Memo

Date:	Tuesday, August 02, 2016
Project:	Lower Platte River Basin Water Management Plan
To:	Lower Platte River Basin Coalition
From:	HDR Team
Subject:	Surface and Groundwater Controls

1.0 Introduction and Background

The Lower Platte River Basin Coalition (Coalition) was formed through an Interlocal Cooperation Act agreement among the Nebraska Department of Natural Resources (NDNR) and the following seven Natural Resources Districts (NRDs) that encompass the Lower Platte River Basin:

- Upper Loup Natural Resources District (ULNRD)
- Lower Loup Natural Resources District (LLNRD)
- Upper Elkhorn Natural Resources District (UENRD)
- Lower Elkhorn Natural Resources District (LENRD)
- Lower Platte North Natural Resources District (LPNNRD)
- Lower Platte South Natural Resources District (LPSNRD)
- Papio-Missouri River Natural Resources District (PMRNRD)

The Lower Platte River Basin includes the Elkhorn River, Loup River, and Lower Platte River below Duncan, as shown in Figure 1 at the end of this section.

The first action taken by the Coalition is the development of the Lower Platte River Basin Water Management Plan. In accordance with LB1098, §15[1] and Nebraska Revised Statute 46-755[2], the purpose of the basin water management plan is to maintain a balance between current and future water supplies and demands. The HDR Team, consisting of HDR, JEO Consulting Group, Inc., and The Flatwater Group, is assisting the Coalition with this effort.

One of the tasks of the Lower Platte River Basin Water Management Plan is to compile and summarize existing ground and surface water control measures currently employed by each Coalition member. Additionally, the HDR team will identify and summarize control measures used in other portions of Nebraska, as well as other states, that may be suitable and allowed under current statutory authorities of the NDNR and NRDs. The HDR team will interview water resources staff of each coalition member and compile pertinent data regarding implementation for each control (administrative framework, control area definition, mandatory versus voluntary

[1] http://nebraskalegislature.gov/FloorDocs/103/PDF/Slip/LB1098.pdf
[2] http://nebraskalegislature.gov/laws/statutes.php?statute=46-755

controls, cost-sharing, variance and appeals procedures, reporting requirements, etc.). Benefits and challenges of each control will be noted based on staff observations.

The purpose of this technical memorandum is to research and document current groundwater policies and practices exercised in Nebraska and in western states to provide both information and potential options for the Coalition to consider.

2.0 Nebraska

2.1 Authority

Nebraska surface waters are governed by the prior appropriation doctrine, which allows diversions from surface waters based on the date the water right was obtained.

Nebraska groundwater is governed by correlative rights.[3] Correlative rights allow landowners to drill wells and extract groundwater from an underlying aquifer for beneficial purposes. However, landowners cannot extract and appropriate groundwater 1) in excess of reasonable and beneficial use, 2) if such use is injurious to others who have substantial rights to the water, and 3) if the natural underground supply is insufficient for all owners.[4]

In 1972, NRDs were established by the passage of Legislative Bill (LB) 1357. Prior to 1972, Nebraska was organized by Soil and Water Conservation Districts. In 1975, the Unicameral passed LB 577, which assigned the legal authority to regulate the use of groundwater to the NRDs.[5]

2.2 Management Approach

By law, the NRDs must create a groundwater management plan.[6] The groundwater management plan must identify 1) available groundwater supplies in the district; 2) past, present, and potential future groundwater uses in the district; 3) proposed water conservation and supply augmentation programs for the district; 4) the availability of supplemental water supplies, including the opportunity for groundwater recharge; 5) the opportunity to integrate and coordinate the use of water from different sources of supply; 6) goals for aquifer life; and 7) boundaries of any proposed groundwater management area (GMA). Groundwater management plans must be approved by NDNR.

Additionally, the Nebraska Legislature grants the NRDs authority to establish GMAs to protect the quantity and quality of the water, and to resolve conflicts between surface water and groundwater users.[7]

---

3 Neb. Rev. Stat. § 46-702 (2004)
4 Bamford v. Upper Republican Natural Resources District, 245 Neb. 299 (1994)
5 Neb. Rev. Stat. § 46-707
6 Neb. Rev. Stat. § 46-709
7 Neb. Rev. Stat. § 46-712

If an NRD establishes a GMA, the NRD must adopt one or more controls, which may include the following:

- Allocations of the amount of groundwater users may withdraw
- System of rotation for use
- Well spacing requirements
- Well meter requirements
- Reduction of irrigated acres
- Limits on or prevention of expansion of irrigated acres or beneficial use of water
- NRD approval of transfer of groundwater off overlaying land
- NRD approval of transfer of rights to use groundwater that result from NRD-imposed allocations or other NRD restrictions
- Prevention of adverse effects on other groundwater or surface water users
- Prevention of adverse effects on compliance with interstate compacts or agreements.[8]

Table 1 lists groundwater controls in place by the seven NRDs that are Coalition members.

Table 1: Controls by NRD (eff. June 2014)

NRD	Allocation	Flow Meters	Well Drilling Moratorium	Required Water Use Reports
Upper Loup NRD	No	New wells	Yes, in sub-areas, plus limited acre expansion	Yes
Lower Loup NRD	No	Sub-area for quality	Yes	Yes, sub-areas
Upper Elkhorn NRD	No	Yes	New irrigated acres (2014)	Yes
Lower Elkhorn NRD	13"-14"/yr in sub-areas	New wells district-wide & wells in sub-areas	Yes, plus no new irrigated acre development	Yes, all districts
Lower Platte North NRD	27"/3 yrs in sub-areas	Yes, in sub-areas	Yes, in sub-areas	Yes, volunteer report
Lower Platte South NRD	NW sub-area: 21"/3 yrs (9"/yr max)	Yes, for entire District	No, but no new irrigated acres, in NW sub-area	Yes, for entire District
Papio-Missouri River NRD	No	No	Yes, in sub-areas	No

2.3 Nebraska Legislative Bill 962

LB 962 was passed by the Nebraska Legislature on July 16, 2004, to address conflicts between surface water and groundwater users. Each year, NDNR evaluates river basins to determine if

[8] Neb. Rev. Stat. § 46-739

they are fully appropriated. A basin is fully appropriated when existing uses of both surface water and hydrologically connected groundwater supplies are equal to, but do not exceed, water supplies over the long term. A basin is considered over appropriated if existing uses exceed supply, and as a result, surface water flows and groundwater table elevations can be expected to decline. Once a basin receives a designation of fully or over appropriated status, NDNR imposes stays on surface water permits and groundwater well permits, as well as stays on increases in irrigated acres.[9] NRDs designated fully appropriated are required develop integrated management plans (IMPs) within 3 to 5 years to protect existing uses and manage new uses. Basins that are not declared fully appropriated have the option to develop voluntary integrated management plans (VIMP). Presently, four (4) of the seven (7) NRDs in the Lower Platte River Basin have developed VIMPs (LPSNRD, LLNRD, ULNRD and PMRNRD) and two (2) other NRDs are working towards development of VIMPs (LPNNRD and LENRD). A summary of the VIMPs is included in Attachment 1.

IMPs are developed jointly by an NRD and NDNR, and the plan must include 1) goals for sustaining balance between surface water and groundwater uses; 2) one or more groundwater controls applicable to a GMA (described previously); and 3) one or more surface water controls, which may include a) increased monitoring and enforcement of surface water diversion rates and amounts diverted annually; b) the prohibition or limitation of additional surface water appropriations; c) requirements for surface water appropriators to apply or use reasonable conservation measures; and d) other reasonable restrictions on surface water use. In over-appropriated basins, an NRD and NDNR must adopt an IMP to decrease water use to pre-July 1, 1997, levels. Currently, eight (8) of the twenty-three (23) NRDs I the state of Nebraska have developed mandatory IMPs. A summary of five (5) of these IMPs is included in Attachment 1.

Subsequent to this bill, LB 1098 was adopted by the Nebraska Legislature in 2014. This bill further required that certain fully-appropriated river basins were to participate in joint basin planning. A summary of the Upper Platte Basin Plan is included in Attachment 1.

2.4 Nebraska Legislative Bill 483

On April 8, 2009, NDNR determined that the Lower Platte River Basin was “not yet fully appropriated.” On April 6, Nebraska Governor Heinemann signed LB 483, which established procedures to limit new irrigation development in areas like the Lower Platte River Basin. In accordance with LB 483, whenever NDNR reverses the preliminary determination that a basin is fully appropriated, the NDNR well bans stay in place. The NRDs subject to LB 483 adopt a 4-year plan to limit the number of new wells so that the basin remains “not yet fully appropriated”. If NDNR does not approve the NRD’s 4-year plan within 60 days, the number of new wells is limited to no more than 2,500 new acres annually or increasing existing irrigated acres no more than 20 percent, whichever is less.

[9] Neb. Rev. Stat. § 46-714

3.0 Kansas

3.1 Authority

The Kansas Department of Agriculture, Division of Water Resources administers the Kansas Water Appropriation Act. The act regulates surface and groundwater under a single priority system.

3.2 Management Approach

3.2.1 Regional Advisory Committee (formerly Basin Advisory Committee)

There are 12 river basins in Kansas. Each river basin has Basin Advisory Committees (BACs) consisting of members representing six water user categories, including domestic; municipal; other public water supplier; industrial; irrigation; and recreation, fish, and wildlife. The remaining members are selected at the discretion of the BAC. Water resource agencies assign staff to serve as advisors to each of the BACs. The Kansas Water Plan includes sections corresponding to the 12 major river basins. BACs provide the link between the Kansas Water Office staff and the public. The BACs advise the Kansas Water Office in identification of water-related concerns within their basin. In August of 2015, the 12 Basin Advisory Committees were transitioned to 14 Regional Advisory Committees to oversee the fourteen regional planning areas established in December 2014 by the Kansas Water Authority.[10]

3.2.2 Groundwater Management Districts

There are five Groundwater Management Districts (GMDs) in Kansas. GMDs are organized for the following purposes[11]:

- "To organize and develop the efforts of the entire groundwater Management district for the proper management and conservation of its' groundwater resources;
- "Provide local input into the use and management of groundwater;
- "Provide for the greatest total social and economic benefits from the development, use and management of groundwater;
- "Support research and education concerning proper water management;
- "Work cooperatively with all federal, state and local units of government to accomplish the objectives of the district and the Groundwater Management District Act and amendments thereto."

3.2.3 Local Enhancement Management Areas

The 2012 Kansas Legislature gave GMDs the authority to recommend Local Enhancement Management Areas (LEMAs) to the Kansas Chief Engineer. If accepted, the Chief Engineer

[10] http://www.kwo.org/Regional-Advisory-Committees.html

[11] Kansas Groundwater Management District Act (K.S.A. 82a-1020 through 82a-1040) and Intensive Groundwater Use Control Area Regulations (K.A.R. 5-20-1 and K.A.R. 5-20-2)

issues an order defining the boundaries of the LEMA. The order of designation may include any of the following "corrective control provisions" set forth in the LEMA plan[12]:

- Closing the LEMA to any further appropriation of groundwater
- Determining the permissible total withdrawal of groundwater in the LEMA area
- Reducing the permissible withdrawal of groundwater
- Imposing any other additional requirements necessary to protect the public interest

The Chief Engineer is authorized to delegate the enforcement of any corrective control provisions ordered for a LEMA to the GMD in which that area is located.

3.2.4 Intensive Groundwater Use Control Areas

The Kansas Legislature authorized the Chief Engineer the authority to designate additional corrective control provisions in Intensive Groundwater Use Control Areas (IGUCAs) or areas where it is determined that 1) significant groundwater declines are occurring, 2) groundwater withdrawals equal or exceed recharge into the aquifer, 3) preventable waste of water is occurring, 4) water quality is deteriorating at an unreasonable rate or may deteriorate, or 5) other conditions warrant additional regulation to protect public interest.[13] As of 2009, eight IGUCAs have been established.

One or more of the following corrective control provisions may be implemented in the IGUCAs to address area problems:

- Close the area to further water appropriation
- Determine the sustainable limit of groundwater withdrawals and apportion that amount among water rights holders according to relative dates of priority
- Administer the permissible withdrawal of groundwater
- Require and specify a system of rotating the use of groundwater rights
- Require any other measures that may be needed to protect the public interest

3.2.5 Water Assurance Districts

In 1986, the Kansas Legislature passed the Water Assurance Program Act, which allowed for the formation of Water Assurance Districts.[14] A Water Assurance District consists of water right holders located below a federal reservoir that holds state-owned or state-controlled water storage space. These water right holders pool their resources to purchase storage space in the reservoirs from the state to assure that the members of the District will have enough water to meet their demands. There are currently three river Water Assurance Districts in Kansas.

Before any district is formed, the Chief Engineer of the Division of Water Resources determines which municipal and industrial water right holders would benefit from water released from Water Assurance District storage. The Division of Water Resources is charged by statute to protect

---

12 Kansas Senate Bill No. 310 (2012)
13 Fact Sheet: Intensive Groundwater Use Control Areas, Kansas Department of Agriculture, August 2009
14 Fact Sheet: Water Assurance Program, Kansas Department of Agriculture, June 2009

such releases from diversion by non-members. Among the powers granted to a Water Assurance District is authority to levy an annual charge against district members to cover costs incurred by the state in acquiring, operating, and maintaining water supply storage.

3.2.6 Multi-Year Flex Accounts

Most groundwater right holders may apply for a multi-year flex account (MYFA) by which they obtain a 5-year term permit that temporarily replaces an existing water right. This term permit allows the water right holder to exceed their annual authorized quantity in any year but restricts total pumping over the 5-year period. Generally, the total amount of the 5-year flex account will be the larger of 1) 5 times the average use of the water right from 2000 to 2009, or 2) 5 times the county's net irrigation requirement for corn times the acres irrigated times 110 percent.[15]

4.0 Texas

4.1 Authority

The Texas Water Development Board (TWDB), Groundwater Resources Division is responsible for the management of groundwater.[16] The TWDB is responsible for conducting groundwater studies, monitoring groundwater levels and quality in aquifers, completing regional-scale groundwater modeling, and maintaining water well records. The TWDB is also charged with reviewing and approving groundwater management plans and participating in the development of goals in GMAs.

4.2 Management Approach

4.2.1 Regional Water Planning

There are 16 regional planning areas in Texas, each with its own regional planning group. The planning groups consist of about 20 members and represent a variety of interests, including agriculture, industry, environment, public, municipalities, business, water districts, river authorities, water utilities, counties, GMAs, and power generation.[17]

The regional water planning process consists of the following 10 tasks[18]:

1. Describing the regional water planning area
2. Quantifying current and projected population and water demand over a 50-year planning horizon
3. Evaluating and quantifying current water supplies
4. Identifying surpluses and needs
5. Evaluating water management strategies and preparing plans to meet the needs

---

15 K.S.A 82a736, 2012
16 Chapter 36 of Texas Water Code
17 http://www.twdb.texas.gov/publications/shells/RegionalWaterPlanning.pdf
18 http://www.twdb.texas.gov/publications/shells/RegionalWaterPlanning.pdf

6. Evaluating impacts of water management strategies on water quality
7. Describing how the plan is consistent with long-term protection of the state's water, agricultural, and natural resources
8. Recommending regulatory, administrative, and legislative changes
9. Describing how sponsors of water management strategies will finance projects
10. Adopting the plan, including the required level of public participation

4.2.2 Groundwater Conservation Districts

The TWDB defers groundwater management to local groundwater conservation districts (GCDs). Currently, 101 GCDs have been created. The GCDs are responsible for managing groundwater through conservation, preservation, protection, recharge, and prevention of waste. The primary duties of a GCD include permitting water wells, developing a comprehensive management plan, and adopting the necessary rules to implement the management plan. A GCD has the authority to regulate the spacing of water wells, the production from water wells, or both.[19]

Chapter 36 of the Texas Water Code prohibits GCDs from requiring permits for the following:

- Wells "used solely for domestic use or for providing water for livestock or poultry…on a tract of land larger than 10 acres...that…is incapable of producing more than 25,000 gallons of groundwater a day"
- Wells "used solely to supply water for a rig that is actively engaged in drilling or exploration operations for an oil or gas well permitted by the Railroad Commission of Texas" provided the well is located on the oil or gas lease and the same person operates the groundwater well and the oil or gas well
- Wells authorized under permits issued by the Railroad Commission for surface coal mining operations

Based on a June 9, 2010, technical memorandum published by the TWDB, 207 counties (81 percent) had exempt uses that were less than 20 percent of groundwater availability in 2010, and 12 counties (5 percent) had exempt uses that were greater than 50 percent of groundwater availability in 2010.[20]

4.2.3 Regional Groundwater Alliance

GCDs overlying common aquifers have joined to share staff and resources and to undertake aquifer management on a regional basis. Currently, there are six regional alliances: West Texas Regional Groundwater Alliance, Far West Texas Alliance of Groundwater Districts, Carrizo-Wilcox Aquifer Alliance, South Texas Regional Groundwater Alliance, Hill Country Groundwater Conservation District Alliance, and Southern Ogallala.[21]

---

[19] www.twdb.texas.gov/groundwater/conservation_districts/facts.asp
[20] June 9, 2010 TWDB Letter to Board, "Briefing, Discussion and Possible Action Concerning Exempt Use in Managed Available Groundwater Numbers"
[21] https://www.twdb.state.tx.us/groundwater/faq/

4.2.4 Groundwater Management Areas

There are 16 GMAs in Texas. GMAs generally coincide with the boundaries of aquifers. GMAs have similar goals as GCDs (conserve, preserve, protect, recharge, and prevent waste of groundwater; control subsidence; address drought conditions, etc.). The responsibility for GMA delineation was delegated to the TWDB.[22] Initial GMA delineations were adopted in 2002.[23]

Often more than one GCD is located in a GMA. If a GCD is in a shared GMA, then each district must consider the plans of the other districts. Additionally, the GCD may call for joint planning of the other districts in the area.[24]

Texas law requires GCDs to use estimates of modeled available groundwater, based on the desired future conditions of aquifers determined for the 16 GMAs, in their management and regional water plans.[25]

4.3 Unique Features

4.3.1 Texas Alliance of Groundwater Districts

The Texas Alliance of Groundwater Districts (TAGD) is a separate entity that represents 82 GCDs as well as 24 groundwater-related consulting firms, law firms, and other businesses. The TAGD provides educational and technical assistance to member districts and the public, serves as a resource on groundwater issues with state officials, assists members in keeping current with state law, and is a central point of contact for information on groundwater issues and practices.[26]

4.3.2 Edwards Aquifer Authority

The Edwards Aquifer is the primary source of drinking water for approximately 2 million people in Atascosa, Bexar, Caldwell, Comal, Guadalupe, Hays, Medina, and Uvalde counties in Texas. Spring outflows from the Edwards Aquifer provide habitat to eight aquatic species listed as threatened or endangered and, therefore, protected by the Endangered Species Act. In 1993, in response to a lawsuit filed under the Endangered Species Act, a federal judge ordered the State of Texas to take the necessary actions to protect the listed species. This ruling led to the creation of the Edwards Aquifer Authority (EAA) and, eventually, the Edwards Aquifer Recovery Implementation Program, which developed the Edwards Aquifer Habitat Conservation Plan (EAHCP). The EAHCP outlines conservation measures designed to protect the species during the drought of record to the extent required by law. The EAA is charged with the following[27]:

- "To issue permits on all wells that do not meet exempt well requirements
- "To limit the total amount of annual water withdrawals to 572,000 acre feet

---

22 Section 35.004, Chapter 35, Title 2, Texas Water Code
23 Chapter 356, Texas Water Development Board Rules
24 Texas Water Code, §36.1071, §36.108
25 http://www.twdb.texas.gov/groundwater/models/index.asp
26 www.texasgroundwater.org
27 Edwards Aquifer Authority Act, rev. 08/01/13 (http://edwardsaquifer.org/legislation-and-rules/the-eaa-act)

- "To have meters on all wells that do not meet exempt well requirements
- "To require drought restrictions that include specific triggers and reduction amounts
- "To have single-member districts for its 15 elected directors
- "To include a built-in interest group to consider the effect of the EAA's actions on downstream users"

Part of the EAA, the San Antonio Water System Aquifer Storage and Recovery Program is a system of pump stations, pipelines, wells, and treatment facilities designed to store surplus Edwards Aquifer water in the nearby Corrizo-Wilcox Aquifer. As of 2013, this was the third largest system in the nation, with a capacity of 120,000 acre-feet and 60 million gallons per day.[28]

Another program, the Voluntary Irrigation Suspension Program Option compensates irrigation permit holders to not pump in drought conditions in an effort to maintain aquifer levels. Additionally, the EAA currently operates four recharge dams on the Edwards Aquifer Recharge Zone.

Critical period management requires up to 44 percent pumping reductions when aquifer levels reach designated levels. Triggers for critical period management are based on aquifer elevations at specific locations of 10-day and 3-day flow averages. Phase I (7 years) of the EAHCP involves habitat and spring flow protection measures as well as data collection, extensive research, and monitoring to make necessary changes in order to achieve specific goals. Phase II (8 years) of the EAHCP will further implement these measures or, if necessary, modify them through an adaptive management process based on the information learned during Phase I.[29]

4.3.3 Ogallala Recharge Project

In conjunction with the U.S. Department of Agriculture (USDA) Agricultural Research Service and Texas Tech University, and in consultation with the USDA Natural Resources Conservation Service and the GCDs across the High Plains, the TWDB is evaluating the effectiveness of playas to recharge the Ogallala Aquifer. Participating landowners are protected from any loss of Farm Program benefits as a result of playa modifications under a specific exemption included in the 2008 Farm Bill.[30]

5.0 Wyoming

5.1 Authority

Wyoming State Statue authorizes the State Engineer's Office as the chief administrator of Wyoming waters.[31] In addition to processing and maintaining groundwater and surface water

[28] http://www.saws.org/Your_Water/WaterResources/projects/asr.cfm
[29] http://edwardsaquifer.org/legislation-and-rules/habitat-conservation-plan
[30] http://www.twdb.texas.gov/groundwater/special_projects/index.asp
[31] Wyoming State Statute, Title 41, Article 9 (2013)

permits, the State Engineer's Office 1) maintains a statewide observation well network, 2) conducts interference investigations and water right adjudication inspections, 3) prepares proof of adjudication for the Board of Control's consideration, 4) reviews reports of water supply adequacy for subdivisions, and 5) provides conflict resolution between groundwater and surface water appropriators.

The state is divided into four water divisions. A water division superintendent administers the waters of each water division. These four superintendents and the State Engineer constitute the state Board of Control. The board meets quarterly to adjudicate or finalize water rights.[32]

5.2 Management Approach

5.2.1 Groundwater Advisory Committees

A Groundwater Advisory Committee was formed in each of the state's four Water Divisions. Each Groundwater Advisory Committee consists of three individuals who reside in the Water Division and who are appointed by the Governor for 6-year terms. The function of the Groundwater Advisory Committees is to advise the State Engineer and Board of Control on matters relative to groundwater development in their respective Water Division and to call and supervise the election of Groundwater Control Area Advisory Boards.[33]

5.2.2 Groundwater Control Areas

Three groundwater management districts called Control Areas have been established in the southeast portion of the state (Laramie, Platte, and Prairie Counties). The Groundwater Control Area Advisory Boards support the State Engineer and Board of Control in formulating policies and recommendations on applications and petitions concerning groundwater development in the Control Area. Each Groundwater Control Area Advisory Board is comprised of five property owners residing in the Control Area. The members are elected to 4-year terms by property owners who own land in the Control Area.[34]

The State Engineer can impose following controls: 1) close an area to further appropriation; 2) establish a limit on water withdrawn; 3) stop water withdrawal by junior water right holders; or 4) establish a system to rotate water use among water holders.[35] Additionally, the Laramie County Control Area has used well spacing requirements.

6.0 California

6.1 Authority

Surface water is regulated by the state while groundwater is regulated by local or judicial management.

---

[32] Wyoming Water Law: A Summary, Jacobs, Fassett, and Brosz, Wyoming Water Research Center, 1995
[33] http://seo.wyo.gov/ground-water/groundwater-advisory-committees
[34] http://seo.wyo.gov/ground-water/groundwater-control-areas-advisory-boards
[35] W.S. § 41-3-912

6.1.1 State Water Resources Control Board

The State Water Resources Control Board (Water Board) was created by the California Legislature in 1967. The Water Board consists of five full-time salaried members (appointed by the Governor) in charge of allocating water rights, adjudicating water right disputes, developing statewide water protection plans, establishing water quality standards, and guiding the nine Regional Water Quality Control Boards. Each Regional Water Quality Control Board has seven part-time members (also appointed by the Governor) whose role is to develop basin plans for their hydrologic areas, issue waste discharge permits, take enforcement action against violators, and monitor water quality.[36]

6.1.2 California Department of Water Resources

The California Budget Act of 1999 directed the California Department of Water Resources (DWR) to develop criteria for evaluating groundwater management plans and develop a model groundwater management ordinance.[37]

6.2 Management Approach

6.2.1 Groundwater Management Act

The Groundwater Management Act was first introduced in 1992 as Assembly Bill (AB) 3030, and has since been modified by Senate Bill 1938 in 2002 and AB 359 in 2011.

AB 3030 allowed certain defined existing local agencies to develop a voluntary groundwater management plan in groundwater basins defined in DWR Bulletin 118.[38] AB 3030 plans cannot be adopted in adjudicated basins or in basins where groundwater is managed under other sections of the Water Code without the permission of the court or the other agency.

AB 3030 also introduced 12 technical components that may be included in the groundwater management plan. The following is the list of the 12 voluntary components:

1. The control of saline water intrusion
2. Identification and management of wellhead protection areas and recharge areas
3. Regulation of the migration of contaminated groundwater
4. The administration of a well abandonment and well destruction program
5. Mitigation of conditions of overdraft
6. Replenishment of groundwater extracted by water producers
7. Monitoring of groundwater levels and storage
8. Facilitating conjunctive use operations
9. Identification of well construction policies
10. The construction and operation by the local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects

---

36 http://www.swrcb.ca.gov/about_us/water_boards_structure/mission.shtml
37 http://www.water.ca.gov/groundwater/groundwater_management/legislation.cfm
38 California Water Code Section 10750 et seq.

11. The development of relationships with state and federal regulatory agencies
12. The review of land use plans and coordination with land use planning agencies to assess activities that create a reasonable risk of groundwater contamination

6.2.2 Groundwater Management Plans

In most areas of California, overlying landowners may extract percolating groundwater and put it to beneficial use without approval from the Water Board or a court. California does not have a permit process for regulation of groundwater use. In several basins, however, groundwater use is subject to regulation in accordance with court decrees adjudicating the groundwater rights within the basins.

Since the early 1990s, more than 125 groundwater management plans have been implemented. Prior to 2011, groundwater management plans were not required to be submitted to DWR. The passage of AB 359 in 2011 placed new requirements on agencies concerning the submittal of groundwater management plan documents, and on DWR to provide public access to this information.

The type of groundwater management plan depends on the current legislation in place at the time the groundwater management plan was adopted. Plan types can be 1) Pre-SB 1938 plans, which include voluntary components, definitions, and procedures; 2) SB 1938 plans, which include required components, conditions for funding, and procedures; or 3) AB 359 plans, which include required components for recharge, conditions for funding, and procedures.[39] Types of controls used in groundwater management plans include the following[40]:

- Trigger or action levels for graduated controls
- Safe-yield concept with defined acceptable operating aquifer-level ranges
- Reduction or suspension of use
- Areal and individual pumping limits
- Controlling water waste
- Prohibiting new wells
- Adjudication

6.2.3 2014 Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act of 2014 requires the formation of new local groundwater sustainability agencies responsible for establishing groundwater management plans within their jurisdictions. The legislation also provides for limited state intervention as necessary to ensure that groundwater resources are being protected.[41]

---

39 California Department of Water Resources (www.water.ca.gov)

40 Uncommon Innovation: Developments in Groundwater Management Planning in California, Water in the West Working Paper 1, Stanford University, March 2011

41 http://opr.ca.gov/s_groundwater.php

7.0 New Mexico

7.1 Authority

Under New Mexico water law, all surface and groundwater belong to the public and are subject to appropriation under the prior appropriation doctrine.

7.2 Management Approach

7.2.1 Active Water Resource Management

The Active Water Resource Management initiative authorizes the State Engineer to manage the state's water resources. The tools available to the State Engineer to implement Active Water Resource Management include measuring and metering, rules and regulations, creation of water districts and appointment of water masters, and development of water master manuals. The State Engineer has created teams to address Active Water Resource Management in identified priority basins. Each basin team includes a project manager, hydrologist, attorney, communication manager, personnel manager, and technical support staff.

Other options for water rights administration include 1) shortage sharing agreements between multiple water right owners to share available supplies under existing conditions; 2) rotation agreements between water users sharing a source; or 3) water banking to allow for expedited short-term or temporary reallocation of water, while still protecting the senior status of water rights holders.[42]

7.2.2 Regional Water Planning in New Mexico

The New Mexico Legislature directed that water planning is most effectively done at the local level via water planning regions (Regions). To date, 16 Regions have been recognized by the Interstate Stream Commission (ISC). The ISC has powers to investigate, protect, conserve, and develop New Mexico's waters. Eight members of the ISC are appointed by the Governor. The ninth member is the State Engineer, who under state law is the secretary of the ISC. The ISC Director serves as the Deputy State Engineer.[43]

The ISC provides guidance for water plans through the *Regional Water Planning Handbook*. Regions are required to identify water supply, project demand, and determine where water shortages are occurring, and then to develop water plans to address water shortages. Water plans must include recommended alternatives for regional water resources management, water conservation, protection of the regional public welfare, and time lines for implementing the water plan. Investigations are also conducted to identify unappropriated groundwater resources that may be appropriated and reserved on behalf of Regions by the ISC.

---

42 http://www.ose.state.nm.us/water_info_index.html
43 http://www.ose.state.nm.us/isc_index.html

8.0 Summary

Preliminary research of surface and groundwater controls in Nebraska and western states reveals that groundwater controls can be broken into three categories: regulatory controls, voluntary controls, and infrastructure projects. Regulatory controls generally consist of limiting groundwater use through mandatory pumping restrictions, new well limits, and mandatory conservation measures. Voluntary controls generally consist of managing groundwater use through fee structures to reduce pumping, water efficiency projects, and buyout or acreage retirement. Infrastructure controls generally consist of managing surface water use through constructing or changing operation of existing infrastructure, system improvements, imported water, or conjunctive management.

Attachment 1: Summary of Integrated Management Plans for Nebraska Natural Resources Districts

Appendix A contains a brief summary of current Integrated Management Plans for the following NRDs:

1) Central Platte NRD (mandatory)
2) Tri-Basin NRD (mandatory)
3) Twin Platte NRD (mandatory)
4) Papio Missouri River NRD (voluntary)
5) Lower Platte South NRD (voluntary)
6) Lower Loup NRD (voluntary)
7) Upper Loup NRD (voluntary)
8) Lower Republican NRD (mandatory)
9) Middle Republican NRD (mandatory)
10) Upper Republican NRD (mandatory)
11) Upper Platte Basin Plan (mandatory)

Effective
CPNRD REV 5/21/12
C. Objectives
B. Non-regulatory Action Items
1. Information and Education Programs
2. Incentive Programs
(a) Where possible, encourage surface water irrigation districts to implement a program to improve measurements and data collection for farm turnouts.
(1) Work with the Department, 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 farm turnouts.
(b) Promote water use efficiency through the use of technology, lower consumptive water use crops and improved management.
(1) Develop conservation programs that place groundwater-irrigated, marginal cropland into grazing land.
(c) Promote and support, wherever economically feasible, programs that reduce water consumption by invasive species.
(1) Support and coordinate research, training, and incentive programs concerning invasive plant species in the Platte River system, and assist with information and education efforts to distribute research results.
3. Water Banking
(a) The District will establish a water bank for the purposes of encouraging and facilitating the transfer of water between users. The District will purchase or otherwise acquire transfers of the depletion impact of certified groundwater acres

C. Groundwater Regulatory Action Items (Controls)

1. Types of controls shall include:
(1) controls to limit or prevent an increase in the amount of irrigated land in the management area or otherwise limit or prevent increases in consumptive use of water for any purpose
(2) requiring approval of transfer permits and placing conditions on such transfers),
(3) closing of the management area to the issuance of additional groundwater well construction permits unless the permit is conditioned to meet the purposes for which the management area was designated,
(4) adapting different controls for different categories of groundwater uses, and (5) establishing different requirements for water wells constructed before the designation of a management area and those drilled afterward.

3. The District and the Department will coordinate with the other Platte Basin NRDs to develop a consistent method of calculation that will be applied when calculation of depletions or accretions to the stream are necessary to implement groundwater controls.

4. Authorized Groundwater Controls to be utilized:
(a) Moratorium
(i) In granting a variance the District will consider timing, location and amount of the depletion and offset so that there is not an adverse impact on existing water users. Only lands that have been certified by the District as “irrigated” acres may be irrigated.
(b) Certification of Groundwater Uses
(c) Variances
(d) Transfers
(1) a permit from the District is required;
(2) the transfer must be in coming from or going to;
(3) an agreement must be reached between the District and the other NRD involved in the transfer that the use being retired in one district will remain retired for the duration of the transfer.
(5) In order to provide for flexibility and efficiency, the District will allow a person to transfer groundwater that had been used for irrigation off of the overlying land after applying for and obtaining approval from the District. The land from which the groundwater is transferred shall remain in dryland agriculture or, with

5. Implementation:
(a) Municipal Use and Accounting

(1) The District will calculate baseline consumptive use for each municipality in the District based on historic consumptive use data for the interval August 1, 2001, through July 31, 2006. Consumptive use will be determined from groundwater computer modeling, and converted to a per capita volume. The baseline per capita volume, plus the annual population growth estimated by the Nebraska Department of Economic Development and/or U.S. Census Bureau will be used to determine annually for each municipality through a reporting and database system administered by the District.

(2) Once each five (5) years, and more often if requested by the Department or as determined by the District, the District will re-calculate the per capita consumptive use based upon similar, but updated, data described in section 5 (a) above, and make any necessary adjustments to the per capita offset requirements.

(3) Each year, the District will be responsible for offsetting all increases from the baseline consumptive use as estimated by population growth, except any new or expanded single commercial/industrial consumptive use, served by the municipal water system, of more than twenty-five (25) million gallons per year.

(4) Each year the municipality shall be responsible for reporting to the District and offsetting to the river, any new or expanded single commercial/industrial consumptive use served by the municipal water system, if that new or expanded consumptive use is greater than twenty five (25) million gallon per year.

6. Non-Municipal Industrial Use and Accounting

(a) The District will calculate baseline consumptive use for each non-municipal commercial/ industrial user in the District based on historic consumptive use data for the interval August 1, 2001, through July 31, 2006. Consumptive use will be determined from groundwater pumping volumes, wastewater discharge volumes (when available) and/or computer modeling. The baseline will be used to determine changes in consumptive use annually.

(b) These changes in consumptive use will be tracked for each non-municipal commercial/ industrial user annually through a reporting and database system administered by the District.

(c) If the new or expanded single commercial/industrial use is less than or equal to twenty-five (25) million gallons per year, the District will be responsible for offsetting the entire new or expanded use below the amount granted in the industrial transfer permit, if applicable.

(d) If the new or expanded non-municipal commercial/industrial use exceeds twenty-five (25) million gallons per year and they do not have a transfer permit, the user will be responsible for offsetting all new or expanded consumptive uses. If the new or expanded non-municipal commercial/industrial use has a transfer permit, the user is responsible for offsetting all new or expanded uses above the amount granted in the industrial transfer permit.

D. Surface Water Regulatory Action Items

1. The Department will continue the moratorium on new surface water appropriations in the portion of the Platte Basin within the boundaries of the District. Variances may be granted by the Department in accordance with Department rules and regulations.
2. Transfers of surface water appropriations will be in accordance with statute and Department rules and regulations.
3. Surface water appropriations will continue to be administered according to statute and Department rules and regulations.
4. The use of surface water will continue to be monitored to make sure that unauthorized use is not occurring.

5. The Department may require surface water appropriators to apply or use conservation measures. If, in the future, the Department requires surface water appropriators to apply or use such conservation measures, in accordance with § 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 may require any other reasonable restrictions on surface water use, as authorized in Nebraska statues if the Department feels it is necessary in order to comply with this IMP, the Basin-Wide IMP or any state program, decree, compact or agreement. If, in the future, the Department requires other restrictions on surface water use, such restrictions must be consistent with the intent of § 46- 715 and the requirements of § 46-231. If, in the future, the Department requires other restrictions on surface water use, in accordance with § 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 : Over appropriated Area & Nebraska Depletion Plan

Goals

1. Incrementally achieve and sustain a fully appropriated condition.

Other Program:

These other programs may include, but are not limited to the following:

(1) transfer existing surface water appropriations within the District to instream flow appropriations;

(2) transfer existing surface water appropriations or apply for new appropriations for intentional recharge, and recovery when applicable, in existing canals during the irrigation or non-

irrigation season;
(3) develop new infrastructure (e.g. dams or canals) that may include intentional recharge projects, and recovery when applicable;
(4) groundwater projects for the purpose of providing net accretions to the river;
(5) contractual agreements between water users.

Regular progress toward meeting the goal of an annual net sum of accretions and depletions that is less than or equal to zero must be demonstrated. Regular progress will be determined by the following triggers.
Monitoring and Studies portion of this IMP (Chapter 7) describes how progress toward achieving these triggers will be measured.
Triggers actions include:
Crop Rotation & Reduction of Irrigated Acres

Chapter 7: Monitoring and Studies

(1) The District will be responsible for tracking the following activities within the District on an annual basis: (1) certification of groundwater 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 water well construction permits issued; (4) any other permits issued by the District; (5) any conditions associated with any permits issued; (6) information gathered through the municipal and non-municipal industrial accounting process; (7) any variances issued, (8) any retirements of irrigated acres or other activities by the District for the purpose of returning to a fully appropriated condition; and (9) offsets provided for depletions resulting from increased consumptive use related to the above listed items.
Measuring the Success of this IMP in Meeting the Goals and Objectives of this IMP
The analysis will include a forecasting of the balance of the depletions and offsets from the current year through the year 2048.
More robust review every 10 yrs

Data needs

Historical data on streamflows within the proposed integrated management plan area.
2. Past, present and potential future surface water use within the proposed integrated management plan area.
3. Hydrogeologic parameters within the proposed integrated management plan area including hydraulic conductivity, saturated thickness, and other groundwater reservoir information.
All groundwater models will be considered, and the best science and data that is readily available will be used.
4. Recharge characteristics and rates.
5. Precipitation and the variations including trends within the proposed integrated management plan area.
6. Past, present and anticipated future crop water needs within the proposed integrated management plan area.
7. Water data collection programs.
8. Past, present and potential groundwater uses within the proposed integrated management plan area.
9. Proposed water conservation and supply augmentation programs within the proposed integrated management plan area.
10. The availability of supplemental water supplies, including the opportunity for groundwater recharge within the proposed integrated management plan area.

Tri-Basin NRD
Eff. June 4, 2012

Action Items

1. Non-Regulatory Action Items

A. Information and Education Programs

Provide education materials to public & carry out educational activities about:
hydrologically connected groundwater and surface water
invasive species management
conversion of irrigated acres to dryland agriculture and wildlife habitat
limited irrigation cropping systems
soil residue and tillage management
alternative crops
funding sources for programs that enhance water supply

B. Incentive Programs

Acquisition by purchase or lease of surface water or ground water rights, including storage water rights with respect to a river or any of its tributaries
Acquisition by purchase or lease or the administration and management, pursuant to mutual agreement, of canals and other works, including reservoirs, constructed for irrigation from a river or any of its tributaries
Vegetation management, including, but not limited to, the removal of invasive species in or near a river or any of its tributaries
Augmentation of river flows
Continue to promote existing conservation programs that result in reductions in use of integrated water resources such as CREP and EQUP

Tri-Basin NRD and DNR may establish and implement financial or other incentive programs to reduce beneficial consumptive use of water within the Tri-Basin NRD.

C. Water Banking

Purposes of the water bank would be to:
offset existing consumptive water uses

help Tri-Basin NRD track temporary and permanent reductions of irrigated land and to quantify any water use credits that result from these reductions
help water users find offsets for new consumptive water uses and reconfigure irrigated acres to achieve maximum water use efficiency
the NRD could hold the transferred water uses in its water bank for the purposes of:
offsetting new or expanded consumptive uses
saving to meet statutory requirements or interstate agreement obligations
saving to meet future incremental targets toward achieving a hydrologically balanced condition
enabling irrigators to aggregate certified groundwater-irrigated acres for the purpose of improving irrigation efficiency

D. Riparian Vegetation Management

Tri-Basin and DNR will work with available resources to identify occurrences of invasive riparian plants.
Available resources may be directed toward eradication of these plants.

E. Encourage use of conservation best management practices

Tri-Basin and DNR will review available, reputable, relevant scientific studies that quantify consumptive water use reductions that result from applying water saving conservation practices and seek to determine the effect of such changes on water consumption within the Republican Basin portion of the district

2. Groundwater Regulatory Action Items (Controls)

Moratorium on drilling new wells for new water uses
Certification of irrigated land and other non de minimum consumptive water uses
Regulation of transfers of groundwater and of certified irrigated land
Meter groundwater pumping and annually report flowmeter readings

(Addresses in detail transfer system)
Municipal Use & Accounting
Non-Municipal Industrial Use & Accounting

3. Surface Water Regulatory Action Items (Controls)

Metering of all surface water diversions at the point of diversion from the stream will be required
Farm turnouts also will be required to be metered
DNR moratorium on issuance of new surface water permits

Monitoring & Studies

Work with County assessor to track location and number of irrigated acres
Gather data on crops planted and harvested, tillage systems and other soil and water conservation practices.

Studies:

Potential for reducing consumptive water use and evaluation of streamflow depletion impacts of various crop rotations
Potential for reducing consumptive water use and evaluation of streamflow depletion impacts of various methods of riparian vegetation management
Potential for reducing groundwater pumping through irrigation scheduling
Conducting an update of previous surveys of the type and location of irrigation systems throughout the district
Potential for reducing consumptive water use and evaluation of streamflow depletion impacts of various tillage practices
Potential for reducing consumptive water use and evaluation of streamflow depletion impacts of other agricultural and land management best practices

Potential for reducing consumptive water use and evaluation of streamflow depletion impacts of various means of enhancing conjunctive water resources management
Tri-Basin NRD and DNR will evaluate available, reputable, relevant scientific studies that quantify consumptive water use by invasive plants to determine whether and to what extent invasive plants consume water at higher rates than native vegetation

Twin Platte NRD
Eff. Nov. 8, 2012

Action Items
FULLY APPROPRIATED AREA
1. Non-Regulatory Action Items

A. Information and Education Programs

Provide educational materials to the public and/or carry out educational activities that may include, but not limited to:

The fully appropriated determination
The overappropriated determination
The IMP
The Nebraska New Depletion Plan
The Platte River Recovery and Implementation Program
hydrologically connected groundwater 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
funding sources for programs that enhance water supply

B. Water Banking

The TPNRD will purchase or otherwise acquire certified groundwater irrigated acres or other groundwater uses or surface water use appropriations for the purpose of:

offsetting new or expanded consumptive uses
saving water to meet statutory requirements or interstate agreement obligations
saving water to meet future incremental targets toward achieving a fully appropriated condition; or
future sales to individuals as offsets for development of new consumptive uses of ground water within the TPNRD

C. Ground Water Regulatory Actions (Controls)

The DNR and TPNRD will coordinate with other NRDS to develop a consistent method of calculating depletions or accretions to the stream when such calculations are necessary to implement ground water regulatory actions

FA Area Controls:

Moratorium
Certification of Irrigated Acres
Transfers

D. Surface Water Regulatory Actions

The DNR will continue the moratorium on new surface water appropriations in the portion of the Platte River Basin within the boundary of TPNRD

OVER APPROPRIATED AREA
1. Non-Regulatory Action Items

A. Information and Education Programs

Same as above

B. Incentive Programs

DNR and/or TPNRD will establish, implement, and/or continue financial or other incentive programs to reduce consumptive use of water within the TPNRD.
The programs may include CREP or EQUP or AWEP or other
Platte Basin Habitat Enhancement Program

C. Other Programs

The TPNRD and DNR may investigate opportunities to reduce consumptive use of water in order to enhance water supply as well as other water supply improvement projects.

Using the best science readily available

Enhancing ground water quantity, quality, and recognition of the value of return flows
Working with irrigation districts, not just individual landowners served by the irrigation district, when potential projects affect the operation of the irrigation district
Remaining in compliance with any state or federal laws, contracts, interstate compacts, or decrees

Other programs may include, but are not limited to:

Transfer existing surface water appropriations within the TPNRD to instream flow appropriations
Transfer existing surface water appropriations or apply for new appropriations for intentional recharge, and recovery when appropriate, in existing canals during the irrigation or non-irrigation season
Develop new infrastructure (e.g. dams or canals) that may include intentional recharge projects and recovery when appropriate
Develop ground water projects for the purpose of providing net accretions to the river
Facilitate contractual agreements between water users

D. Unappropriated Surface Water

Perform analysis to determine if there is unappropriated surface water
Determine if unappropriated surface water is available at the nece3ssary time, in the right location and in the correct amount, or determine if it can be relocated or retimed

E. Appropriated Surface Water

Compile a list of existing surface water appropriations within the TPNRD

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

F. Groundwater

Compile a list of certified ground water uses within the TPNRD
Determine if unappropriated surface water is available at the nece3ssary time, in the right location and in the correct amount, or determine if it can be relocated or retimed

For existing surface water appropriations, contact the appropriator to determine willingness to cooperate, lease and/or sell those appropriations.

For existing ground water appropriations, contact the landowner to determine willingness to cooperate with proposed projects

Potential purchase or lease of surface water irrigation district appropriations in order to transfer those appropriations to intentional recharge appropriations.
Exploration of water supply opportunities in the South Platte River.

2. Ground Water Regulatory Actions (Controls)

Trigger (Accretions < Depletions)
Alternative Crop Mixes
Allocation

3. Studies

Stream depletions due to the use of ground water wells that are commingled with surface water
Crop rotation
Vegetation management
Irrigation Scheduling
Survey of type and location of irrigation systems throughout the TPNRD
Tillage practices
Other best management practices
Conjunctive management
Water Budget Analysis
Invasive species
conservation measures

Papio Missouri NRD
Eff. August 2014

Groundwater Action Item (Control)
1. Establish a limit on the expansion of groundwater-irrigated acres.

Surface Water Action Item (Control)
1. Establish a limit on the expansion of surface water-irrigated acres within Surface Water Control Area

Action Item for Goal 1:
Utilize existing policies and authorities of PMRNRD and NDNR to address water quality issues

1.Review and evaluate the PMRNRD's Groundwater Management Plan relative to the goals and objectives of the IMP
2. Evaluate the need for a ranking system for new groundwater irrigation wells or expanded groundwater irrigated acres.
3. Evaluate the need to require proposed new groundwater well field expansions and new groundwater uses to perform an impact analysis.
4. Assess the need to further study the Lower Platte aquifer properties, extents, and connectivity to surface water.
5. Assess the need for additional revenue sources to be used to fund programs and projects resulting from this IMP.
6. Identify and study opportunities for the development of transfers, variances, water banking, and other actions of water management to potentially be used for the IMP area.

Action Item for Goal 1. Obj 2:
Minimize invasive species vegetation encroachment in the river channels.

1. Provide financial and administrative support to weed management activities in river channels.
2. Encourage removal of invasive species to improve channel conveyance.

Action Item Goal 1. Obj 3:

1. Evaluate the potential for conjunctive management programs or project opportunities to protect existing users or mitigate new uses such as water rights leases, interference agreements, augmentation projects, conjunctive use management, or use retirement.,

Action Item Goal 2. Obj1:
Develop and implement a data gathering and monitoring plan that provides scientific information to support NDNR's annual evaluation.

1. Identify important data components to monitor in order to ensure the best available datasets are used in the NDNR's annual evaluation.
2. Estimate consumptive water use utilizing the best available data and analysis tools.
3. Assess the need for additional monitoring and ensure information on land use changes are evaluated with respect to water use utilizing the best available data and tools.
4. Continue to monitor changes in streamflow and groundwater levels.
5. Continue to gather and analyze hydrogeologic data.

Obj. 2.2:
Monitor and track changes in precipitation, consumption, inflows, and outflows.

1. Develop or maintain a comprehensive spatial/tabular water inventory database that includes measurements or estimates of components of the water budget.
2. Develop or maintain science-based protocols for estimated unmeasured water uses.
3. Establish a system to better monitor and evaluate changes in surface water and groundwater supplies and uses.
4. Track variability in water use and supply by regularly evaluating data from existing surface water, groundwater, and weather monitoring networks.
5. Recommend changes to the Groundwater Management Plan as necessary.

Obj. 2.3:
Coordinate with water suppliers and other water users to understand and project future water demands.

1. Obtain short- and long-term water use projections from municipalities.
2. Develop online water use form for reporting annual water use.
3. Investigate the need for metering for annual reporting of irrigation and other large water uses.
4. Evaluate the need to expand existing or develop new rural water systems (Improvement Project Areas).
5. Develop estimates of water use from private, domestic, and other unmetered wells

Obj. 3.1
Promote water use education that addresses both rural and urban water conservation efforts.

1. Continue to use existing and develop additional information and education programs that promote wise water use and conservation
2. Evaluate the need for additional cost-share programs or projects to promote wise water use and conservation.
3. Collaborate with schools and other agencies to develop curriculum on water supplies and water conservation measures for use in classrooms.

Obj. 3.2
Work with other entities on education and conservation programs.

1. Coordinate with public water systems to develop or expand educational materials and programs on water supplies, water quality, and best conservation practices.
2. Continue to coordinate with cities, counties, and others as they develop long-term planning activities.
3. Continue to coordinate with industries, cities, and agricultural producers to promote the use of best management practices for stormwater management.
4. Continue to coordinate with cities, counties, and others to encourage water education and conservation.
5. Evaluate the potential for programs or projects that support the use of best management practices related to agricultural crop water management.
6. Evaluate implementing urban cost-sharing incentive programs to encourage indoor and outdoor water conserving technology or landscaping.

Obj. 3.3.
Explore opportunities to reuse water, where feasible.

1. Evaluate the positive and negative effects of capturing and using waste water.
2. Cooperate with public water systems to identify potential applications for reuse of treated waste water.

Obj. 4.1.
Actively participate in Lower Platte River Basin water management planning activities.

1. Cooperate on water management studies and planning with the Lower Platte River Basin Water Management Plan Coalition.
2. Continue to support the efforts and initiatives of the Eastern Nebraska Water Resources Assessment.

Obj. 4.2.
Identify and evaluate potential conjunctive management projects and activities within the Lower Platte River Basin.

1. Review and analyze existing studies of water storage opportunities in the Lower Platte River Basin and conduct additional multi-agency studies as appropriate.
2. Evaluate the potential for conjunctive management programs or project opportunities to mitigate new uses such as water right leases, interference agreements, augmentation projects, conjunctive use management, or use retirement.
3. Assess federal or statewide funding opportunities to further the goals and objectives of this IMP.

Obj. 4.3
Identify and evaluate additional water resources supplies.

1. Coordinate with other entities to identify and study opportunities for the development of transfers, variances, water banking, and other actions of water management to potentially be used across the entire Platte River Basin.

Obj. 4.4
Coordinate with other entities in the Upper Platte River Basin on water management planning and activities.

1. Work with the Platte River Recovery and Implementation Program on water management planning activities, as necessary.

Lower Platte South NRD
Eff. May 2014

Action Items

Information & Education
1. Provide information to the general public through media releases, newsletters, and radio and television public service announcements.
Target information to specific audiences through workshops, open houses, demonstration projects, and direct mailings.
Support school environmental education programs focused on water.

Incentive/guidance
1. The District and Department may investigate opportunities to reduce the consumptive use of water, considering best management practices, in order to enhance water supply as well as other water quality related projects.

Interagency Collaboration.
1. The District and DNR will seek out interagency partners to collaborate in studies and investigations, in projects, and will share data.
2. An interagency meeting will be held annually and in conjunction with the annual IMP Review.

Water Banking
1. It is anticipated that a regional water banking project will be developed by the Lower Platte River Basin Coalition with participation from the District.
2. The potential for additional surface water storage within the District to bank future water supplies will be studied.

Municipal and Rural Water Districts (water use & accounting)
1. In 2014, the District will develop and implement a process to collect and record water use data from all municipalities, and rural water districts.

Non-municipal water use and accounting.
1. In 2014, the District will develop and implement a process to collect and record water use data from all major non-municipal industrial water users.

Ground Water Regulatory Actions (Controls)

Actions Currently in Place
1. Well Permitting.
2. Moratorium
3. Well Spacing
Meters & Reporting
Certification of Irrigated Acres
Variances
Groundwater Transfers
Hydrologically connected areas - limit expansion of historically irrigated acres

Water conservation incentives - farming/irrig. Practices, industrial practices, and residential and commercial practices, and the installation of mechanical equipment to augment those changes.

Potential Actions.
Allocations
Rotation of groundwater use
More restrictive well spacing
Reduction of irrigated acres

Limit or prevent the expansion of irrigated acres or prevent increases in consumptive use of groundwater withdrawals from water wells used for irrigation or other use
Require use of BMPs
Impose mandatory educational requirements designed to stabilized or reduce the incidence of groundwater depletion, or conflict between users and appropriators
Require district approval of certain transfers of groundwater

Close all or a portion of the management area to the issuance of additional permits or may condition the issuance of additional permits on compliance with other rules and regulations adopted
Adopt or promulgate such other reasonable rules and regulations as are necessary to carry out the purpose for which a management area was designated.

Surface Water Regulatory Actions (Controls)

Actions in Place
Tracking of surface water irrigated acres - DNR map & track
Moratorium or restriction of new acres for irrigation
Meters & Reporting
Variance & Transfer Process

Emergency Responds/Drought Mitigation Plan:
Identify scenarios for temporary shortages
Develop emergency response plan

Monitoring & Studies
The objective of the monitoring and studies is to gather and evaluate data, information and methodologies that could be used to increase understanding of surface water and ground water supplies and uses within, and as appropriate, outside the District.
Annual monitor 300 wells (quality and quantity)
13 stream gauges (USGS)
DNR - monitor surface water appropriation in District and provide records, project maps, etc.
District will continue to monitor and report on ground water levels, irrigated acres, permitted wells & pumping, and variances and transfers in accordance with District's Ground Water Management Plan
District & DNR - monitor land use and land cover change
District & DNR - develop procedures to track depletions & gains to streamflows resulting from new, retired, or other changes to uses within the District.
District & DNR - cooperate with other state and federal agencies to monitor the impacts of changes in the Lower Platte River Basin on water supplies and consumptions, changes due to climate cycles, changes in stream flows, and changes due to other factors.

District & DNR - in cooperation with other agencies, will monitor the changes in population, consumption patterns and rates in municipalities and for non-municipal industrial water users.

- DNR methodology to assess the hydrologically connected water supplies and water uses

- Studies will or may include refinements of the hydrologically connected ground water and surface water areas, aquifer characteristics, effectiveness of various conservation best management practices, the impacts of climate cycles, the effectiveness and efficiency of water conveyance via streams from upstream sources, development of protocols for refining estimates of consumptive water use and understanding instream flow needs.
- Additional studies may include better understanding of specific storage, conveyance, or conservation projects in relation to the IMP goals & objectives

Review and Modification to the IMP
annually prepare and exchange reports on data collected and, on new and expanded groundwater or surface water permits and uses, and will review progress toward goals of IMP
publically available report distributed in advance of the annual review and the public will be invited to participate and provide input
District and DNR will jointly determine what amendments need to be made to the IMP and will identify action steps for the succeeding two years.

Information Considered in Developing IMP
LPSNRD Ground Water Management Plan (1995)

Water for the Future: Stakeholder Perspectives (2011)
LPSNRD Water Balance Study (2012)
Summary Report from the Public Involvement Plan implementation
Historical data on streamflows within and bordering the IMP area
Past, present and potential future surface water use within & bordering the IMP area
Data on ground water supplies within the IMP area including hydraulic conductivity, saturated thickness, and other ground water reservoir information
Local recharge characteristics and rates from any sources, where available
Records on climate & precipitation, trends and future projections for the IMP area
Land use information and crop water need estimates
Data from water collection programs
Past, present, and potential ground water uses within the IMP area
Proposed water conservation and supply augmentation programs within or available to the IMP area
The availability of supplemental water supplies, including the opportunities for ground water recharge
surface and ground water concerns within the IMP area
Opportunities to integrate and coordinate the use of water from different sources of supply within the IMP area
Existing and potential sub-irrigation uses within the IMP area
The relative economic value of different uses of surface and ground water proposed or existing within the IMP area
Rules & Regulations for ground water management developed by the District

Lower Loup NRD
eff. May 9, 2016

Groundwater and Surface Water Controls
1. Establish a limit on the expansion of groundwater-irrigated acres
2. Establish a limit on the expansion of surface water-irrigated acres
The limit on expansion of surface water-irrigated acres shall be a maximum of 1/3 the amount the Upper Loup NRD will allow of additional groundwater-irrigated acres.

Action Items

Action Item 1.1.4	Maintain an inventory of all registered wells and surface water appropriations
Action Item 1.2.1	Obtain short- and long-term water use projections from municipalities
Action Item 1.2.6	Develop estimates of water use from private, domestic, and other unmetered wells.
Action Item 1.2.7	The NDNR will continue any existing stream gaging in the LLNRD and look for new opportunities to enhance the stream gaging network.
Action Item 1.2.9	The NDNR will continue to map and track surface water irrigated acres.
Action Item 1.2.10	The NDNR will implement a voluntary reporting program for surface water irrigation permit holders in the LLNRD aimed at identifying the quantity of water pumped, the acres irrigated, and the type of irrigation system used.
Action Item 1.2.11	The NDNR will continue to evaluate the necessity for mandatory installation of flow meters an all surface water pumps for irrigation, industrial, and municipal uses.
Action Item 1.3.2	Consider the need for additional groundwater monitoring wells and additional stream gaging sites.
Action Item 2.2.1	Require an impact analysis on new large groundwater and surface water appropriations
Action Item 4.2.3	Pursue opportunities for public outreach efforts, such as news release, in order to support water education programs.

Incentive Programs
The Lower Loup NRD and NDNR will explore and evaluate cost-share incentive programs that promote water conservation practices.

Monitoring & Studies.
The overall objective of the monitoring plan is to gather and evaluate data, information, and methodologies that could be used to accomplish the purpose of this IMP.
The Lower Loup NRD and NDNR have agreed to accomplish the following actions set forth in the monitoring plans:
Gather and evaluate data, information, and methodologies that could be used to accomplish the purpose of this IMP
Increase understanding of the surface water and hydrologically connected groundwater system.
Test the validity of the conclusions and information upon which the IMP is based.
The NDNR will be responsible for collecting, tracking, evaluating, and reporting the following activities within the IMP area on an annual basis:
Department stream gage measurements on NDNR maintained gages
Surface water permits issues, cancelled or denied
Irrigation water use data collected
Other data as agreed to
The Lower Loup NRD will be responsible for collecting, tracking, evaluating, and reporting the following activities within the IMP area on an annual basis:
Groundwater level measurements
Stream gage measurements on NDNR maintained gages
Municipal, commercial, and industrial water use
Agricultural/irrigation water use
Certified irrigated acres and any changes to certifications
Well water construction permits approved, cancelled or denied
Variances granted, cancelled, or denied
Water banking transactions (if a water banking system is established).

Upper Loup NRD
Eff. July 15, 2016

Groundwater and Surface Water Controls

1. Establish a limit on the expansion of groundwater-irrigated acres
2. Establish a limit on the expansion of surface water-irrigated acres

The limit on expansion of surface water-irrigated acres shall be a maximum of 1/3 the amount the Upper Loup NRD will allow of additional groundwater-irrigated acres.

Objective 1.2

Action Item 1.2.1 The Upper Loup NRD will continue to require that all high capacity wells within the Upper Loup NRD be equipped with flowmeters.

Action Item 1.2.2 The Upper Loup NRD will continue to require all municipal, industrial, commercial and agricultural water users to submit an annual report to the Upper Loup NRD which includes information about the volume of water pumped and the number of irrigated acres, where applicable.

Action Item 1.2.3 The Upper Loup NRD will continue to permit, regulate, or take action on groundwater transfers.

Action Item 1.2.4 On an annual basis, the Upper Loup NRD will determine the number of new irrigated acres which will be allowed for the subsequent year.

Action Item 1.2.5 The Upper Loup NRD will continue to measure, review and evaluate spring static water levels across the Upper Loup NRD.

Action Item 1.2.10 The NDNR will implement a voluntary reporting program for surface water irrigation permit holders aimed at identifying the quantity of water pumped, the acres irrigated, and the type of irrigation system used.

Action Item 1.2.11 The NDNR will continue to evaluate the necessity for mandatory installation of water flow meters on all surface water pumps for irrigation, industrial, and municipal uses.

Objective 3.1 - Education

Action Item 3.1.1

The Upper Loup NRD and the NDNR will continue to provide information to the general public through educational materials, media releases, newsletters, pamphlets and website.

Action Item 3.1.2

The Upper Loup NRD and the NDNR will tailor specific information, as needed, to audiences through workshops, open houses, demonstration projects, and direct mailings.

Action Item 3.1.4 The Upper Loup NRD will continue to collaborate and support school environmental education curriculum and programs.

Incentive Programs

The Upper Loup NRD and the NDNR will explore and evaluate cost-share incentive programs that promote water conservation practices.

Monitoring & Studies

The objective of the monitoring plan is to gather and evaluate data, information, and methodologies that could be used to accomplish the purpose of the IMP.

The Upper Loup NRD and NDNR have agreed to accomplish the following actions set forth in the monitoring plans:

Gather and evaluate data, information, and methodologies that could be used to accomplish the purpose of this IMP.
Increase understanding of the surface water and hydrologically connected groundwater system.
Test the validity of the conclusions and information upon which the IMP is based.

The NDNR will be responsible for collecting, tracking, evaluating, and reporting the following activities within the IMP area on an annual basis:

NDNR stream gage measurements on the NDNR's maintained gages;
Surface water permits issued, cancelled, or denied;
Irrigation water use data; and
Other data as agreed to

The upper Loup NRD will be responsible for collecting, tracking, evaluating, and reporting the following activities within the IMP area on an annual basis:

Groundwater level measurements;
Stream gage measurements on the Upper Loup NRD's maintained gages;
Municipal, commercial and industrial water use;
Agricultural/irrigation water use;
Certified irrigated acres and any changes to certifications;
Well water construction permits approved, cancelled, or denied;
Variances granted, cancelled, or denied;
Water transfer permits granted, cancelled, or denied;
Water banking transactions (if a water banking system is established).

Lower Republican NRD
Eff. October 1, 2011

1. Groundwater Controls & Management Activities

During Compact Call Years, the LRNRD will seek to implement management actions (such as surface water leasing, ground water leasing, augmentation, etc..) to ensure compliance.
If additional control is required, the additional control may include, but not be limited to, restriction or curtailment of ground water pumping within the Rapid Response Region of the LRNRD and restrictions of ground water pumping in all other sub areas of the district.
During Compact Call Years, the LRNRD may set a on-year pumping allocation within the district.
Maintain requirement of metering of all ground water uses.
Provide for transfers.

2. Surface Water Controls - DNR
When water is needed for diversion at Guide rock and projected annual irrigation supply < 130,000 AF, Nebraska will close junior, and require compliance with senior, natural flow diversions of surface water between Harlan County Lake and Guide Rock
Nebraska will protect storage water released from Harlan County Lake for delivery at Guide Rock from surface water diversions.
Metering of all surface water diversions. Farm turnouts are required to install and maintain DNR approved measuring device. All appropriators will be monitored.
A "Compact Call" will result in DNR issuing closing notices on all natural flow and storage permits in the basin.

3. Incentive Programs
Include, but not limited to:
- acquisition by purchase or lease of surface water or ground water rights,
- purchase or lease or the administration and management, pursuant to mutual agreement, of canals and other works, including reservoirs, constructed for irrigation from a river or any of its tributaries
- vegetation management, including, but not limited to, the removal of invasive species in or near a river or any of its tributaries.
- the augmentation of river flows

Such incentive programs may include any program authorized by state law and/or federal programs such as, but not limited to, Conservation Reserve Enhancement Program (CREP) and Environmental Quality Incentives Program (EQIP)
Any reductions in depletions to streamflow generated through supplemental programs, funded entirely by the state of Nebraska and/or U.S. Government, including acreage retirement or other incentive programs undertaken, will not accrue to any specific NRD, regardless of location.
However, should any NRD establish, fund partially or in total, and implement its own such conservation program, available only for acreage within such district, the accounting of credit for the resulting water savings shall be given exclusively to that NRD.

4. Monitoring & Studies
Potential Studies:
- Crop rotation
- Vegetation Management
- Irrigation Scheduling
- Survey of type and location of irrigation systems through LRNRD
- Tillage practices
- Conjunctive Management

The LRNRD agrees to annually provide GIS coverage maps of all lands irrigated and to meter, record and provide DNR its ground water usage records and irrigation system details.
The LRNRD shall make copies of district actions taken on variances, offset, and similar actions available to DNR.
DNR agrees to make available to LRNRD all reports and records of the other NRDs as well as all documentation and reports utilized by DNR to determine the basin's virgin water supplies.

5. Early Warning System for Water Short Year
Trigger
Forecast

Middle Republican NRD
Eff. Nov 1, 2010

Baselines & Definitions (e.g. "Allowable Depletions")

Supplemental Programs

Includes but not limited to :
Surface water or ground water augmentation projects
river flow enhancement projects
Incentive Programs
Riparian management projects

Groundwater Controls

Transfers
Meters
Certification of Acres
Drilling Moratorium
Ban on increase of irrigated acres

Standards

A minimum of 20% reduction in pumping from the 98-02 pumping volume using a combination of regulation and supplemental programs so that the average ground water pumping is no greater than 247,580 AF over the long term
An additional reduction in 98-02 pumping volumes of 5% during the next 5-yr period shall be accomplished primarily through voluntary incentive programs and other means as determined by MRNRD
The district's net depletions to stream flow shall average no greater than 30% of Nebraska's allowable ground water depletions as computed using the RRCAGWM

Other Controls and Management Activities

During Compact Call Years, the MRNRD will seek to implement management actions such as surface water leasing, ground water leasing, augmentation, etc. to ensure compliance with IMP
If such management actions are insufficient to ensure compliance, the MRNRD will implement additional ground water controls and regulations such as restriction of ground water pumping in Rapid Response Region and restrictions on ground water pumping in other subareas
Maintain moratorium on new uses
Limit or prevent expansion of irrigated uses
Provide for transfers

Surface Water Controls - DNR

To provide for regulation of natural flow between Harlan Co. Lake and Superior-Courtland Diversion Dam
When water is needed for diversion at Guide Rock and the projected or actual irrig. Supply < 130,000 AF, DNR will close junior, and require compliance with senior, natural flow diversions of surface water between Harlan Co. Lake & Guide Rock
DNR will protect storage water released from Harlan Co. Lake for delivery at Guide Rock from surface water diversions
DNR will take actions to minimize the bypass flows at Superior-Courtland Diversion Dam

Metering of all surface water canals & farm turnouts
DNR moratorium will be continued

Augmentation & Incentive Programs

Acquisition by purchase or lease of surface water or ground water rights, including storage water rights with respect to a river or one of its tributaries
Acquisition by purchase or lease or the administration and management, pursuant to mutual agreement, of canals and other works, including reservoirs, constructed for irrigation from a river or any of its tributaries
Vegetation management, including, but not limited to, the removal of invasive species in or near a river or any of its tributaries
The augmentation of river flows
Incentive programs - such as CREP or EQIP or other

The MRNRD, through the Republican River Basin Coalition, intends to establish and implement river flow enhancement projects

The MRNRD, alone, and/or through the Republican River Basin Coalition, may use any or all available funding authorities to establish and implement river flow enhancement projects or other projects that result in an in crease to streamflow or a decrease in ground water depletions.

Potential Studies

- Crop Rotation
- Vegetation Management
- Irrigation Scheduling
- Survey of the type and location of irrigation systems throughout the MRNRD
- Tillage practices
- Conjunctive management

Monitoring

- Tracking & Reporting of water use activities
- Forecast procedures
  - Determination of available stream flow
  - Compact Call Year Evaluation
  - Calculation of Allowable Ground water Depletions for the MRNRD and Determining the necessity of additional controls
  - Calculation of Compact Call Stream flow Volume
  - Additional adjustments related to long-term trends
  - Harlan Co. Lake Operations

Basin Wide Plan
Platte River Basin
Upstream of the Kearney Canal
Eff. 9/11/2009

Goal 1, Obj 1
Offset impacts of streamflow depletions to (A) surface water appropriations and (B) water wells constructed in aquifers dependent upon recharge from streamflow, to the extent those depletions are due to water use initiated after July 1, 1997

A. Offset depletions to streamflows for new or expanded uses initiated after July 1, 1997

1. Identify depletions and accretions due to :

changes in irrigated acres
changes in municipal and domestic uses of water
changes in livestock use of water
changes in industrial uses of water
changes in proportion of water provided by surface water and groundwater sources on commingles irrigation land
any other relevant changes in water use that affect streamflows

2. Develop methodologies and gather and evaluate data that could be used to estimate depletions and accretions to streamflow
3. Identify projects that may be used to enhance water supply. These projects shall be pursued on a basin-wide level, when such projects will help achieve sustainable levels of supply and use and address water shortages in one NRD that affect more than one NRD
4. Reduce consumptive water use through retirement of irrigated lands, water use allocation, and/or other management options.
5. Establish uniform methods for calculating depletions and offsets and for conducting water banking of both ground water and surface water, using tools developed as part of COHYST and other methods
6. Establish uniform methods for identifying and regulating water use on acres irrigated with both surface water and ground water
7. Ensure the offsets of depletions occur at the equivalent time, amount, and location of the depletion.

B. Initial identification of depletions
Depletions to streamflows estimated by the COHYST model will need to be adjusted to reflect the requirement to offset only those amounts needed to prevent depletions to (A) surface water appropriations and (B) water wells constructed in aquifers dependent upon recharge from streamflow.
2. Estimates of other new uses have been calculated by the DNR and the Platte River Basin NRDs
a. Changes in population will be used as an indicator of the change in consumptive use of water for municipalities and domestic users in the rural areas.
b. Changes in the number of livestock as reported by the Nebraska Agricultural Statistics Service or the Agricultural Census will be used as an indicator of the change in the consumptive use of water due to livestock
c. Changes in the industrial use of water will be estimated based upon registered well data and a survey of industrial uses in the Platte Basin.
3. Other data and methods may be used to determine consumptive use and depletions as long as DNR & NRD(s) agree on the data and method used.

Goal 1, Obj. 2:
actively pursue funding for offsets and develop and maintain data and analytical tools, such as COHYST and other programs and projects needed to implement this Plan
A. Work to maintain and improve COHYST
b. Work to secure necessary funding for existing and proposed projects that will advance goals of Plan

Goal 1, Obj. 3:
a. The determination of the overall difference between current and fully appropriated levels of development:
1. take into account cyclical supply, including drought
2. identify the portion of the overall difference that is due to conservation measures
3. identify the portion of the overall difference that is due to water use initiated prior to July 1, 1997

4. Identify the portion of the overall difference that is due to water use initiated or expanded on or after July 1, 1997

B. In quantifying difference between fully & over appropriated conditions, the DNR, CNPPID, NPPD, and CPNRD performed a preliminary estimate of the changes in stream reach gains and surface water demands affected by such reach gain changes entitled "Preliminary Estimate of Historical Stream Flow Reductions in the Overappropriated Portion of the Platte River in Nebraska"
C. The COHYST model, and other models or tools, will be used to refine estimates of the overall difference between the current and fully appropriated levels of development.

D. A water budget/consumption approach may also be used to determine the overall difference as it can be a useful tool in that it allows for a comprehensive understanding of the water supplies and uses in the basin.

Goal 1, Obj. 4:
Conduct a technical analysis as described in this Plan and the individual Platte River Basin NRD IMPs after they have been effective for at least 5 yrs, to determine whether the controls adopted in the respective plans are sufficient to offset depletions post 1997

Goal 1, Obj. 5:
Use available funds to offset depletions due to water uses initiated prior to July 1997, that are identified as part of the overall differences between current & fully-appropriated levels of development

Goal1 , Obj 6:
Adopt and implement IMPs in each Platte River Basin.
A. The IMP for each NRD shall:
1. Be consistent with this Basin-Wide Plan
2. Identify management options that will help to achieve the goals and objectives of this Plan.
a. Management actions should take into account the cyclical nature of water supplies as well as the impact of conservation measures.
b. Other options that are not regulatory include augmentation/retiming projects; alternative management of canals; new storage reservoirs and/or underground storage; water banking; incentive programs for retiring irrigated acres and/or purchasing surface water; alternative management of existing reservoirs and drought management plans.
c. Riparian or riverine vegetation control may be considered as a management option when a change in consumptive use can be scientifically proven and there is a comprehensive accounting of all changes in such vegetation over the development period.
3. Ensure that depletions caused by new or expanded uses within each NRD are offset.
4. Describe how progress toward the depletion reduction objective for the individual NRD is measured (tracking reduction in irrig. Acres; monitoring reduction in consumptive water uses; and making new COHYST model runs).
5. Include actions that will offset depletive impacts of poet - July 1997 water uses outside the OA area, to the extent that those new uses deplete streamflows within the OA area.
6. Allow for transfer of certified acres across NRD boundaries, while not increasing Streamflow depletions to Platte River

Goal 3, Obj 1:
Meet at least annually to review progress toward achieving the goals and objectives of the Basin-Wide Plan and those portions of individual NRD IMPs that implement this Plan

A. The first annual meeting will be held …
B. Discussions shall include, but not be limited to:
1. Revisions to Plan
2. Revisions to the IMPs
3. New data and information, including items like consumptive use calcs for municipal, livestock and industrial uses
4. Disputes related to implementation of IMPs
5. Any other topic on which the DNR and individual NRDs have mutually agreed

C. A proposed agenda will be made available to the public, along with supporting documents, at least 2 weeks prior to annual meeting

D. As a result of actions taken at the annual meeting, the Plan may be revised as necessary.
E. Stakeholder and/or public feedback concerning the Basin-Wide Plan or individual IMPs will be considered in the following process . . .

Goal 3, Obj. 2:
Gather and evaluate data and information to measure the effectiveness of controls, incentives and/or other programs in the individual NRD IMPs:

A. Jointly conduct a study to identify the impact of soil and water conservation measures on streamflows.
B. Review current methodologies, as well as proposed new methodologies, and evaluate data at the annual meeting
C. Revise Plan, if such revisions will ensure that its goals and objectives will be achieved in the timeliest and most efficient and cost-effective manner possible.

Goal 4, Obj. 1:
Identify disputes between ground water users and surface water appropriators

Goal 4, Obj. 2:
Investigate and address disputes between ground water users and surface water appropriators based on the investigation results.

URNRD
Eff. Nov 1, 2010

Groundwater Controls

ground water allocations
moratorium on new water wells and irrigated acres as required by the FSS
Reduction of irrigated acres
incentive programs targeting acres with high stream flow depletion factor as alternatives to URNRD-wide reductions in allocation or irrigated acres

Standards

Same as MRNRD

Other Controls and Management Activities

During Compact Call Years:

surface water leasing
ground water leasing
augmentation, etc.
Set one year pumping allocation within District if necessary
Metering required
Provide for transfers

Surface Water Controls

Same as MRNRD

Augmentation Incentive Programs

Same as MRNRD