

## **INTEGRATED MANAGEMENT PLAN**

Jointly Developed by the  
North Platte Natural Resources District  
and the  
Nebraska Department of Natural Resources

### **CHAPTER 1: EFFECTIVE DATE**

This Integrated Management Plan (IMP) was adopted by the North Platte Natural Resources District (NPNRD) on August 13, 2009 and by the Nebraska Department of Natural Resources (Department) on August 13, 2009.

This IMP became effective on September 15, 2009.

### **CHAPTER 2: AUTHORITY**

This IMP was prepared by the Board of Directors of the NPNRD and the Department in consultation and collaboration with the NPNRD Stakeholders Group in accordance with Neb. Rev. Stat. §§ 46-715, 46-716, 46-717, 46-718, and 46-720.

### **CHAPTER 3: BACKGROUND**

On September 5, 2002, the NPNRD sent a letter to the Department requesting that studies be conducted and a hearing held on the preparation of a joint action plan for the integrated management of hydrologically connected ground water and surface water within the NPNRD. On November 1, 2002, the Director of the Department made a preliminary determination that there is reason to believe that the use of hydrologically connected ground water and surface water resources is contributing to or is in the reasonably foreseeable future likely to contribute to conflicts between ground water users and surface water appropriators, and that studies should be conducted to determine the causes of the conflicts and the extent of the area affected. Also on November 1, 2002, the NPNRD adopted Rules and Regulations for the Temporary Suspension of the Drilling of New Wells within the entire district, with the exception of the Pumpkin Creek Basin Ground Water Management Sub-Area, where a moratorium had already been implemented.

Following the completion of the studies, the Department held a public hearing on March 18, 2004, on the findings of the studies. On May 13, 2004, the NPNRD adopted an Order to work cooperatively with the Department on the development of a joint action plan for the entire NPNRD, with the exception of the Pumpkin Creek Basin Ground Water Management Sub-Area, which was designated as an integrated management area by the NPNRD in 2001.

When LB 962 (2004) became effective on July 16, 2004, the entirety of the NPNRD, with the exception of the Pumpkin Creek Basin Ground Water Management Sub-Area, became fully

appropriated. The temporary suspension on the drilling of new wells was replaced by a stay on the issuance of water well construction permits. In addition, the fully appropriated determination resulted in a stay on new surface water appropriations and on increases in acres irrigated by either ground water or surface water.

On September 15, 2004, the Department issued an Order designating a portion of the Platte River Basin upstream of the Kearney Canal diversion as overappropriated. The Pumpkin Creek Basin Ground Water Management Sub-Area was included in this designation.

Prior to the effective date of LB 962 (2004), a stakeholder group had been established to provide input on the preparation of the joint action plan. This stakeholder group was continued and expanded for purposes of consultation and collaboration on the preparation of the IMP. This stakeholder group continued to meet until the February 2009. Consensus was not reached on the language of the draft IMP by the stakeholder group; therefore, the NPNRD and the Department continued to work on the draft of the IMP until April 2009, when agreement on the IMP was reached by the NPNRD and the Department and a public hearing was scheduled.

#### **CHAPTER 4: MAP AND MANAGEMENT AREA BOUNDARIES**

I. The area subject to the fully appropriated portion of this IMP is the entire geographic area of the NPNRD with the exception of the Pumpkin Creek Basin Ground Water Management Sub-Area (Map 1).

II. The area subject to the overappropriated portion of this IMP is the geographic area of the NPNRD designated by the Department as overappropriated on September 15, 2004 (Map 2) which includes the Pumpkin Creek Basin Ground Water Management Sub-Area (Map 3).

III. The stratigraphic boundaries subject to this IMP include all sediments from ground level downward through all aquifer units.

#### **CHAPTER 5: FULLY APPROPRIATED PORTION OF THE IMP**

##### **I. GOALS AND OBJECTIVES**

###### **A. Vision Statement**

Cooperatively develop and implement an IMP for ground water and surface water uses that facilitates the optimum management of integrated surface water and ground water resources, and sustain a balance between water uses and water supplies so that the economic viability, social and environmental health, safety and welfare of the river basin can be achieved and maintained for both near term and long term.

###### **B. Goals**

1. Protect existing users, local economy, environmental health, and recreational uses to the extent possible.

2. Manage total water supply in the NPNRD to achieve a balance between water uses and water supply so that economic viability, social and environmental health, safety, and welfare are maintained for the near term and long term.
3. Ensure no act or omission of the NPNRD will cause the state to be in noncompliance with applicable state and federal laws and with any applicable interstate water compact or decree or other formal state contract or agreement pertaining to surface water or ground water use or supplies.

C. Objectives

1. Identify and implement potential incentive programs, educational programs, and funding sources (state, federal, and/or other) that help reduce consumptive use and meet other management goals and objectives.
2. Cooperate and collaborate with water users and other governmental entities to identify and implement appropriate management responses to water supply fluctuations, allowing for a reasonable use of integrated water.
3. Allow for ground water banking and transfers as appropriate.
4. Investigate and implement water supply enhancement projects that 1) increase ground water supply, 2) increase surface water storage, 3) increase stream baseflow, or 4) make water available from an existing source.
5. Manage and maintain existing surface water diversions within the NPNRD to protect existing surface water irrigation rights to the extent possible in order to maintain or enhance ground water recharge and return flows within the NPNRD.
6. Manage ground water use on lands irrigated by both surface water and ground water to encourage the use of surface water as the primary irrigation water source.

**II. PLAN COMPONENTS**

A. Action Items to Achieve Goals and Objectives

The action items described in this section are intended to be consistent with the requirements of Neb. Rev. Stat. § 46-715(3).

B. Non-Regulatory Action Items

1. Information and Education Programs
  - (a) The NPNRD and the Department will provide educational materials to the public and/or carry out educational activities on topics that may include, but not be limited to,

the following: the fully appropriated determination; the overappropriated designation; the IMP; the Nebraska New Depletion Plan (NDP); the Platte River Recovery and Implementation Program (Program); hydrologically connected ground water and surface water; invasive species management; conversion of irrigated acres to dryland agriculture or wildlife habitat; limited irrigation cropping systems; soil residue and tillage management; alternative crops; and funding sources for programs that enhance water supply.

(b) These educational materials and/or activities may include, but not be limited to, joint public meetings, pamphlets, and website information.

## 2. Incentive Programs

(a) Where possible, encourage surface water irrigation districts and canal companies to implement a program to improve measurements and data collection for farm turnouts.

(i) Work with the U.S. Bureau of Reclamation, USDA-Natural Resources Conservation Service, and others to seek cost-share for installation of measuring devices on surface water irrigation district and canal company farm turnouts.

## 3. Water Banking

(a) The NPNRD will establish a water bank for the purpose of facilitating the transfer of water between uses. The NPNRD will purchase or otherwise acquire transfers of certified ground water irrigated acres or other ground water uses or surface water appropriations. The NPNRD will hold the transferred consumptive use credit in its water bank for the following purposes: (1) offsetting new or expanded consumptive uses; (2) meeting statutory requirements and/or interstate agreement obligations; (3) meeting future incremental targets toward achieving a fully appropriated condition; or (4) making available for development of new consumptive uses of ground water within the NPNRD.

New consumptive uses of ground water are those uses which will result in an additional depletion to the river.

(b) In determining the amount of accretions to the stream that will be placed into the water bank from the transfer of ground water or surface water uses, the NPNRD and the Department will agree on the best available tools to utilize for calculating these accretions (i.e. the bankable volume of water). The calculations used to determine the accretions to be put into the water bank will consider the impact to streamflows through at least a fifty (50) year period and will be consistent with the methods used to evaluate transfers as described in Chapter 5, Subsection II.C.3. Additionally, these calculations will determine the timing and location of streamflow changes and any impacts to existing ground water users or surface water appropriators that may result from the transfer to the water bank.

(c) If the NPNRD intends to acquire a surface water appropriation for deposit in the water bank, the NPNRD will contact the Department prior to such acquisition. The Department will conduct a field investigation of the surface water appropriation and notify the NPNRD of the results within ninety (90) days. The NPNRD will work collaboratively with the Department in performing the analysis to evaluate the bankable volume of water resulting from the retirement of the surface water appropriation. If the surface water appropriation is to be transferred to another use, the NPNRD will follow the appropriate statutes and rules and regulations of the Department for approval of the transfer.

(d) The NPNRD will be required to obtain and maintain permanent easements, lease agreements, or other agreements on all property from which surface water appropriations or ground water uses have been retired for purposes of the water bank.

(e) Any water banking activity carried out by the NPNRD must follow the procedures for any ground water regulatory action (e.g. transfers, certification, or municipal and non-municipal industrial accounting) applicable to such activity. Any surface water related water banking activity carried out by the NPNRD must follow the appropriate state statute and Department rules and regulations.

### C. Ground Water Regulatory Action Items (controls)

The NPNRD will periodically review the controls being implemented to carry out the goals and objectives of this IMP. If necessary and appropriate, the NPNRD will adjust, modify and/or expand the existing controls, and/or implement additional controls to carry out the goals and objectives of this IMP. However, if the NPNRD decides to remove these existing controls, the NPNRD and the Department must amend this IMP prior to removal of these controls. The annual review of progress being made toward achieving the goals of this IMP, pursuant to Neb. Rev. Stat. § 46-715(4)(d)(ii), may result in such changes to the controls. Any changes to the controls must not be in conflict with the goals and objectives of this IMP.

The Department and the NPNRD will coordinate with the other Platte Basin NRDs (Central Platte NRD, Tri-Basin NRD, Twin Platte NRD, and South Platte NRD) to develop a consistent method of calculation that will be applied when calculations of depletions or accretions to the stream are necessary to implement ground water regulatory actions.

The following controls (authorized by Neb. Rev. Stat. § 46-739) are currently being implemented in the fully appropriated area of the NPNRD and will continue to be implemented in the future.

#### 1. Moratorium

The NPNRD has implemented a moratorium on the issuance of water well construction permits and on new or expanded ground water uses. The NPNRD may issue a water well construction permit with conditions, provided that there is an offset for any new or expanded use or the new or expanded use will not result in an increase in consumptive use. Any new or expanded ground water uses not requiring a water well construction permit may occur if

an offset is provided. When granting a variance from the moratorium on water well construction permits or on new or expanded uses, the NPNRD will consider the timing, location, and amount of the depletion and the corresponding offset for the new or expanded use to ensure that the proposed action will not adversely impact existing surface water appropriators or ground water users.

## 2. Certification of Ground Water Uses

The purpose of certifying ground water uses is to identify the ground water uses within the NPNRD at the time of the certification. All ground water uses, with the exception of domestic and range livestock, have been certified by the NPNRD. If modifications are required for any certified use, the NPNRD will consider the timing, location, and amount of any depletion associated with the modification and any corresponding offset to ensure that there will not be an adverse impact on existing surface water appropriators or ground water users.

## 3. Ground Water Transfers

(a) The purpose of a transfer is to allow for the consumptive use of ground water to be changed either in location or purpose without causing an increase in depletions to the river or an adverse impact to existing surface water appropriators or ground water users.

(b) The NPNRD will utilize the methodology for calculating depletions and accretions consistent with the other Platte Basin NRDs when evaluating proposed transfers to ensure that the criteria for compliance with the Program, including the timing, location and amount of the depletion and corresponding offset, are met. Any actions taken by the NPNRD related to the approval of transfers through a permitting process will be documented and shared with the Department pursuant to Chapter 7, Subsection I.A.

## 4. Municipal Use and Accounting

(a) The NPNRD will calculate baseline consumptive use for each municipality in the NPNRD based on historic average annual consumptive use data for the interval August 1, 2001, through July 31, 2006. Consumptive use will be determined from ground water pumping volumes and, where applicable, wastewater discharge volumes. The baseline will be used to determine annual changes in consumptive use. These annual changes in consumptive use will be tracked for each municipality through a reporting and database system administered by the NPNRD.

(b) Increases in annual consumptive use above the baseline will be subdivided into the following three categories: new or expanded commercial/industrial uses; increases in governmental uses; and increases in per capita consumptive use.

(c) Each year, the NPNRD will be responsible for offsetting all increases in governmental consumptive uses, per capita use up to two hundred fifty (250) gallons per person per day, and new or expanded single commercial/industrial consumptive uses of

less than twenty-five (25) million gallons per year. If a municipality holds a municipal transfer permit, then the NPNRD must offset any increased consumptive use above the baseline up to the amount granted in the municipal transfer permit.

(d) Each year the municipality will be responsible for offsetting all increases in per capita use greater than two hundred fifty (250) gallons per person per day and new or expanded single commercial/industrial consumptive uses of greater than twenty-five (25) million gallons per year. If a municipality holds a municipal transfer permit, then the municipality must offset any increased consumptive use above the baseline that is over the amount granted in the in the municipal transfer permit.

#### 5. Non-Municipal Industrial Use and Accounting

(a) The NPNRD will calculate baseline consumptive use for each non-municipal commercial/industrial user in the NPNRD based on historic average annual consumptive use data for the interval August 1, 2001, through July 31, 2006. Consumptive use will be determined from ground water pumping volumes and, where applicable, wastewater discharge volumes. The baseline will be used to determine annual changes in consumptive use. These annual changes in consumptive use will be tracked for each non-municipal commercial/industrial user through a reporting and database system administered by the NPNRD.

(b) The NPNRD will be responsible for offsetting all new or expanded single commercial/industrial consumptive uses below the amount granted in the industrial transfer permit, if applicable, and the new or expanded use in amounts of less than or equal to twenty-five (25) million gallons per year.

(c) The non-municipal commercial/industrial user will be responsible for offsetting all new or expanded consumptive uses above the amount granted in the industrial transfer permit, if applicable, or the entirety of the new or expanded use in excess of twenty-five (25) million gallons per year.

#### D. Surface Water Regulatory Action Items

The following surface water controls as authorized by Neb. Rev. Stat. § 46-716 will be implemented or will continue to be implemented by the Department:

1. The Department will continue the moratorium on new surface water appropriations in the portion of the Platte River Basin within the boundaries of the NPNRD. Variances may be granted by the Department in accordance with Department rules and regulations.
2. Any transfers of surface water appropriations will be in accordance with state statute and Department rules and regulations.

3. Surface water appropriations will continue to be administered according to the provisions of the permit, state statute, Department rules and regulations, and any applicable interstate compact, decree or agreement.
4. Surface water use will continue to be monitored to ensure that unauthorized use is not occurring.
5. The Department will not require surface water appropriators to apply or use conservation measures.
  - (a) If the Department in the future requires surface water appropriators to apply or use conservation measures, in accordance with Neb. Rev. Stat. § 46-716(2), the surface water appropriators will be allowed a reasonable amount of time, not to exceed one hundred eighty (180) days unless extended by the Department, to identify conservation measures to be applied or used and to develop a schedule for such application and utilization.
6. The Department will not require any other reasonable restrictions on surface water use.
  - (a) If the Department in the future requires other restrictions on surface water use, such restrictions must be consistent with the intent of Neb. Rev. Stat. § 46-715 and the requirements of Neb. Rev. Stat. § 46-231.
  - (b) If the Department in the future requires other restrictions on surface water use, in accordance with Neb. Rev. Stat. § 46-716(2), the surface water appropriators will be allowed a reasonable amount of time, not to exceed one hundred eighty (180) days unless extended by the Department, to comment on the proposed restrictions.

## **CHAPTER 6: OVERAPPROPRIATED PORTION OF THE IMP**

The entirety of the fully appropriated portion of the IMP including the Goals and Objectives applies to the entirety of the overappropriated area within the NPNRD with the exception of Subsections II.C.1-3 which do not apply to the Pumpkin Creek Basin Ground Water Management Sub-Area. A further description of the ground water controls specific to the Pumpkin Creek Basin Ground Water Management Sub-Area is found in Chapter 6, Section II.B.5.

### **I. GOALS AND OBJECTIVES**

#### **A. Goals**

1. Incrementally achieve and sustain a fully appropriated condition.
  - (a) Within the first ten (10) year increment, address impacts of streamflow depletions to surface water appropriations and water wells constructed in aquifers dependent upon recharge from streamflow to the extent those depletions are due to water uses initiated after July 1, 1997.



(b) Impacts of streamflow depletions to surface water appropriations and water wells constructed in aquifers dependent upon recharge from streamflow to the extent those depletions are due to water uses initiated prior to July 1, 1997, may be addressed prior to a subsequent increment with the intent of achieving a fully appropriated condition.

(c) Once a fully appropriated condition is achieved, maintain such condition through the implementation of the IMP.

2. Ensure that no act or omission of the NPNRD would cause noncompliance by Nebraska with any interstate compact or decree or other formal state contract or agreement.

(a) Ensure that no act or omission of the NPNRD would cause noncompliance by Nebraska with the NDP included within the Program, for as long as a Program exists.

3. Maintain consistency with the Basin-Wide Plan.

**B. Objectives**

1. Goal I.A.1.a Objectives

(a) Implement measures within the first ten (10) year increment to offset an average annual depletion rate of eight thousand (8,000) acre-feet to the North Platte River for the period 2043-2048. This rate is the current best estimate and is subject to change based upon new data and information.

(b) Conduct a technical analysis as described in Neb. Rev. Stat. § 46-715(4)(d)(iii) for this IMP after it has been in effect for six (6) years, to determine whether the measures adopted in this IMP are sufficient to offset depletions due to post-July 1, 1997, water uses.

2. Goals I.A.1.a and I.A.1.b Objectives

(a) Continue to refine the estimation methodology used to calculate the difference between the current and fully appropriated levels of development.

(b) Use available funds to offset depletions that are identified as part of the overall difference between current and fully appropriated levels of development.

3. Goals I.A.1.a, I.A.1.b, and I.A.1.c Objectives

(a) Develop and maintain data and analytical tools, such as the Cooperative Hydrology Study (COHYST), and other programs and projects needed to implement this IMP.

(b) Review the provisions of this IMP to ensure that they are adequate to sustain progress toward a fully appropriated condition.

(c) Review the provisions of this IMP to ensure that they are adequate to maintain a fully appropriated condition.

4. Goal I.A.2.a Objectives

(a) To the extent required in order to maintain compliance with the NDP, provide accretions to the North Platte River equal to or exceeding the annual depletion amount (Table 1), taking into account appropriate timing and location, for the first ten (10) year increment. The depletion amounts shown in Table 1 represent the current best estimate of depletions to the river from changes in ground water irrigated acres between 1997 and 2005 and are subject to change based upon new data and information.

Table 1 - Current Best Estimate of Post-1997 Depletions to the North Platte River due to Changes in Ground Water Irrigated Acres within the NPNRD between 1997 and 2005, based on the June 10, 2008, COHYST Report on Stream Depletions

Year	2009	2010	2011	2012	2013	2014
<b>Annual Stream Depletion (AF)</b>	6,972	7,110	7,213	7,291	7,360	7,418

Year	2015	2016	2017	2018	2019
<b>Annual Stream Depletion (AF)</b>	7,464	7,500	7,539	7,569	7,594

(b) As required by the NDP, the NPNRD will submit reports to the Department as necessary to assist Nebraska in maintaining compliance with the Program.

5. Goal I.A.3 Objectives

- (a) Amend this IMP as needed to remain consistent with the Basin-Wide Plan.
- (b) Participate in basin-wide planning activities.
- (c) If necessary and appropriate, follow the dispute process in the Basin-Wide Plan.

**II. PLAN COMPONENTS AND ACTION ITEMS**

The action items described in this section are intended to be consistent with the requirements of Neb. Rev. Stat. § 46-715(3).

A. Non-Regulatory Action Items

1. Information and Education Programs

These programs are discussed in the fully appropriated portion of this IMP.

2. Incentive Programs

(a) The Department and/or the NPNRD intend to establish, implement, and/or continue financial or other incentive programs to reduce consumptive use of water within the NPNRD to meet the goals and objectives of this IMP. Incentive programs may include, but not be limited to, retiring irrigated acres, or any program authorized by state law, and/or federal programs [e.g., CREP (Conservation Reserve Enhancement Program), EQIP (Environmental Quality Incentive Program), or AWEP (Agricultural Water Resources Enhancement Program)].

(b) At this time, the Platte Basin NRDs and the Department have identified PBHEP (Platte Basin Habitat Enhancement Program) as an incentive program that they intend to pursue to reduce consumptive use within the overappropriated portion of the Platte River Basin.

3. Other Programs

(a) The NPNRD and the Department may investigate opportunities to reduce the consumptive use of water in order to enhance water supply, as well as other water supply improvement projects. The NPNRD and the Department may develop an incentive-based program if such opportunities exist. When developing any water-based programs, the Department and the NPNRD intend to follow these principles:

(i) Use the best science readily available.

(ii) Work with irrigation districts and/or canal companies, not just individual landowners served by the irrigation district and/or canal company, when potential projects affect the operation of the irrigation district and/or canal company.

(iii) Enhance water supplies and recognize the value of return flows.

(iv) Comply with any state or federal laws, contracts, interstate compacts or decrees that govern the water use of irrigation districts or canal companies.

(b) These other programs may include, but are not limited to, the following: (1) transfer existing surface water appropriations or apply for new appropriations for intentional recharge, and recovery when applicable, using existing canals; (2) develop new infrastructure (e.g. dams or canals) that may include intentional recharge projects, and recovery when applicable; (3) develop ground water projects for the purpose of providing net accretions to the river; and (4) facilitate contractual agreements between water users.

(c) If any of these programs were to be pursued, the Department and the NPNRD would develop a schedule for the project(s) within the first ten (10) year increment.

(d) Process for Implementing Other Programs

(i) Determine the available ground water and surface water supplies.

1. Unappropriated Surface Water

(a) Perform an analysis to determine if there is unappropriated surface water within the first year of the first ten (10) year increment.

(b) Determine if unappropriated surface water is available at the necessary time, in the right location, and in the correct amount, or if it can be appropriately relocated or retimed.

2. Appropriated Surface Water

(a) Compile a list of existing surface water appropriations within the NPNRD within the first year of the first ten (10) year increment.

(b) Determine if the appropriated surface water is available at the necessary time, in the right location, and in the correct amount, or determine if it can be appropriately relocated or retimed.

3. Ground Water

(a) Compile a list of certified ground water uses within the NPNRD within the first year of the first ten (10) year increment.

(b) Determine if the certified ground water uses can be converted to another use or otherwise retimed or relocated to provide net accretions to the river at the necessary time and in the right location.

(ii) Develop a list of criteria to evaluate the potential to utilize available surface water and/or ground water supplies. The criteria may take into consideration the following:

1. Any permitting requirements or regulatory constraints related to the utilization of available water supplies.

2. The potential benefits and the estimated cost of operation.

3. The cyclical water supply conditions.

(iii) Evaluate the available surface water and/or ground water supplies based on the criteria developed in Subsection II.A.3.d.ii above.

(iv) Subsections II.A.3.d.ii and II.A.3.d.iii would be an iterative process until the preferred projects are identified.

- (v) For existing surface water appropriations, contact the appropriators of record and landowners to determine willingness to cooperate, lease, and/or sell those appropriations. If willing, develop and execute contract(s) with the appropriator(s) of record and landowner(s).
  - (vi) For existing ground water uses, contact the landowner(s) to determine willingness to cooperate with the proposed project(s). If willing, develop and execute contract(s) with such landowner(s).
  - (vii) Submit any required permit application(s).
  - (viii) Implement approved projects.
- (e) Identification of Specific Other Programs
- (i) Work with the Glendo Reservoir storage contractors and the Bureau of Reclamation to investigate any opportunities to utilize any unused Glendo water supplies.

**B. Ground Water Regulatory Actions (controls)**

1. In order to determine whether controls are needed in the overappropriated area, the annual stream depletion amounts shown in Table 2 will be compared to the stream accretions resulting from the actions taken by the NPNRD. As long as the annual net sum of the accretions resulting from the actions taken by the NPNRD and the annual depletions (Table 2) are less than or equal to zero, controls will not be required. The depletion amounts shown in Table 2 are subject to change based upon the best scientific data and information available.

Table 2 - Current Best Estimate of Depletions to the North Platte River due to Changes in Ground Water Irrigated Acres within the Overappropriated Area of the NPNRD between 1997 and 2005, based on the June 10, 2008, COHYST Report on Stream Depletions

<b>Year</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<b>Annual Stream Depletion (AF)</b>	6,972	7,110	7,213	7,291	7,360	7,418

<b>Year</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>Annual Stream Depletion (AF)</b>	7,464	7,500	7,539	7,569	7,594

2. The CREP and EQIP incentive programs have been utilized to retire approximately nine thousand two hundred (9,200) acres within the NPNRD, as of March 2009. The current estimates of the annual accretions resulting from these CREP and EQIP acreage retirements are shown in Table 3. These annual accretion estimates were developed based on the best scientific data and information available and are subject to change when more refined data or information becomes available.

Table 3 - Current Best Estimate of Annual Accretions to the North Platte River due to Acreage Retirements through the CREP and EQIP Incentive Programs (developed by the Department based upon type curves derived from the June 10, 2008, COHYST stream depletions report assuming the distribution of existing retired acres; surface water retirements assume one hundred (100) percent accretion to streamflow instantaneously)

<b>Year</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<b>Annual Stream Accretion (AF)</b>	3,367	3,414	3,460	3,507	3,554	3,601

<b>Year</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>Annual Stream Accretion (AF)</b>	3,682	3,695	3,718	3,740	3,761

The annual calculated accretions shown in Table 3 do not exceed the current annual depletions shown in Table 2. Therefore, the resulting net depletions shown in Table 4 represent the remaining depletions to be offset within the NPNRD.

Table 4 - Current Best Estimate of Annual Net Depletions to the North Platte River, Assuming Existing CREP and EQIP Retirements

<b>Year</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<b>Annual Stream Depletion (AF)</b>	3,605	3,696	3,753	3,784	3,806	3,817

<b>Year</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>Annual Stream Depletion (AF)</b>	3,783	3,805	3,821	3,829	3,834

Based on the information shown in Table 4, the actions taken by the NPNRD as of March 2009 (i.e., the existing CREP and EQIP retirements) do not provide the stream accretions necessary to obtain a net sum of accretions and depletions of less than or equal to zero. As a result, controls will be required.

3. Ground Water Controls

(a) Allocation

(i) Based on the best scientific methods and data currently available, an allocation of fifty-six (56) inches per certified irrigated acre for a four (4) year allocation period in the overappropriated area, in conjunction with existing CREP and EQIP retirements, would provide the necessary accretions to the North Platte River to achieve the objective of balancing annual depletions with annual accretions by the year 2017, if such an allocation was implemented beginning with the 2010 irrigation season (Table 5). The amount of the allocation allowed to be carried over (carryforward) into the next allocation period shall not exceed the base allocation of fourteen (14) inches per certified irrigated acre.

Table 5 - Current Best Estimate of Annual Net Depletions<sup>1</sup> to the North Platte River, Assuming Existing CREP and EQIP Retirements and a Fourteen (14) Inch Annual Average Allocation on Certified Irrigated Acres Served by Ground Water Only (developed by the Department based on type curves derived from the June 10, 2008, COHYST stream depletions report assuming the distribution of existing retired acres; surface water retirements assume one hundred (100) percent accretion to streamflow instantaneously; allocation based on type curves as described above and acres within the overappropriated portion of the District)

<b>Year</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<b>Annual Stream Depletion (AF)</b>	3,605	3,033	2,581	2,104	1,618	1,120

<b>Year</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>Annual Stream Depletion (AF)</b>	577	91	-401	-629	-849

(ii) The Department and the NPNRD will evaluate the effectiveness of the allocation of fifty-six (56) inches per certified irrigated acre for a four (4) year allocation period in achieving the goals and objectives of this IMP prior to the end of the next allocation period. If this evaluation shows that the allocation of fifty-six (56) inches per certified irrigated acre for a four (4) year allocation period is not sufficient to meet the goals and objectives of this IMP, the Department and the NPNRD will decide what additional steps should be taken.

(iii) The allocations for separate certified irrigated tracts may be combined into designated allocation units (DAU) provided they meet the criteria for eligibility. All of the wells and at least a portion of each certified irrigated tract to be included in a DAU must be within a floating one (1), two (2), or three (3) mile square. In addition, the stream depletion percentage for each well to be included in the DAU must be within ten (10) percent of the stream depletion percentage of the other wells to be included in the DAU. A DAU may consist of either ground water only irrigated tracts or surface water and ground water (commingled) irrigated tracts, but not a combination of ground water only and commingled tracts. If a DAU is comprised of commingled tracts supplied by surface water from an irrigation district or canal company, all of the commingled tracts must be within the boundaries of the same irrigation district or the land served by the same canal company.

(iv) Prior to the 2010 irrigation season, the Department and the NPNRD will evaluate the concept of a higher allocation per certified irrigated acre for the four (4) year allocation period in the overappropriated area for acres irrigated by a gravity system.

4. Other Ground Water Controls

At this time, no other ground water controls have been specifically identified to achieve the goals and objectives of Chapter 6.

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<sup>1</sup> Negative values indicate streamflow accretions.

## 5. Pumpkin Creek Basin Ground Water Management Sub-Area Ground Water Controls

The controls that have been implemented in the Pumpkin Creek Sub-Area include the following: (1) a moratorium on water well construction permits; (2) a moratorium on new or expanded ground water uses; and (3) certification of all ground water uses, with the exception of domestic and range livestock uses. Allocations have been and will continue to be implemented in the Pumpkin Creek Sub-Area and will not be greater than any allocation set for the rest of the overappropriated area within the NPNRD. Ground water transfers are not allowed within the Sub-Area. Designated allocation units have been established which allow the allocation for certified irrigated tracts to be combined when each tract is served by a separate well and the wells for the tracts to be combined are located within a square mile.

### C. Surface Water Regulatory Actions

The surface water controls that will be used in the overappropriated area are the same as those described in the fully appropriated portion of this IMP.

## **CHAPTER 7: MONITORING AND STUDIES**

The overarching purpose of the monitoring and studies section is to ensure that the overappropriated and fully appropriated areas within the NPNRD reach and/or maintain a fully appropriated condition. The objective of the monitoring and studies section of this IMP is to gather and evaluate data, information and methodologies that could be used to increase understanding of the surface water and hydrologically connected ground water system, to test the validity of the conclusions and information upon which this IMP is based, and to assist decision makers in properly managing the water resources within the NPNRD.

### **I. MONITORING**

Various methods will be employed to monitor the progress of the implementation of this IMP. Part One describes the tracking and reporting of water use activities within the fully appropriated and overappropriated areas of the District by the NPNRD and the Department. Part Two describes the analyses that will evaluate the progress that has been made toward: (1) addressing streamflow depletions due to new uses begun subsequent to July 1, 1997; (2) reaching a fully appropriated condition; and (3) sustaining a fully appropriated condition. Part Three describes the procedure for evaluating whether a subsequent increment is necessary to meet the goals and objectives of this IMP.

#### A. Part One: Tracking and Reporting of Water Use Activities

##### 1. Tracking

(a) The NPNRD will be responsible for tracking the following activities within the District on an annual basis: (1) certification of ground water uses and any changes to



these certifications; (2) approved transfers, including all of the information provided with the application and used in the approval of the transfer; (3) any flow meter data collected; (4) any water well construction permits issued; (5) any other permits issued by the NPNRD; (6) any conditions associated with any permits issued; (7) information gathered through the municipal and non-municipal industrial accounting process; (8) any variances issued, including the purpose, the location, any required offset, the length of time for which the variance is applicable, and the reasoning behind approval of the variance; (9) any retirements of irrigated acres or other activities by the NPNRD for the purpose of returning to a fully appropriated condition; (10) information related to any water banking transactions; and (11) offsets provided for depletions resulting from increased consumptive use related to the above listed items.

(b) The Department will be responsible for tracking the following activities within the District on an annual basis: (1) any surface water permits issued; (2) any dam safety permits issued; (3) any ground water permits issued; and (4) the associated offsets for any new permits issued. The Department will be responsible for tracking the following activities within the District on a five (5) year basis: (1) National Agricultural Statistics Service livestock data; (2) US Census Bureau population data; (3) inventory of sandpits; (4) inventory of reservoirs of less than fifteen (15) acre-feet; (5) any retirements of irrigated acres or other activities by the Department for the purpose of returning to a fully appropriated condition; and (6) offsets provided for depletions resulting from increased consumptive use related to the above listed items.

## 2. Reporting

(a) An annual review of the progress being made toward achieving the goals and objectives of the first ten (10) year increment will include annual reporting by the Department and the NPNRD of the information being tracked as described above. This information will be shared between the NPNRD and the Department, presented at the basin-wide annual meeting, and used for Program compliance.

(b) The reports from the NPNRD and the Department should include information on the location, amount and timing of the depletions caused by each permitted new or expanded water use, as well as the associated offset and the location, amount and timing of the offset's accretions to the river. The depletions and/or the accretions should be reported for each year throughout the first ten (10) year increment.

(c) These reports should be made available at least four (4) weeks prior to each annual basin-wide meeting. The format of the reports will be standardized as agreed to by the Department and the Platte Basin NRDs.

(d) The reported information will be utilized as appropriate in the evaluation process described below.

**B. Part Two: Measuring the Success of this IMP in Meeting the Goals and Objectives of this IMP**

1. Measuring the success of this IMP in addressing streamflow depletions due to new uses begun subsequent to July 1, 1997 (Goals I.A.1.a and I.A.2.a of Chapter 6).

(a) In order to meet the requirements of Neb. Rev. Stat. § 46-715(4)(d)(ii), the data contained in the annual reports submitted by the NPNRD and the Department will be jointly reviewed and analyzed annually to assess the progress being made toward achieving the goals and objectives of Chapter 6 for the first ten (10) year increment. The analysis will include an update of the balance of the depletions and offsets from the current year through the year 2048.

(b) In addition to the annual review, a more robust review of the progress being made toward achieving the goals and objectives of Chapter 6 for the first ten (10) year increment will be carried out periodically. The process for this review is described below.

(i) The ground water models utilized for this process will be calibrated to baseflows and ground water levels in the area with sufficient temporal variability to assess the impacts on a monthly basis. The ground water models will be updated periodically to simulate the management practices that have been implemented to date. The evaluation period of the models will be 1998 through 2048.

(c) The following two ground water model runs will be conducted to measure the success toward reaching the objectives of Goals I.A.1.a and I.A.2.a:

(i) The 1997 Development Level Run - A model run which simulates the number of irrigated acres in 1997 and the associated crop mix. It will incorporate the full crop irrigation requirement for the 1997 crop mix. This model run will serve as the baseline to which the evaluation run will be compared. The run will be conducted using data through the current date and will include an update from the current date through the year 2048.

(ii) The Evaluation Run - A model run which simulates the annual changes between the irrigated acres throughout the evaluation period and the irrigated acres in 1997. The model, when appropriate, will utilize the flow meter data that the NPNRD collects to determine the crop consumptive use. The run will be conducted using data through the current date and will include an update from the current date through the year 2048.

(iii) Difference between the Evaluation Run and the 1997 Run - The simulated baseflow output from each model run will be compared to determine the difference.

(iv) Surface Water Accretions and Other Uses not Covered by the Model - If the NPNRD chooses to retire surface water acres to offset streamflow depletions due to new uses begun subsequent to July 1, 1997, then the accretions resulting from those retirements will be determined using agreed upon methodologies.

(v) Evaluation Results - In order for the first ten (10) year increment to be considered achieved, the results of combining the difference between the evaluation run and the 1997 development level run with the addition of surface water accretions and other uses not covered by the model will be less than or equal zero. See the following equation:

$$\begin{aligned} & (\text{Depletions from the Evaluation Run}) - (\text{Depletions from the 1997 Development} \\ & \text{Level Run}) + (\text{Surface Water Accretions and Other Uses not Covered by the Model}) \\ & = \text{Net Depletions} \end{aligned}$$

2. Measure the success of reaching a fully appropriated condition.

Because a fully appropriated condition is not currently determined, the Department and the NPNRD will work on outlining the process that will measure the success of reaching the fully appropriated condition once that condition has been determined.

3. Measure the success of maintaining a fully appropriated condition.

(a) Current Fully Appropriated Area - Monitor and analyze uses in the fully appropriated area to determine the change in stream depletions due to such uses.

(b) Current Overappropriated Area - Because a fully appropriated condition is not currently determined, the Department and the NPNRD will work on outlining the process that will measure the success of maintaining a fully appropriated condition once that condition has been determined.

4. In performing the analyses described in Chapter 7, Subsections I.B.1 through I.B.3, the Department and the NPNRD will use the best data and science that is readily available. The Department and the NPNRD will work with other agencies and/or interested parties, if necessary, to identify data gaps in their analyses and determine whether studies should be undertaken to address these gaps.

C. Part 3: Evaluating the Need for a Subsequent Increment

1. The Department and the NPNRD will carry out the studies and the technical analysis as specified in Neb. Rev. Stat. § 46-715(4)(d)(iii) to determine whether or not a subsequent ten (10) year increment is necessary. This will include a process to test the validity of the conclusions and information upon which this IMP is based, as required by Neb. Rev. Stat. § 46-715(2)(e).

2. Within the first ten (10) year increment, the Department and the NPNRD will continue to refine the estimation methodology used to calculate the difference between the current and fully appropriated levels of development, in accordance with Neb. Rev. Stat. § 46-715(4)(c). Fully appropriated levels of development will be determined through the following process:

- (a) Determine the changes in recharge from surface water diversions and carriage losses and the impacts of those changes on streamflow using readily available data.
- (b) Determine the changes in ground water irrigation, municipal, industrial, domestic, livestock, and other uses and the streamflow depletions or accretions caused by those changes using readily available data.
- (c) Determine the effects of conservation measures on streamflows.
- (d) Determine the timing and location of the net changes in streamflow.
- (e) Determine when streamflow changes impact existing users, taking into account the effects of cyclical supply (e.g., drought).
- (f) If significant changes in either the timing or location of streamflow have impacted existing users, the NPNRD and the Department will work collaboratively with affected parties to determine subsequent ten (10) year increment goals. These goals will include consideration of the socioeconomic benefits derived from the various uses impacted by such changes in streamflow.
- (g) The Department and the NPNRD will review other data and/or methodologies relevant or significant to the process.

3. The process described in Chapter 7, Subsection I.C.2 will focus on uses initiated prior to July 1, 1997, and their impacts on hydrologically connected streamflows. All uses initiated subsequent to July 1, 1997, will be evaluated utilizing the process described in Chapter 7, Subsection I.B.

4. In performing these analyses, the Department and the NPNRD will use the best data and science that is readily available. The Department and the NPNRD will work with other agencies and/or interested parties, if necessary, to identify data gaps in their analyses and determine whether studies should be undertaken to address these gaps.

## **II. STUDIES**

A. The Department and the NPNRD will jointly pursue and/or evaluate studies, contingent upon budget and staff resources, to evaluate their potential effectiveness in achieving the goals and objectives of this IMP.

B. The following potential studies have been identified by the Department and the NPNRD: (1) crop rotation; (2) vegetation management; (3) irrigation scheduling; (4) surveying of the type and

location of irrigation systems throughout the NPNRD; (5) tillage practices; (6) other best management practices; (7) conjunctive management; (8) invasive species; and (9) conservation measures.

## **CHAPTER 8: REVIEW OF AND MODIFICATIONS TO THE IMP**

### **I. FULLY APPROPRIATED PORTION OF THE IMP**

- A. The NPNRD and the Department will jointly determine whether amendments need to be made to this IMP as necessary.
- B. Modifications to this IMP will require an agreement by both the NPNRD and the Department as to the proposed changes. After the proposed changes have been agreed to, a joint hearing on those changes will be required. Following the joint hearing, the NPNRD and the Department will, by order, adopt the amendments to this IMP.
- C. If the published results of COHYST, or other model(s) or tool(s) developed as part of the monitoring effort, indicate annual depletion values different from those in Table 1, which includes the depletions from both the fully appropriated area and the overappropriated area, then the Department and the NPNRD shall meet and discuss how this IMP may need to be revised.

### **II. OVERAPPROPRIATED PORTION OF THE IMP**

#### **A. First Ten (10) Year Increment**

1. The NPNRD and the Department may amend Chapter 6 after an annual review of progress made towards achieving the goals and objectives, or at more frequent intervals as more data and information become available.
  - (a) If the published results of COHYST, or other model(s) or tool(s) developed as part of the monitoring effort, indicate annual depletion values different from those in Table 2, then the Department and the NPNRD shall meet and discuss how this IMP may need to be revised.
2. If the Basin-Wide Plan is revised and results in the need for this IMP to be revised to be consistent with the Basin-Wide Plan, this IMP will be revised accordingly.
3. Basin-Wide Plan Disputes
  - (a) If a dispute is presented at the annual meeting as described in the Basin-Wide Plan, the Platte Basin NRDs and the Department will make a determination of whether or not the dispute has hydrologic impact. If the dispute is determined to have hydrologic impact, then the Platte Basin NRDs and the Department will determine whether the dispute pertains to all of the Platte Basin NRDs or just to individual NRD(s).

(b) If the dispute pertains to all of the Platte Basin NRDs, an investigation will be conducted by the Platte Basin NRDs and the Department to determine what management actions will address the dispute(s) in the Basin-Wide Plan and/or the IMPs. If the management action pertains to this IMP, it will be revised accordingly.

(c) If the dispute is not a basin-wide issue but pertains to the NPNRD, the Department, the NPNRD, and any other affected Platte River Basin NRD(s), working with the affected water user(s), shall develop management solutions as appropriate to address the issue(s).

4. Modifications to Chapter 6 will require an agreement by both the NPNRD and the Department as to the proposed changes. After the proposed changes have been agreed to, a joint hearing on those changes will be required. This IMP will be provided to all of the other Platte Basin NRDs for comment before the revisions are approved by the NPNRD and the Department.

**B. Second Ten (10) Year Increment**

1. A technical analysis as described in Neb. Rev. Stat. § 46-715(4)(d)(iii) will be completed after this IMP has been in effect for six (6) years. This technical analysis will determine whether the measures adopted in this IMP are sufficient to offset depletions due to post-July 1, 1997, water uses. The technical analysis will also determine whether the adopted measures have returned the NPNRD to a fully appropriated condition.

2. If it is determined from this technical analysis that a subsequent ten (10) year increment is needed to meet the goals and objectives of this IMP, then, pursuant to Neb. Rev. Stat. § 46-715(4)(d)(iv), the goals and objectives for the subsequent ten (10) year increment will be developed using the consultative and collaborative process described in Neb. Rev. Stat. § 46-715(4)(b). The changes to this IMP needed to implement a subsequent ten (10) year increment shall be completed, adopted and put into effect not more than ten (10) years after adoption of this IMP.

**CHAPTER 9: INFORMATION CONSIDERED IN DEVELOPING THIS IMP**

Information used in the preparation and to be used in the implementation of this IMP can be found in the following: 1) the Order Designating Overappropriated River Basins, Subbasins, or Reaches, and Describing Hydrologically Connected Geographic Area in the Matter of the Platte River Basin upstream of the Kearney Canal Diversion, the North Platte River Basin, and the South Platte River Basin; 2) the NPNRD Ground Water Management Plan; and 3) additional data on file with the NPNRD and the Department.







