NEBRASKA NATURAL RESOURCES COMMISSION

Water Sustainability Fund

Application for Funding

Section A.

ADMINISTRATIVE

PROJECT NAME: **Sutherland Canal System Mile Post 1.6 Check and Wasteway Gate Operators Automation Project**

SPONSOR'S *PRIMARY CONTACT INFORMATION* **(Not Consultant's)**

Sponsor Business Name: Nebraska Public Power District (NPPD)

Sponsor Contact's Name: Randy Zach

Sponsor Contact's Address: PO Box 499, 1414 15th Street, Columbus, NE 68602-0499

Sponsor Contact's Phone: 402-276-4591

Sponsor Contact's Email: rrzach@nppd.com

1. **Funding** amount requested from the Water Sustainability Fund:

   Grant amount requested. $ 72,215
   - If requesting less than 60% cost share, what %? N/A

   If a loan is requested amount requested. $ N/A

   - How many years repayment period? N/A
   - Supply a complete year-by-year repayment schedule. N/A

2. **Neb. Rev. Stat. § 2-1507 (2)**

   Are you applying for a **combined sewer overflow 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☐
- Attach a copy to your application. N/A
- What is the population served by your project? N/A
- Provide a demonstration of need. N/A
- **Do not complete the remainder of the application.**

3. **Permits Required/Obtained** Attach a copy of each that has been obtained. For those needed, but not yet obtained (box **"NO"** checked), 1.) State when you will apply for the permit, 2.) When you anticipate receiving the permit, and 3.) Your estimated cost to obtain the permit.

(N/A = Not applicable/not asking for cost share to obtain)
(Yes = See attached)
(No = Might need, don't have & are asking for 60% cost share to obtain)

G&P - T&E consultation (required)	N/A☒ Obtained: YES☐ NO☐
DNR Surface Water Right	N/A☒ Obtained: YES☐ NO☐
USACE (e.g., 404/other Permit)	N/A☒ Obtained: YES☐ NO☐
FEMA (CLOMR)	N/A☒ Obtained: YES☐ NO☐
Local Zoning/Construction	N/A☒ Obtained: YES☐ NO☐
Cultural Resources Evaluation	N/A☒ Obtained: YES☐ NO☐
Other (provide explanation below)	N/A☒ Obtained: YES☐ NO☐

No permits are required for this project. It is fully contained within NPPD's existing property and there is no ground disturbing activity. NPPD does not need any additional water rights due to this project.

This project is located within the boundary of NPPD's Federal Energy Regulatory Commission (FERC) Project No. 1835 for the North Platte Hydro and NPPD has authority to maintain and enhance the facilities. NPPD's FERC Project and the Sutherland Canal System are synonymous. NPPD is not required to obtain a permit from FERC to complete this project.

NPPD has received a letter from the Nebraska State Historical Preservation Office stating that "….the determination that no adverse effect is appropriate…." (See Attachment F).

4. **Partnerships**

List each Partner / Co-sponsor, attach documentation of agreement:
NPPD does not have any partners or co-sponsors for this project, however, NPPD has received a number of letters of support from stakeholders. See Attachment A for Letters of Support from:
1. Twin Platte Natural Resources District for the seepage return flow and groundwater recharge benefits to the Integrated Management Plan as well as recreation benefits to the NRD.
2. The Central Nebraska Public Power & Irrigation District (Central) for the protection of the Sutherland System through protection of NPPD's Keystone Diversion Gates. NPPD and Central FERC hydropower projects are interrelated, and this automation system is valuable to protecting those interrelated operations. NPPD's FERC Project and the Sutherland Canal System are synonymous.
3. Platte River Recovery Implementation Program by providing important operational flexibility in NPPD's system to assist PRRIP in attaining its objective of managing river flows to benefit threatened and endangered species.

Identify the roles and responsibilities of each Partner / Co-sponsor involved in the proposed project regardless of whether each is an additional funding source.

NPPD is the sole project sponsor and is fully capable of completing the project.

5. **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.

NPPD is requesting funding of $72,215. The total cost of the project is estimated at $321,484, which includes $201,125 of ineligible in-kind costs. NPPD is seeking 60% funding for eligible project costs of $120,359 including:

1. Equipment/Materials/Supplies		$ 110,959
2. 3-Phase power upgrade		$ 5,400
3. Crane contractor		$ 4,000
	Total	$ 120,359

The $201,125 of ineligible costs for the project includes internal labor, vehicle use, administration, and contingency.

There are no other contributors.

If funding is not obtained from the Water Sustainability Fund, NPPD will be required to fund the project through rates charged to its electricity customers.

6. **Overview**

In 1,000 words *or less*, provide a brief description of your project including the nature/purpose of the project and its objectives. Do not exceed one page!

Nature/Purpose
The scope of this project is to modernize the gate operating equipment at the Sutherland Canal System Mile Post (MP) 1.6 Check and Wasteway so they can be opened/closed remotely. New Limitorque motor operated actuators and tumble rods will replace the 1930's equipment. The electrical service and Programmable Logic Controller at the site will be upgraded for the requirements of the new actuators.

The purpose of this project is three-fold. First, it will provide additional safeguards for NPPD's Sutherland Canal System by ensuring the stability of the Keystone Diversion Gates in the event of an emergency. Secondly, it will provide additional safety measures for canal patrolman by moving from manual operation to automated operation of the gates. A third purpose is to reduce flood damage to agricultural land should a canal or Keystone Dam breach occur in the system.

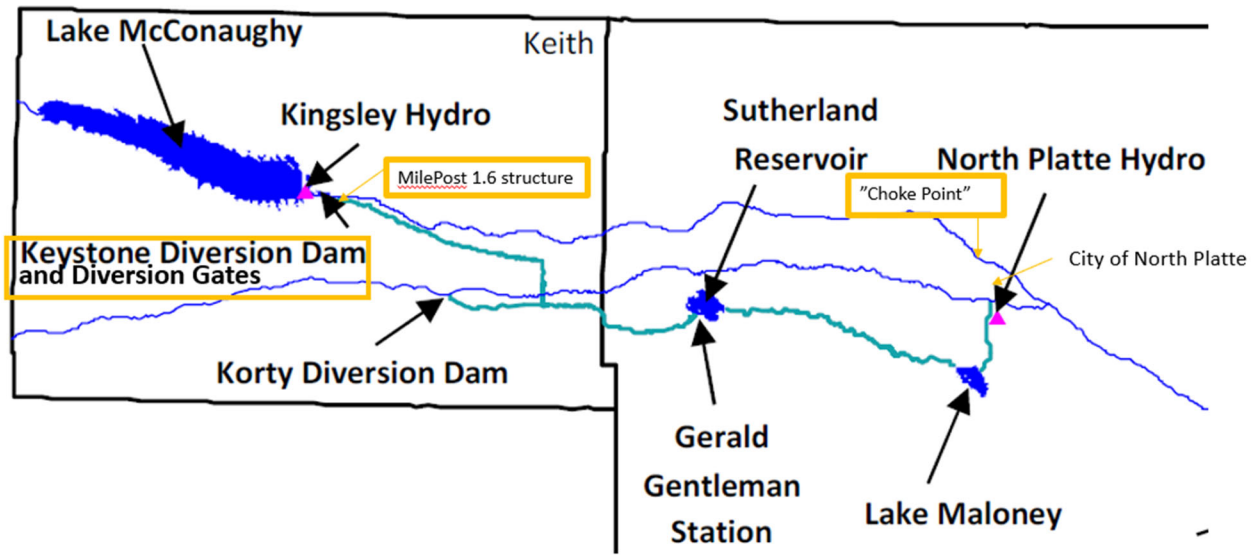
Objectives
The primary objective of this project is to make the Check and Wasteway gates at MP 1.6 remotely operated by NPPD's 24/7 Hydro Operators in North Platte, allowing for faster response times in the event of a Sutherland Canal System emergency situation. In this situation, the wasteway gate would need to be opened and canal check gate closed as soon as possible to continue adequate "back pressure" on the Keystone Diversion gates upstream. The MP 1.6 gates are located approximately 30 minutes from the canal patrolman's office and over one hour from the farthest location on the patrolled system and up to two hours away if not during work hours. This operational situation creates a hazard as the time required between the emergency notification and gate operation is excessive.

A second objective is to remove a safety hazard for NPPD employees. The gates are currently manually operated with large open gears that create a safety hazard. The gates are manually operated with the assistance of a "mule" operator (large electric drill), but this does not eliminate the large open gear safety hazard. Automation will remove this safety hazard.

Modernization of the Check and Wasteway contributes to multiple water sustainability goals:
1. Protect the integrity of the Sutherland Canal System by providing a quicker response to an emergency situation that puts the Keystone Diversion at risk of inoperability. The Keystone Diversion Gates need water for back pressure to prevent damage or failure;
2. Flood Protection by immediately opening the MP 1.6 Wasteway gates in the event of a downstream breach, which would minimize the uncontrolled "breach water" and instead release

the canal water into a controlled drainage. This would minimize any erosion at the breach site and agricultural/wildlife habitat damage;
3. Protect the Sutherland Canal System's delivery of water around the "North Platte Chokepoint";
4. Water conservation by ensuring the Sutherland Canal System is available for the groundwater recharge it provides and baseflows for both the North Platte River and South Platte River along its route;
5. Preservation of water resources by providing for the safe and reliable operation of NPPD's water systems;
6. Ensure the Sutherland Canal System is available for routing of the Platte River Recovery Implementation Plan Environmental Account water;
7. Protecting the main supply of cooling water for Gerald Gentleman Station power plant;
8. Ensure continued canal and lake recreation as wells as benefits to migratory birds; and
9. Carbon-free hydropower at the North Platte Hydro will be protected by the project through protection of the Keystone Diversion.

(See Attachment B for Project Location.)



Blue-green lines show NPPD's Sutherland Canal System (a.k.a. FERC Project 1835)

7. Project Tasks and Timeline

Identify what activities will be conducted to complete the project, and the anticipated completion date.
For multiyear projects please list (using the following example):

Tasks	Year 1$	Year 2$	Year 3$	Remaining	Total $ Amt.
Permits	$18,000				$18,000
Engineering		$96,000			$96,000
Construction		$87,000	$96,000		$183,000
Close-out				$8,000	$8,000

TOTAL $305,000

- What activities (Tasks) are to be completed.
- An estimate of each Tasks expenditures/cost per year.
- Activities in years 4 through project completion under a single column.

The project consists of eligible expenditures only in Year 1. Total eligible cost of $120,359.

3-Phase Power upgrade to existing structure	August 2023	$ 5,400
Major equipment/supplies delivery date	August 2023	$ 110,959
Construction start date:	October 2023	$ 4,000
Asset In service date:	November 2023	$ 0
Project close date:	December 2023	$ 0
	Total	$ 120,359

The total cost of the project is expected to be $321,484, although NPPD is only seeking 60% reimbursement from the Water Sustainability Fund on $120,359 of eligible total cost.

8. **IMP**

Do you have an **Integrated Management Plan** in place, or have you initiated one? YES☐ NO☐ Sponsor is not an NRD☒

Section B.

DNR DIRECTOR'S FINDINGS

Prove Engineering & Technical Feasibility

(Applicant must demonstrate compliance with Title 261, CH 2 - 004)

1. Does your project include physical construction (defined as moving dirt, directing water, physically constructing something, or installing equipment)?
YES☒ NO☐

If you answered "YES" you must answer all questions in section 1.A.
If you answer "NO" you must answer all questions in section 1.B.

If "YES", it is considered mostly structural, so answer the following:

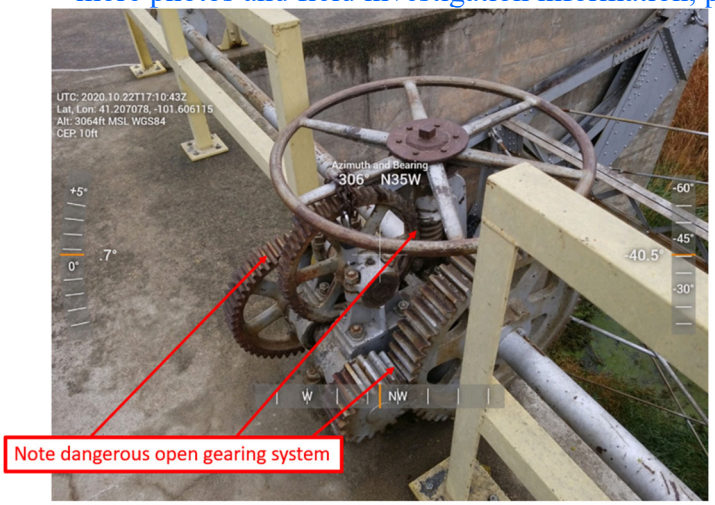
1.A.1 Insert a feasibility report to comply with Title 261, Chapter 2, including engineering and technical data; NPPD has Professional Engineers on staff who analyzed the situation at the Sutherland Canal System Mile Post 1.6 Check and Wasteway. They determined that it is feasible and necessary to install gate automation equipment to mitigate problems that could occur with a delayed gate operation in the event of an emergency. The risk being mitigated is that the Keystone Diversion Gates upstream could be compromised if back pressure is suddenly lost. This is of particular concern if the Mile Post 1.6 gates are not operated in a timely manner, which could occur if a patrolman was not nearby or if weather conditions were such that it would not be physically possible to access the site (e.g., blizzard conditions, torrential rain, road washouts, etc.).

Historically, NPPD has had more patrolman, some of which were located within two miles of this structure and could be summoned quickly to manually operate the gates. Currently however, canal patrolman could be up to one hour away if gate operation were needed during working hours and up to two hours away if not during work hours. If back pressure is not maintained on the Keystone Diversion Gates in that amount of time, damage could occur to the Keystone Diversion Gates. Adding the Limitorque motor operated actuators and tumble rods to the gates at the Mile Post 1.6 will provide immediate and remote activation of the gates, whenever needed by NPPD's 24/7 Hydro Operators in North Platte. It will also improve the safety of NPPD employees that would otherwise have to manually operate the gates.

NPPD currently has Supervisory Control And Data Acquisition (SCADA) communications equipment at this site that will be used for this project. This SCADA equipment currently allows for communication with sensors, etc. at the site and if the project is built, it will allow for communicating with the new gate actuators for opening and closing the gates.

NPPD engineers recommended that the equipment added would be from the same vendors as other automated structures on the Sutherland Canal System (Limitorque).

Below are two photos. The first is an example of an existing manual gate operator. The second is of what the Limitorque equipment installation is anticipated to look like. . For more photos and field investigation information, please refer to Attachment C.



NPPD Mile Post 1.6 Wasteway Gate Operator - 1930s existing equipment.

Example of what the new operator will generally look like.
Much safer and protected from the weather.

1.A.2 Describe the plan of development (004.01 A);

In 2022, NPPD reviewed its automation needs at this location. We have been systematically automating various structures, within the limits of budgets and construction seasons. NPPD's internal Professional Engineers determined this location as a priority. Using their experience with automation at other NPPD locations, they received materials quotes in July 2022 along with plans for delivery ahead of the construction in

October 2023. NPPD has contacted the local power provider (Midwest Electric Cooperative Corporation,) to supply the necessary 3-phase power to the site for the automation equipment. NPPD will hire a crane operator to help install the automation equipment. Staging for construction is expected to begin in August 2023 prior to the October dewatering of the canal. Construction will occur in October and November 2023, with closeout of the project expected by the end of 2023.

1.A.3 Include a description of all field investigations made to substantiate the feasibility report (004.01 B);

NPPD canal patrolman along with NPPD Professional Engineers made various field investigation site visits to review the current state of manual operation of the gates. To ensure the correct size and power requirements for the automation equipment, they took photos and measurements of the existing gate operators. From these onsite visits and internal discussions, they determined the course of action for this project.

1.A.4 Provide maps, drawings, charts, tables, etc., used as a basis for the feasibility report (004.01 C);

Attachment C contains various photos and specifications obtained from field investigation.

1.A.5 Describe any necessary water and/or land rights including pertinent water supply and water quality information (004.01 D);

There are no additional water or land rights needed for this project. It is completely on NPPD property and NPPD has the water rights for the diversion into the canal.

1.A.6 Discuss each component of the final plan (004.01 E);

Our plan for tasks to be completed in 2023 for the project are as follows:

1. Installation of 3-Phase power by the local power provider.
2. Mobilize equipment to the site.
3. Delivery of materials and supplies to the site.
4. Remove the existing gate operator equipment.
3. Use crane to set the new gate operator equipment.
4. Complete wiring for power and remote operation.
5. Test remote operation of gates.
6. Demobilization.

1.A.7 When applicable include the geologic investigation required for the project (004.01 E 1);

No geologic investigation was required because the work is entirely on equipment above ground.

1.A.8 When applicable include the hydrologic data investigation required for the project (004.01 E 2);

No hydrologic investigation was required because the proposed modification does not alter the original design intent of the check / wasteway, and the original hydrologic parameters remain unchanged.

1.A.9 When applicable include the criteria for final design including, but not limited to, soil mechanics, hydraulic, hydrologic, structural, embankments and foundation criteria (004.01 E 3).

Criteria for final design includes measurements for sizing of the automation equipment and electrical requirements. National Electrical Code (NEC) will be followed during installation. NPPD engineering personnel have determined that the additional equipment will not affect the structural loading of the check and wasteway.

If "NO", it is considered mostly non-structural, so answer the following:

1.B.1 Insert data necessary to establish technical feasibility (004.02); **N/A**

1.B.2 Discuss the plan of development (004.02 A); **N/A**

1.B.3 Describe field or research investigations utilized to substantiate the project conception (004.02 B); **N/A**

1.B.4 Describe any necessary water and/or land rights (004.02 C); **N/A**

1.B.5 Discuss 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**

Prove Economic Feasibility

(Applicant must demonstrate compliance with Title 261, CH 2 - 005)

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

The alternative to any automation endeavor is to hire multiple employees so that one would be stationed at the site 24 hours a day, 7 days a week. That is the real equivalent of automation. That level of hiring is cost-prohibitive and extremely unpractical. To provide coverage for 24/7, six additional employees covering 8-hour shifts would be needed. A less costly Next Best Alternative approach NPPD will use in this application is to hire one additional patrolman at approximately $136,258 annually including benefits, based on NPPD current patrolman costs. This avoided cost will make the total cost of this project recoverable in less than three years ($321,484 project cost / $136,258 labor savings avoided cost). This is all subject to the nationwide problem of finding labor to fill

such positions, which are not factored into these numbers.

In addition, this next best alternative would still not solve the problems of hazardous manual operation and access in poor weather conditions.

Historically, NPPD has had more patrolman, some of which were located in a NPPD-owned house within two miles of this structure and could be summoned quickly to manually operate the gates. This is also costly and impractical.

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 is the project life. (Title 261, CH 2 - 005). The automation of the Mile Post 1.6 Check and Wasteway is cost-effective. NPPD is requesting funding of $72,215. The total project cost is estimated at $321,484 for all of the project costs including ineligible in-kind costs. NPPD is seeking 60% funding for costs for: Materials/Supplies $110,959, 3-Phase power upgrade $5,400, and Crane contractor $4,000, for a total eligible cost of $120,359. Ineligible portions of the total project cost are $201,125 for internal labor, vehicle use, administration, and contingency.

   NPPD will use the next best alternative of hiring one additional patrolman for the basis of the cost/benefit analysis. The total cost of the project is expected to be $321,484. The annual benefit is the avoided cost of one additional patrolman ($136,258 escalated at 3%). The Cost/Benefit Table in Attachment D "Cost/Benefit Table" shows that the net benefit is a positive $14,142,426 over the 50-year life of the project.

   One intangible benefit not factored into the cost/benefit analysis is employee safety from both the perspective of manual operation of the gate as well as potential unsafe travel conditions currently.

   Other benefits stemming from the project that are not easily quantified include the following:
   1. Protect the integrity of the Sutherland Canal System by providing a quicker response to an emergency situation that puts the Keystone Diversion at risk of inoperability. The Keystone Diversion Gates need water for back pressure to prevent damage or failure;
   2. Flood Protection by immediately opening the Mile Post 1.6 Wasteway gates in the event of a downstream breach, which would minimize the uncontrolled "breach water" and instead release the canal water into a controlled drainage. This would minimize any erosion at the breach site and agricultural/wildlife habitat damage;
   3. Protect the Sutherland Canal System's delivery of water around the "North Platte Chokepoint";
   4. Water conservation by ensuring the Sutherland Canal System is available for the groundwater recharge it provides and baseflows for both the North Platte River and South Platte River along its route;
   5. Preservation of water resources by providing for the safe and reliable operation of NPPD's water systems;

6. Ensure the Sutherland Canal System is available for routing of the Platte River Recovery Implementation Plan Environmental Account water;
7. Protecting the main supply of cooling water for Gerald Gentleman Station power plant;
8. Ensure continued canal and lake recreation as wells as benefits to migratory birds; and
9. Carbon-free hydropower at the North Platte Hydro will be protected by the project through protection of the Keystone Diversion.

3.A 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). The total cost of the project is expected to be $321,484, although NPPD is only seeking 60% reimbursement from the Water Sustainability Fund on $120,359 of eligible total cost or $72,215.

Ongoing operations and maintenance (O/M) costs for the new automation equipment is estimated to be $3,000 annually. This includes labor and vehicle use. The equipment will have a 6-month Preventative Maintenance plan that would require 2 technicians at 10 hours each cycle or 40 hours a year. At approximately $75/hour including benefits, this results in $3,000. Vehicle charges will be insignificant and are factored into this total.

The Attachment D "Cost/Benefit Table" shows the costs for the total project and demonstrates that it is cost beneficial. A summary table is below.

Sutherland Canal System Mile Post 1.6 Check and Wasteway Gate Operators Automation Project					
Cost/Benefit Item	**Year 1 - 2023**	**Year 2 - 2024**	**Year 3 - 2025**	**Years 4-50**	**Total Amount**
Construction Cost	(321,484)	-	-	-	(321,484)
O&M (1)	-	(3,000)	(3,090)	(319,532)	(325,622)
Benefit: Avoided cost of hiring 1 additional Canal Patrolman (2)	-	136,258	140,346	14,512,928	14,789,532
Benefit: Groundwater Recharge Value to the basin IMPs (3)	Note: not all benefits were quantified.				-
Benefit: Drought Resiliency Benefit (4)	Note: not all benefits were quantified.				-
Benefit: Flood benefit (5)	Note: not all benefits were quantified.				-
Net Benefit over 50 years					**14,142,426**

(1) O&M includes: Estimated to be approximately $3,000 annually. This includes labor and vehicle use. The equipment will have a 6-month Preventative Maintenance plan that would require 2 technicians at 10 hours each cycle or 40 hours a year. At approximately $75/hour including benefits, this results in $3,000. Vehicle charges would be small and are considered included in this total.; escalated at 3% per year.

(2) Cost/Benefit is being calculated using the Next Best Alternative approach, which is to hire an additional Canal Patrolman to have better coverage of gate operations, but not equivalent to 24/7 that automation provides. Escalated at 3%.

(3) Recharge is valuable to PRRIP and NRDs' IMPs. PRRIP pays: $34.88/AF recharged(2022 price). NPPD is not including this as benefit because we are not getting paid for it.

(4) Drought Resiliency: No quantitative values have been determined for the drought resiliency benefits provided by the Sutherland Canal System protections this automation provides.

(5) Flood benefits: Flood protection benefits of continuing the routing of water past the North Platte ChokePoint, and other floods benefits have not been quantified.

3.B 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 intangible or secondary benefits (if any) 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, in a way that justifies economic feasibility of the project such that the finding can be approved by the Director and the Commission (005.02). The primary tangible benefit is $136,258 per year (escalated at 3% annually), which is the avoided cost of hiring one additional patrolman.

3.C Present all cost and benefit data in a table to indicate the annual cash flow for the life of the project (005.03). See Attachment D for Cost/Benefit Table and annual cash flow.

3.D 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, demonstrate the economic feasibility of such proposal by such method as the Director and the Commission deem appropriate (005.04). (For example, show costs of and describe the next best alternative.) There are no other reasonable or feasible options but to replace the Mile Post 1.6 Check and Wasteway gate operators with remotely operated actuators. The primary tangible benefit is $136,258 per year (escalated at 3% annually), which is the avoided cost of hiring one additional patrolman This is considered the next best alternative. This next best alternative is $14,142,426 more than NPPD's proposed project 50-year cost ($647,106). See Attachment D "Cost/Benefit Table".

Prove Financial Feasibility

(Applicant must demonstrate compliance with Title 261, CH 2 - 006)

4. Provide evidence that sufficient funds are available to complete the proposal. NPPD has sufficient funds to pay for its 40% of costs. NPPD is a public corporation and political subdivision of the state of Nebraska and has the authority under Nebraska Statutes Chapter 70 to develop rates to its customers to recover its share of the project costs. NPPD's chartered territory includes all or parts of 86 of the State's 93 counties and more than 400 municipalities in the State.

Neb. Rev. Stat. 70-655 states in part: (1) Except as otherwise provided in this section, the board of directors of any district organized under or subject to Chapter 70, article 6, shall have the power and be required to fix, establish, and collect adequate rates, tolls, rents, and other charges for electrical energy, water service, water storage, and for any and all other commodities, including ethanol and hydrogen, services, or facilities sold, furnished, or supplied by the district, which rates, tolls, rents, and charges shall be fair, reasonable, nondiscriminatory, and so adjusted as in a fair and equitable manner to confer upon and distribute among the users and consumers of commodities and services furnished or sold by the district the benefits of a successful and profitable operation and conduct of the business of the district.

5. Provide evidence that sufficient annual revenue is available to repay the reimbursable costs and to cover OM&R (operate, maintain, and replace). NPPD has sufficient funds to pay for its 40% of project costs and ongoing OM&R. NPPD is a public corporation and political subdivision of the state of Nebraska and has the authority under Nebraska Statutes Chapter 70 to develop rates to its customers to recover its share of the project costs. NPPD's chartered territory includes all or parts of 86 of the State's 93 counties and more than 400 municipalities in the State.

   Neb. Rev. Stat. 70-655 states in part: (1) Except as otherwise provided in this section, the board of directors of any district organized under or subject to Chapter 70, article 6, shall have the power and be required to fix, establish, and collect adequate rates, tolls, rents, and other charges for electrical energy, water service, water storage, and for any and all other commodities, including ethanol and hydrogen, services, or facilities sold, furnished, or supplied by the district, which rates, tolls, rents, and charges shall be fair, reasonable, nondiscriminatory, and so adjusted as in a fair and equitable manner to confer upon and distribute among the users and consumers of commodities and services furnished or sold by the district the benefits of a successful and profitable operation and conduct of the business of the district.

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 (i.e. timing vs nesting/migration, etc.). The project will minimize impacts to the natural environment because it installs automation equipment above ground, on an existing structure. Erosion control measures will be taken as needed. No U.S. Army Corps of Engineers (USACE) Clean Water Act (CWA) Section 404 permit is needed because there are no ground disturbing activities or tasks that will affect water in the canal, as the canal will be dewatered during the installation.

   The project will not involve release of chemicals into waterways or soil.

   The project provides for the protection of more carbon-free power from the hydropower plant at North Platte (through protecting the integrity of the canal system that provides its water).

8. Explain how you are qualified, responsible and legally capable of carrying out the project for which you are seeking funds. NPPD is a public power and irrigation district that operates under statutes of the State of Nebraska. NPPD's Mile Post 1.6 Check and Wasteway, Keystone Diversion, and Sutherland Canal System have been operated since the 1930s. NPPD and its predecessor have provided for operation, maintenance, professional engineering, construction, and monitoring of the structures.

   This project is located within the boundary of NPPD's Federal Energy Regulatory Commission (FERC) Project No. 1835 for the North Platte Hydro and NPPD has authority to maintain and enhance the facilities. FERC approval for projects is only required in cases where a project changes the hydropower output, which this project does

not. NPPD is not required to obtain a permit from FERC to complete this project. As such, NPPD is qualified, responsible, and legally capable of carrying out this project.

9. Explain how your project considers plans and programs of the state and resources development plans of the political subdivisions of the state. NPPD's project not only will have benefits to NPPD, but to other stakeholders in the basin. This project is a risk reduction measure. It maintains status quo, including the items listed, at a lower risk of losing such items through unplanned failure events. NPPD anticipates benefits of protecting the integrity of the Sutherland Canal System by providing important operational flexibility in NPPD's system to assist the Platte River Recovery Implementation Program (PRRIP) in attaining its objective of managing river flows to benefit threatened and endangered species--the State of Nebraska is a party to the PRRIP; help retime canal seepage for the Twin Platte Natural Resources Districts' Platte River Integrated Management Plan and Upper Platte River Basinwide Plan. Each of these Plans has the State of Nebraska as a stakeholder.

   The project will benefit The Central Nebraska Public Power & Irrigation District (Central) (a political subdivision) by protecting the integrity of the Sutherland Canal System. The Sutherland Canal System routes a portion of Central's storage water, which has less losses than if the storage water were left in the North Platte River and also allows Central's water to go around the "Choke Point" at North Platte; and routes Platte River Recovery Implementation Program Environmental Account water, of which Central is a stakeholder.

10. Are land rights necessary to complete your project? YES☐ NO☒

If yes:

10.A Provide a complete listing of all lands involved in the project. **N/A**

10.B Attach proof of ownership for each easements, rights-of-way and fee title currently held. **N/A**

10.C Provide assurance that you can hold or can acquire title to all lands not currently held. **N/A**

11. Identify how you possess all necessary authority to undertake or participate in the project. NPPD owns the property and has authority to make modifications to continue its operation. NPPD has the authority under Nebraska Statutes Chapter 70 to develop rates to its customers to recover its share of the project costs.

12. Identify the probable consequences (environmental and ecological) that may result if the project is or is not completed. There are no environmental and ecological consequences of completing this project.

   The environmental and ecological consequences of not completing this project stem from the potential for the inoperability of the Keystone Diversion gates and/or failure of the canal system. If the Keystone Diversion gates are inoperable, the Sutherland Canal

System could be out of service anywhere from a few months to a few years, depending on the severity. The risk being mitigated is that the Keystone Diversion Gates upstream could be compromised if back pressure is suddenly lost. This is of particular concern if the gates at Mile Post 1.6 are not operated in a timely manner, which could occur if a patrolman was not nearby or if weather conditions are such that it will not be physically possible to access the site (e.g., blizzard conditions, torrential rain, road washouts, etc.). If back pressure is not maintained on the Keystone Diversion Gates in a timely manner, damage could occur to the Keystone Diversion Gates. Adding the Limitorque motor operated actuators and tumble rods to the gates at the Mile Post 1.6 will provide immediate and remote activation of the gates, whenever needed by NPPD's 24/7 Hydro Operators in North Platte.

Those uses that are at most risk if the Keystone Diversion Gates are inoperable include but are not limited to carbon-free energy through hydropower; improved water management; the canal fishery; migratory birds, and continued seepage providing North Platte River and South Platte River baseflows.

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:

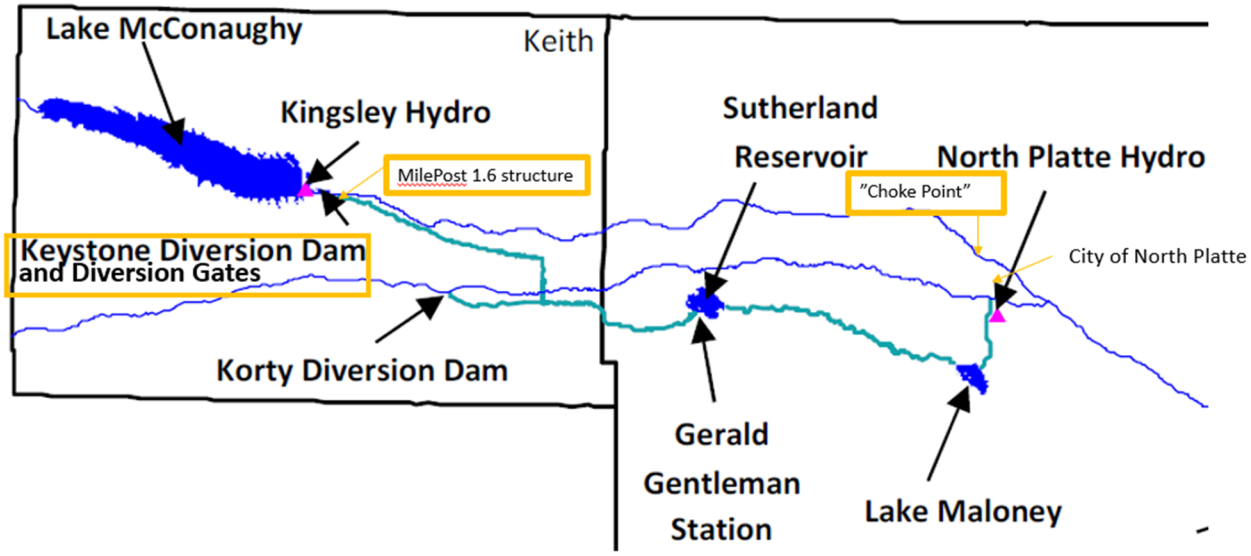
- The responses to one criterion ***will not*** be considered in the scoring of other criteria. Repeat references as needed to support documentation in each criterion as appropriate. The 15 categories are specified by statute and will be used to create scoring matrixes which will ultimately determine 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 above. 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.

Below is map of the location of this proposed project:



Blue-green lines show NPPD's Sutherland Canal System (a.k.a. FERC Project 1835)

1. Remediates or mitigates threats to drinking water;

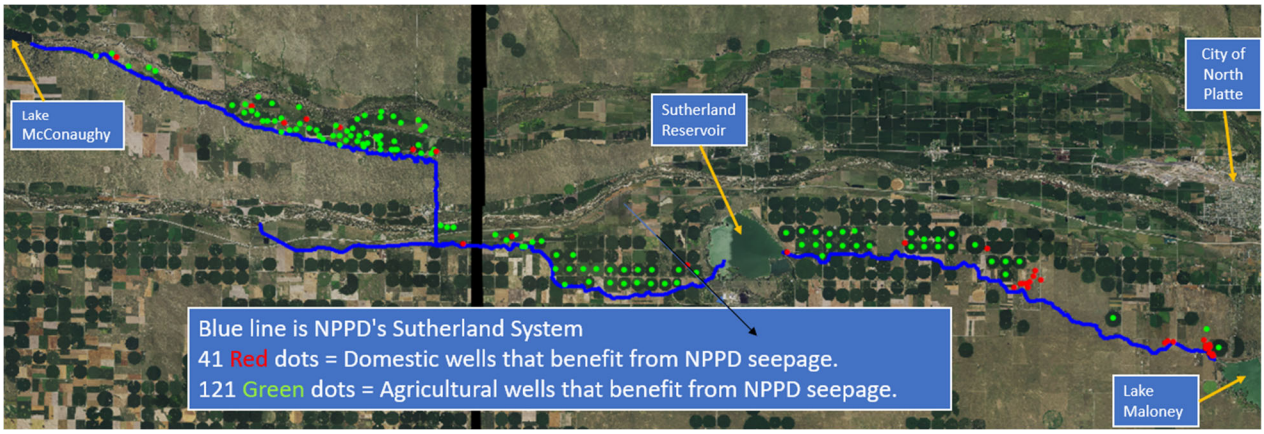
   - Describe the specific threats to drinking water the project will address.
   - Identify whose drinking water, how many people are affected, how will project remediate or mitigate.
   - Provide a history of issues and tried solutions.
   - Provide detail regarding long-range impacts if issues are not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

The automation of the Mile Post 1.6 Check and Wasteway is important to drinking water because this project better manages water through automation and provides for added assurances of the integrity of the Sutherland System by protecting the Keystone Diversion Gates should an emergency situation occur, and back pressure is needed to be maintained on the Keystone Gates. If the Keystone Diversion gates are inoperable, the Sutherland Canal System could be out of service anywhere from a few months to a few years, depending on the severity.

Remote operability of the Keystone Diversion gates and by extension the overall NPPD Sutherland Canal System provide groundwater recharge to domestic wells along its route from Lake Ogallala to the city of North Platte. The protections this project provides will help remediate or mitigate threats to drinking water for those wells along the system over the long-term should the Keystone Diversion gates become inoperable for an extended period of time.

Project benefit may also address historical issues of quantity of drinking water as well as quality. Recharge from NPPD's canal provides a source of well water that is lower in nitrates than that of recharge from rainfall through agricultural land and may allow for less nitrate treatment at those wells. Due to the low cost of this project, we did not perform any studies on exact affects that could be caused.

Below is a map showing a conservative estimate of wells that are influenced by NPPD's Sutherland Canal System. Of the wells shown, 41 are domestic (shown in red) and 121 are agricultural wells (shown in green).



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.

   The automation of the Mile Post 1.6 Check and Wasteway is important to Integrated Management Plans (IMP) downstream because this project better manages water through automation and provides added assurances for integrity of the Sutherland System by protecting the Keystone Diversion Gates should an emergency situation occur, and back pressure is needed to be maintained on the Keystone Diversion Gates.

   The project will benefit the following plans:
   1) the Twin Platte Natural Resources District (TPNRD) Integrated Management Plan effective September 11, 2019, by the TPNRD and the Nebraska Department of Natural Resources (NDNR);
   2) Upper Platte River Basin Wide Plan (UPRBP)) effective September of 2019 issued Jointly by the upper Platte River NRD's and the NDNR.

   Some of the historic work of the TPNRD IMP completed to achieve the goals of the plan related to NPPD's Sutherland Canal System includes:
   1) to provide offset water for groundwater well impacts through continuing supply of groundwater recharge from the Sutherland Canal System
   2) to minimize conflicts between water users
   3) safeguard current uses of water for irrigation
   4) safeguard recreational uses on the Sutherland Canal System

5) ensure compliance by Nebraska with any interstate decree, compact, or other formal state contract or agreement through the benefits that the Sutherland Canal System provides to the Platte River Recovery Implementation Plan, especially through its routing of Environmental Account water to the central Platte River near Grand Island, and
6) allows NCORPE to continue to provide offsets as required by the Basin-wide IMP.

The UPRBP, of which NPPD is a primary stakeholder, addresses aging infrastructure including canals. The proposed project meets the following goals and objectives of the UPRBP:
1) to provide offset water for groundwater well impacts through continuing supply of groundwater recharge from the Sutherland Canal System
2) to minimize conflicts between water users.
The UPRBP mentions NPPD with respect to its "Current to Fully Appropriated Study"; various uses of water by NPPD in the Upper Platte Basin; assessments of upcoming water supplies; and NPPD's excess flow diversions on our irrigation canals.

The following goals and objectives of the IMPs could benefit from the project:
1) to provide offset water for groundwater well impacts,
2) to minimize conflicts between water users.
The Sutherland Canal System can assist in these by increasing normal flows during times of excess to retime flows to times when water may be needed, potentially in times of drought and will increase recharge along the canal. These retimed river flows reduce the NRDs' need to provide offsets. (See Attachment B for Project Location.)

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 automation of the Mile Post 1.6 Check and Wasteway contributes to water sustainability goals because this project better manages water through automation and provides for integrity of the Sutherland System by protecting the Keystone Diversion Gates should an emergency situation occur, and back pressure is needed to be maintained stability on the Keystone Diversion Gates.

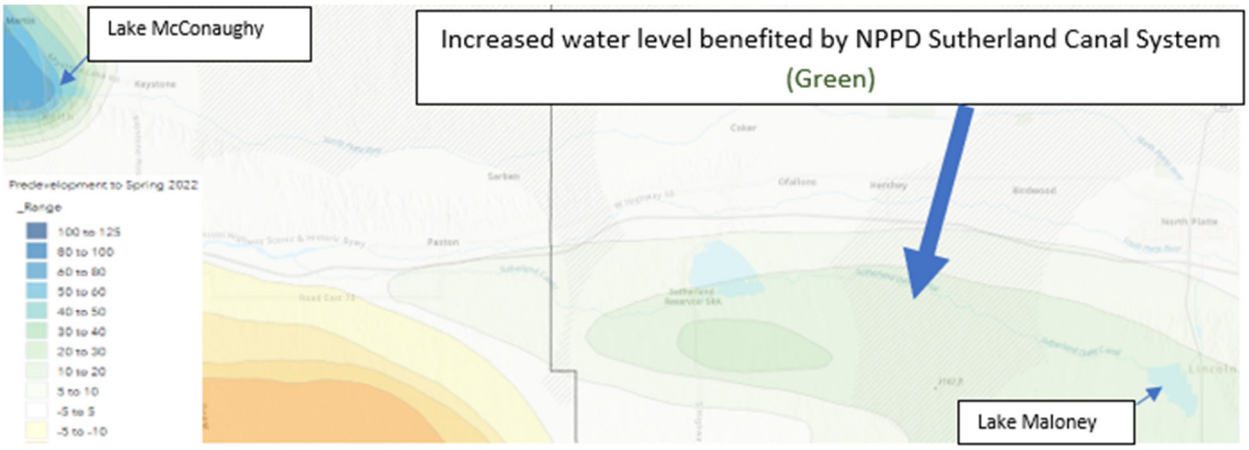
Benefits of the project align with the protection of existing groundwater recharge because the Sutherland System provides groundwater recharge to wells along its route from Lake Ogallala to the city of North Platte. NPPD estimates the amount of this recharge that is being protected by this project to be over 120,000 AF annually, and by contrast, aquifer

depletion also benefits from the project protecting the Sutherland Canal System.

Benefits of the project align with maintaining streamflow. By protecting the Keystone Diversion Gates, the seepage that results in streamflow on the entire Sutherland Canal System is protected. It is protected along its route from Lake Ogallala to the city of North Platte. These benefits accrue to both the North Platte River and the South Platte River. NPPD understands that the seepage losses either end up in long-term aquifer storage, is utilized by groundwater wells, or returns to the river.

Because the Sutherland Canal System traverses both the North Platte River and the South Platte River, the water protected by this project has cross-basin benefits including groundwater recharge, reduction of aquifer depletion, and streamflow. These benefits have been in place since the 1930s and the project is critically important to continue the current benefits.

Below is a map showing, in green, the groundwater benefit NPPD's Sutherland Canal System has provided (up to 10-40 feet).



Ground Water Level Map for Predevelopment to 2022 (Source: Nebraska Conservation & Survey Division Ground Water and Geology Data Portal)

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.

   The automation of the Mile Post 1.6 Check and Wasteway contributes to multiple water supply goals because this project better manages water through automation and provides

for integrity of the Sutherland Canal System by protecting the Keystone Diversion Gates should an emergency situation occur, and back pressure is needed to be maintained to prevent failure of the Keystone Diversion Gates. This project is a risk reduction measure. It maintains status quo, including the items listed, at a lower risk of losing such items through unplanned failure events. If the Keystone Diversion gates are inoperable, the Sutherland Canal System could be out of service anywhere from a few months to a few years, depending on the severity.

The project can contribute to multiple water supply goals for:
1. Protect the integrity of the Sutherland Canal System by providing a quicker response to an emergency situation that puts the Keystone Diversion at risk of inoperability. The Keystone Diversion Gates need water for back pressure to prevent damage or failure;
2. Flood Protection by immediately opening the Mile Post 1.6 Wasteway gates in the event of a downstream breach, which would minimize the uncontrolled "breach water" and instead release the canal water into a controlled drainage. This would minimize any erosion at the breach site and agricultural/wildlife habitat damage;
3. Protect the Sutherland Canal System's delivery of water around the "North Platte Chokepoint";
4. Water conservation by ensuring the Sutherland Canal System is available for the groundwater recharge it provides and baseflows for both the North Platte River and South Platte River along its route;
5. Preservation of water resources by providing for the safe and reliable operation of NPPD's water systems;
6. Ensure the Sutherland Canal System is available for routing of the Platte River Recovery Implementation Plan Environmental Account water;
7. Protecting the main supply of cooling water for Gerald Gentleman Station power plant;
8. Ensure continued canal and lake recreation as wells as benefits to migratory birds; and
9. Carbon-free hydropower at the North Platte Hydro will be protected by the project through protection of the Keystone Diversion.

The long-range forecasted benefits are greater than continuing the current path of requiring a canal operator to manually open/close during emergencies. This manual operation can be affected by the distance the patrolman is from Check and Wasteway at the time of the emergency and the weather conditions at the time of the emergency. Attachment D "Cost/Benefit Table" shows the net benefits of completing this water sustainability project as $14,142,426 over the 50-year useful life.

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.

The automation of the Mile Post 1.6 Check and Wasteway maximizes the beneficial use of Nebraska's water resources for the benefit of the state's residents because this project better manages water through automation and provides for integrity of the Sutherland Canal System by protecting the Keystone Diversion Gates should an emergency situation occur, and back pressure is needed to be maintained on the Keystone Diversion Gates. This project is a risk reduction measure. It maintains status quo, including the items listed, at a lower risk of losing such items through unplanned failure events. If the Keystone Diversion gates are inoperable, the Sutherland Canal System could be out of service anywhere from a few months to a few years, depending on the severity.

Stability at the Keystone Diversion Gates upstream of this automation project is vital to providing the following benefits to the state's residents:
1. Protect the integrity of the Sutherland Canal System by providing a quicker response to an emergency situation that puts the Keystone Diversion at risk of inoperability. The Keystone Diversion Gates need water for back pressure to prevent damage or failure;
2. Flood Protection by immediately opening the Mile Post 1.6 Wasteway gates in the event of a downstream breach, which would minimize the uncontrolled "breach water" and instead release the canal water into a controlled drainage. This would minimize any erosion at the breach site and agricultural/wildlife habitat damage;
3. Protect the Sutherland Canal System's delivery of water around the "North Platte Chokepoint";
4. Water conservation by ensuring the Sutherland Canal System is available for the groundwater recharge it provides and baseflows for both the North Platte River and South Platte River along its route;
5. Preservation of water resources by providing for the safe and reliable operation of NPPD's water systems;
6. Ensure the Sutherland Canal System is available for routing of the Platte River Recovery Implementation Plan Environmental Account water;
7. Protecting the main supply of cooling water for Gerald Gentleman Station power plant;
8. Ensure continued canal and lake recreation as wells as benefits to migratory birds; and
9. Carbon-free hydropower at the North Platte Hydro will be protected by the project through protection of the Keystone Diversion.

The proposed project will not reduce beneficial uses of water.

If Keystone Diversion Gates are inoperable and allow free flow of water into Sutherland Canal breach, water that was being used for those purposes would no longer serve those purposes. Each of the purposes listed is a benefit to residents of Nebraska.

The project, through automation, also removes a safety hazard for NPPD employees who will no longer be required to manually operate the gates with the large open gears that create a safety hazard. The gates are manually operated with the assistance of a "mule" operator (large electric drill), but this doesn't eliminate the large open gear safety hazard. Automation will remove this safety hazard and protect these Nebraska residents.

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.

The automation of the Mile Post 1.6 Check and Wasteway is cost-effective. NPPD is requesting funding of $72,215. The total project cost is estimated at $321,484 for all of the project costs including ineligible in-kind costs. NPPD is seeking 60% funding for eligible costs for: Equipment/Materials/Supplies $110,959, 3-Phase power upgrade $5,400, and Crane contractor $4,000, for a total eligible cost of $120,359. Ineligible portions of the total project cost are $201,125 for internal labor, vehicle use, administration, and contingency.

NPPD will use the next best alternative of hiring one additional patrolman for the basis of the cost/benefit analysis. The total cost of the project is expected to be $321,484. The annual benefit is the avoided cost of one additional patrolman ($136,258 escalated at 3%). The Cost/Benefit Table in Attachment D “Cost/Benefit Table” shows that the net benefit is a positive $14,142,426 over the 50-year life of the project.

One intangible benefit not factored into the cost/benefit analysis is employee safety from both the perspective of manual operation of the gate as well as potential unsafe travel conditions currently.

Other benefits stemming from the project that are not easily quantified include the following:
1. Protect the integrity of the Sutherland Canal System by providing a quicker response to an emergency situation that puts the Keystone Diversion at risk of inoperability. The Keystone Diversion Gates need water for back pressure to prevent damage or failure;
2. Flood Protection by immediately opening the Mile Post 1.6 Wasteway gates in the event of a downstream breach, which would minimize the uncontrolled “breach water” and instead release the canal water into a controlled drainage. This would minimize any erosion at the breach site and agricultural/wildlife habitat damage;
3. Protect the Sutherland Canal System’s delivery of water around the “North Platte Chokepoint”;
4. Water conservation by ensuring the Sutherland Canal System is available for the

groundwater recharge it provides and baseflows for both the North Platte River and South Platte River along its route;
5. Preservation of water resources by providing for the safe and reliable operation of NPPD's water systems;
6. Ensure the Sutherland Canal System is available for routing of the Platte River Recovery Implementation Plan Environmental Account water;
7. Protecting the main supply of cooling water for Gerald Gentleman Station power plant;
8. Ensure continued canal and lake recreation as wells as benefits to migratory birds; and
9. Carbon-free hydropower at the North Platte Hydro will be protected by the project through protection of the Keystone Diversion.

Ongoing operations and maintenance (O/M) costs for the new automation equipment is estimated to be $3,000 annually. This includes labor and vehicle use. The equipment will have a 6-month Preventative Maintenance plan that would require 2 technicians at 10 hours each cycle or 40 hours a year. At approximately $75/hour including benefits, this results in $3,000. Vehicle charges will be insignificant and are factored into this total.

There are no other reasonable or feasible options but to replace the Mile Post 1.6 Check and Wasteway gate operators with remotely operated actuators. The primary tangible benefit is $136,258 per year (escalated at 3% annually), which is the avoided cost of hiring one additional patrolman This is considered the next best alternative. This next best alternative is $14,142,426 more than NPPD's proposed project 50-year cost ($647,106). The Benefit/Cost Ratio for the proposed project is 23.

The Attachment D "Cost/Benefit Table" shows the costs for the total project and demonstrates that it is cost beneficial. A summary table is below.

Sutherland Canal System Mile Post 1.6 Check and Wasteway Gate Operators Automation Project					
Cost/Benefit Item	**Year 1 - 2023**	**Year 2 - 2024**	**Year 3 - 2025**	**Years 4-50**	**Total Amount**
Construction Cost	(321,484)	-	-	-	(321,484)
O&M (1)	-	(3,000)	(3,090)	(319,532)	(325,622)
Benefit: Avoided cost of hiring 1 additional Canal Patrolman (2)	-	136,258	140,346	14,512,928	14,789,532
Benefit: Groundwater Recharge Value to the basin IMPs (3)	Note: not all benefits were quantified.				-
Benefit: Drought Resiliency Benefit (4)	Note: not all benefits were quantified.				-
Benefit: Flood benefit (5)	Note: not all benefits were quantified.				-
Net Benefit over 50 years					**14,142,426**

(1) O&M includes: Estimated to be approximately $3,000 annually. This includes labor and vehicle use. The equipment will have a 6-month Preventative Maintenance plan that would require 2 technicians at 10 hours each cycle or 40 hours a year. At approximately $75/hour including benefits, this results in $3,000. Vehicle charges would be small and are considered included in this total.; escalated at 3% per year.

(2) Cost/Benefit is being calculated using the Next Best Alternative approach, which is to hire an additional Canal Patrolman to have better coverage of gate operations, but not equivalent to 24/7 that automation provides. Escalated at 3%.

(3) Recharge is valuable to PRRIP and NRDs' IMPs. PRRIP pays: $34.88/AF recharged(2022 price). NPPD is not including this as benefit because we are not getting paid for it.

(4) Drought Resiliency: No quantitative values have been determined for the drought resiliency benefits provided by the Sutherland Canal System protections this automation provides.

(5) Flood benefits: Flood protection benefits of continuing the routing of water past the North Platte ChokePoint, and other floods benefits have not been quantified.

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 automation of the Mile Post 1.6 Check and Wasteway helps the state meet its obligations under compacts, decrees, state contracts or agreements or federal law because this project better manages water through automation and provides for integrity of the Sutherland Canal System by protecting the Keystone Diversion Gates should an emergency situation occur, and back pressure is needed to be maintained on the Keystone Diversion Gates. If the Keystone Diversion gates are inoperable, the Sutherland Canal System could be out of service anywhere from a few months to a few years, depending on the severity.

   Colorado, Wyoming, Nebraska, and the Department of Interior formed a unique partnership with the goal of developing a shared approach for managing the Platte River for endangered and threatened species. Water users from the three states, U.S. Bureau of Reclamation, U.S. Fish & Wildlife Service, and local and national conservation groups joined the effort. Together, these stakeholders developed an innovative approach for improving the management of the Platte River for the health of the ecosystem and the people that depend on it. The Platte River Recovery Implementation Program (PRRIP) is the result of that planning effort. The PRRIP is focused on implementing this shared vision for creating and maintaining habitats on the Platte, including river flows. This includes reducing shortages to target flow in the Platte River from Lexington to Chapman, Nebraska--deficiencies our project will protect against. Part of PRRIP includes an Environment Account of water in Lake McConaughy that can be used for PRRIP purposes downstream.

   The automation of the Mile Post 1.6 Check and Wasteway and the protections it provides to the Sutherland Canal System will help the state and PRRIP meet its obligations for endangered species and wildlife habitat. The canal provides a means for the PRRIP to move water past the “choke point” at North Platte. The North Platte River channel at North Platte has capacity issues commonly known as the “choke point”. If not for NPPD’s Sutherland Canal System, at certain times, the PRRIP would not be able to move their Environmental Account water from Lake McConaughy to areas of critical habitat in the central Platte River near Grand Island.

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 automation of the Mile Post 1.6 Check and Wasteway reduces threats to property damage and protects critical infrastructure because this project better manages water through automation and provides for integrity of the Sutherland Canal System by protecting the Keystone Diversion Gates should an emergency situation occur, and back pressure is needed to be maintained on the Keystone Diversion Gates. If the Keystone Diversion gates are inoperable, the Sutherland Canal System could be out of service anywhere from a few months to a few years, depending on the severity.

The entire Sutherland Canal System is critical infrastructure vital to Nebraska. The benefits of this critical infrastructure are:
1. Protect the integrity of the Sutherland Canal System by providing a quicker response to an emergency situation that puts the Keystone Diversion at risk of inoperability. The Keystone Diversion Gates need water for back pressure to prevent damage or failure;
2. Flood Protection by immediately opening the Mile Post 1.6 Wasteway gates in the event of a downstream breach, which would minimize the uncontrolled "breach water" and instead release the canal water into a controlled drainage. This would minimize any erosion at the breach site and agricultural/wildlife habitat damage;
3. Protect the Sutherland Canal System's delivery of water around the "North Platte Chokepoint";
4. Water conservation by ensuring the Sutherland Canal System is available for the groundwater recharge it provides and baseflows for both the North Platte River and South Platte River along its route;
5. Preservation of water resources by providing for the safe and reliable operation of NPPD's water systems;
6. Ensure the Sutherland Canal System is available for routing of the Platte River Recovery Implementation Plan Environmental Account water;
7. Protecting the main supply of cooling water for Gerald Gentleman Station power plant;
8. Ensure continued canal and lake recreation as wells as benefits to migratory birds; and
9. Carbon-free hydropower at the North Platte Hydro will be protected by the project through protection of the Keystone Diversion.

Specific benefits resulting from the proposed project include public security and public health and safety. The project could reduce flood threats to property downstream,

bridges, agricultural land, highways, roads, etc. For example, if a breach flow was to occur at ~1800 cubic feet per second, then this will be additional flow in the North Platte River during irrigation season. The North Platte River at the City of North Platte almost always is at or near flood stage during summer irrigation water deliveries and this extra flow would likely cause flood damage. NPPD did not estimate the amount of damage.

The benefits to public security and safety are the flood reductions. These flood control aspects will also benefit the United States by reducing FEMA expenditures.

NPPD's Sutherland Canal System, including the power plants and canal are critical infrastructure and this project would protect the canal. There would be a potential to have to reduce the power output to address issues related to not having canal water for cooling or hydropower production. This potential cost was not calculated.

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.

The automation of the Mile Post 1.6 Check and Wasteway improves water quality because this project better manages water through automation and provides for integrity of the Sutherland Canal System by protecting the Keystone Diversion Gates should an emergency situation occur, and back pressure is needed to be maintained on the Keystone Diversion Gates.

The water quality issues to be improved by protecting the operation of the Sutherland Canal System include the seepage recharge benefit to any domestic/livestock wells along the canal. The canal seepage includes less nitrates than water filtrating the land to those wells. Nitrate problems in wells are a well-known phenomenon in the area.

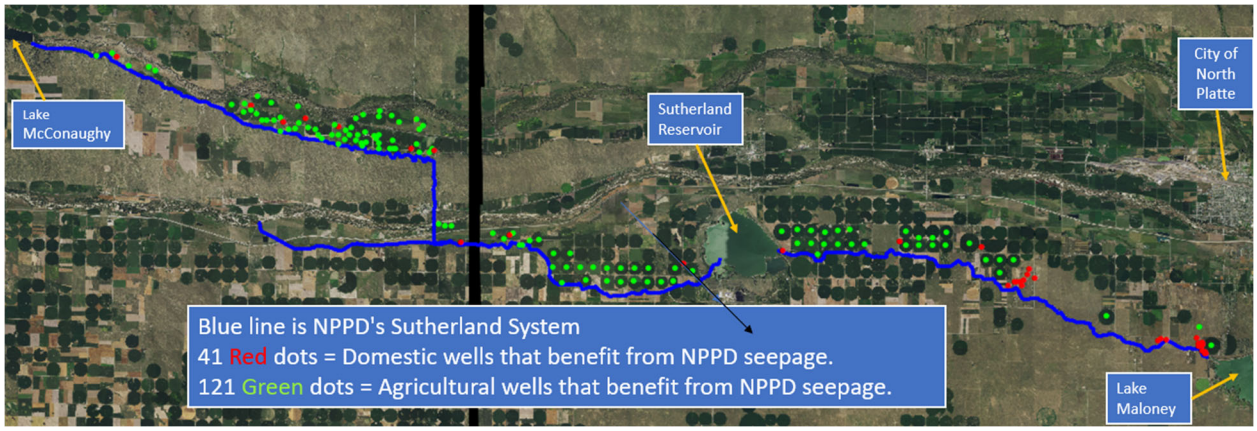
Another water quality issue improved by the proposed project is to protect the existing flow of cooling water for Gerald Gentleman Station (GGS). GGS has a pollutant discharge limit with respect to the temperature of water it discharges into the Sutherland Reservoir after it is used for cooling purposes in the generation plant. Protecting the flows of cool water from the canal is vital to full operation of GGS. If a water quality temperature limit is reached, one of the solutions is for GGS to reduce generation, with that generation needing to come from a more costly generating plant, thus raising costs to NPPD electricity users throughout the state.

Previous attempts to remedy water quality problems of nitrates include nitrate management areas where agricultural nitrate application is monitored and controlled, as

well as NRDs' Chemigation Permits, and water quality sampling. Previous attempts to remedy water quality problems for cooling water at the GGS include 1) restoration of NPPD's South Supply Canal Project in 2021 (the Water Sustainability Fund provided key cost-sharing) and 2) installation of a wellfield around GGS that is used to provide cool groundwater when needed.

For recreational benefits, see NPPD's last Federal Energy Regulatory Commission Recreation Report, which shows recreation benefits of fishing, boating, picnicking, swimming, hunting, camping, etc. in Attachment E.

Below is a graphic of a conservative estimate of wells that benefit from NPPD's Sutherland Canal System.



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.

There are no local funding resources available for this project. NPPD has obtained letters of support from these stakeholders of the project:
1. Twin Platte Natural Resources District for the seepage return flow and groundwater recharge benefits to the Integrated Management Plan as well as recreation benefits to the NRD.
2. The Central Nebraska Public Power & Irrigation District (Central) for the protection of the Sutherland System through protection of NPPD's Keystone Diversion Gates. NPPD and Central FERC hydropower projects are interrelated, and this automation equipment is valuable to protecting those interrelated operations NPPD's FERC Project and the Sutherland Canal System are synonymous.
3. Platte River Recovery Implementation Program by providing important operational flexibility in NPPD's system to assist PRRIP in attaining its objective of managing river flows to benefit threatened and endangered species.

(See Attachment A for Letters of Support).

NPPD will use its budgeted funds for its matching portion of the project.

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.

The project is located within the Twin Platte Natural Resources District (TPNRD). The TPNRD has an Integrated Management Plan (IMP) and is involved with the Basin-Wide Plan for Joint Integrated Water Resources Management of Overappropriated Portions of the Platte River Basin, Nebraska, and the Platte Basin Coalition.

The history of work completed to achieve the goals of the aforementioned plans include, but not limited to a moratorium on new or expanded water well construction, certification of irrigated acres, provisions for groundwater transfers, tracking of municipal, industrial, and commercial uses, contractual arrangements with irrigation canals to divert excess flows for groundwater recharge.

NPPD's proposed project supports those goals and objectives of the IMPs through its protection of the Sutherland Canal System through:
1. Protect the integrity of the Sutherland Canal System by providing a quicker response to an emergency situation that puts the Keystone Diversion at risk of inoperability. The Keystone Diversion Gates need water for back pressure to prevent damage or failure;
2. Flood Protection by immediately opening the Mile Post 1.6 Wasteway gates in the event of a downstream breach, which would minimize the uncontrolled "breach water" and instead release the canal water into a controlled drainage. This would minimize any erosion at the breach site and agricultural/wildlife habitat damage;
3. Protect the Sutherland Canal System's delivery of water around the "North Platte Chokepoint";
4. Water conservation by ensuring the Sutherland Canal System is available for the groundwater recharge it provides and baseflows for both the North Platte River and South Platte River along its route;
5. Preservation of water resources by providing for the safe and reliable operation of NPPD's water systems;
6. Ensure the Sutherland Canal System is available for routing of the Platte River

Recovery Implementation Plan Environmental Account water;
7. Protecting the main supply of cooling water for Gerald Gentleman Station power plant;
8. Ensure continued canal and lake recreation as wells as benefits to migratory birds; and
9. Carbon-free hydropower at the North Platte Hydro will be protected by the project through protection of the Keystone Diversion.

Both Central Public Power & Irrigation District and NPPD have irrigation customers relying on stored water for irrigation. Some of that water is supplied through NPPD's Sutherland Canal System. The Platte River Recovery Implementation Program (PRRIP) benefits from the proposed project because it uses the Sutherland Canal to usher Environmental Account(EA) in Lake McConaughy past the "North Platte Chokepoint" (the chokepoint is at the city of North Platte during summer high irrigation water deliveries in the river where water is needed to be routed through NPPD's Sutherland Supply Canal around that chokepoint and returned to the South Platte River just upstream of the confluence of the North and South Platte rivers east of North Platte). Protecting the canal system is vital for these to continue unaffected.

The primary stakeholders of the proposed project are Upper Platte Basin NRDs; the PRRIP; NPPD power generation; NPPD irrigation customers (protect/enhance their water supply); and Central Public Power & Irrigation District irrigation customers (protect/enhance their water supply). Other stakeholders include irrigators, recreators, electricity users, etc.

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.

The automation of the Mile Post 1.6 Check and Wasteway addresses statewide problems or issues because this project better manages water through automation and provides for integrity of the Sutherland Canal System by protecting the Keystone Diversion Gates should an emergency situation occur, and back pressure is needed to be maintained on the Keystone Diversion Gates.

All entities possessing diversions statewide have issues with the need to maintain back pressure should the need arise because of a rapid, uncontrolled drawdown of their canal.

The issues addressed by the project include:
1. Protect the integrity of the Sutherland Canal System by providing a quicker response to an emergency situation that puts the Keystone Diversion at risk of inoperability. The Keystone Diversion Gates need water for back pressure to prevent damage or failure;
2. Flood Protection by immediately opening the Mile Post 1.6 Wasteway gates in the

event of a downstream breach, which would minimize the uncontrolled "breach water" and instead release the canal water into a controlled drainage. This would minimize any erosion at the breach site and agricultural/wildlife habitat damage;
3. Protect the Sutherland Canal System's delivery of water around the "North Platte Chokepoint";
4. Water conservation by ensuring the Sutherland Canal System is available for the groundwater recharge it provides and baseflows for both the North Platte River and South Platte River along its route;
5. Preservation of water resources by providing for the safe and reliable operation of NPPD's water systems;
6. Ensure the Sutherland Canal System is available for routing of the Platte River Recovery Implementation Plan Environmental Account water;
7. Protecting the main supply of cooling water for Gerald Gentleman Station power plant;
8. Ensure continued canal and lake recreation as wells as benefits to migratory birds; and
9. Carbon-free hydropower at the North Platte Hydro will be protected by the project through protection of the Keystone Diversion.

The number of people or acres that could benefit from the project includes, but not limited to domestic/livestock wells which benefit from canal seepage; irrigation users who benefit from the canal's use for moving irrigation water to seven irrigation canal diversions downstream serving over 120,000 acres, and property-owners that have homes, businesses, and drinking water wells near the canal.

The benefit, to the state, this project would provide is the protection of the economic benefits each of the items above provides to Nebraska.

A shortage of automation in water facilities is a statewide problem. Additional remote operation could help better manage water resources. Labor shortages are also causing entities to look for ways to automate. Aging infrastructure can also pose a safety concern for employees by current standards. NPPD considers its safety focus vital to its success.

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.

This project will utilize funds provided solely by NPPD. NPPD does however have letters of support from the following stakeholders:
1. Twin Platte Natural Resources District for the seepage return flow and groundwater

recharge benefits to the Integrated Management Plan as well as recreation benefits to the NRD.
2. The Central Nebraska Public Power & Irrigation District (Central) for the protection of the Sutherland System through protection of NPPD's Keystone Diversion Gates. NPPD and Central FERC hydropower projects are interrelated, and this automation equipment is valuable to protecting those interrelated operations. NPPD's FERC Project and the Sutherland Canal System are equivalent.
3. Platte River Recovery Implementation Program by providing important operational flexibility in NPPD's system to assist PRRIP in attaining its objective of managing river flows to benefit threatened and endangered species.
(See Attachment A for Letters of Support).

If funding is not obtained from the Water Sustainability Fund, NPPD will be required to fund the project through rates it charges its electricity customers.

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.

The automation of the Mile Post 1.6 Check and Wasteway contributes to watershed health and function because this project better manages water through automation and provides for integrity of the Sutherland Canal System by protecting the Keystone Diversion Gates should an emergency situation occur, and back pressure is needed to be maintained on the Keystone Diversion Gates. This project is a risk reduction measure. It maintains status quo, including the items listed, at a lower risk of losing such items through unplanned failure events. If the Keystone Diversion gates are inoperable, the Sutherland Canal System could be out of service anywhere from a few months to a few years, depending on the severity.

Watershed health and function could be improved by the project through:
1. Protect the integrity of the Sutherland Canal System by providing a quicker response to an emergency situation that puts the Keystone Diversion at risk of inoperability. The Keystone Diversion Gates need water for back pressure to prevent damage or failure;
2. Flood Protection by immediately opening the Mile Post 1.6 Wasteway gates in the event of a downstream breach, which would minimize the uncontrolled "breach water" and instead release the canal water into a controlled drainage. This would minimize any erosion at the breach site and agricultural/wildlife habitat damage;
3. Protect the Sutherland Canal System's delivery of water around the "North Platte Chokepoint";
4. Water conservation by ensuring the Sutherland Canal System is available for the groundwater recharge it provides and baseflows for both the North Platte River and South Platte River along its route;
5. Preservation of water resources by providing for the safe and reliable operation of NPPD's water systems;
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Recovery Implementation Plan Environmental Account water;
7. Protecting the main supply of cooling water for Gerald Gentleman Station power plant;
8. Ensure continued canal and lake recreation as wells as benefits to migratory birds; and
9. Carbon-free hydropower at the North Platte Hydro will be protected by the project through protection of the Keystone Diversion.

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 automation of the Mile Post 1.6 Check and Wasteway uses objectives described in the annual report because this project better manages water through automation and provides for integrity of the Sutherland Canal System by protecting the Keystone Diversion Gates should an emergency situation occur, and back pressure is needed to be maintained on the Keystone Diversion Gates.

The Nebraska Department of Natural Resources' 2019 Annual Report dated September 2019 includes the following objectives that the project helps to meet. Objective "3. Support locally developed water management plans for conjunctively managing hydrologically connected water supplies" is aided by the project's protection of the Sutherland Canal System and its uses for flood protection, routing water around the North Platte chokepoint, canal seepage recharging groundwater. Objective "5. Participate in interagency collaboration with federal agencies, state agencies, local natural resources districts (NRD's), and other water interest entities on various water resources programs and projects" could be met by the project's protection of the Sutherland Canal System and its uses for routing Platte River Recovery Implementation Program's Environmental Account water.

The proposed project provides additional protections for
1) reducing shortages to target flows for wildlife by retiming ~120,000 acre-feet of flows through seepage,
2) lessening damaging flood effects by immediately shutting down canal flow, and
3) Improves or sustains hydropower production.

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.

N/A

Attachment A – Letters of Support
Attachment B – Project Location
Attachment C – Field Investigations Photos and Specifications
Attachment D – Cost/Benefit Information
Attachment E – FERC Recreation Report
Attachment F – State Historical Preservation Office Letter