Water Supply Reserve Account – Grant and Loan Program
Water Activity Summary Sheet
March 16-17, 2016
Agenda Item 14(i)

Applicant & Fiscal Agent:	Purgatoire River Water Conservancy District
Water Activity Name:	Ditch Infrastructure Repair Project
Water Activity Purpose:	Agricultural
County:	Las Animas
Drainage Basin:	Arkansas
Water Source:	Purgatoire River
Amount Requested/Source of Funds:	$30,000 Arkansas Basin Account $60,000 Statewide Account $90,000 Total Grant Request
Matching Funds:	Basin Account Match ($30,000) = 33% of total grant request (meets 5% min); Applicant/3rd Party Match ($132,500) = 147% of total grant request (meets 25% min); Basin Account & Applicant Match ($162,500) = 180% of total grant amount (refer to *Funding Summary/Matching Funds* section)

Staff Recommendation:
Staff recommends approval of up to $30,000 from the Arkansas Basin Account; and $60,000 from the Statewide Account and to assist in funding the project titled: Ditch Infrastructure Repair Project.

Water Activity Summary: WSRA funds, if approved, will be expended to perform critical repairs needed throughout the irrigation system downstream from Trinidad Dam. Each of the individual ditch companies completed its own assessment of need, which the District compiled into a master project list, comprising eight components:

1. Picketwire Ditch - Headgate
   Debris carried down the Purgatoire River lodges against this headgate, interfering with and blocking its opening. There is currently no safe way for the superintendent to clean this out, other than to hang on the rail revetments and clear debris by hand.

   The solution at this location will include:
   - Improve safety by installing surface mount ladders down to the headgates
   - Reduce debris collection by installing a trash rack to divert large floatables coming down the Purgatoire River
   - Improve safety and maintenance access by building a catwalk on the trash rack
   - Control erosion and limit debris lodging by installing a concrete wall along the railroad rail and riprap revetment

- Control erosion and help stabilize the outlet works by installing a new concrete floor ahead of the gate structure
- Improve water control by installing new gate seals
- Improve safety and decrease public access by constructing fencing, two access gates, handrails, catwalks, and signage.

2. Chilili Ditch – Ditch Piping
   The Chilili Ditch is a senior ditch on the River, with a diversion right of 7 cfs. The ditch is seven miles long, approximately 60 percent running parallel to the BNSF Railroad tracks. There exists a reach, approximately 700-feet long, wherein the ditch is narrowly constrained between a bluff and the railroad tracks. The ditch receives highway runoff and runoff from the bluff, which causes it to overtop, resulting in damage to the ditch bank, and flooding and washing of debris onto the railroad tracks. The very limited accessibility exacerbates problems with repair and maintenance. Approximately 450-feet of the ditch was previously put into a metal pipe culvert, but has now deteriorated and failed at various locations.

   The Project will replace approximately 450 feet of existing metal culvert, extending it an additional 300 feet to provide protection for the full reach where a breach could damage the railroad embankment. This improvement would provide the added benefit of reduced maintenance costs, and reduced water losses. Included in the construction will be the installation of new debris screens.

3. Baca Ditch - Siphon Protection
   The section of concern is an inverted siphon which carries water for the Baca, El Moro, and Picketwire Ditches under the Powell Arroyo drainage. Measures in place to control head cutting in the arroyo, consisting of railroad rails and rock-filled wire baskets, are deteriorating and allowing fines to wash through, and threaten the long term viability of the structure.

   The planned approach for this repair is to buttress the existing revetment by constructing grouted rock riprap across the arroyo channel, providing energy dissipation as water flows over the top of the rocks.

4. Enlarged Southside Irrigation Ditch - Diversion Erosion Repair and Debris Removal
   At this location, the Purgatoire River has eroded the bank beyond the wing wall of the diversion structure, working its way back to the Southside Ditch and threatening the loss of the ditch embankment. Sediment continues to build up on the opposite side of the river, directing current toward the area, causing further erosion.

   The plan of work for this area includes the removal of the area of built up sediment, using the excavated/dredged material to backfill the eroded area, followed by armoring the eroded area with rock riprap.

5. Enlarged Southside Irrigation Ditch - Railroad Crossing
   At this location the ditch parallels the railroad tracks and then makes an abrupt turn to the right to cross under the railroad embankment via four 60-inch culverts. The abrupt change in direction is causing erosion and debris accumulation on the outside of the bend, eroding the bank, railroad grade, and the entrance to the culverts.

The proposed work at this location is to construct a concrete headwall and wing walls for the culverts, including a concrete floor at the entrance to the culvert entrance. This chosen option carries the added benefit of improved flow and culvert hydraulics.

6. El Moro - Hoehne Pipeline Association – Headgate Repair
   The headgate at this location no longer functions correctly, failing to completely close water flow. It is believed that replacement of the gate seals will solve the problem.

7. New John Flood Ditch – Headgate Replacement
   At the headgate where the diversions are made from the Picketwire Ditch, the headgate diversion cannot be completely shut off because the gate operator moves upward as the gate is screwed down. This means that water is lost from the shareholders of the Picketwire Ditch without providing benefit to the New John Flood Ditch. The concrete headwalls and slab to which the slide gate and operator are attached are in such poor condition that it is no longer possible to set new or additional anchors. Therefore, replacement is the only option to restore the operation of this headgate structure.

8. New John Flood Ditch - Lietzendorfer Arroyo Flume
   A significant amount of water is being lost from an open channel flume, which conveys water across the Lietzendorfer Arroyo, from areas where the flume's metal plates have rusted out or welds have broken. The ditch company has been maintaining this structure over time by welding patches over holes as they develop, but due to deterioration of the base metal to where it is very thin, this is no longer a viable plan of maintenance. Since the flume's support structure is in good condition, it is not necessary to replace the entire structure. The plan is to weld new metal plate lining in-place over the existing lining.

Discussion: This project aligns with Goals and Measurable Outcomes described in the Arkansas Basin Implementation Plan. Projects related to this WSRA Grant are included in the Appendix 5.2-A Arkansas Basin Implementation Plan per the following table:

Arkansas Basin ID (ARK-2015-)	Project Title	Project Proponent
0517	Trinidad Project Infrastructure Upgrade	Purgatoire River Water Conservancy District
0520	Baca-Picketwire Headgate Improvement	Purgatoire Watershed Partnership
0522	Chilili Ditch Diversion and Improvement	Chilili Ditch Co., Purgatoire Watershed Partnership
0521	Powell Arroyo Siphon Protection Structure	Baca Ditch Co.
0518	El Moro - Hoehne Pipeline Association Water Line Replacement	El Moro - Hoehne Pipeline Association

This project also aligns with Colorado's Water Plan, *Section 10.3 – Critical Goals and Actions*, item D. - Agriculture, serving to maintain agricultural viability, and supporting agricultural conservation and efficiency.

Issues/Additional Needs: No issues or additional needs have been identified.

Threshold and Evaluation Criteria: The application meets all four Threshold Criteria.

Tier 1-3 Evaluation Criteria: This activity has been reviewed and evaluated and has staff determined that it satisfies the Evaluation Criteria. Please refer to the WSRA Application for applicant's detailed response.

Funding Summary/Matching Funds:

Funding Source	Cash	In-kind	Total
Purgatoire River Water Conservancy District	$100,000	$0	$100,000
Picketwire Ditch Company	$4,640	$0	$4,640
Enlarged Southside Irrigation Ditch Co.	$13,420	$0	$13,420
Chilili Ditch Company	$7,870	$0	$7,870
Baca Ditch Company	$2,350	$0	$2,350
New John Flood Ditch Co.	$4,030	$0	$4,030
El Moro - Hoehne Pipeline Association	$190	$0	$190
Sub-total matching funds	**$132,500**	**$0**	**$132,500**
WSRA Arkansas Basin Account	$30,000	n/a	$30,000
WSRA Statewide Account	$60,000	n/a	$60,000
Total Project Costs	**$222,500**	**$0**	**$222,500**

The applicant has provided a Basin Roundtable Letter indicating recommendation of the Basin and Statewide grant amounts. It should be duly noted that the applicant's required cash matching should be $132,500, not $121,500 as stated in the Basin Roundtable Letter.

CWCB Project Manager: Derek Johnson

All products, data, and information developed as a result of this grant must be provided to the CWCB in hard copy and electronic format as part of the project documentation. This information will in turn be made widely available to Basin Roundtables and the general public and will help promote the development of a common technical platform. In accordance with the revised WSRA Criteria and Guidelines, staff would like to highlight additional reporting and final deliverable requirements. The specific requirements are provided below.

Reporting: The applicant shall provide the CWCB a progress report every 6 months, beginning from the date of the executed contract. The progress report shall describe the completion or partial completion of the tasks identified in the scope of work including a description of any major issues that have occurred, any corrective action taken to address these issues, and copies of construction progress meeting minutes.

Final Deliverable: At completion of the project, the applicant shall provide the CWCB a final report that summarizes the project and documents how the project was completed. This report shall contain photographs, summaries of meetings, and engineering reports/designs.

Engineering: All engineering work (as defined in the Engineers Practice Act (§12-25-102(10) C.R.S.)) performed under this grant shall be performed by or under the responsible charge of professional engineer licensed by the State of Colorado to practice Engineering.