoir. It is scheduled for completion in 2007.

Access to the area will be from Highway 93. The area is located approximately 3 miles west of the highway. BCRF is located on public lands administered by the Bureau of Land Management (BLM)

The BCRF will provide:

- Water sports
- Day use and picnicking
- Camping
- Hiking
- Interpretive display

The cost of Final Engineering Design and construction of the Recreation facility and the Access Road is estimated to be \$1,800,000. The total anticipated cost of the Final Engineering Design and Construction is expected to be between \$7,000,000 and \$7,500,000.

6.0 LIMITATIONS

A limitation on the accuracy of this estimate may be the unknown costs associated with environmental concerns, if any, associated with the project. The BLM has not received a copy of the Preliminary Design Report, therefore they have not defined their environmental concerns at this time.

ATTACHMENT B