

STATE OF NEBRASKA  
DEPARTMENT OF NATURAL RESOURCES

PETITION REQUESTING LEAVE TO FILE OR CONSIDER AN APPLICATION FOR  
A NEW SURFACE WATER APPROPRIATION WITHIN A MORATORIUM OR STAY AREA  
UNDER TITLE 457 N.A.C. CHAPTER 23

Instructions:

1. Complete items 1 through 5 by printing in ink or typing the appropriate information and by placing an X in the appropriate box.
2. Attach a copy of the completed proposed application for a new surface water appropriation.
3. Attach any supporting documentation.
4. Include a \$10 non-refundable filing fee.

FOR DEPARTMENT USE ONLY

Filed in the office of the Department of Natural Resources  
at 9 : 15 on April 22, 2020  
Modification VAR- 8944  
SW Application: \_\_\_\_\_ RightID: \_\_\_\_\_  
Water Division: 1-A  
Receipt Number: A-5290 Amount: \$10.00

1. Name and contact information of petitioner:

(\$50.00)

Name: Twin Platte Natural Resources District

Address 1: Attn: Kent O Miller, General Manager

Address 2: PO Box 1347

City & State: North Platte NE

Zip Code: 69103 - 1347

Phone Number: (308) 535 - 8080

E-Mail Address: komiller@tpnrd.org

Cell Phone: ( ) -

2. Check the situation that applies:

- ☐ Application already filed. Application Number: \_\_\_\_\_
- ☒ Application not filed. (Enclose copy of proposed application)

3. Description of proposed project:

In the non-irrigated season and such other times as excess flows are available, divert excess stream flows for the purpose of recharging the aquifer, via the existing North Platte Canal head gate located in the NE 1/4 SE 1/4 Section 13, T14N, R34W, Lincoln County from the North Platte River.

4. The proposed project must meet at least one of the following criteria. (Check all that apply)

- ☒ 1. The proposed project is for a non-consumptive use. (Attach description of use)
- ☐ 2. The applicant has a credible proposal for replacing any consumptive use that will occur in a manner such that the project will not harm other users. (Attach offset plan)
- ☒ 3. The Applicant has credible information that indicates there may be unappropriated water available at the proposed location at the time the depletion is likely to occur. (Attach analysis)
- ☐ 4. The project existed prior to any informal moratorium, formal moratorium or stay. (Attach proof)
- ☐ 5. There is a public safety issue that must be addressed and the proposed project addresses that issue. (Attach explanation)
- ☐ 6. The proposed use is a temporary use for public construction and the total volume requested is less than ten (10) acre-feet.

5. Other reason(s) to show good cause why a variance should be granted:

Granting the variance will allow broad benefits to local, regional, and state interests. Specifically, the augmented flows will provide habitat for species as intended by the Platte River Cooperative Agreement. Augment flow will further assist the applicant, NRDs, and NeDNR, meet obligations under LB 962 & PRIP

04/20/2020

Date

Signature of Petitioner (or authorized agent)

Kent O. Miller

Print Name

If you have any questions regarding this form, please contact the Surface Water Permitting Section at the Department of Natural Resources (402) 471-2363

Forward this petition, all supplemental documentation and a \$10 non-refundable filing fee to:

State of Nebraska  
Department of Natural Resources  
301 Centennial Mall South  
P.O. Box 94676  
Lincoln, Nebraska, 68509-4676

## LEASE AGREEMENT

This Canal/Lateral Lease Agreement is made and entered into this 12<sup>th</sup> day of March, 2015, between the Twin Platte Natural Resources District ("TPNRD"), a political subdivision of the State of Nebraska, and the Platte Valley Irrigation District ("Irrigation District"), a political subdivision of the State of Nebraska, collectively referred to as the "Parties."

### RECITALS

WHEREAS, TPNRD is a political subdivision of the State of Nebraska, duly authorized to acquire, hold, dispose of and lease rights and appropriations to use the waters of the State of Nebraska;

WHEREAS, TPNRD desires to enhance the flows of water to the Platte River, as required by the TPNRD Integrated Management Plan, through means of ground water recharge to induce return flows;

WHEREAS, the Irrigation District owns and operates certain canals and laterals that have the capability to divert water from the North Platte River;

WHEREAS, the Irrigation District desires to enter into a lease the use of its canals and laterals with the TPNRD to divert available flows in the non-irrigation season and such other times as flows are available from the North Platte River for ground water recharge and streamflow enhancement;

WHEREAS, the Irrigation District understands and acknowledges that payment for the use of its canals and laterals, as set forth below, is dependent upon TPNRD obtaining an appropriation from the Nebraska Department of Natural Resources ("NDNR").

NOW THEREFORE, the Parties mutually agree as follows:

1. Canals and Laterals. The Irrigation District agrees to lease to the TPNRD the canals and laterals identified in Appendix A to this Lease Agreement. Under the direction of TPNRD, the Irrigation District will be responsible for the operation of any headgates and the diversion of water into the appropriate canals and laterals.

2. Water Rights. TPNRD shall be responsible for obtaining the necessary and appropriate water rights/appropriations from the NDNR. The Irrigation District understands and acknowledges that TPNRD will not be authorized to direct any diversion of water from the North Platte River and that the date of issuance of any such right or appropriation is beyond the control of TPNRD.

3. Amount Diverted And Timing of Diversions. TPNRD intends to acquire a water right/appropriation for 201.00 cubic feet per second ("cfs"). As directed by TPNRD, the Irrigation District shall divert flows up to and including 201.00 cfs during the non-irrigation season and such other times as flows are available. If necessary for safety, or as required to protect the canals and laterals, the Irrigation District may divert a lesser amount or no amounts upon notice to TPNRD management.



4. Non-Irrigation Season. As used in this Lease Agreement, the term "non-irrigation season" shall mean the period from October 1 to April 15 of the following year.

5. Payment. Upon the execution of this Lease Agreement, TPNRD shall pay the Irrigation District the sum of \$5,100.00 as an incentive to enter into this Lease Agreement. Provided the TPNRD obtains the necessary and appropriate water rights/appropriations, on March 1 of each year thereafter, TPNRD agrees to pay an additional sum of \$5,100.00 to the Irrigation District as an annual retainer. Provided the TPNRD obtains the necessary and appropriate water rights/appropriations, on January 1 of each year thereafter, TPNRD agrees to pay \$31.00 per acre-foot of recharge that occurs during the preceding year. The Irrigation District understands and agrees that TPNRD shall have sole discretion to calculate the amount of recharge that occurs for each year. Upon the request of the Irrigation District, TPNRD agrees to provide a detailed explanation of its calculations to determine the amount of recharge that occurs each year. TPNRD agrees to annually adjust the previous year's retainer payment and per acre-foot payment based on a change in a consumer price index agreed to by the Irrigation District and the TPNRD. Payments received by the Irrigation District will be used for improvements or maintenance of structures, canals, and/or laterals. The Irrigation District will provide an annual report to the TPNRD on the use of the funds received from the TPNRD.

6. Duration. The duration of this Lease Agreement shall be 50 years from the date this agreement is signed by both Parties. The Parties may mutually agree to extend this Lease Agreement upon the terms and conditions set forth herein as desired.

7. Assignment. No assignment of this Lease Agreement shall be allowed without the mutual written consent of the Parties.

8. Governing Law. Parties agree that this Lease Agreement shall be governed, construed, and enforced in accordance with the laws of the State of Nebraska.

9. Modification. None of the terms or conditions of this Lease Agreement shall be modified without the written consent of the Parties, and this Lease Agreement contains the entire agreement of the Parties.

IN WITNESS WHEREOF, the Parties hereto have signed this Lease Agreement on the dates indicated.

TWIN PLATTE NATURAL  
RESOURCES DISTRICT

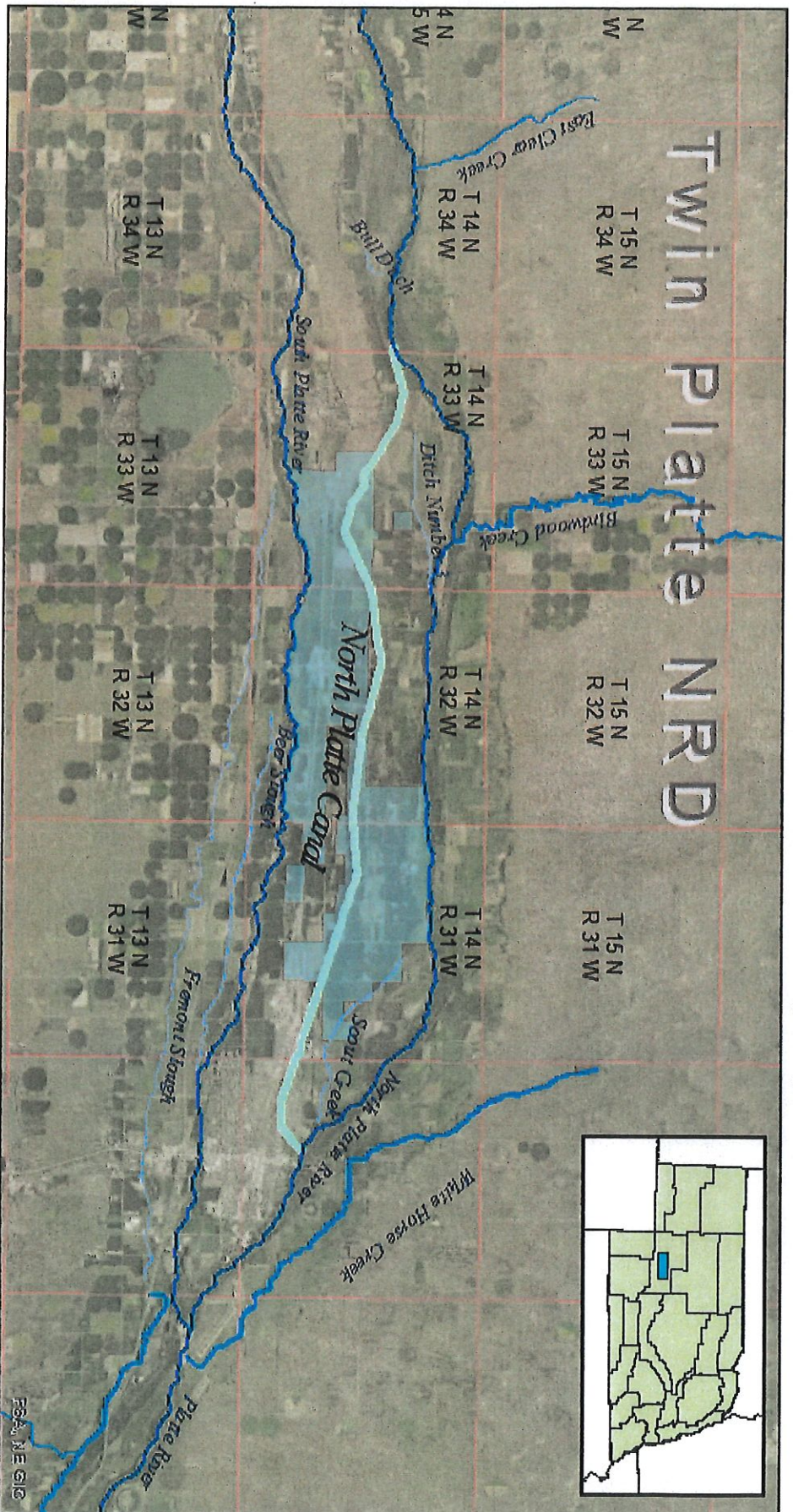
March 12, 2015  
Date  
[Signature]  
Signature

PLATTE VALLEY  
IRRIGATION DISTRICT

March 12, 2015  
Date  
[Signature]  
Signature



# The North Platte Canal Operated by the Platte Valley Irrigation District



Data Source: FSA 2016 Aerial Photography  
 NED NR Surface Water Database, National Hydrography Dataset  
 Map by NEDNR 12Z2017 bae

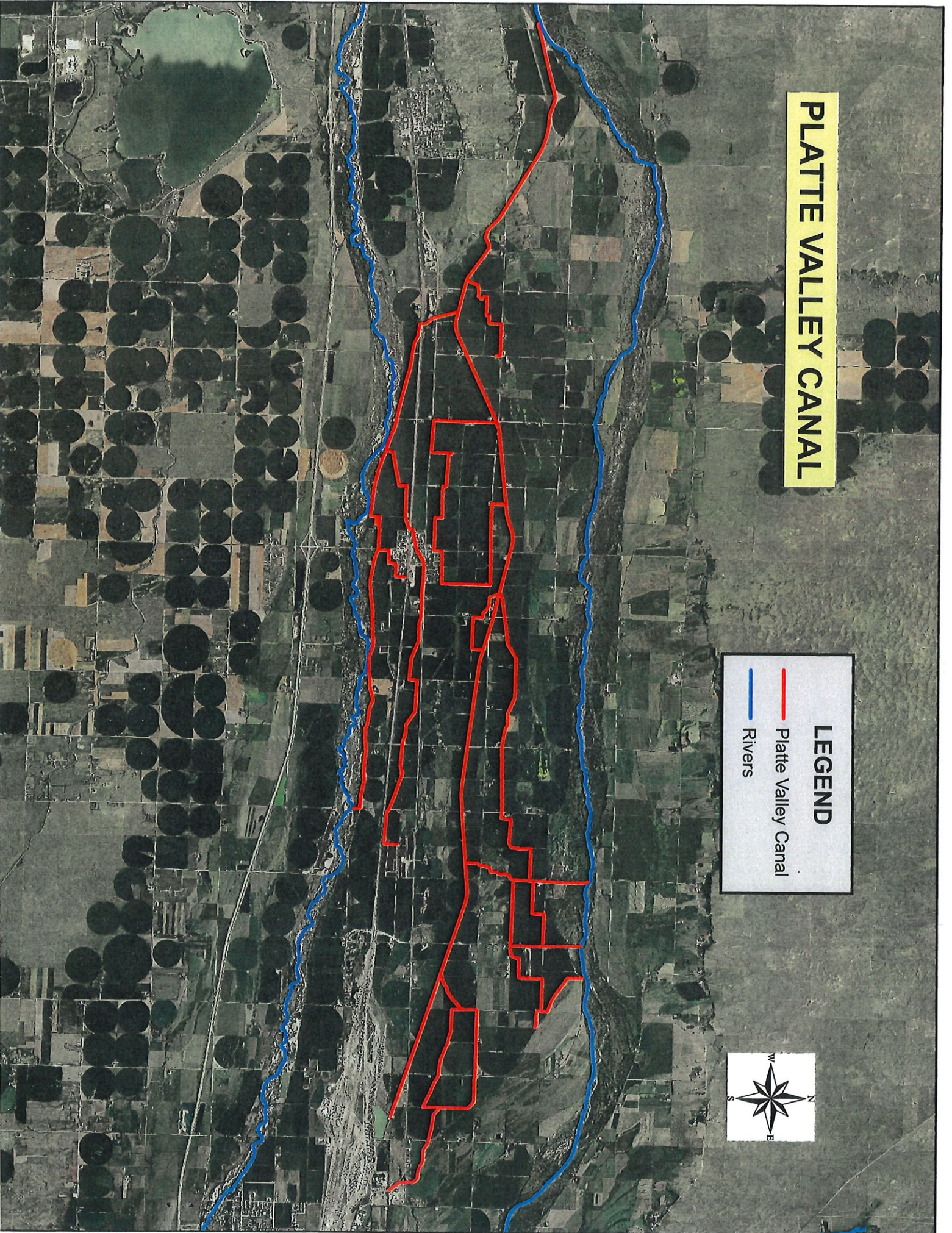


# PLATTE VALLEY CANAL

**LEGEND**

— Platte Valley Canal

— Rivers





## **Narrative on the Benefits of the Irrigation Canal Recharge Projects in the Twin Platte Natural Resources District**

### **Background:**

In 2004, Legislative Bill 962 was enacted which designated the Platte River Basin west of Elm Creek as "Over Appropriated." This designation requires the Natural Resources Districts (NRDs) in the over appropriated areas to impose moratoriums on new ground water wells, and on new ground water depletions due to ground water irrigated acres. The moratoriums include all tributary streams above the Loup River confluence, including the North and South Platte Rivers and tributaries. The Twin Platte Natural Resources District (TPNRD) is located in the impacted area.

On January 1, 2007, work officially commenced on the Platte River Recovery Implementation Program (Program). The Program's goals include reducing shortages to U.S. Fish and Wildlife Service target flows and providing additional land habitat for "target species" (the whooping crane, piping plover, interior least tern, and pallid sturgeon) in the Lexington to Chapman reach of the Platte River. In order to meet these goals, the states of Nebraska, Wyoming, Colorado, and the Department of the Interior adopted depletion plans to address the mitigation of the adverse impacts of certain new water-related activities on stream flows in the Platte River. Nebraska's New Depletion Plan provides that the State of Nebraska will mitigate existing surface water and ground water uses in order to return to a July 1, 1997 level of water-use development. Portions of the shortages to target flows are intended to be offset through water conservation and water supply projects identified by the Program Governance Committee in the Water Action Plan. A goal of the first 13 year increment of the Program is to attempt to reduce shortages to target flows by an average of 130,000 to 150,000 acre-feet (AF) per year, as measured at Grand Island.

In August 2009, integrated management plans (IMPs) were adopted by order of the Nebraska Department of Natural Resources (Department), pursuant to *Neb. Rev. Stat. 46-718(2)* for several NRDs, including the TPNRD. As part of the surface water controls adopted by the Department pursuant to *Neb. Rev. Stat. 46-716 (1)(b)*, the moratorium on issuing new surface water appropriations was continued.

On September 11, 2009, a Basin-Wide Integrated Management Plan (BWIMP) for the over appropriated area of the Platte River Basin was adopted by order of the Department. The TPNRD approved the BWIMP, effective September 15, 2009. As a result, the TPNRD must place 7,700 AF of offset water into the Platte River annually due to the impact of new ground water irrigated acres developed since 1997. If offset water is not found, the IMP requires regulations for ground water users to reduce their consumptive use of ground water approximately 10 to 15 percent per irrigator (approximately 35,000 to 50,000 acres) to meet the required offset water to the river.

### **Project Purpose and Approach:**

As a result of LB 962's designation of the area as over appropriated and the mission of the Program, the TPNRD is seeking a temporary right to divert excess flows from the Platte River in order to provide ground water recharge and provide additional public interest benefits (detailed on the following pages). Specifically, the objective of the project is to allow an opportunity to divert "excess" flows into existing irrigation canals for intentional ground water recharge. Excess flows include any flow that is not already identified in the Program agreement, or any flow that is not already appropriated by the State of Nebraska. Temporary permits for similar purposes requested by the TPNRD were granted by the Department in 2011, 2013, and 2014.

Temporary appropriations are being sought for the following canals:

- Keith-Lincoln Irrigation Canal, which diverts water from the North Platte River
- Suburban Irrigation Canal, which diverts water from the North Platte River
- Paxton-Hershey Canal, which diverts water from the North Platte River
- North Platte Canal, which diverts water from the North Platte River
- Western Irrigation Canal, which diverts water from the South Platte River

When excess water is available, water will be diverted by any or all of these canals to flow through the canals and their laterals. This diversion could begin as early in the spring as possible, when excess water is available and ice is not a problem. Diversion would continue, subject to availability, until irrigation season begins. Diversions could also continue after irrigation season concludes or demand diminishes, sufficient to allow the canals to have enough capacity to carry the recharge water. All of the diversions would be subject to availability of excess flows, and would only occur when excess flow events occur. The total annual diversion volumes will vary depending on flows and availability. Lease agreements for appropriation have been signed by the TPNRD and irrigation districts involved.

### **Results of Previous "Upper Platte River Recharge and Flood Mitigation Demonstration Project":**

In order to understand the potential impacts of a project of this kind, a demonstration project was developed in 2011 in conjunction with the Department, Platte Basin NRDs (North Platte NRD, South Platte NRD, Twin Platte NRD, Central Platte NRD, and Tri-Basin NRD), and 21 irrigation districts along the North and South Platte Rivers. Excess flows were diverted during September through December. Canal losses were calculated using diversion and spill discharge measurements in order to quantify the volume of water that was recharged by the canals. Recharge volumes for each canal were used in conjunction with response functions developed by the technical committee under the Platte Basin Habitat Enhancement Program (PBHEP) to calculate estimated accretions/depletions to the Platte River. Results from the demonstration project include:

- Annual accretion during the first decade is approximately 1,000 to 1,500 AF per year
- Residual accretions greater than 500 AF per year will persist for 25 years

- NRD specific estimates show a 50 year benefit to stream flow ranging from 2,000 to 12,000 AF, with total 50 year benefits over 36,000 AF
- Canal specific source data indicates that approximately 140,000 AF was diverted, of which approximately 65,000 AF is estimated to have seeped into ground water storage

This indicates that much of the benefit from this single seepage demonstration may persist well beyond the 50 year planning horizon. Water use and management practices in the interim will fundamentally impact the realization of these benefits.

### **Project Benefits:**

The water right requested in this application not only provides the economic, environmental, and social benefits outlined below, it is compatible with the BWIMP as well as the TPNRD's IMP. These plans allow for the Platte River Basin NRDs to identify management options to accomplish the goal of incrementally achieving and sustaining a fully appropriated status, including through augmentation/retiming projects and alternate management of canals. Specific benefits of this project include:

- Enhanced flows in the Platte River in the over appropriated reach to assist with returning the Platte River to 1997 levels of depletion, as required by the TPNRD's IMP.
- Increased habitat for threatened and endangered species due to greater stream flows during the summer months as a result of the ground water recharge and associated base flow returns
- Improved flows of the Platte River as it passes the wellfields of Kearney, Grand Island, Fremont, Lincoln, Omaha, and other smaller communities
- Decreased number of irrigated acres that must be retired in order to meet flow requirements
- Decreased economic impact upon the local tax base, communities, industries, and the State of Nebraska, by limiting the detrimental impact from lost irrigated acres on reduced sales and income tax
- Protection of existing water users, local economies, environmental health and recreation users, while maintaining the economic and social aspects of life within the TPNRD
- Reduced burden on the Department and Program to assist (financially and other) in returning the Platte River to 1997 levels of depletion

In summary, the temporary appropriation will be used for recharge to ultimately enhance Platte River flows. Due to the substantial benefits this project will provide, it is in the public's interest to grant a temporary appropriation.



## **Excess Flow Analysis**

### **Approach**

The estimate of excess flow availability for potential diversion is based on the analyses conducted by HDR for the NDNR titled "Evaluation of Historic Platte River Streamflow in Excess of State Protected Flows and Target Flows" (December 2010), and the subsequent "Supplement to December 2010 Report" (March 2013).

These analyses included the Platte River reaches from the North Platte River at Lewellen, Nebraska, and the South Platte River at Julesburg, Colorado, to the Platte River near Louisville, Nebraska. In simplified terms, the daily historic flows throughout the reach compared to state protected flows and target flows for the period 1946 to 2010. For each day of the analysis, historic daily flows at each gage location were compared to state protected flows and target flows. If historic flows were exceeded by state protected flows and target flows, no excess flow is available at that gage for that day and at upstream reaches (travel time accounted for). If the daily historic flow exceeded state protected flows and target flows, excess flow was then available and quantified. To account for the process of administration of appropriations on the river, excess flows were required to be available three consecutive days before any excess flows volumes were recognized as being available for diversion. The analysis was completed on a daily basis for the entire 1946-2010 period and cumulative excess flow volumes determined at select gage locations along the river.

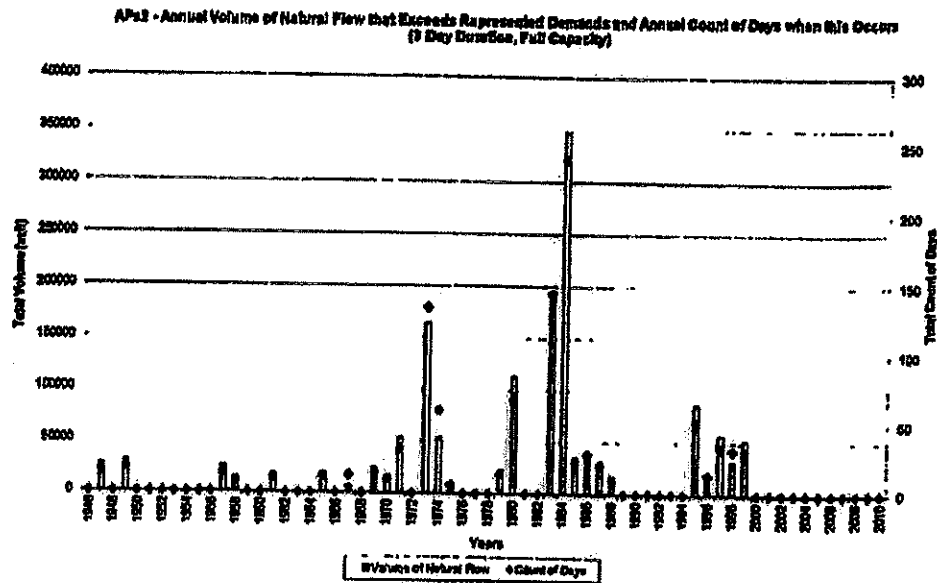
### **Excess Flow Results**

Figure 1 illustrates the estimate of annual volumes of excess flows available and the total number of days excess flow is available for diversion in the South Platte River below Julesburg for the 1946-2010 period. Figure 2 illustrates the estimated average monthly volume of excess flow available and the average number of days excess flow was available for each month for the 1946-2010 period. Both figures illustrate that excess flows can be expected on the South Platte River and be available for diversion.

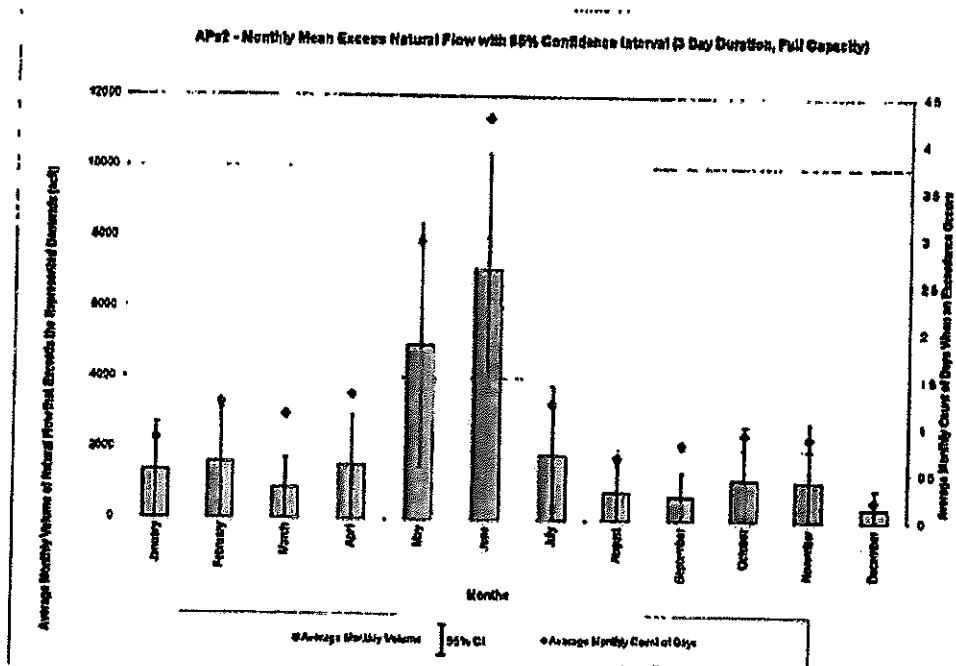
### **Recent Diversion of Excess Flows**

In addition to the results of the excess flow analyses that illustrate excess flows available for diversion can be expected on the South Platte River, temporary appropriations were obtained and exercised for diversion of excess flows on the North Platte and South Platte Rivers in 2011, 2013, and 2014. Table 1 summarizes the number of days excess flows were available and the total diversions of Western Canal.

**Figure 1. Annual Volume of Excess Flow – South Platte River below Julesburg**



**Figure 2. Average Monthly Volume of Excess Flow (1946-2010) – South Platte River below Julesburg**





**Table 1. Summary of excess flow diversions (2011-2013) under temporary appropriations**

Canal	Spring 2011 <sup>1</sup>		Fall 2011 <sup>1</sup>		Fall 2013 <sup>1</sup>		Spring 2014 <sup>1</sup>	
	# of Days	Diversion Volume (AF)	# of Days	Diversion Volume (AF)	# of Days	Diversion Volume (AF)	# of Days	Diversion Volume (AF)
Western	41	15,236	49	18,370	27	10,137	28	1,066

<sup>1</sup> Estimates of canal diversions provided by Twin Platte Natural Resources District (see attached summary) Diversion volumes calculated based on canal seepage volume and % seepage values for each canal. Volumes include diversion and seepage from main canal and recharge pits.

The excess flow analysis and availability (and subsequent diversion under temporary appropriations granted by NDNR) of excess flows in three of the last four years illustrate that excess flows available for diversion can be expected to occur on the South Platte River below Julesburg.

**TPNRD - 2011-2014 Temporary Appropriations**
*\* Approved March 12, 2015*

Irrigation Canal	Total Water Right	Seepage Rate		Days	Estimated Canal Seepage	Pits Seepage	Total Seepage
	cfs	%	AF/Day		AF	AF	AF
<b>Keith Lincoln</b>	<b>80.56</b>	<b>32%</b>	<b>52</b>				
2011 - Spring				41	2,114	0	2,114
2011 - Fall				49	2,526	0	2,526
2011 - Total				90	4,640	0	4,640
2012 - Total				0	0	0	0
2013 - Total				0	0	0	0
2014 - Total				0	0	0	0
<b>Total</b>					<b>4,640</b>	<b>0</b>	<b>4,640</b>
<b>Platte Valley</b>	<b>201.00</b>	<b>32%</b>	<b>129</b>				
2011 - Spring				41	5,274	0	5,274
2011 - Fall				49	6,303	0	6,303
2011 - Total				90	11,578	0	11,578
2012 - Total				0	0	0	0
2013 - Fall				27	3,473	0	3,473
2013 - Total				27	3,473	0	3,473
2014 - Total				0	0	0	0
<b>Total</b>					<b>15,051</b>	<b>0</b>	<b>15,051</b>
<b>Suburban</b>	<b>77.47</b>	<b>32%</b>	<b>50</b>				
2011 - Spring				41	2,033	0	2,033
2011 - Fall				49	2,429	0	2,429
2011 - Total				90	4,462	0	4,462
2012 - Total				0	0	0	0
2013 - Total				0	0	0	0
2014 - Total				0	0	0	0
<b>Total</b>					<b>4,462</b>	<b>0</b>	<b>4,462</b>
<b>Western</b>	<b>176.26</b>	<b>30%</b>	<b>106</b>				
2011 - Spring				41	4,336	235	4,571
2011 - Fall				49	5,182	329	5,511
2011 - Total				90	9,518	564	10,083
2012 - Total				0	0	0	0
2013 - Fall				27	2,855	185	3,041
2013 - Total				27	2,855	185	3,041
2014 - Spring				0	0	320	320
2014 - Total				0	0	320	320
<b>Total</b>					<b>12,373</b>	<b>1,069</b>	<b>13,443</b>
<b>Paxton Hershey</b>	<b>102.78</b>	<b>32%</b>	<b>66</b>				
2011 - Spring				41	2,697	0	2,697
2011 - Fall				49	3,223	0	3,223
2011 - Total				90	5,920	0	5,920
2012 - Total				0	0	0	0
2013 - Fall				27	1,776	0	1,776
2013 - Total				27	1,776	0	1,776
2014 - Total				0	0	0	0
<b>Total</b>					<b>7,696</b>	<b>0</b>	<b>7,696</b>
<b>Totals</b>					<b>44,223</b>	<b>1,069</b>	<b>45,292</b>



## MEMORANDUM

TO: POAC Administrators

FROM: Tracy Zayac, Chair, POAC Technical Committee

SUBJECT: Dates and rates to use in canal-recharge portion of Robust Review project

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At the January 25, 2017, kickoff meeting for the Robust Review, the POAC Technical Committee identified the need to assign the date ranges and canal-seepage rates that would be used for the portion of the Robust Review that will examine the effects of canal-recharge projects in the overappropriated area.

The Technical Committee determined in subsequent discussions that the POAC Administrators should be given the opportunity to approve the date ranges to be used for the analysis. The following information summarizes the Technical Committee's recommendations to the Administrators for date ranges to use. Information on the recharge rates to be used is also provided below for the Administrators' information.

### Date ranges for canal-recharge events

The attached tables, modified from those compiled by Jessie Winter (DNR) to aid the Committee's discussion, show the potential dates that could be used for the analysis. The Committee's recommendations to the Administrators are as follows:

*Spring 2011:* The Committee recommends that the date of first diversion be used as the start date for the Spring 2011 recharge event, and the end date shown in PBHEP records be used as the final diversion date.

**\*\*EXCEPTION:** The final date in the PBHEP records for Central Irrigation District is June 15, 2011. The Committee agrees that this date is extremely late to be nonirrigation. In addition, the diversion data show that Central Canal's diversions increase markedly after June 3, compared to diversions made on or before June 3. For Central Canal, the Committee recommends using June 3, 2011, as the end date, instead of the PBHEP date.

*Fall 2011:* The Committee recommends that the start date specified in the Fall 2011 contracts be used as the start date for the Fall 2011 event, and the last date of diversion be used as the final diversion date.

**\*\*EXCEPTIONS:** The Fall 2011 contracts executed with NPPD for the Dawson, Gothenburg, and North Platte Canals did not specify a start date for diversions. As a result, the Committee recommends using the start date shown in PBHEP records for these three canals.

*Spring 2012:* The Committee recommends using the date range of March 17-22, 2012, for Orchard Alfalfa Canal. These six days represent the dates in the PBHEP records and are the days on which excess flows were actually available to be diverted. The Committee also

recommends using January 1-5, 2012, for Phelps Canal, as these dates represent the end of CNPPID's fall/winter diversions for that season.

*Fall 2013:* The Committee recommends using the start date specified in the Fall 2013 contracts as the start date for the Fall 2013 event and the last date of diversion for the end date of the event.

Canal seepage rates

Attached to this memo are additional tables showing the recommended recharge rates to use for each canal in the WWUMM area, along with the reason for those recommendations as made by Thad Kuntz of ARI. An additional table shows the recommended rates for the canals in the COHYST area. The Committee accepts ARI's recommendations for the WWUMM area canals and COHYST area recommendations.

Action Item for Administrators:

The Administrators may choose to approve the Technical Committee's recommendations outlined above either in whole or in part, or may make alternative recommendations for date ranges to use in the Robust Review analysis of canal recharge.



Table 1. Date range information for spring 2011 diversions. All dates are 2011 unless otherwise noted.

Canal	Contract Information			Diversion Data		DNR 2011 Spreadsheet		PBHEP Table		Notes
	Entered	Start	End	Start	End	Start	End	Start	End	
Belmont	3/29	4/1	Not listed	4/1	5/11	4/1	5/1	4/1	5/11	
Castle Rock	4/4	4/6	Not listed	4/3	5/10	4/3	5/3	4/6	5/10	
Central	4/6	4/6	Not listed	4/6	6/15	4/6	5/15	4/6	6/15*	*TC chose 6/3 based on data consistency and timing within season
Chimney Rock	3/30	4/1	Not listed	4/1	5/3	4/1	5/1	4/1	5/3	
Cozad	4/11	4/15	Not listed	4/18	5/19	4/18	5/17	4/18	5/19	
Enterprise	3/31	4/4	Not listed	4/4	5/3	4/4	5/1	4/4	5/3	
Farmers	3/30	4/7	Not listed	4/6	5/9	4/5	5/7	4/7	5/9	
Keith Lincoln	3/28	4/10	Not listed	4/7	5/2	4/7	5/2	4/10	6/2	
Lisco	3/30	4/10	Not listed	4/13	5/13	4/13	5/13	4/13	5/18	
Minatare	3/31	4/4	Not listed	4/1	5/5	4/1	4/30	4/4	5/5	
Nine Mile	3/30	4/1	Not listed	4/1	5/23	4/15	5/14	4/1	5/23	
Dawson County	4/22	4/15	5/15	4/18	5/26	4/18	5/17	4/18	5/26	
Gothenburg	4/22	4/15	5/15	4/11	5/19	4/11	5/10	4/15	5/19	
Kearney	4/22	4/15	5/15	4/15	5/17	4/18	5/17	4/15	5/15	
Orchard-Alfalfa	4/11	4/15	Not listed	4/18	5/23	4/18	5/17	4/18	5/23	
Pathfinder	3/31	3/31	Not listed	3/31	4/15	4/1	4/15	3/31	4/15	
Paxton-Hershey	3/28	4/10	Not listed	4/4	5/16	4/4	5/10	4/10	5/16	
North Platte	3/28	4/4	Not listed	4/3	5/23	4/3	5/5	4/4	5/18	
Suburban	3/28	4/4	Not listed	4/4	5/18	4/4	5/3	4/4	5/18	
Thirty Mile	4/11	4/15	Not listed	4/22	5/30	4/22	5/17	4/22	5/30	
Western	4/11	Not listed	Not listed	4/11	6/2	4/10	5/17	4/22	6/2	4/22/11 last signature date

Table 2. Date range information for fall 2011 diversions. All dates are 2011 unless otherwise noted.

Canal	Contract Information			Diversion Dates		DNR 2012 Spreadsheet		PBHEP Records		Notes
	Entered	Start	End	Start	End	Start	End	Start	End	
Belmont	9/21	9/27	Not listed	9/24	11/1	9/24	11/1	9/27	10/27	
Castle Rock	10/4	10/5	Not listed	10/5	11/12	10/5	11/12	10/5	11/4	
Central	9/19	10/1	Not listed	9/24	10/29	9/24	10/29	9/24	10/29	
Chimney Rock	10/25	10/14	Not listed	9/24	11/9	9/24	11/9	10/7	11/9	
Phelps	6/27	Not specified	8/15/2012	9/28	1/5/2012	9/28	12/31	9/28	12/31	Contract stated diversions to start end of irrigation season (likely early September 2011). Diversions continued into 2012, through January 5. Those 5 days are reported with 2012 data
Cozad	9/16	9/16	Not listed	9/1	10/10	9/1	10/10	9/2	10/10	
Keith Lincoln	9/15	9/20	Not listed	9/20	10/27	9/21	10/27	9/20	10/27	
Lisco	9/14	9/20	Not listed	9/24	10/23	9/23	10/23	9/20	10/20	
Minatare	9/16	10/1	Not listed	10/1	11/2	10/1	11/2	10/1	11/2	
Nine Mile	9/16	10/10	Not listed	9/14	10/24	9/14	10/24	10/10	11/10	
Dawson County	10/3	Not specified	10/10	9/10	10/13	9/10	10/13	9/10	10/12	
Gothenburg	10/3	Not specified	10/10	9/10	10/13	9/10	10/13	9/10	10/12	
North Platte	9/15	Not listed	Not listed	9/26	10/26	9/26	10/26	9/23	10/27	
Orchard-Alfalfa	9/12	9/12	Not listed	9/1	10/12	9/1	10/12	9/12	10/12	
Paxton-Hershey	9/15	9/19	Not listed	9/17	10/31	9/17	10/31	9/19	10/31	
Suburban	9/15	9/15	Not listed	9/15	10/17	9/15	10/17	9/15	10/15	
Thirty Mile	9/1	9/1	Not listed	9/1	10/3	9/1	10/3	9/1	10/1	
Western	9/15	9/21	Not listed	9/1	11/14	9/1	11/14	9/21	10/21	Department finalized records show diversions through 11/14. Diversions after 10/21 may have been for the recharge pits. SPNRD or TPNRD have this information
Winters Creek	10/7	10/7	Not listed	9/23	10/26*	9/23	11/7	10/7	11/7	Includes Winters Creek from North Platte River and Winters Creek from Winters Creek;

\*additional data needed to verify

Table 3. Date range information for spring 2012 diversions. All dates are 2012 unless otherwise noted.

Canal	Contract Information			DNR 2012 Spreadsheet		Notes
	Entered	Start	End	Start	End	
Orchard-Alfalfa	3/26	Not listed	4/18 or first day of irrigation season	3/17	3/22	PBHEP records indicate payment for 6 days of diversions
Phelps	6/27/2011	Not specified	8/15	1/1	1/5	Contract stated diversions to start end of irrigation season (likely early September 2011).

Table 4. Date range information for fall 2013 diversions. All dates are 2013 unless otherwise noted.

Canal	Contract/Task Order Information			Diversions Dates		DNR 2013 Spreadsheet		Notes
	Entered	Start	End	Start	End	Start	End	
Dawson County	9/26	9/18	Not listed	9/23	10/9	9/23	10/9	
E65	9/20	9/20	Not listed	9/20	10/16	9/20	10/16	
Gothenburg	9/26	9/18	Not listed	9/15	10/8	9/15	10/12	Department finalized records show no diversion after 10/8
Phelps	9/20	9/20	8/15/2014	9/19	10/28	9/19	10/28	
North Platte	9/16	9/16	Not listed	9/15	10/12	9/15	10/12	Department finalized records show diversion through 10/15
Paxton-Hershey	9/16	9/16	Not listed	9/15	10/15	9/15	10/11	Department finalized records show diversion through 10/15
Thirty Mile	12/4	9/18	Not listed	9/22	10/11	9/15	10/5	
Western	9/16	9/16	Not listed	9/15	10/27	9/15	10/27	



*Table 1: WWUM Modeling Area 2011 Spring Assessment of Canal Loss Calculations, Recommended Canal Loss, and Explanation*

Canal	Updated TM Canal Loss %	Number of Spill Measurements	Modeled Canal Loss %	Recommended Canal Loss % to Use	Recommended Canal Loss %	Explanation of the Criteria for the Recommendation
Pathfinder	40%	1	55%	Modeled	55%	There was only a single spill measurement taken at the Pathfinder Spill. However, there is no data for the other Pathfinder spill locations to determine if there were additional spills.
Farmers	45%	3	49%	Modeled	49%	There were three spill measurements. However, two measurements only recorded spills at Red Willow Creek at the end of the canal, and one measurement measured Winters Creek and Red Willow Creek. We personally know they spilled some water into Nine Mile Creek. The canal has several other spills points, and the dataset does not provide any information on whether spills occurred at these locations.
Enterprise	69%	3	42%	Modeled	42%	There were three spill measurements with decent distribution during the excess flow diversion. However, one measurement recorded spill at Tub Springs Creek and two measurements measured at Winters Creek at the end of the canal. There is no additional information on whether the Tub Springs or Winters Creek spills were active during each other measurement.
Minatare	24%	4	41%	Measured	24%	Minatare Canal had a decent number of spill measurements between 4-5-2011 and 4-26-2011. The canal diverted between 4-1-2011 and 4-30-2011. This is an acceptable resolution to determine the canal loss.
Castle Rock	41%	3	41%	Average of Measured and Modeled	41%	Castle Rock Canal had a decent number of spill measurements between 4-13-2011 and 4-26-2011. However, the canal diverted from 4-3-2011 and 5-3-2011. Because of the narrow date range of the spill measurements the measurements were averaged with the modeled estimate of canal loss.
Chimney Rock	45%	4	42%	Measured	45%	Chimney Rock Canal had a decent number of spill measurements between 4-4-2011 and 4-26-2011. The canal diverted between 4-1-2011 and 5-1-2011. This is an acceptable resolution to determine the canal loss.
Nine Mile	96%	1	41%	Average of Measured and Modeled	68%	There was only a single spill measurement taken at Nine Mile Spill. However, with only one measurement on 4-21-2011, there is not sufficient data to determine if the canal leakage was realistic, so the measured and modeled data were averaged.
Belmont	53%	3	38%	Measured	53%	Belmont Canal had a decent number of spill measurements between 4-4-2011 and 4-20-2011. The canal diverted between 4-1-2011 and 5-1-2011. This is an acceptable resolution to determine the canal loss.
Lisco	24%	1	41%	Average of Measured and Modeled	33%	There was only a single spill measurement taken at Lisco Spill. However, with only one measurement on 4-19-2011, there is not sufficient data to determine if the canal leakage was realistic, so we averaged the measured and modeled data.
Central	25%	0	42%	Modeled	42%	There were no spill measurements taken for Central Canal. The spreadsheet associated with the TM provides an estimated number. However, the estimated number was ignored as well, and 25% was used. We disregarded both these numbers and used the modeled estimate for canal leakage.
Western	31%	11	37%	Corrected Measurements	31%	There were 11 measurements from 4-21-2011 through 5-31-2011 for Western Canal which is a decent resolution. To determine the canal loss, the original TM was corrected by using Western Canal's diversions instead of Kearney Canal's. Note: Contractually, 70% of the canal recharge goes to TPNRD and 30% goes to SPNRD
Western Canal Pits	100%	N/A	N/A	N/A	100%	TM assumed that all the recorded values were recharged at 100%



Modeling

Table 2: WWUM Modeling Area 2011 Fall Assessment of Canal Loss Calculations, Recommended Canal Loss, and Explanation

Canal	Updated TM Canal Loss %	Number of Spill Measurements	Modeled Canal Loss %	Recommended Canal Loss % to Use	Recommended Canal Loss %	Explanation of the Criteria for the Recommendation
Minatare	17%	1	41%	Average of Measured and Modeled	29%	There was only a single spill measurement taken at the Minatare Canal spill. Because one measurement is not sufficient, the averaged measured and model data was used.
Castle Rock	45%	2	41%	Average of Measured and Modeled	43%	Castle Rock Canal had two measurements occurring on 10-10-11 and 10-17-11. Due to the limited number of measurements, the averaged measured and model data was used.
Chimney Rock	17%	2	42%	Average of Measured and Modeled	30%	Chimney Rock Canal had two measurements occurring on 10-10-11 and 10-18-11. Due to the limited number of measurements, the averaged measured and model data was used.
Nine Mile	96%	0	41%	Modeled	41%	No measurements were taken in the fall at Nine Mile Spill, so the modeled canal loss was used.
Belmont	63%	2	38%	Average of Measured and Modeled	51%	Belmont Canal had two measurements occurring on 10-12-11 and 10-18-11. Due to the limited number of measurements, the averaged measured and model data was used.
Lisco	56%	2	41%	Average of Measured and Modeled	49%	Lisco had two measurements occurring on 10-12-11 and 10-18-11. Due to the limited number of measurements, the averaged measured and model data was used.
Central	26%	2	42%	Average of Measured and Modeled	34%	Central had two measurements occurring on 10-11-11 and 10-17-11. Due to the limited number of measurements, the averaged measured and model data was used.
Winters	1%	2	41%	Average of Measured and Modeled	21%	Winters had two measurements occurring on 10-11-11 and 10-17-11. The spill measurement on 10-17-11 created a negative canal loss measurement and was ignored. Consequently, 1% loss was used as the measured amount. Due to the limited number of measurements, the averaged measured and model data was used.
Western	38%	3	37%	Measured	38%	Western Canal had 3 measurements in the fall which occurred on 10-17-11, 10-5-11, and 11-9-11. The measurement from 11-9-11 was ignored because it was a negative value. Due to the limited number of measurements, the averaged measured and model data was used. Note: Contractually, 70% of the canal recharge goes to TPNRD and 30% goes to SPNRD
Western Canal Pits	100%	N/A	N/A	N/A	100%	TM assumed that all the recorded values were recharged at 100%



## Memo

Table 3: WWUM Modeling Area 2013 Fall Assessment of Canal Loss Calculations, Recommended Canal Loss, and Explanation

Canal	Updated TM Canal Loss %	Number of Spill Measurements	Modeled Canal Loss %	Recommended Canal Loss % to Use	Recommended Canal Loss %	Explanation of the Criteria for the Recommendation
Western	31%	3	37%	Duplicate Measurements	31%	Because there were no measurements for fall 2013 for Western Canal, the same canal loss % for fall 2011 was used. Note: Contractually, 70% of the canal recharge goes to TPNRD and 30% goes to SPNRD
Western Canal Pits	100%	N/A	N/A	N/A	100%	TM assumed that all the recorded values were recharged at 100%





### COHYST Modeling area average canal loss calculations

**Table 1.** COHYST % of Diversion that is Recharge when diverting excess flow in 2011

	Ave % Loss	% Loss from 2013 Technical Memorandum
Cozad	96.0%	32 no return measurement
Dawson Co.	99.8%	32 no return measurement
Gothenburg	99.5%	32 no return measurement
Kearney		32 no return measurement
Keith Lincoln	97.2%	28 1 return measurement
North Platte	98.8%	32 no return measurement
Orchard-Alfalfa	76.0%	32 no return measurement
Paxton Hershey	96.9%	32 no return measurement
Phelps	100.0%	
Suburban	100.0%	61 1 return measuerment
30 Mile	94.5%	32 no return measurement
Western	79.2%	31 no return measurement

**Table 2.** COHYST % of Diversion that is Recharge when diverting excess flow in 2012

Orchard-Alfalfa	89.6%
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**Table 3.** COHYST % of Diversion that is Recharge when diverting excess flow in 2013

Dawson Co.	
Gothenburg	98.5%
North Platte	95.4%
Paxton Hershey	87.8%
Phelps	98.1%
Suburban	99.5%
30 Mile	77.0%
Western	91.9%

% Loss was estimated in the 2011 (2), 2012 and 2013 (2) worksheets

The % loss is the constant canal seepage from the Stella model divided by the diversion when diversions are gre  
If the diversion rate is less than the seepage rate % loss was set to 100%.

The % loss was then averaged for a year during the days diversion occurred

# STATE OF NEBRASKA

## DEPARTMENT OF NATURAL RESOURCES

### APPLICATION FOR A PERMIT TO APPROPRIATE WATER

COPY

Complete items 1 through 10 by printing in ink or typing the appropriate information and by placing an X in the appropriate box.

#### For Department Use Only

1. Name and address of owner of land under proposed project. Names must be exactly as described on the deed or document transferring ownership of property. Landowner must sign the application.

Twin Platte Natural Resources District  
Attn: Kent O Miller  
PO Box 1347  
North Platte NE 69103-1347

E-mail address: komiller@tpnrd.org Telephone No. (308) 535-8080

2. Name, address, and telephone number of applicant if different than landowner.

E-mail address: \_\_\_\_\_ Telephone No. ( ) \_\_\_\_\_

Filed in the office of the Department of

Natural Resources at \_\_\_\_\_ a.m./p.m.

on \_\_\_\_\_

Application No. \_\_\_\_\_

Map No. \_\_\_\_\_

Water Division \_\_\_\_\_

Receipt No. \_\_\_\_\_ Amount \_\_\_\_\_

Right ID \_\_\_\_\_

- 3a. A permit is sought to:

☒ Use natural flow ☐ Use impounded water\*

- 3b. A permit is sought for the purpose of:

☐ Irrigation ☐ Manufacturing ☐ Domestic  
☒ Other Recharge to enhance river flow  
☐ Temporary\*\* \_\_\_\_\_

- 4a. Identify the source of water (name of stream or reservoir).

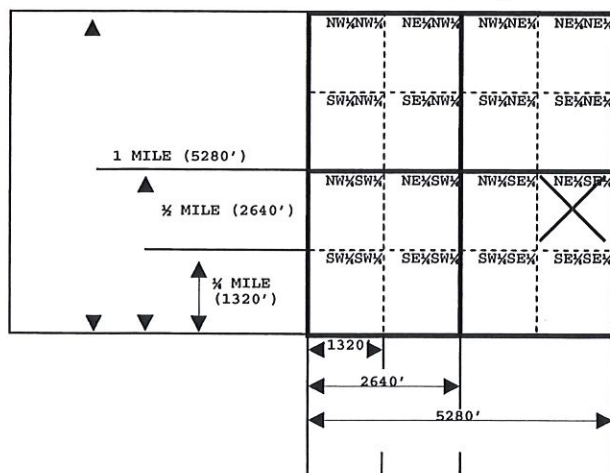
NorthPlatte River

- 4b. If applicable, identify the facility name for transporting water from the source (portable pump, name of canal or pipeline).

North Platte Irrigation Canal

5. Identify the location of the ☒ Headgate ☐ Pump

Section 13, Township 14 North, Range 34 E ☐ W ☒ County Lincoln



The box at left represents one square mile (section). Place an X within each appropriate 40-acre tract to indicate the location(s) of each headgate or pump.

If applicable, indicate the height, in feet, of any diversion or check dams on the line below.

\_\_\_\_\_

\* A separate permit to impound water must be obtained.

\*\* A temporary permit maybe granted for a maximum of one year.



6. If applicable, identify the location of lands by 40-acre subdivisions that will be irrigated.

LEGAL SUBDIVISIONS	Sec.	Twp.	Rge.	No. of Acres	LEGAL SUBDIVISIONS	Sec.	Twp.	Rge.	No. of Acres
					TOTAL NUMBER OF ACRES TO BE IRRIGATED: 0.0				

☐ Enclosed is an aerial photograph that I have marked to show the approximate location of land to be irrigated as described above.

7. State the approximate quantity of water desired for

appropriation. 201

- ☐ Gallons per minute  
☒ Cubic feet per second  
☐ Acre-feet (impounded water)

8a. State the estimated time required for completion of all water diversion facilities.

Existing/Completed

8b. State the earliest date when water will have been used for beneficial purposes.

April 2020

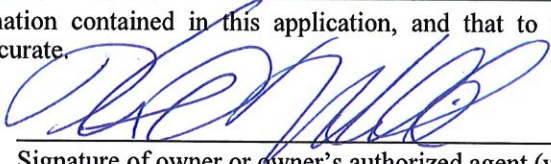
9. Will this project be constructed under a federal program, receive federal funding, or have federal planning assistance?

☒ No ☐ Yes If yes, explain: \_\_\_\_\_

10. I certify that am familiar with the information contained in this application, and that to the best of my knowledge and belief such information is true, complete and accurate.

4/20/2020

Date

  
 Signature of owner or owner's authorized agent (with proper documentation)

A final project map may accompany this application or must be filed within six months following departmental approval of this application, drawn in accordance with NAC Title 457 – Rules for Surface Water, Chapter 10, (<http://dnr.nebraska.gov/swr/surface-water-rules>). At the request of the applicant, the Department will assist with preparation of the project map.

This form must be completed in full. An incomplete or defective application will be returned with 90 days being allowed for resubmission. Failure to resubmit a corrected application within this period shall cause dismissal of the application and consequent loss of priority and fees.

A non-refundable filing fee, payable to the Department of Natural Resources, computed from the table below must accompany this application. Forward this application and applicable fees to:

State of Nebraska  
 Department of Natural Resources  
 301 Centennial Mall South / P.O. Box 94676  
 Lincoln, Nebraska 68509-4676  
 (402) 471-2363

Nature of Use	Cost	Nature of Use	Cost
Domestic.....	\$10	Manufacturing	
Agricultural		General.....	\$10
Irrigation from Stream		Power Generation for each theoretical 50 horsepower.....	\$5
0-1,000 acres.....	\$200	Other .....	\$10
Each additional 1,000 acre unit .....	\$100		
or portion thereof in excess of the first 1,000 acre unit			
Irrigation from Storage Reservoir			
0-1,000 acres.....	\$50		
or portion thereof in excess of the first 1,000 acre unit			
Each additional 1,000 acre unit.....	\$25		
or portion thereof in excess of the first 1,000 acre unit			