

NEBRASKA NATURAL RESOURCES COMMISSION

Water Sustainability Fund

Application for Funding

Section A.

ADMINISTRATIVE

PROJECT NAME: Platte Republican Diversion Project

PRIMARY CONTACT INFORMATION

Entity Name: Platte Republican Diversion

Contact Name: Scott Dicke

Address: 30 North John Street, P.O. Box 618, Alma, NE 68920

Phone: 308-928-2182

Email: sdicke@lnrd.org

Partners / Co-sponsors, if any: Lower Republican Natural Resources District (Lower Republican NRD) and Tri-Basin Natural Resources District (Tri-Basin NRD).

1. Dollar amounts requested: Grant

Grant amount requested: \$ 897,300

Loan amount requested: \$ 0

If Loan, how many years repayment period? N/A

If Loan, supply a complete year-by-year repayment schedule. N/A

2. Permits Needed - Attach copy for each obtained (N/A = not applicable)

Nebraska Game & Parks Commission (G&P) consultation on Threatened and Endangered Species and their Habitat N/A Obtained: YES NO

Surface Water Right N/A Obtained: YES NO

USACE (e.g., 404 Permit) N/A Obtained: YES NO

Cultural Resources Evaluation N/A Obtained: YES NO

Other (provide explanation below) N/A Obtained: YES NO

Additionally, a Floodplain Development Permit will be required.

3. Are you applying for funding for a combined sewer over-flow project?

YES NO

If yes, do you have a Long Term Control Plan that is currently approved by the Nebraska Department of Environmental Quality?

YES NO

If yes attach a copy to your application. N/A

If yes what is the population served by your project? N/A

If yes provide a demonstration of need. N/A

If yes and you were approved for funding in the most recent funding cycle, then resubmit the above information updated annually but you need not complete the remainder of the application.

4. If you are or are representing an NRD, do you have an Integrated Management Plan in place, or have you initiated one?

N/A YES NO

5. Has this application previously been submitted for funding assistance from the Water Sustainability Fund and not been funded?

YES NO

If yes, have any changes been made to the application in comparison to the previously submitted application? N/A

If yes, describe the changes that have been made since the last application.
N/A

No, I certify the application is a true and exact copy of the previously submitted and scored application. (Signature required) N/A

6. Complete the following if your project has or will commence prior to next July 1st.

As of the date of submittal of this application, what is the Total Net Local Share of Expenses incurred for which you are asking cost share assistance from this fund? \$ 0

Attach all substantiating documentation such as invoices, cancelled checks etc. along with an itemized statement for these expenses. N/A

Estimate the Total Net Local Share of Expenses and a description of each you will incur between the date of submittal of this application and next July 1st for which you are asking cost share assistance from this fund. \$ 1,495,500.

Table 1 provides a detailed schedule and construction budget with the estimated expenses for each month of the project. The project bidding could begin as soon as October 2017 and construction completed in seven months. The total project cost estimate for activities before July 1, 2018 is \$1,495,500. The local cost share of these expenses would be \$598,200.

Table 1 Proposed Schedule and Construction Budget

FY 17-18	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18
PRD Project Construction							
Bidding							
Issue Contracts							
Mobilization							
Pipe and Diversion Installation							
Channel Grading							
Stablization Measures							
Montly Construction Value			\$250,000	\$250,000	\$295,500	\$350,000	\$350,000
Cumulative Construction Value			\$250,000	\$500,000	\$795,500	\$1,145,500	\$1,495,500

Note: Schedule contingent on approval of necessary permits.

Section B.

DNR DIRECTOR'S FINDINGS

Does your project include physical construction (defined as moving dirt, directing water, physically constructing something, or installing equipment)?

YES NO

1(a). If yes (structural), submit a feasibility report (to comply with Title 261, CH 2) including engineering and technical data and the following information:

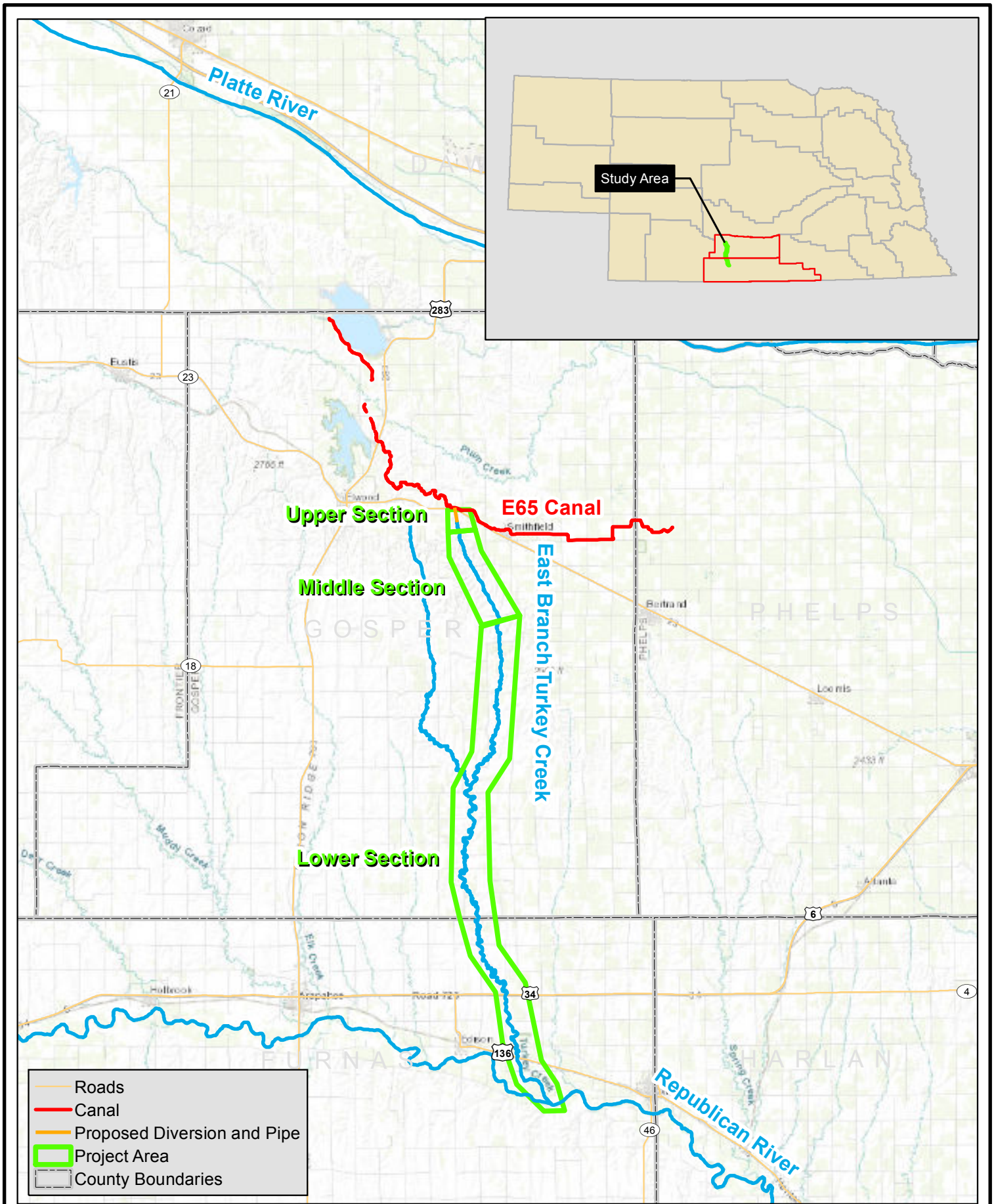
A discussion of the plan of development (004.01 A);

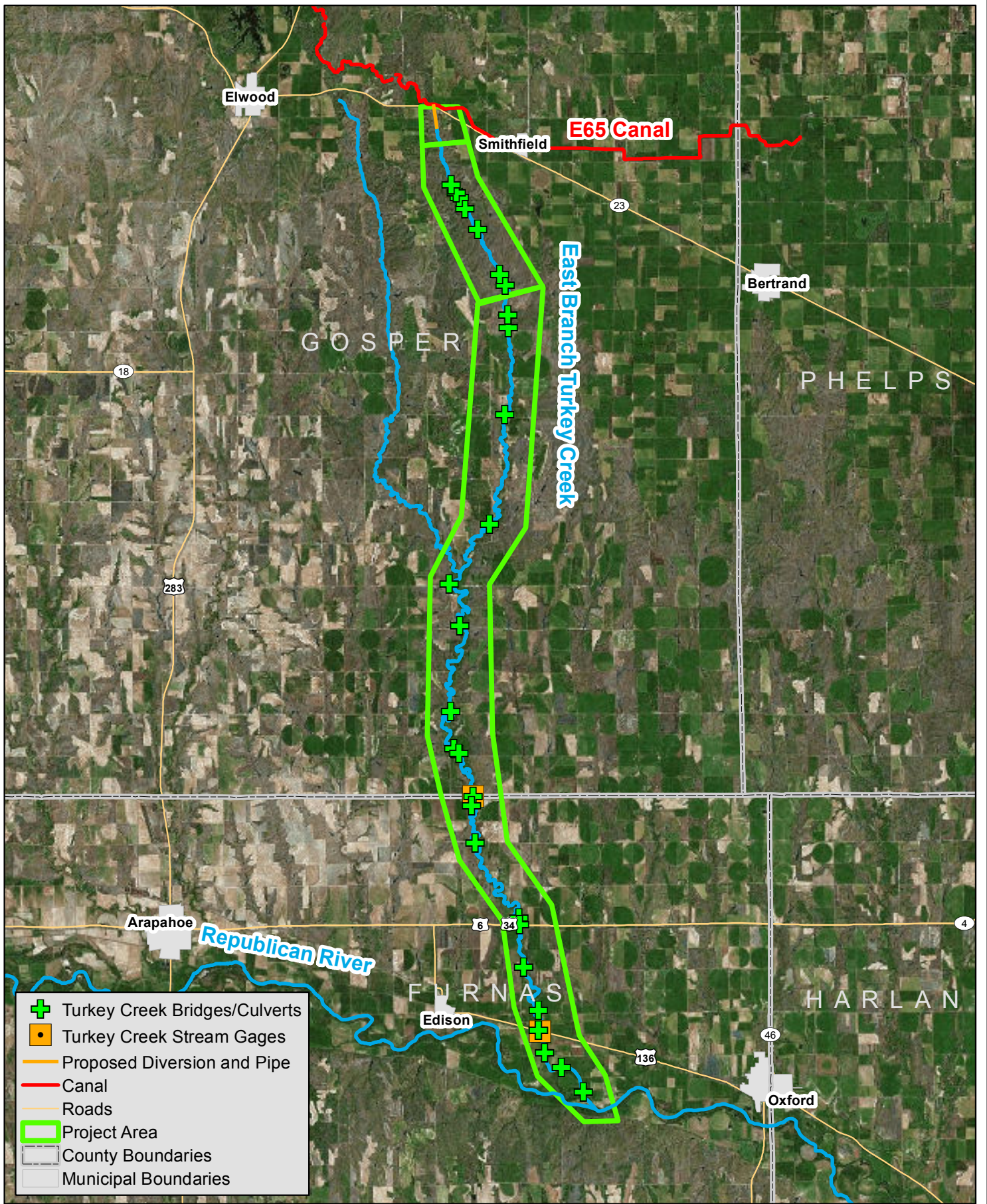
The Platte Republican Diversion Project (PRD) will construct a diversion to transfer excess flows from the Platte River to Turkey Creek in the Republican River Basin (Figure 1). The PRD will provide water during times of excess on the Platte to the Republican River Basin. The project objectives are to help the Lower Republican and the Tri-Basin NRDs meet the requirements of their Integrated Management Plans and assist the State of Nebraska meet its obligations under the Republican River Compact. The purpose of the project is to use all available unappropriated water to the benefit of the citizens of Nebraska.

The PRD project involves construction of a diversion on Central Nebraska Public Power and Irrigation District's (CNPPID) E65 canal and a suite of channel improvements on Turkey Creek in Gosper and Furnas County (Figure 2). The proposed improvements are separated into two main categories. The first type of improvement includes modifications to the existing creek channel so that the channel can support the diverted flows without causing additional erosion. The second type of improvement includes modifications to existing structures including bridges, culverts, and farm ponds so that they will not be impacted by the diverted flows.

The PRD project estimates seven months to completion based on the feasibility report and preliminary design (Olsson, 2017 – Attachment A). To complete the project the following tasks are required:

- Task 1 Final Engineering Design and Bidding
- Task 2 Issue Construction Contracts
- Task 3 Contractor Mobilization
- Task 4 Pipe and Diversion Structure Installation
- Task 5 Channel Grading
- Task 6 Channel Stabilization Measures





Currently, the project is anticipated to be completed according to the following schedule:

Table 2 Proposed Construction Schedule

FY 17-18	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18
PRD Project Construction							
Bidding							
Issue Contracts							
Mobilization							
Pipe and Diversion Installation							
Channel Grading							
Stablization Measures							

Note: Schedule contingent on approval of necessary permits

A description of all field investigations made to substantiate the feasibility report (004.01 B);

Three field investigations were completed as part of the PRD Project Feasibility Review (Olsson, 2017 – Attachment A). A thorough geomorphological survey was completed to assess the impact of adding flow diverted from CNPPID’s E65 canal to Turkey Creek (Attachment A2). A wetland delineation was completed along the project reach to identify and quantify the extent of existing wetlands (Attachment A3). Finally, a topographic survey of the project reach from the diversion of CNPPID’s E65 canal along Turkey Creek to the confluence with the Republican River was completed to aid in design of the project (Attachment A1).

Although not technically part of the feasibility report, the Nebraska Game and Parks Commission conducted a fisheries survey on Turkey Creek for threatened and endangered species. None were found.

Maps, drawings, charts, tables, etc., used as a basis for the feasibility report (004.01 C);

A list of the Maps/drawings, charts and tables that were used as a basis for the PRD Feasibility Review is provided below. The report and all the tables, figures and appendices are included as Attachment A.

LIST OF TABLES

- Table 1. Turkey Creek Structures – Current Conditions
- Table 2. Turkey Creek Structures - Estimated Costs for Erosion Repair
- Table 3. Turkey Creek Structures – Improvements for 40 cfs
- Table 4. Turkey Creek Structures – Improvements for 100 cfs
- Table 5. Estimated Project Costs – Diverting 40 cfs with Pipe Installation in Upper Section
- Table 6. Estimated Project Costs – Diverting 40 cfs with Grading in Upper Section

- Table 7. Estimated Project Costs – Diverting 100 cfs with Pipe Installation in Upper Section
- Table 8. Estimated Project Costs – Diverting 100 cfs with Grading in Upper Section
- Table 9. Estimated Project Costs – 4 Alternatives
- Table 10. Potential Acre-Feet Available to Divert
- Table 11. Potential Acre-Feet Available to Divert during September through April
- Table 12. Computation of Average Annual Delivery Cost for Lower Republican NRD for water from N-CORPE
- Table 13. Potential Annual Cost – 40 cfs
- Table 14. Potential Annual Cost – 100 cfs
- Table 15. Benefit-Cost Ratios in Comparison to Project Alternative

LIST OF APPENDICES

Appendix A – Exhibits

- Exhibit A – Turkey Creek Map
- Exhibit B – East Branch Turkey Creek Drainage Area Map
- Exhibit C – Turkey Creek Regression
- Exhibit D – Upper Reach Channel Profile of Turkey Creek
- Exhibit E – Available Flows

Appendix B – Geomorphology Report

Appendix C – Environmental Report

A description of any necessary water and land rights and pertinent water supply and water quality information, if appropriate (004.01 D);

Water Rights:

An application for a permit to divert surface water from the Platte to the Republican River for the PRD project is currently being prepared by CNPPID for submittal to the Nebraska Department of Natural Resources. The interbasin transfer application will request up to 100 cfs from the Platte River, when available, for diversion into Turkey Creek, a tributary of the Republican River. The beneficial use of the water will be compliance with and interstate compact.

Land Rights:

Permanent and temporary easements are currently being prepared for property along Turkey Creek in the Tri-Basin NRD. Temporary easements are currently being prepared for property along Turkey Creek in the Lower Republican NRD. The permanent easements will be for the land at the very upper reach of Turkey Creek where the project will install 3,000 linear feet of underground pipe on the upper section of the project. Temporary easements will be needed to complete the bridge and culvert projects and other channel maintenance.

Water Supply:

CNPPID and PRD have a water service agreement (Attachment B). As stated in Section 5.2.1 of the agreement, during the operations phase of the PRD, CNPPID will divert water into Turkey Creek at the diversion structure off the E65 canal in accordance with the

appropriation. The PRD Project agrees that all uses of water received under the agreement shall be in accordance with the appropriation.

A discussion of each component of the final plan including, when applicable (004.01 E);

Required geologic investigation (004.01 E 1);

As part of the PRD Feasibility Review (Olsson, 2017 – Attachment A), a geomorphologic analysis was performed along the entire project length. Soil samples, stream measurements, erosion areas, and other pertinent information were collected during the site visit and used during the analysis. The full geomorphology report is included in Appendix B of the Feasibility Review (Attachment A2).

The general purpose of the geomorphology study was to determine what would be the potential impact of diverting flows into Turkey Creek for an extended length of time. Flow rates of 40 cubic feet per second (cfs) and 100 cfs were both analyzed for their impacts and length of time that the diverted flows could realistically be diverted into Turkey Creek without causing erosion issues. General findings from this analysis conclude that the upper section would require extensive grading to create a defined channel area or installation of a large buried pipe to handle the new flows. Without a newly created channel, either flow amount would have a highly erosive effect on the existing ground creating large areas of erosion. The middle and lower sections of Turkey Creek have enough existing capacity to handle 40 cfs of flow during certain times of the year.

If the diverted flow of 40 cfs is allowed down Turkey Creek during the months of September through April, the existing creek conditions appear to be sufficient to handle the additional flows. If diverted flows of 100 cfs are introduced into Turkey Creek during the same months, the number of continuous days in a row will need to be monitored. Based off existing conditions and capacity it is recommended that a flow of 100 cfs only be diverted into Turkey Creek for a maximum of 5 continuous days before stopping the diversion of excess flows. Longer periods of the diverted flow of 100 cfs would begin to affect the stability of Turkey Creek and could begin to cause sloughing along the banks and headcutting to the existing flowline.

Required hydrologic data (004.01 E 2);

A detailed hydrologic analysis was completed as part of the PRD Feasibility Review (Olsson, 2017 – Attachment A). The analysis was completed along the entire project length to determine the typical flows that have historically occurred in Turkey Creek. It is important to establish the baseline conditions so that these baseline conditions can be considered relative to the conditions that will occur when diverted flows are added to the creek. This will help separate existing erosional conditions from potential new erosion concerns when designing channel improvements.

The project length was separated into different drainage areas to correctly determine typical flows from upstream to downstream along the creek. Exhibit B of Attachment A1 shows the drainage areas as they were delineated. Drainage areas 1 and 2 are in the previously defined upper section, drainage areas 3 through 6 are in the middle section, and drainage areas 7 through 25 are in the lower section. The upper section was divided into two areas to more accurately reflect flows in that section. Downstream of the upper section, drainage areas were separated and delineated according to drainage structures or roadway crossings. A separate drainage area was developed for each structure and peak flows were calculated. Below the uppermost drainage area, the peak flows are combined to reflect a total flow in Turkey Creek at that location.

Two different hydrologic methods were utilized to calculate peak flows along Turkey Creek. The method chosen was based on the size of each drainage area being analyzed. The first method, Technical Release 55 (TR-55), is a simplified procedure to calculate storm runoff volume, peak rate of discharge, and hydrographs for small watersheds and was used for drainage areas under 5 square miles. The second method, which involved using selected Regional Regression Equations, was used for the drainage areas greater than 5 square miles.

Due to the flatter slope and larger flow area, the peak flows actually decrease somewhat toward the downstream areas of Turkey Creek. Peak flows for the 2-year, 10-year, 25-year, 50-year, and 100-year events were calculated. Exhibit C in Attachment A1 shows the peak flows that were calculated for each drainage area and the cumulative flows along Turkey Creek.

Next, the hydraulic characteristics of Turkey Creek were modeled using HEC-RAS 4.0. The HEC-RAS program was developed by the Hydrologic Engineering Center and is designed to model one-dimensional steady flow, one and two-dimensional unsteady flow, sediment transport/mobile bed conditions, and water temperature / water quality conditions. Input data for the HEC-RAS model included the hydrologic information discussed above, LiDAR and survey data to represent the channel shape and the topography, and channel and overbank roughness coefficients. The one-dimensional steady flow model was utilized for this project. The current conditions of Turkey Creek were analyzed to establish the existing water surface elevations along the project length. Each existing drainage structure was also analyzed as part of this modeling effort.

Other hydrologic data used to evaluate the PRD project are stream-gaging records for the Platte River and Compact Accounting information from the Republican River Compact Administration (RRCA). Stream gage records collected at the Platte River near Overton were utilized to assess time periods when flows in the Platte River were in excess of the US Fish and Wildlife Target Flows, which are currently the limitations used by the Department of Natural Resources when permitting any new uses of water in the Platte River Basin. The RRCA accounting data were used to determine years when water uses in the Republican River Basin were, or would have been in lieu of other management actions, greater than allowed under the rules of the RRCA. Combining the two sets of information reveal the times when the project would provide benefits to the sponsors.

Design criteria for final design including, but not limited to, soil mechanics, hydraulic, hydrologic, structural, embankments and foundation criteria (004.01 E 3).

As described in the PRD Project Feasibility Review (Olsson, 2017 – Attachment A), the proposed improvements that are required as part of the PRD project are separated into two main categories. The first type of improvement includes modifications to the existing creek channel so that it will handle the diverted flows without causing additional erosion. The second type of improvements includes modifications to existing structures including bridges, culverts, and farm ponds so that they will not be impacted by the diverted flows. Table 3 lists the improvements starting at the upstream end of the project and continuing downstream along Turkey Creek.

Table 3 Design Improvements for the PRD Project

Design improvements	Quantity
Pipe Installation	3,000 Linear Feet
Small Erosion Protection	2 Each
Medium Erosion Protection	14 Each
Large Erosion Protection	5 Each
Grade Control Structures	9 Each
New Drainage Structures	4 Each
New Culvert Crossings	3 Each
Farm Pond Improvements	7 Each

Channel Improvements

Because of the significantly greater channel slopes, the initial focus with regard to channel improvements was in the upper section - the first 3,000 feet of the east branch of Turkey Creek. The existing creek cross-section and slope are not equipped to handle the diverted flows without causing erosion along the existing flow path. The preferred improvement option for the upper section is to install a new underground polyvinyl chloride (PVC) pipe for the entire 3,000-foot length of the upper channel. The new pipe will range from 36-inches diameter to 48-inches diameter in size. The actual pipe size will be determined during final design.

The middle section of Turkey Creek (approximately the next 5 miles) has an intermittently defined channel with varying capacity. Some grading is needed along this section to increase the capacity to handle up to a 100 cfs without causing headcutting or incising of the existing creek. Total regrading of Turkey Creek would not be necessary, but rather would consist of widening of the existing channel in some areas to allow the diverted flows to stay within the banks.

The rest of Turkey Creek's cross-section downstream of the first 5 miles currently has sufficient capacity to handle the diverted flows along with the current base flow that Turkey Creek carries, which is approximately 12 cfs. No substantial improvements are anticipated along this stretch. There may be some minor grading that occurs along this

section to repair large areas of erosion that have occurred over time. Any minor grading will take place above the ordinary high water mark (OHWM) so as to minimize any impacts to the existing stream and allow a Nationwide Section 404 permit to be obtained, as needed.

Improvements to Existing Structures

The second category of proposed improvements deals with the existing structures and erosion control measures that need to be installed at each drainage structure location. Many of the existing drainage structures at the upstream face have erosion issues that need to be addressed regardless of whether the diverted flows are introduced into Turkey Creek. If measures are not taken to control erosion in these areas erosion will continue to expand and may eventually compromise bridge abutments or cause failure along roadway embankments. Riprap will be installed at the upstream face to provide protection either at bridge abutments or the inlets of culverts.

Table 3 lists the improvements anticipated for each drainage structure starting at the upstream end of the project and continuing downstream along Turkey Creek. The erosion protection improvements are listed as large, medium and small. This refers to the anticipated amounts of riprap that may have to be installed at each location. A large amount is approximately 150 tons of riprap, medium is 75 tons of riprap, and small is 25 tons of riprap. This erosion protection is in addition to the riprap that will need to be placed at the structures due to existing erosion issues. The additional riprap reflects the protection needed due to the diverted flows into Turkey Creek.

Additionally, seven, existing farm ponds will need improvements to handle the diverted flows. Either new overflow structures or additional pipes will be constructed at each farm pond location to allow the diverted flow to travel downstream instead of creating additional ponding areas and erosion along the farm pond embankment.

1(b). If no (non-structural), submit data necessary to establish technical feasibility including, but not limited to the following (004.02):

A discussion of the plan of development (004.02 A);

N/A

A description of field or research investigations utilized to substantiate the project conception (004.02 B);

N/A

A description of the necessary water and/or land rights, if applicable (004.02 C);

N/A

A discussion of the anticipated effects, if any, of the project upon the development and/or operation of existing or envisioned structural measures including a brief description of any such measure (004.02 D).

N/A

2. Provide evidence that there are no known means of accomplishing the same purpose or purposes more economically, by describing the next best alternative.

As part of the PRD Feasibility Review (Olsson, 2017 – Attachment A), the economic feasibility and potential benefit to the project sponsors and the residents of the state of Nebraska was evaluated. In the analysis, the cost of designing, constructing, operating and maintaining the project was compared with the costs of previous efforts to reduce consumptive use and/or increase streamflows in the Republican River basin. The two alternatives already implemented to increase streamflow in the Republican River were: 1) Surface water leases from irrigation districts and 2) the Nebraska Cooperative Republican Platte Enhancement (N-CORPE) Project. The following describes these two alternatives and the cost of water for each alternative. Development of another large-scale augmentation project or future surface water purchased are considered to be the next best alternatives to developing the PRD project.

Surface Water Purchase: From 2006 to 2008, surface water was leased from irrigation districts in the basin to assist with compliance with the Republican River Compact. The state and the local NRDs paid \$18,722,500, which resulted in a reduction of consumptive use of 51,614 acre-feet, which equates to \$362 per acre-feet of water.

Nebraska Cooperative Republican Platte Enhancement (N-CORPE) Project: The N-CORPE project is a large-scale streamflow augmentation project located in southern Lincoln County. This project provides construction costs and delivery costs for water from a similar project. Based on these project costs and an assumed average annual delivery of 3,750 acre-feet, the annual delivery cost for water from N-CORPE is \$272.59 per acre-foot.

As described below, unit costs for water from the PRD project will be significantly less than the cost of these two alternatives.

3. Document all sources and report all costs and benefit data using current data, (commodity prices, recreation benefit prices, and wildlife prices as prescribed by the Director) using both dollar values and other units of measurement when appropriate (environmental, social, cultural, data improvement, etc.). The period of analysis for economic feasibility studies shall be fifty (50) years or with prior approval of the Director, up to one hundred (100) years [T261 CH 2 (005)].

- Describe any relevant cost information including, but not limited to the engineering and inspection costs, capital construction costs, annual operation and maintenance costs, and replacement costs. Cost information shall also include the estimated construction period as well as the estimated project life (005.01).

Table 4 lists the estimated project costs for the PRD project from the Feasibility Review Report (Attachment A). The three major costs for the PRD project are grading along the creek, pipe installation and erosion control measures. The majority of the grading will be completed in the upper section to create a larger and defined, stable channel. An estimated unit price of \$10 per cubic yard (CY) of earthwork was used to develop the cost for grading. If it is determined that the excavated material can be spoiled onsite, then a lower unit price may be realized for this project. Installing a new pipe in the upper section (instead of grading a larger creek section) is also analyzed as part of an estimated project cost. An average cost of \$90 per linear foot was used for the pipe. Installing erosion control measures at the upstream face of the existing structures will be the other major project cost. It has been estimated that each structure will have a cost in the range of \$2,000 - \$12,000, depending on the magnitude of measures required to accommodate the diverted flows. The grade control structures needed to create a more stable slope in the upper reach of the project have been estimated at \$10,000 for each structure. The four existing drainage structures that cross the stream cannot handle the diverted flows without overtopping; the cost of dealing with this issue are estimated at \$15,000 per structure for 100 cfs of diverted flow. Three well-defined field drives in the upper section will each need a culvert crossing installed along with the proposed channel improvements. Those culvert crossings are estimated to be \$7,500 each for 100 cfs. The last construction cost is associated with the existing farm ponds. The farm pond improvements are estimated to be \$10,000 per pond. The anticipated construction cost of the diversion structure from the E65 canal into Turkey Creek is also included at a cost of \$315,000. All unit prices are based on past construction costs on prior projects and the Nebraska Department of Road's Average Unit Price Summaries.

The engineering estimate for operation and maintenance of the PRD are \$5,000 to \$15,000 per year. Replacement costs have not been developed for the PRD since maintenance will be managed by the PRD and replacement of the structures is not anticipated for the life of the project.

Table 4 Estimated Project Costs*

Construction Item	Quantity	Unit Price	Total Price
Mobilization	1 Each	\$65,000/Each	\$65,000
Pipe Installation	3,000 LF	\$90/LF	\$270,000
Small Erosion Protection	2 Each	\$2,000/Each	\$4,000
Medium Erosion Protection	14 Each	\$6,000/Each	\$84,000
Large Erosion Protection	5 Each	\$12,000/Each	\$60,000
Grade Control Structures	9 Each	\$10,000/Each	\$90,000
New Drainage Structures	4 Each	\$15,000/Each	\$60,000

Construction Item	Quantity	Unit Price	Total Price
New Culvert Crossings	3 Each	\$7,500/Each	\$22,500
Farm Pond Improvements	7 Each	\$10,000/Each	\$70,000
Contingency (30 percent)			\$220,000
Estimated Total Construction Cost			\$945,500
Engineering Fees			\$140,000*
Construction Observation (10 percent of Construction Cost)			\$95,000
Diversion Structure	1 Each	\$315,000/Each	\$315,000
Estimated Total Project Cost			\$1,495,500*

NOTE: LF = linear feet, CY – cubic yards

*This cost estimate is lower than what was reported in the Feasibility Review (Attachment A) because \$95,000 of the engineering design has been completed. The original engineering fee estimate was \$235,000. The current estimate to complete the final design is \$140,000.

- **Only primary tangible benefits may be counted in providing the monetary benefit information and shall be displayed by year for the project life. In a multi-purpose project, estimate benefits for each purpose, by year, for the life of the project. Describe any intangible or secondary benefits separately. In a case where there is no generally accepted method for calculation of primary tangible benefits describe how the project will increase water sustainability, such that the economic feasibility of the project can be approved by the Director and the Commission (005.02).**

Intangible benefits include:

- Increased recharge along Turkey Creek during times of diversion.
- The project benefits groundwater users in the Republican Basin portion of Tri-Basin NRD. By insuring that the district is able to fulfill the goals and objectives of the joint Republican Basin IMP, irrigators are much less likely to be restricted for the purpose of maintaining compliance with the Republican River Compact.
- The proposed project will enable greater utilization of excess flows in the Platte River, water that would otherwise be wasted, or worse, contribute to flooding downstream of the Tri-County diversion.
- The primary purpose of this project is to ensure that Lower Republican and Tri-Basin NRDs maintain compliance with the terms of their joint Integrated Management Plans (IMP). By maintaining IMP compliance, the districts are doing their part to help Nebraska maintain compliance with the Republican River Compact.
- The proposed project will provide a small increment of flood magnitude reduction in the Platte River valley.
- Aquatic benefits to the shoreline of Harlan County Lake
- Recreational benefits for users of Harlan County Lake

- **All benefit and cost data shall be presented in a table form to indicate the annual cash flow for the life of the proposal, not to exceed 100 years (005.03).**

A meeting was held on July 19, 2017, with Nebraska Department of Natural Resources (NDNR) staff members Kris Reed, Kent Zimmerman, and LeRoy Sievers to discuss using a “least-cost analysis” to document Economic Feasibility for the PRD project. This approach is the same as was used by the City of Hastings in their 2015 application and the City of Lincoln in the 2016 application. Both applications were accepted using the “least-cost analysis” method. It was agreed that this would be an appropriate method for the current application.

A least-cost analysis involves comparing the costs of various mutually exclusive, technically feasible project options and selecting the one with the lowest cost. Mutually exclusive project options must be alternative ways of producing the same output of a specified service quality. The alternative with lowest present value of costs is the least-cost alternative. (Guidelines for the Economic Analysis of Projects – Economics and Development Resource Center, February 1997).

Tables 5a and 5b present the annual cash flow for the fifty-year life of the project. The annual cash flow tables include a comparison of the PRD project to the next least cost alternative, development of a large-scale streamflow augmentation project. The cost for water delivery to the PRD project is based on an average annual supply of 625 acre-feet per year at \$44.35 per acre foot (Olsson, 2017 – Attachment A). 625 acre-feet is the average amount of the water that would have been available during 2013-2016 with a 40 cfs project capacity and 1,000 cfs of additional future development on the Platte River (i.e. the most conservative potential water supply). The capital cost for the large-scale augmentation project is one sixth of the Lower Republican NRDs cost for the N-CORPE project (625 acre-feet per year is one sixth of the 3,750 acre-feet per year on average available to the Lower Republican NRD from N-CORPE). With this information as presented in Tables 5a and 5b, over the 50-year period, including operation and maintenance costs, Option 1 (the PRD project) is still the least cost option by \$11,802,738.

It is important to note that simply purchasing the water from the N-CORPE Project is not a realistic alternative. The N-CORPE Project has been heavily utilized since it became operational, and is still being developed for use in the Platte River Basin. There is currently no known offer for the project sponsors to purchase an additional supply of water from N-CORPE.

Table 5a – Annual Cash Flow and Least Cost Comparison for the PRD (Option 1)

Platte Republican Diversion Project		
Year	2016	
#0	Capital Items	
	O&M and Replacement Items	\$0
		\$0
Year	2017	
#1	Capital Items	\$1,590,500
	O&M and Replacement Items	\$0
		\$1,590,500
Year	2018	
#2-50	Capital Items	\$0
	O&M and Replacement Items	\$490,000
	(\$10,000 x 49)	
	Water Delivery Charge	\$1,358,231
	(\$27,719 x 49)**	
		\$1,848,231
	Total Project Cost over 50 year period	\$3,438,731

Table 5b – Annual Cash Flow and Least Cost Comparison for a Large-scale Streamflow Augmentation Project (Option 2)

Large-scale Streamflow Augmentation Project		
Year	2016	
#0	Capital Items	
	O&M and Replacement Items	\$0
		\$0
Year	2017	
#1	Capital Items*	\$ 6,893,419
	O&M and Replacement Items	\$0
		\$6,893,419
Year	2018	
#2-50	Capital Items	\$0
	O&M and Replacement Items***	\$6,755,550
	(\$137,868 x 49)	
	Water Delivery Charge	\$1,592,500
	(\$32,500 x 49)****	
		\$8,348,050
	Total Project Cost over 50 year period	\$15,241,469
Notes:		

This is a least cost alternative analysis and therefore benefits are not included in this table.

Capital items include engineering fees for design, permitting, bidding and construction.

O&M includes operation and maintenance fees and equipment replacement costs.

Years represent calendar years. Cost sources include N-CORPE, LRNRD and CNPPID.

** cost based on one sixth of the LRNRD's share in N-CORPE which was \$41,360,511*

*** cost assumes average water deliver of 625 acre-feet at a cost of \$44.35/acre-foot*

**** annual OM&R assumed to be 2% of project capital costs*

***** cost assumes average water delivery of 625 acre-feet at a cost of \$52/acre-foot*

- **In the case of projects for which there is no generally accepted method for calculation of primary tangible benefits and if the project will increase water sustainability, the economic feasibility of such proposal shall be demonstrated by such method as the Director and the Commission deem appropriate (005.04).**

N/A

4. Provide evidence that sufficient funds are available to complete the proposal.

The Lower Republican NRD and Tri-Basin NRD have formed an interlocal agreement called the PRD. A copy of the agreement is included as Attachment C. The Lower Republican NRD and the Tri-Basin NRD possess the following statutory funding sources that are available to allow the NRDs to complete the PRD Project.

Nebraska Rev. Statutes §2-3225.

Districts; tax; levies; limitation; use; collection.

- (1)(a) Each district shall have the power and authority to levy a tax of not to exceed four and one-half cents on each one hundred dollars of taxable valuation annually on all of the taxable property within such district unless a higher levy is authorized pursuant to section 77-3444.
- (b) Each district shall also have the power and authority to levy a tax equal to the dollar amount by which its restricted funds budgeted to administer and implement ground water management activities and integrated management activities under the Nebraska Ground Water Management and Protection Act exceed its restricted funds budgeted to administer and implement ground water management activities and integrated management activities for FY2003-04, not to exceed one cent on each one hundred dollars of taxable valuation annually on all of the taxable property within the district.
- (c) In addition to the power and authority granted in subdivisions (1)(a) and (b) of this section, each district located in a river basin, subbasin, or reach that has been determined to be fully appropriated pursuant to section 46-714 or designated overappropriated pursuant to section 46-713 by the Department of Natural Resources shall also have the power and authority to levy a tax equal to the dollar amount by which its restricted funds budgeted to administer and implement ground water management activities and integrated management activities under the Nebraska Ground Water Management and Protection Act exceed its restricted funds budgeted to administer and implement ground water management activities and integrated management activities for FY2005-06, not to exceed three cents on each one hundred dollars of taxable valuation on all of the taxable property within the district for fiscal year 2006-07 and each fiscal year thereafter through fiscal year 2017-18.

5. Provide evidence that sufficient annual revenue is available to repay the reimbursable costs and to cover OM&R (operate, maintain, and replace).

The Lower Republican NRD and Tri-Basin NRD have formed an interlocal agreement called the PRD. A copy of the agreement is included as Attachment C. The Lower Republican NRD and the Tri-Basin NRD possess the following statutory funding sources that are available to allow the NRDs to repay the reimbursable costs and to operate, maintain, and replace the PRD Project.

Nebraska Rev. Statutes §2-3225.

Districts; tax; levies; limitation; use; collection.

- (1)(a) Each district shall have the power and authority to levy a tax of not to exceed four and one-half cents on each one hundred dollars of taxable valuation annually on all of the taxable property within such district unless a higher levy is authorized pursuant to section 77-3444.
- (b) Each district shall also have the power and authority to levy a tax equal to the dollar amount by which its restricted funds budgeted to administer and implement ground water management activities and integrated management activities under the Nebraska Ground Water Management and Protection Act exceed its restricted funds budgeted to administer and implement ground water management activities and integrated management activities for FY2003-04, not to exceed one cent on each one hundred dollars of taxable valuation annually on all of the taxable property within the district.
- (c) In addition to the power and authority granted in subdivisions (1)(a) and (b) of this section, each district located in a river basin, subbasin, or reach that has been determined to be fully appropriated pursuant to section 46-714 or designated overappropriated pursuant to section 46-713 by the Department of Natural Resources shall also have the power and authority to levy a tax equal to the dollar amount by which its restricted funds budgeted to administer and implement ground water management activities and integrated management activities under the Nebraska Ground Water Management and Protection Act exceed its restricted funds budgeted to administer and implement ground water management activities and integrated management activities for FY2005-06, not to exceed three cents on each one hundred dollars of taxable valuation on all of the taxable property within the district for fiscal year 2006-07 and each fiscal year thereafter through fiscal year 2017-18.

6. If a loan is involved, provide sufficient documentation to prove that the loan can be repaid during the repayment life of the proposal.

N/A

7. Describe how the plan of development minimizes impacts on the natural environment.

The project includes installation of underground pipe along the upper segment of Turkey Creek to accommodate the excess flows. The use of pipe minimizes sediment and erosion in this, the steepest section of Turkey Creek. After the installation is completed the site will be graded and seeded to minimize impacts to the area. Additionally, the improvements will improve bridge abutments with riprap to decrease deterioration.

A full wetland delineation was completed along the project reach to determine the extent of existing wetlands. A memo, site map, and wetland map of each drainage structure are included in the PRD Feasibility Review Report (Attachment A3) for reference. The location of the existing wetlands will be taken into account during final design. Erosion control measures and proposed grading will be designed to avoid affecting the existing wetlands and creek. If the U.S. Army Corps of Engineers (USACE) requires a Clean Water Act (CWA) Section 404 permit, it is anticipated that a nationwide permit will be obtainable. The Section 404 permit program regulates the construction activities that take place in waters of the U.S. including wetlands.

The Nebraska Game and Parks Commission conducted a fisheries survey on Turkey Creek for threatened and endangered species. None were found.

8. Explain how you are qualified, responsible and legally capable of carrying out the project for which you are seeking funds.

The Tri-Basin NRD and Lower Republican NRD have formed an interlocal agreement called the PRD to carry out this project (Attachment C). The Tri-Basin NRD and Lower Republican NRD are involved in a wide variety of projects and programs to conserve and protect the state's natural resources. Nebraska's NRDs are charged under state law with twelve areas of responsibility, seven of which (in bold) are identified as direct benefits of this project:

- **Erosion prevention and control**
- **Prevention of damages from flood water and sediment**
- **Flood prevention and control**
- **Soil conservation**
- **Water supply for any beneficial uses**
- **Development, management, utilization, and conservation of groundwater and surface water**
- **Drainage improvement and channel rectification**
- Pollution control
- Solid waste disposal and drainage
- Development and management of fish and wildlife habitat
- Development and management of recreational and park facilities
- Forestry and range management

Furthermore, the Tri-Basin NRD and Lower Republican NRD have a wide range of statutory responsibilities and authorities, including but not limited to Nebraska Revised Statutes §2-3,201 through 2-3,243 and the Ground Water Management and Protection Act (Nebraska Rev. Statutes §46-701 through 46-756). As regulators of groundwater, the Tri-Basin NRD and Lower Republican NRD are clearly both qualified and responsible to carry out the proposed project. Specifically, Nebraska Rev. Statutes §46-707(f) confers to the NRDs the power to “conduct investigations and cooperate or contract with ... public

or private corporations, or any association or individual on any matter relevant to the administration of the [Ground Water Management and Protection] act.”

While all NRDs share these responsibilities, each district sets its own priorities and develops its own programs to best serve local needs. NRDs often team with other agencies to carry out projects. For this project, the PRD has entered into a water service agreement with CNPPID to deliver the excess flows from the Platte River to Turkey Creek via the E65 canal (Attachment B). CNPPID is a political subdivision of the State of Nebraska organized under public power and irrigation district laws of Nebraska passed in 1933. CNPPID was created to enable the people of south-central Nebraska to develop the state’s irrigation and electric power potential. CNPPID delivers irrigation water to more than 113,000 acres on the south side of the Platte River between North Platte and Minden and also provides supplemental water from Lake McConaughy (CNPPID’s main storage reservoir) to irrigation projects serving more than 110,000 acres along the North Platte and Platte Rivers.

9. Explain how your project considers plans and programs of the state and resources development plans of the political subdivisions of the state.

The project is being implemented to fulfill, in part, the requirements of the Lower Republican and the Tri-Basin NRD’s IMPs. The IMPs are written in accordance with the Groundwater Management and Protection Act (GWMPA) as well as the Republican River Compact and the Final Settlement Stipulation (FSS) between Nebraska, Kansas, and Colorado. This project will assist the Lower Republican and the Tri-Basin NRD meet the requirements of their IMPs and it will assist the State of Nebraska meet its obligations under the Republican River Compact and the FSS. Additionally, the Lower Republican NRD has a groundwater management plan (GMP) pursuant to the GWMPA. The project will assist Nebraska and Tri-Basin NRD meet the requirements of the GMP. Finally, the PRD project will assist with an important aspect of the most recent Annual Report and Plan of Work for the Nebraska Water Planning and Review Process submitted to the Governor and Legislature by the Director of the Nebraska Department of Natural Resources (NDNR, 2016 – Attachment D). As stated on page 26 of the plan, “the Department will continue to work to implement the [Republican River] Compact and ensure compliance through integrated management planning activities.”

There are two specific Integrated Management Plans (IMPs) and one Groundwater Management Plan (GMP) that this project will address (Attachments E, F, and G). The IMP jointly developed by the Department of NDNR and the Tri-Basin NRD is dated September 2012, the IMP jointly developed by the NDNR and the Lower Republican NRD is dated January 15, 2016, and the GMP was developed by the Tri-Basin NRD in 2003. The project has been endorsed by both the Tri-Basin and the Lower Republican NRDs because the project helps meet the goals of these plans.

For the Tri-Basin NRD IMP, the goals and objective that the project will address are as follows:

- Goal I. *“Tri-Basin NRD will assist the State of Nebraska, in cooperation with other Natural Resources Districts, in maintaining compliance with the Republican River Compact as adopted in 1943 and as implemented in accordance with the settlement approved by the United States Supreme Court on May 19, 2003 and other lawful interstate compacts, decrees and agreements relevant to management of the integrated water resources of the district.”*
- The following objective is listed to enable attainment of the goal: *“To develop and implement plans, in collaboration with CNPPID, its customers and other affected water users, that continue and, to the extent possible, increase groundwater recharge and stream baseflow enhancement from Platte Basin surface water supplies in amounts sufficient to sustain existing groundwater uses and to maintain imported water contributions to the Republican River Basin.”*

The PRD will directly address Goal I because the PRD project will construct a diversion to transfer these excess flows from the Platte River to Turkey Creek in the Republican River Basin. The project will provide water during times of excess on the Platte to the Republican River Basin, to meet the water delivery requirements of the Republican River Compact. Tri-Basin NRD has contracted with CNPPID to divert excess flows from the Platte River since 2007. Within that time span over 100,000 acre-feet of water was diverted.

The PRD project will directly address the objective of Goal I through the interlocal agreement with CNPPID to divert water from the Platte River to Turkey Creek which will increase groundwater recharge and enhance baseflow in the Republican River Basin.

For the Tri-Basin NRD GMP, the goal that the project will benefit is as follows:

- Reservoir Life Goal - *“All groundwater supplies within the Tri-Basin NRD will be used in a beneficial manner, efficiently managed and properly utilized to preserve the present quantity of this vital resource forever.”*

Intentional groundwater recharge helps sustain groundwater supplies. The PRD project will provide enhanced groundwater recharge in the Turkey Creek watershed.

For the Lower Republican NRD, the goals and objectives that this project will address as outlined in their IMP are as follows:

Goals:

1. Ensure that ground water and surface water users within the Lower Republican NRD assume their share of the responsibility to keep Nebraska in compliance with the Republican River Compact.
2. Provide that Lower Republican NRD 's share of that responsibility be distributed in an equitable manner and to minimize adverse economic, social, and environmental consequences to the extent possible.
3. Sustain a balance between water uses and water supplies within the Lower Republican NRD so that the economic viability, social and environmental health,

safety, and welfare of the Lower Republican NRD can be achieved and maintained for both the near and long term.

4. Reserve any streamflow available from regulation, incentive programs, and purchased or leased surface water and ground water required to maintain Compact compliance from any use that would negate the benefit of such regulations or programs, to the extent allowed by statute and the surface water controls of this IMP.

Objectives:

- With limited exceptions, prevent the initiation of new or expanded uses of water that increase Nebraska's computed beneficial consumptive use of water within the Lower Republican NRD, as required for Compact compliance and by Nebraska law.
- Achieve the required reductions in water use through a combination of regulatory and incentive programs designed to reduce beneficial consumptive use.
- Make such additional reductions in ground water use in Compact Call Years as are necessary, after taking into account any reduction in beneficial consumptive use achieved through basin-wide incentive and streamflow augmentation programs, to achieve a reduction in beneficial consumptive use in the Lower Republican NRD that ensures the District limits its ground water depletions to the Allowable Ground Water Depletions for the Lower Republican NRD. Compact Call Years will be determined through the procedures outlined in Section IX of this IMP.
- To assist in ensuring long-term Compact compliance, reduce existing ground water use within the Lower Republican NRD by 20 percent from the 1998 to 2002 baseline pumping volumes under average precipitation conditions so that, when combined with streamflow augmentation and incentive programs, the Lower Republican NRD 's ground water depletions are maintained within their portion of Nebraska's Allowable Ground Water Depletions as computed through use of the Republican River Compact Administration Groundwater Model. Additionally, voluntary reductions in baseline pumping volumes will continue to be pursued by the Lower Republican NRD with the incentive of limiting the level of long-term management actions that are necessary during Compact Call Years.
- The Lower Republican NRD and the DNR will continue to investigate and explore augmentation projects that would add to or retime the water supply within the basin. Such augmentation and retiming projects include, but are not necessarily limited to, the following:
 - a. Leasing or purchasing surface water and/or ground water.
 - b. Augmentation wells, both within and outside of the Republican River Basin.
 - c. Exploring trans-basin diversion projects.
 - d. Conjunctive management of surface water irrigation projects.

The PRD will indirectly address all the listed goals and objectives. The project will directly address Goal I because the project will provide water during times of excess on the Platte to the Republican River Basin, to meet the water delivery requirements of the Republican River Compact. The PRD project will directly address the final objective (d.) by building a trans-basin diversion project to divert water from the Platte River to Turkey Creek.

10. Are land rights necessary to complete your project?

YES NO

If yes, provide a complete listing of all lands involved in the project.

Land acquisition is not required under this project however, easements and maintenance agreements along Turkey Creek will be. Attachment H provides a complete listing of the lands that will require easements or maintenance agreements to complete the project.

If yes, attach proof of ownership for each easements, rights-of-way and fee title currently held.

Easements are actively being negotiated by the PRD.

If yes, provide assurance that you can hold or can acquire title to all lands not currently held. The Lower Republican and Tri-Basin NRD have a wide range of statutory responsibilities and authorities, including but not limited to Nebraska Revised Statutes §2-3,201 through 2-3,243.

11. Identify how you possess all necessary authority to undertake or participate in the project.

The Lower Republican and Tri-Basin NRD have a wide range of statutory responsibilities and authorities, including but not limited to Nebraska Revised Statutes §2-3,201 through 2-3,243 and the Ground Water Management and Protection Act (Nebraska Rev. Statutes §46-701 through 46-756). As Nebraska's preferred regulator of groundwater, the NRDs along with CNPPID are clearly both qualified and responsible to carry out the proposed project. Specifically, Nebraska Rev. Statutes §46-707(f) confers to the NRDs the power to "conduct investigations and cooperate or contract with ... public or private corporations, or any association or individual on any matter relevant to the administration of the [Ground Water Management and Protection] act."

12. Identify the probable environmental and ecological consequences that may result as the result of the project.

No negative environmental or ecological consequences are anticipated to result from this project. A full wetland delineation was completed along the project reach to determine the extent of existing wetlands. A memo, site map, and wetland map of each drainage structure are included in the PRD Feasibility Review Report (Attachment A) for reference. The location of the existing wetlands will be taken into account during final design. Erosion control measures and proposed grading will be designed to avoid affecting the existing wetlands and creek. If the U.S. Army Corps of Engineers (USACE) requires a Clean Water Act (CWA) Section 404 permit, it is anticipated that a nationwide permit will be obtainable. The Section 404 permit program regulates the construction activities that take place in waters of the U.S. including wetlands.

Section C.

NRC SCORING

In the NRC's scoring process, points will be given to each project in ranking the projects, with the total number of points determining the final project ranking list.

The following 15 criteria constitute the items for which points will be assigned. Point assignments will be 0, 2, 4, or 6 for items 1 through 8; and 0, 1, 2, or 3 for items 9 through 15. Two additional points will be awarded to projects which address issues determined by the NRC to be the result of a federal mandate.

Notes:

- The responses to one criterion ***will not*** be considered in the scoring of other criteria. Repeat references as needed to support documentation in each criterion as appropriate. The 15 categories are specified by statute and will be used to create scoring matrixes which will ultimately determine which projects receive funding.
- There is a total of 69 possible points, plus two bonus points. The potential number of points awarded for each criteria are noted in parenthesis. Once points are assigned, they will be added to determine a final score. The scores will determine ranking.
- The Commission recommends providing the requested information and the requests are not intended to limit the information an applicant may provide. An applicant should include additional information that is believed will assist the Commission in understanding a proposal so that it can be awarded the points to which it is entitled.

Complete any of the following (15) criteria which apply to your project. Your response will be reviewed and scored by the NRC. Place an N/A (not applicable) in any that do not apply, an N/A will automatically be placed in any response fields left blank.

1. Remediates or mitigates threats to drinking water;
 - Describe the specific threats to drinking water the project will address.
 - Identify whose drinking water, how many people are affected, how will project remediate or mitigate.
 - Provide a history of issues and tried solutions.
 - Provide detail regarding long range impacts if issues are not resolved.

According to the Tri-Basin Natural Resources District (NRD), the Turkey Creek watershed is not an area with significant amounts of nitrates or other ag-chemicals in the groundwater supplies. For that reason, protection (not mitigation) of water quality and

water quantity in the area are the goals of the NRD. The Platte Republican Diversion Project (PRD) will provide additional recharge along Turkey Creek during periods of diversion. With the project, groundwater recharge will be enhanced which generally helps extend the life of aquifers and dilutes contaminants.

2. Meets the goals and objectives of an approved integrated management plan or ground water management plan;

- **Identify the specific plan that is being referenced including date, who issued it and whether it is an IMP or GW management plan.**
- **Provide the history of work completed to achieve the goals of this plan.**
- **List which goals and objectives of the management plan the project provides benefits for and how the project provides those benefits.**

There are two specific Integrated Management Plans (IMPs) and one Groundwater Management Plan (GMP) that this project will address (Attachments E, F, and G). The IMP jointly developed by the Nebraska Department of Natural Resources (NDNR) and the Tri-Basin NRD is dated September 2012, the IMP jointly developed by the NDNR and the Lower Republican NRD is dated January 15, 2016, and the GMP was developed by the Tri-Basin NRD in 2003. The project has been endorsed by both the Tri-Basin and the Lower Republican NRDs because the project helps meet the goals of these plans.

For the Tri-Basin NRD IMP, the goals and objective that the project will address are as follows:

- Goal I. *“Tri-Basin NRD will assist the State of Nebraska, in cooperation with other Natural Resources Districts, in maintaining compliance with the Republican River Compact as adopted in 1943 and as implemented in accordance with the settlement approved by the United States Supreme Court on May 19, 2003 and other lawful interstate compacts, decrees and agreements relevant to management of the integrated water resources of the district.”*
- The following objective is listed to enable attainment of the goal: *“To develop and implement plans, in collaboration with [Central Nebraska Public Power and Irrigation] CNPPID, its customers and other affected water users, that continue and, to the extent possible, increase groundwater recharge and stream baseflow enhancement from Platte Basin surface water supplies in amounts sufficient to sustain existing groundwater uses and to maintain imported water contributions to the Republican River Basin.”*

The PRD will directly address Goal I because the PRD project will construct a diversion to transfer these excess flows from the Platte River to Turkey Creek in the Republican River Basin. The project will provide water during times of excess on the Platte to the Republican River Basin, to meet the water delivery requirements of the Republican River Compact. Tri-Basin NRD has contracted with CNPPID to divert excess flows from the Platte River since 2007. Within that time span over 100,000 acre-feet of water was diverted.

The PRD project will directly address the objective of Goal I through the interlocal agreement with CNPPID to divert water from the Platte River to Turkey Creek which will increase groundwater recharge and enhance baseflow in the Republican River Basin.

For the Tri-Basin NRD GMP, the goal that the project will benefit is as follows:

- Reservoir Life Goal - *“All groundwater supplies within the Tri-Basin NRD will be used in a beneficial manner, efficiently managed and properly utilized to preserve the present quantity of this vital resource forever.”*

Intentional groundwater recharge helps sustain groundwater supplies. The PRD project will provide enhanced groundwater recharge in the Turkey Creek watershed.

For the Lower Republican NRD, the goals and objectives that this project will address as outlined in their IMP are as follows:

Goals:

1. Ensure that ground water and surface water users within the Lower Republican NRD assume their share of the responsibility to keep Nebraska in compliance with the Republican River Compact.
2. Provide that Lower Republican NRD 's share of that responsibility be distributed in an equitable manner and to minimize adverse economic, social, and environmental consequences to the extent possible.
3. Sustain a balance between water uses and water supplies within the Lower Republican NRD so that the economic viability, social and environmental health, safety, and welfare of the Lower Republican NRD can be achieved and maintained for both the near and long term.
4. Reserve any streamflow available from regulation, incentive programs, and purchased or leased surface water and ground water required to maintain Compact compliance from any use that would negate the benefit of such regulations or programs, to the extent allowed by statute and the surface water controls of this IMP.

Objectives:

- With limited exceptions, prevent the initiation of new or expanded uses of water that increase Nebraska's computed beneficial consumptive use of water within the Lower Republican NRD, as required for Compact compliance and by Nebraska law.
- Achieve the required reductions in water use through a combination of regulatory and incentive programs designed to reduce beneficial consumptive use.
- Make such additional reductions in ground water use in Compact Call Years as are necessary, after taking into account any reduction in beneficial consumptive use achieved through basin-wide incentive and streamflow augmentation programs, to achieve a reduction in beneficial consumptive use in the Lower Republican NRD that ensures the District limits its ground water depletions to the Allowable Ground Water Depletions for the Lower Republican NRD. Compact Call Years will be determined through the procedures outlined in Section IX of this IMP.

- To assist in ensuring long-term Compact compliance, reduce existing ground water use within the Lower Republican NRD by 20 percent from the 1998 to 2002 baseline pumping volumes under average precipitation conditions so that, when combined with streamflow augmentation and incentive programs, the Lower Republican NRD 's ground water depletions are maintained within their portion of Nebraska's Allowable Ground Water Depletions as computed through use of the Republican River Compact Administration Groundwater Model. Additionally, voluntary reductions in baseline pumping volumes will continue to be pursued by the Lower Republican NRD with the incentive of limiting the level of long-term management actions that are necessary during Compact Call Years.
- The Lower Republican NRD and the DNR will continue to investigate and explore augmentation projects that would add to or retime the water supply within the basin. Such augmentation and retiming projects include, but are not necessarily limited to, the following:
 - a. Leasing or purchasing surface water and/or ground water.
 - b. Augmentation wells, both within and outside of the Republican River Basin.
 - c. Exploring trans-basin diversion projects.
 - d. Conjunctive management of surface water irrigation projects.

The PRD will indirectly address all of the listed goals and objectives. The project will directly address Goal I because the project will provide water during times of excess on the Platte to the Republican River Basin, to meet the water delivery requirements of the Republican River Compact. The PRD project will directly address the last objective by building a trans-basin diversion project to divert water from the Platte River to Turkey Creek.

The history of work that has gone into meeting the goals and objectives of the IMP begins with the original adoption of the IMPs in 2009. Since then the NRDs and NDNR have amended the IMPs on three separate occasions. Also, the NDNR and the NRDs, in conjunction with the other Republican River Basin NRDs, hold meetings at least annually to review their progress in meeting the goals and objectives of the IMPs.

3. Contributes to water sustainability goals by increasing aquifer recharge, reducing aquifer depletion, or increasing streamflow;

List the following information that is applicable:

- **The location, area and amount of recharge;**
- **The location, area and amount that aquifer depletion will be reduced;**
- **The reach, amount and timing of increased streamflow. Describe how the project will meet these objectives and what the source of the water is;**
- **Provide a detailed listing of cross basin benefits, if any.**

The PRD project directly contributes to water sustainability by increasing aquifer recharge and increasing streamflow along Turkey Creek during times of diversion. Figure 3

illustrates the location of Turkey Creek where the recharge and increased streamflow will occur.

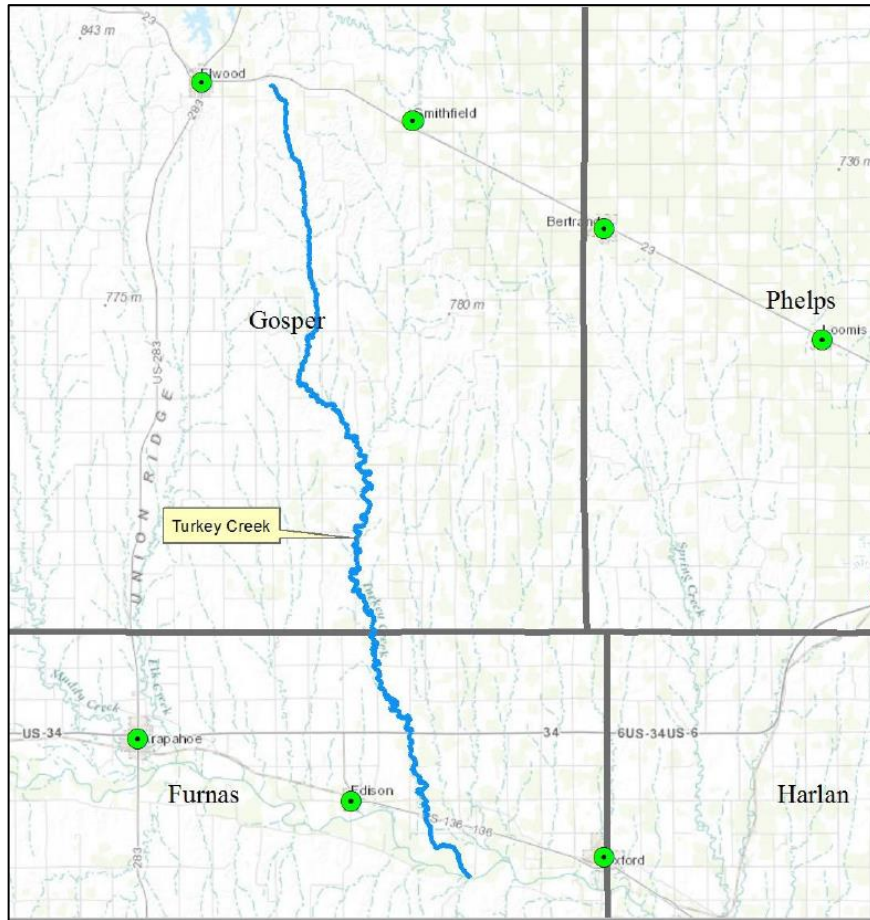


Figure 3 Location of increased recharge and streamflow along Turkey Creek.

Table 6 lists the amount and timing of increased streamflow if the project had been operating during from 2000-2016. The table provides the flows available with or without up to 1,000 cfs of additional diversions that might be required along the Platte River to meet the future needs in the Platte Basin.

An estimate of the amount of recharge along this same stretch is not as straightforward to estimate since recharge rates are dependent on soil type, soil moisture, and many other variables. A conservative (or low) estimate of the recharge that may occur along Turkey Creek is 10 percent of the volumes listed in Table 6.

Table 6 Potential Amount of Excess Streamflow Available for Diversion from 2000-2016

YEAR	Without additional 1,000 cfs		With additional 1,000 cfs	
	40 cfs	100 cfs	40 cfs	100 cfs
2000	9,340	21,721	3,722	8,989
2001	8,102	19,117	772	1,742
2002	7,419	16,782	0	0
2003	2,408	4,877	0	0
2004	2,752	5,651	0	0
2005	2,994	7,277	0	0
2006	2,487	5,120	79	198
2007	3,665	8,366	79	198
2008	4,346	9,973	713	1,782
2009	5,227	12,474	356	752
2010	16,889	41,818	8,217	20,176
2011	25,859	64,469	20,176	49,559
2012	7,827	19,261	2,732	6,712
2013	9,249	21,950	2,119	5,207
2014	8,732	21,115	2,812	6,811
2015	19,206	47,401	12,474	30,730
2016	20,117	49,124	13,266	32,076

The cross-basin benefits of this project are generally related to improving water supply conditions in the Republican River. Water use is limited in the Republican River basin due to the Republican River Compact. Nebraska is allocated a certain percentage of the basin water supply, which varies from year to year based on climatic conditions. During many previous dry years, Nebraska has used more than its allocation of water. Excess flows from the Platte River would be used to offset any potential overuse in the future, reducing or eliminating the cost of other management actions that might be needed. The cross-basin benefits of the PRD include:

- Benefits to agriculture
- Benefits to municipal and industrial users
- Benefits to recreational users
- Benefits to wildlife habitat
- Benefits to the conservation of water resources
- Preservation of water resources

4. Contributes to multiple water supply goals, including, but not limited to, flood control, agricultural use, municipal and industrial uses, recreational benefits, wildlife habitat, conservation of water resources, and preservation of water resources;

- **List the goals the project provides benefits.**
- **Describe how the project will provide these benefits**
- **Provide a long range forecast of the expected benefits this project could have versus continuing on current path.**

With the PRD project, excess flows in the Platte River will be used to help augment flows in the Republican River using publicly-owned existing infrastructure. The project will contribute to multiple water supply goals by providing the following benefits:

- **Agricultural water use** – by providing additional streamflow to help meet the obligations of the Republican River Compact and thereby increase the amount of water that can be used for agriculture in the basin. For example, by insuring that the NRDs are able to fulfill the goals and objectives of the joint Republican Basin IMP, irrigators are much less likely to be restricted for the purpose of maintaining compliance with the Republican River Compact.
- **Municipal and industrial use** – by providing additional streamflow in Turkey Creek and the Republican River basin, the project will provide additional groundwater recharge that could be used for more sustainable municipal and industrial groundwater supplies.
- **Recreational benefits** – by providing additional streamflow Harlan County reservoir will receive additional flow from Turkey Creek and the Republican River. This will allow for additional fishing, boating, swimming and other recreational opportunities.
- **Wildlife habitat** – by providing additional streamflow in Turkey Creek and the Republican River, wildlife habitat along the rivers and within Harlan Reservoir will be enhanced. The Nebraska Game and Parks Commission noted that currently due to low flow conditions in Turkey Creek, aquatic habitat conditions associated with high water levels have been reduced and lower production of shoreline species has occurred. Further they indicate that some fisheries species are not sampled anymore due to the absence of coves which results in a low fish counts.
- **Conservation and preservation of water resources** – The past few years have seen incredible flows in the Platte River at a time when water supplies have been relatively low in the Republican River Basin. For example, in the summer of 2010, the peak discharge on the Platte River at Maxwell, Nebraska was over 7,600 cfs, and again in the summer of 2011, the peak discharge nearly exceeded 7,900 cfs. These flows occurred at times when flows in the Republican River at McCook, south of Maxwell, were about 190 to 200 cfs. It has been pointed out that it seems like a waste to lose all that Platte River flood water (that eventually just flows down to the Missouri River) when it could be put to good use in Nebraska. The PRD project will conserve and preserve some the excess Platte River flows that would otherwise be lost to the Missouri River.

A long-range forecast of the expected benefits the PRD project could have on the Republican River basin versus continuing on current path were quantified in the Feasibility Review Report (Attachment A).

5. Maximizes the beneficial use of Nebraska's water resources for the benefit of the state's residents;

- Describe how the project will maximize the increased beneficial use of Nebraska's water resources.
- Describe the beneficial uses that will be reduced, if any.
- Describe how the project provides a beneficial impact to the state's residents.

Currently, excess flows in the Platte River are not used by the state's residents because the excess flows are discharged to the Missouri River. By diverting the excess flows from the Platte to the Republican River basin, the water will be used by Nebraska state residents primarily for agricultural uses. As reported by the University of Nebraska, in 2010 agriculture in Nebraska account for:

- A total sales volume of \$68.88 billion or 41 percent
- A total gross state product of \$22.64 billion or 27 percent
- Employment with 289,200 jobs or 24 percent
- Total wages and proprietor's income of \$13.67 billion or 25 percent

In short, these measures document that agriculture in Nebraska accounts for about one-fourth of the state's total economy. Conversely, when Nebraska does not meet the obligation of the Republican River Compact, water restrictions in the Republican River Basin are imposed which impacts the state's economy, employment and total wages.

6. Is cost-effective;

- List the estimated construction costs, O/M costs, land and water acquisition costs, alternative options, value of benefits gained.
- Compare these costs to other methods of achieving the same benefits.
- List the costs of the project.
- Describe how it is a cost effective project or alternative.

As described in the Feasibility Review Report (Attachment A), project costs are as follows:

- The estimated construction costs – \$1,495,500
- The estimate O/M costs – \$5,000 to \$15,000 per year
- There are no land and water acquisition costs
- The two alternative options evaluated included surface water purchases from irrigation districts, and the cost of water produced through the N-CORPE project. The cost for surface water purchases is \$362 per acre foot and \$272.59 per acre foot for water produced through the N-CORPE project. The annual cost of water from the PRD is estimated at \$60.51 per acre foot.
- The PRD project was selected as the least cost alternative because over the 50-year period, including operation and maintenance costs, the PRD is the least cost option by \$11,802,738.

The cost of the project is listed in Table 4 as follows:

Table 4 Estimated Project Costs (Table Repeated from Section B)

Construction Item	Quantity	Unit Price	Total Price
Mobilization	1 Each	\$65,000/Each	\$65,000
Pipe Installation	3,000 LF	\$90/LF	\$270,000
Small Erosion Protection	2 Each	\$2,000/Each	\$4,000
Medium Erosion Protection	14 Each	\$6,000/Each	\$84,000
Large Erosion Protection	5 Each	\$12,000/Each	\$60,000
Grade Control Structures	9 Each	\$10,000/Each	\$90,000
New Drainage Structures	4 Each	\$15,000/Each	\$60,000
New Culvert Crossings	3 Each	\$7,500/Each	\$22,500
Farm Pond Improvements	7 Each	\$10,000/Each	\$70,000
Contingency (30%)			\$220,000
Estimated Total Construction Cost			\$945,500
Engineering Fees			\$140,000*
Construction Observation (10 percent of Construction Cost)			\$95,000
Diversion Structure	1 Each	\$315,000/Each	\$315,000
Estimated Total Project Cost			\$1,495,500*

NOTE: LF = linear feet, CY – cubic yards

*This cost estimate is lower than what was reported in the Feasibility Review (Attachment A) because \$95,000 of the engineering design has been completed. The original engineering fee estimate was \$235,000. The current estimate to complete the final design is \$140,000.

To ensure that the PRD was the least cost alternative, the PRD project was compared to development of a large-scale streamflow augmentation project. The cost for water delivery to the PRD project is based on an average annual supply of 625 acre-feet per year at \$44.35 per acre foot (Olsson, 2017 – Attachment A). 625 acre-feet is the average amount of the water that would have been available during 2013-2016 with a 40 cfs project capacity and 1,000 cfs of additional future development on the Platte River (i.e. the most conservative potential water supply). The capital cost for the large-scale augmentation project is one sixth of the Lower Republican NRDs cost for the N-CORPE project (625 acre-feet per year is one sixth of the 3,750 acre-feet per year on average available to the Lower Republican NRD from N-CORPE). With this information the PRD project is the least cost option by \$11,802,738.

7. Helps the state meet its obligations under interstate compacts, decrees, or other state contracts or agreements or federal law;

- **Identify the interstate compact, decree, state contract or agreement or federal law.**
- **Describe how the project will help the state meet its obligations under compacts, decrees, state contracts or agreements or federal law.**
- **Describe current deficiencies and document how the project will reduce deficiencies.**

The PRD project provides a beneficial impact to the state’s residents by helping meet the obligations that the State of Nebraska has under the Interstate Compact between Kansas,

Nebraska and Colorado, known as the Republican River Compact (Compact). The Compact and the more recent Final Settlement Stipulation (FSS), which resolved interstate litigation concerning the Compact in 2002, lays out specific limitations on Nebraska use of the water supply of the Republican River Basin. Nebraska Rev. Statutes §46-715 requires the IMPs to ensure compliance with the Compact and the FSS.

The Compact limits Nebraska's use of the water supplies of the basin. Currently, the IMPs for the Tri-Basin and Lower Republican NRDs addresses hydrologically connected surface and groundwater, and, along with the other Republican River Basin NRDs, they all have the overarching goal of ensuring compliance with the Compact. The NRDs have rules and regulations that limit the amount of groundwater that can be pumped per irrigated acre and the NRDs strive to strike the appropriate balance between maximizing beneficial consumptive use and limiting impacts to the aquifers and streamflow. The PRD project will increase streamflow in the Republican River which will lessen the burden on agricultural producers in the basin that are imposed through decreased groundwater allocations and restrictions on surface water use.

When Nebraska failed to meet those requirements in 2005-6, the State of Kansas sought upwards of \$80 million from Nebraska through additional litigation. This litigation also challenged Nebraska's ability to comply with the Compact and FSS in the future. Nebraska successfully demonstrated that its IMPs will ensure Compact compliance through a regulatory backstop, which, if required in the future, would for example, shut down over 77,000 groundwater irrigated acres in the Lower Republican NRD (Attachment I). The PRD project will assist the NRD in maintaining compact compliance. For example, the 2016 Farm Real Estate Report from the University of Nebraska Institute of Agriculture and Natural Resources indicated that the difference between irrigated and non-irrigated cropland in the area of the Lower Republican NRD (South region) exceeds \$3,000 per acre. Applying this value to the potentially impacted area in the Lower Republican NRD indicates the potential economic impact of non-compliance by not pursuing the PRD project could result in an economic impact to the area of over \$200 million. When compared to the cost of the PRD project, it is clear that the benefits of the project significantly outweigh the cost and the project is clearly cost-effective.

8. Reduces threats to property damage or protects critical infrastructure that consists of the physical assets, systems, and networks vital to the state or the United States such that their incapacitation would have a debilitating effect on public security or public health and safety;

- **Identify the property that the project is intended to reduce threats to.**
- **Describe and quantify reductions in threats to critical infrastructure provided by the project and how the infrastructure is vital to Nebraska or the United States.**
- **Identify the potential value of cost savings resulting from completion of the project.**
- **Describe the benefits for public security, public health and safety.**

The PRD project, by diverting excess flows during times of flood along the Platte to the Republican during times of drought, could reduce the threats to property damage and protect critical infrastructure. The PRD project addresses these critical threats to public security and public health due to inevitable flood and drought in the region.

Since agricultural development began in the Republican River Valley, the history of water availability has been one of droughts and floods. This fact is best illustrated by the flood of 1935. According to the National Weather Service, on May 30, 1935, in the middle of the Dust Bowl (one of the greatest droughts in the Great Plains) a historic flood swept through the Republican River. As stated on the historical marker near Oxford, Nebraska, "On May 30, 1935, torrential rains fell in eastern Colorado and southwestern Nebraska; by early morning of the 31st, the usually peaceful Republican River was running bluff-to-bluff along its upper reaches. When the waters subsided two days later, over 100 lives had been lost and many millions of dollars of damage had been done..." Although this project is not a flood control project, it does provide flood control benefits along Turkey Creek.

As described in the existing conditions section of the PRD Feasibility Review Report, \$132,000 of improvements to structures along county roads including bridges and access roads were identified as needing repair whether the project is completed or not. In order to divert up to 100 cfs of water into Turkey Creek, erosion control structural improvements will be needed. Specifically, forty-two small, medium and large erosion control and drainage structures will be built. These improvements will be completed to maintain and improve the current integrity of the creek, reduce flooding along the upper stretch and minimize damage to bridges, roads, and other infrastructure along Turkey Creek.

Regarding the threat of drought, the United States Department of Homeland Security's Office of Cyber and Infrastructure Analysis recently released a report entitled Analysis of High Plains Resource Risk and Economic Impacts. The report analyzed how continued depletions of the High Plains aquifer in Kansas and Nebraska might impact critical infrastructure and the economy at the local, regional, and national levels.

A key finding of this report is that "[if] current water use practices are continued into the future, sixty counties in Kansas and seven in Nebraska are projected to face exhaustion of groundwater supplies in 100 years or less." It is clear that water use practices will need to be carefully managed to ensure that groundwater is available in the future. This clear benefit to public security, public health and safety will be provided by this project. It will provide information on the current status of groundwater availability and how that might change over time, allowing the Lower Republican NRD to make well informed management decisions.

Excess flows in the Platte River will be used to help augment flows in the Republican River through Turkey Creek with a direct beneficial use to the state of Nebraska's interstate compact obligations, using publicly owned existing infrastructure. Other beneficial uses include groundwater recharge, and potential aquatic and recreational benefits at Harlan County Lake.

Furthermore, in the time since the Republican River Compact and Final Settlement Stipulation were signed and implemented, the United States has become increasingly aware of the impacts that climate change may have on agriculture, industry, and our quality of life. On May 6, 2014, the White House issued a comprehensive, authoritative scientific report on the impacts of current and future climate change on every region of the country. The Great Plains assessment cites this language:

“Great Plains – Wyoming, N. Dakota, S. Dakota, Montana, Nebraska, Kansas, Oklahoma, and Texas: The Great Plains region “experiences multiple climate and weather hazards, including floods, droughts, severe storms, tornadoes, hurricanes, and winter storms. In much of the Great Plains, too little precipitation falls to replace that needed by humans, plants, and animals. These variable conditions already stress communities and cause billions of dollars in damage. Climate change will add to both stress and costs.” “Rising temperatures lead to increased demand for water and energy and impacts on agricultural practices.” (NCA Highlights: Great Plains; NCA Highlights: Overview)”

9. Improves water quality;

- Describe what quality issue(s) is/are to be improved.
- Describe and quantify how the project improves water quality, what is the target area, what is the population or acreage receiving benefits, what is the usage of the water: residential, industrial, agriculture or recreational.
- Describe other possible solutions to remedy this issue.
- Describe the history of the water quality issue including previous attempts to remedy the problem and the results obtained.

Although this project was primarily designed to better utilize and sustain Nebraska’s water resources through construction of the PRD. A secondary benefit of the project is that through construction of the project, erosion control repairs will be completed along the length of Turkey Creek. This will reduce erosion and decrease sedimentation along the creek. Although this has not been defined as a primary benefit of the project, it is a secondary benefit to the health and function of the watershed through improved water quality.

10. Has utilized all available funding resources of the local jurisdiction to support the program, project, or activity;

- Identify the local jurisdiction that supports the project.
- List current property tax levy, valuations, or other sources of revenue for the sponsoring entity.
- List other funding sources for the project.

Two local jurisdictions have signed the PRD interlocal agreement to complete this project (Attachment C). The Lower Republican and the Tri-Basin NRDs are the project sponsors

and each has committed to supporting the project financially as illustrated in the letters of commitment (Attachment J and K).

The NRDs will support the proposed project through their tax levy authority. The tax levy for the Tri-Basin NRD in 2016/2017 was 3.9374¢ per \$100 valuation and in 2017/2018 is 33.011¢. The Tri-Basin NRD had a valuation of \$5.4 million in 2016/2017. The current tax levy for the Lower Republican NRD is 2.3522¢ per \$100 valuation. The Lower Republican NRD also plans to collect approximately \$3.5 million in occupation taxes during FY 2017.

Additionally, CNPPID has signed a water service agreement to deliver the excess flows from the Platte River to Turkey Creek and the Republican River Basin (Attachment B). CNPPID is also installing a new \$315,000 diversion on the E65 canal in order to make the water deliveries.

11. Has a local jurisdiction with plans in place that support sustainable water use;

- **List the local jurisdiction and identify specific plans being referenced that are in place to support sustainable water use.**
- **Provide the history of work completed to achieve the goals of these plans.**
- **List which goals and objectives this project will provide benefits for and how this project supports or contributes to those plans.**
- **Describe and quantify how the project supports sustainable water use, what is the target area, what is the population or acreage receiving benefits, what is the usage of the water: residential, industrial, agriculture or recreational.**
- **List all stakeholders involved in project.**
- **Identify who benefits from this project.**

Both the Lower Republican and Tri-Basin NRDs have plans in place that support sustainable water use. There are two specific Integrated Management Plans (IMPs) and one Groundwater Management Plan (GMP) that were written to meet the goals of sustainable water use (Attachments E, F, and G). The IMP jointly developed by the NDNR and the Tri-Basin NRD is dated September 2012, the IMP jointly developed by the NDNR and the Lower Republican NRD is dated January 15, 2016, and the GMP was developed by the Tri-Basin NRD in 2003.

The history of work that has gone into meeting the goals and objectives of the IMPs begins with the original adoption of the IMPs in 2009. Since then the NRDs and NDNR have amended the IMPs on three separate occasions. Also, NDNR and the NRDs, in conjunction with the other Republican River Basin NRDs, hold meetings at least annually to review their progress in meeting the goals and objectives of the IMPs. To date, the Tri-Basin NRD has contracted with CNPPID to divert excess flows from the Platte River since 2007. Within that time span over 100,000 acre-feet of water was diverted. Currently the four Republican River NRDs are developing a basin-wide plan that supports sustainable water use across the entire basin.

For the Tri-Basin NRD IMP, the objectives that the project will address are as follows:

- *Revise existing NRD integrated water management rules and regulations, to the extent necessary, to insure that the NRD will incrementally achieve and sustain a hydrologically “balanced” condition so that, in combination with imported water contributions from the Platte basin, streamflow augmentation and other management actions, Tri-Basin NRD water users will not cause a net depletion to streamflow.*

The PRD will directly address the sustainability goal because the PRD project will construct a diversion to transfer these excess flows from the Platte River to Turkey Creek in the Republican River Basin. The project will provide water during times of excess on the Platte to the Republican River Basin, increasing the water supply to the basin to help reduce net depletion to streamflow.

For the Tri-Basin NRD GMP, the sustainability goal that the project will benefit is as follows:

- Reservoir Life Goal - *“All groundwater supplies within the Tri-Basin NRD will be used in a beneficial manner, efficiently managed and properly utilized to preserve the present quantity of this vital resource forever.”*

Intentional groundwater recharge helps sustain groundwater supplies. The PRD project will provide enhanced groundwater recharge in the Turkey Creek watershed.

For the Lower Republican NRD, the water sustainability goals and objectives in the IMP that this project will address are as follows:

Goal:

- Sustain a balance between water uses and water supplies within the Lower Republican NRD so that the economic viability, social and environmental health, safety, and welfare of the Lower Republican NRD can be achieved and maintained for both the near and long term.

The PRD will directly address the Lower Republican sustainability goal because the PRD project will provide water during times of excess on the Platte to the Republican River Basin, increasing the water supply to the basin to help reduce net depletion to streamflow.

The target area for sustainable water use includes the entire Republican River basin as illustrated in Figure 4. The map was developed for use by the stakeholders that are currently working with NDNR to develop a basin-wide water management plan for the Republican River basin. The population of the basin as report by the US Census Bureau in 2010 was 53,382. Water use in the basin is for municipal, agricultural, industrial and recreational, however, as with the rest of the state, the majority of water use in the area is for agriculture.

Because water resources are so scarce, all the stakeholders identified on the basin-wide planning map in Figure 4 along with all the residents of the Republican River Basin will benefit from sustainable water use in the area. The stakeholders on the map have discussed the PRD and this is one of the few projects that all the stakeholders for the Republican River basin-wide water plan have agreed upon. They realized that by minimizing consumptive use of water, the state of Nebraska remains in compliance with the Republican River Compact. The financial obligations of the state are minimized when we are in compliance with the compact.

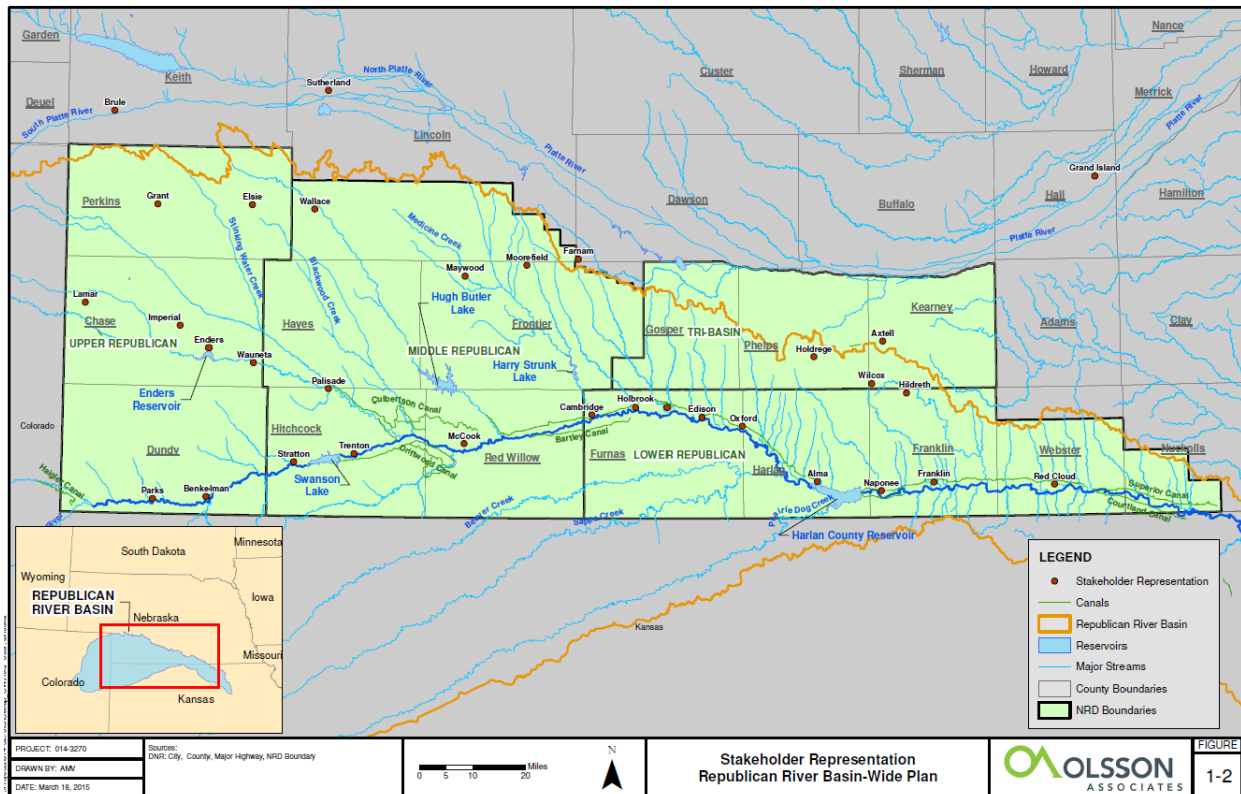


Figure 4 Republican River Basin-Wide Water Planning Area Map and Stakeholder Representation

12. Addresses a statewide problem or issue;

- List the issues or problems addressed by the project and why they should be considered statewide.
- Describe how the project will address each issue and/or problem.
- Describe the total number of people and/or total number of acres that would receive benefits.
- Identify the benefit, to the state, this project would provide.

This project will assist the Lower Republican and the Tri-Basin NRD meet the requirements of their Integrated Management Plans and assist the State of Nebraska in meeting its obligations under the Republican River Compact. The statewide issue that the PRD will assist in addressing is compliance with the Republican River Compact and the potential for further litigation with the State of Kansas should Nebraska fail to meet the

requirements of the Compact. The facts of the Kansas v. Nebraska lawsuit were reported on the Legal Information Institute website as follows:

“On May 3, 2010, Kansas filed a Motion with the Supreme Court of the United States that revived previous litigation between Kansas and Nebraska concerning a water rights dispute. The dispute reflects ongoing tensions between Kansas and Nebraska concerning a water rights agreement signed in 1943. The 1943 Republican River Compact agreement (“Compact”) allocates 49 percent of the river’s water to Nebraska, 40 percent to Kansas, and 11 percent to Colorado. Notably, the “Compact Clause” of the United States Constitution dictates that Congress must approve any compact—an agreement—between two states.

Starting in 1999 and continuing through the action at hand, Kansas accuses Nebraska of violating the Compact by allowing farmers to divert more water than they should for private use. The Compact, however, does not contain clauses for dispute resolution, actual administration of the Compact, or for damages. Colorado, not accused of wrongdoing itself, is involved as one of the members of the Compact and as a party interested in the outcome of the case.

In the previous dispute, Kansas alleged that Nebraska’s use of hydraulic wells to drain the Republican River and its tributaries constituted consumption that counted against Nebraska’s allocated share of the water. The Court decided to exercise original jurisdiction on January 19, 1999. The Court appointed a Special Master (“Master”) to handle proceedings and give findings and suggestions to the Court. Thereafter the parties entered into settlement discussions on how to properly account for water consumption in accordance with the Compact. In 2003, the parties adopted a groundwater agreement known as the Final Settlement Stipulation (“FSS”).

In 2010, Kansas claimed Nebraska violated the FSS by over-consuming water from the Republican River and that Nebraska’s violation harmed Kansas. Kansas thus requested the Court for various remedies. In April 2011, the Court again appointed a Master to direct the proceedings of the litigation, take evidence, and report to the Court with recommendations.

After taking evidence and hearing the parties’ claims, the Master issued a Special Master’s Report and gave suggestions to the Supreme Court regarding how to settle the dispute. The Master concluded that Nebraska used more water than it should, and that the Court should use its equitable powers to craft a remedy to suit the situation. The Master suggested that the parties abide by a new accounting procedure to determine water use. The Master further concluded that the Court deny Kansas’ request that Nebraska be held in contempt. The Master also recommended that the Court enter judgment in the amount of \$5.5 million against Nebraska and in favor of Kansas for Nebraska’s failure to meet the standards set forth in the compact in 2006. Finally, the Master suggested that the Court deny

Kansas' other requests for relief, including requests for injunctive relief, sanctions, and appointment of a river master."

<https://www.law.cornell.edu/supct/cert/126orig>

Over the course of the litigation described above, the Nebraska Legislature appropriated over \$50 million from the general fund through the Department of Natural Resources toward Compact compliance and legal support. The population of the Republican River Basin is over 53,000 and the population of the state over 1.9 million. The PRD project will assist the state in ensuring Compact compliance and water sustainability in the Republican River Basin.

13. Contributes to the state’s ability to leverage state dollars with local or federal government partners or other partners to maximize the use of its resources;

- **List other funding sources or other partners, and the amount each will contribute, in a funding matrix.**
- **Describe how each source of funding is made available if the project is funded.**
- **Provide a copy or evidence of each commitment, for each separate source, of match dollars and funding partners**
- **Describe how you will proceed if other funding sources do not come through.**

The PRD will pay 40% of the cost of the PRD project, thereby contributing \$598,200 to the project. Attached are letters from the Lower Republican NRD and Tr-Basin NRD showing their commitment to the PRD project (Attachment J and K, respectively). In order to deliver the excess flows, CNPPID is installing a new diversion on the E65 canal. Attached is the water service agreement from CNPPID showing their commitment to the PRD project (Attachment B). These commitments ensure that the project will proceed and be completed. If the sources of funding are not obtained, the PRD will reassess the commitments needed to complete the project.

Table 7 Project Commitments

Sponsor	Commitment	Funding for	Funding Confirmed
CNPPID	\$315,000	Diversion on Canal E65	Yes
Tri-Basin NRD	\$141,600	Erosion control repairs, pipe installation, and upgrades	Yes
Lower Republican NRD	\$141,600	Erosion control repairs and upgrades	Yes
Total PRD Commitment	\$598,200		
Total PRD Project Cost	\$1,495,500		

14. Contributes to watershed health and function;

- Describe how the project will contribute to watershed health and function in detail and list all of the watersheds affected.

This project is designed to better utilize and sustain Nebraska's water resources through construction of the PRD. A secondary benefit to the project is that through construction of the project, erosion control repairs will be completed along the length of Turkey Creek. This will reduce erosion and decrease sedimentation along the creek. Although this has not been defined as a primary benefit of the project, it is a secondary benefit to the health and function of the Turkey Creek watershed through improved water quality.

15. Uses objectives described in the annual report and plan of work for the state water planning and review process issued by the department.

- Identify the date of the Annual Report utilized.
- List any and all objectives of the Annual Report intended to be met by the project
- Explain how the project meets each objective.

The PRD project is significant to the NDNR efforts in the Republican River Basin. This can be seen on page 24 of the Annual Report and Plan of Work for the Nebraska State Water Planning and Review Process, submitted to the Governor and Legislature by NDNR in September of 2016 (NDNR, 2016 – Attachment D). As stated in the report, “[t]his year’s accounting and forecast indicated the potential for non-compliance with the Republican River Compact (Compact), unless certain management actions were put into place. Those actions are specified in the IMPs, and are proactively being implemented by both the NRDs and the Department to help ensure Compact compliance for Nebraska. This year’s forecast was the third consecutive year that has been designated as a Compact Call Year.” Furthermore, as stated on page 26 of the plan, “the Department will continue to work to implement the [Republican River] Compact and ensure compliance through integrated management planning activities.”

Simply stated, the objectives of the annual report are to ensure compact compliance through implementation of the Republican River Basin IMPs. The PRD Project will construct a diversion to transfer excess flows from the Platte River to Turkey Creek in the Republican River Basin. This project will help the Lower Republican and the Tri-Basin NRDs meet the requirements of their Integrated Management Plans by increasing streamflow in the Republican River Basin. The purpose of the project is to use available unappropriated water to the benefit of the citizens of Nebraska.

16. Federal Mandate Bonus. If you believe that your project is designed to meet the requirements of a federal mandate which furthers the goals of the WSF, then:

- Describe the federal mandate.
- Provide documentary evidence of the federal mandate.

- **Describe how the project meets the requirements of the federal mandate.**
- **Describe the relationship between the federal mandate and how the project furthers the goals of water sustainability.**

The PRD project is designed to meet the requirements of a federal mandate. The federal mandate is the Republican River Compact, which is a federal law adopted by the United States Congress (Attachment L).

The Republican River Compact was negotiated during the early 1940s with participation by the states of Colorado, Kansas and Nebraska and a representative of the president of the United States. The Compact was formally signed on December 31, 1942. According to the website of the Republican River Compact Administration (<http://www.republicanrivercompact.org/>), the purposes of the compact are to: (1) provide for equitable division of such waters; (2) remove all causes of controversy; (3) promote interstate comity; (4) promote joint action by the states and the United States in the efficient use of water and the control of destructive floods; and (5) provide for the most efficient use of waters in the Republican River basin. The negotiators of the compact determined the virgin water supply within the basin. Virgin water supply is defined as the water supply within the basin undepleted by the activities of man. Based on that, the compact makes specific allocations to each of the three states in 14 different subbasins. The compact includes provisions for adjustments to the virgin water supply and allocations based on future records and/or changing conditions.

By helping meet the requirements of the Republican River NRDs Integrated Management Plans, the PRD will assist the State in ensuring compliance with the requirements of the Republican River Compact. Ensuring compliance with interstate compacts is one of the stated goals of the Water Sustainability Fund (Nebraska Revised Statutes §2-1,506(1)(h)).

Section D.

PROJECT DESCRIPTION

1. Overview

In 1,000 characters or less, provide a brief description of your project including the nature and purpose of the project and objectives of the project.

The past few years have seen incredible flows in the Platte River at a time when water supplies have been relatively low in the Republican River Basin. For example, in the summer of 2010, peak discharge on the Platte River at Maxwell, was over 7,600 cubic feet per second (cfs), and again in the summer of 2011, the peak discharge nearly exceeded 7,900 cfs. These flows occurred at times when flows in the Republican River at McCook, south of Maxwell, were about 190 to 200 cfs. Many people have rightly pointed out that it seems like a waste to lose all that Platte River flood water (which eventually just flows down to the Missouri River) when it could be put to good use in Nebraska. The Platte Republican Diversion Project (PRD) will construct a diversion to transfer excess flows from the Platte River to Turkey Creek in the Republican River Basin. This project will help the Lower Republican and the Tri-Basin Natural Resources Districts (NRDs) meet the requirements of their Integrated Management Plans and assist the State of Nebraska meet its obligations under the Republican River Compact. The purpose of the project is to use available unappropriated water to the benefit of the citizens of Nebraska.

2. Project Tasks and Timeline

Identify what activities will be conducted by the project. For multiyear projects please list what activities are to be completed each year.

The PRD project is scheduled for completion in seven months. Table 2 provides a detailed project schedule.

Table 2 Proposed Construction Schedule *(Table Repeated from Section B)*

FY 17-18	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18
PRD Project Construction							
Bidding							
Issue Contracts							
Mobilization							
Pipe and Diversion Installation							
Channel Grading							
Stablization Measures							

Note: Schedule contingent on approval of necessary permits

3. Partnerships

Identify the roles and responsibilities of agencies and groups involved in the proposed project regardless of whether each is an additional funding source. List any other sources of funding that have been approached for project support and that have officially turned you down. Attach the rejection letter.

An interlocal agreement, known as the PRD, has been established for this project between the Lower Republican and Tri-Basin NRDs. Additionally, a water service agreement has been signed with Central Nebraska Public Power and Irrigation (CNPPID). The roles and responsibilities of the NRDs and CNPPID are described in the agreements included as Attachments B and C. No other sources of funding have been requested or turned down.

4. Other Sources of Funding

Identify the costs of the entire project, what costs each other source of funding will be applied to, and whether each of these other sources of funding is confirmed. If not, please identify those entities and list the date when confirmation is expected. Explain how you will implement the project if these sources are not obtained.

Table 7 Project Commitments *(Table Repeated from Section C)*

Sponsor	Commitment	Funding for	Funding Confirmed
CNPPID	\$315,000	Diversion on Canal E65	Yes
Tri-Basin NRD	\$141,600	Erosion control repairs, pipe installation, and upgrades	Yes
Lower Republican NRD	\$141,600	Erosion control repairs and upgrades	Yes
Total PRD Commitment	\$598,200		
Total PRD Project Cost	\$1,495,500		

If the sources of funding are not obtained, the PRD will reassess the commitments needed to complete the project.

5. Support/Opposition

Discuss both support and opposition to the project, including the group or interest each represents.

Attachment M is a letter from Former Senator Tom Carlson in support of the PRD project.

Support for the project has been voiced at the current basin-wide planning meetings. The stakeholders currently developing the Republican River Basin-wide Plan (RRBWP) have identified the PRD as one of their best options to achieve sustainability in the basin. The group has had over ten, half-day meetings over the past three years discussing the PRD and other projects that could help with the mission to sustain a balance between water uses and water supplies so that the economic viability, social and environmental health, safety, and welfare of the Republican River Basin can be achieved and maintained for both the near-term and long-term. There has been no opposition to the PRD project voiced at the RRBWP meetings.

There has been no formal opposition to the project. Both Gosper and Furnace County have been briefed on the PRD project and are not in opposition. Additionally, questions were raised about the methodology used to calculate available excess flows at a Platte River Recovery Implementation Program meeting in April 2017. The methodology was revised per the request of the PRRIP and the amount of excess flows available in the Platte River increased based on the revised analysis. No formal opposition to the PRD project has been received by the PRD.