LOWER PLATTE RIVER BASIN COALITION WATER MANAGEMENT PLAN

Coalition Board Update

January 27, 2015

01 Project Activities

Project Activities since June Coalition Board Meeting

- Ground and Surface Water Controls review
- Water Banking research, review, and examples
- DNR New Methodologies/INSIGHT Database
- Data Collection and Infrastructure Inventory
- Goals, Objectives and Action Item Development

Surface/Groundwater Controls

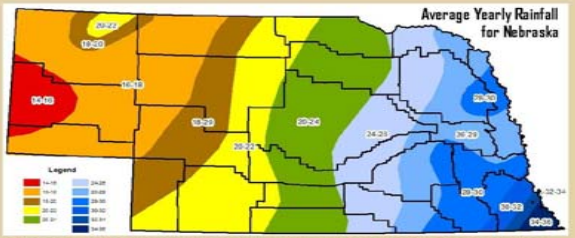
- Regulatory Controls
  - Mandatory pumping restrictions
  - Limiting new wells
  - Mandatory conservation measures
- Voluntary Controls
  - Fee structures to reduce pumping
  - Water efficiency projects
  - Buyout or acreage retirement
- Infrastructure Projects
  - Constructing or changing operation of existing infrastructure
  - System improvements
  - Imported water
  - Conjunctive management

NRD	Allocation	Flow Meters	Well Drilling Moratorium	Required Water Use Reports	Rainfall Yearly Average
Upper Loup NRD	No	New wells	Sub-areas; plus limited acre expansion	Yes	18”-22”
Lower Loup NRD	No	Sub-area for quality	Yes	Yes, sub-areas	22”-27”
Upper Elkhorn NRD	No	Yes	New irrigated acres (2014)	Yes	24”-28”
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	26”-30”
Lower Platte North NRD	27”/3yrs in sub-areas	Yes, in sub-areas	Yes in sub-areas	Yes, volunteer report	26”-30”
Lower Platte South NRD	NW sub-area: 21”/3yrs (9”/yr max)	Yes, for entire District	No, but no new irrigated acres, in NW sub-area	Yes, for entire District	28”-30”
Papio-Missouri NRD	No	No	Yes, in sub-areas	No	30”-32”

NRDs Are Managing Water Statewide—As of February 2014:

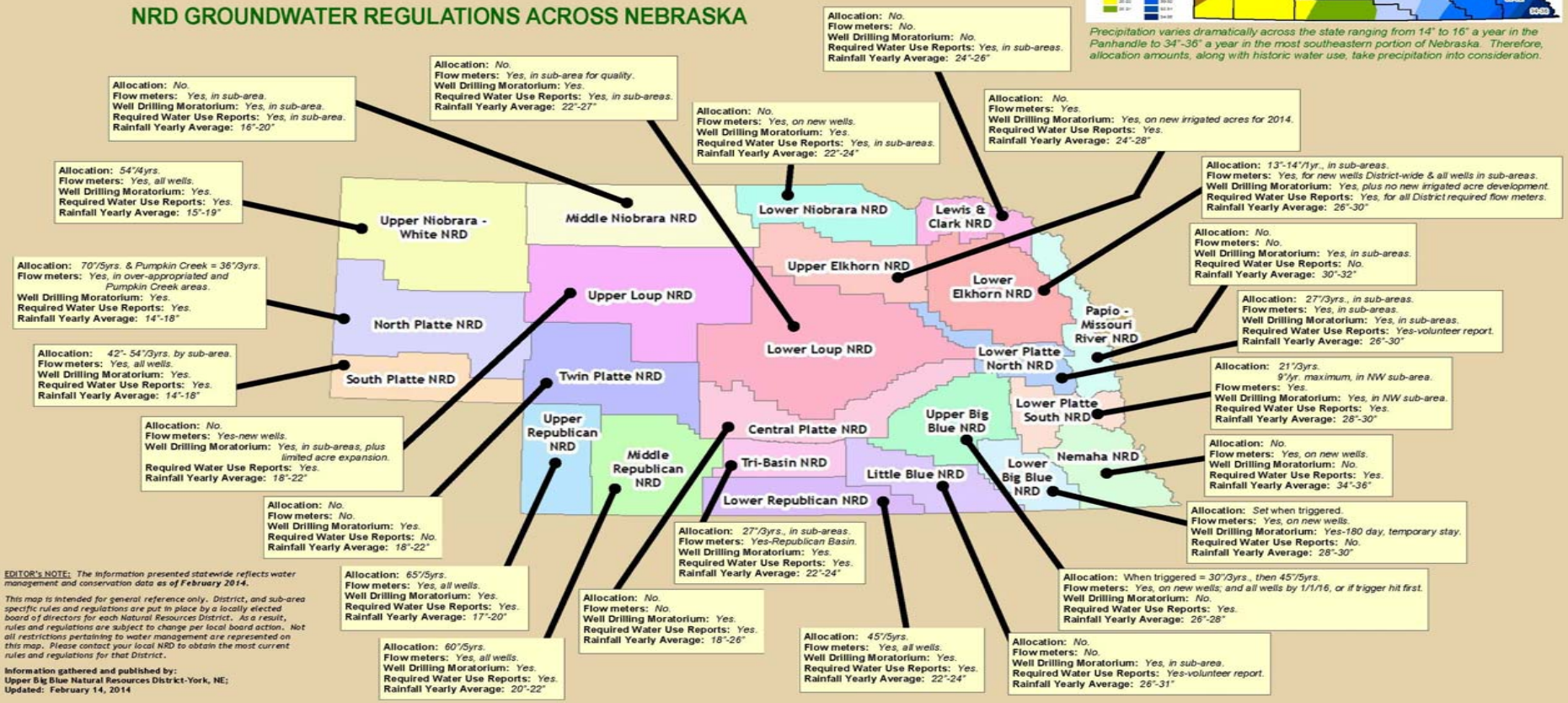
Nebraska's 23 Natural Resources Districts (NRDs) are uniquely positioned to manage the conservation of the state's natural resources through local governance. Because of Nebraska's diverse geology, climatology, and hydrology, each NRD—and it's locally elected board of directors—are able to enact rules, regulations, and programs that can assist its District's citizens and protect local natural resources for future generations to share. Water management regulations in particular include allocating groundwater, augmenting surface water, requiring flow meters, instituting well drilling moratoriums, requiring water use reports, and restricting the expansion of irrigated acres. Individual NRDs use these regulations in different combinations and to different degrees depending on their respective geographic areas of concern. Below is a map showing all 23 NRDs and their most recent status of water management techniques.

So why does this matter to you? Quite simply, Nebraska's NRDs are working to ensure that you and future generations can continue to share in the use and enjoyment of our natural resources. Nebraska's NRDs: Protecting Lives, Protecting Property, and Protecting the Future...



Precipitation varies dramatically across the state ranging from 14" to 16" a year in the Panhandle to 34"-36" a year in the most southeastern portion of Nebraska. Therefore, allocation amounts, along with historic water use, take precipitation into consideration.

NRD GROUNDWATER REGULATIONS ACROSS NEBRASKA



Allocation: No.
Flow meters: No.
Well Drilling Moratorium: No.
Required Water Use Reports: Yes, in sub-areas.
Rainfall Yearly Average: 24"-26"

Allocation: No.
Flow meters: Yes, in sub-area.
Well Drilling Moratorium: Yes, in sub-area.
Required Water Use Reports: Yes, in sub-area.
Rainfall Yearly Average: 16"-20"

Allocation: No.
Flow meters: Yes, in sub-area for quality.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes, in sub-areas.
Rainfall Yearly Average: 22"-27"

Allocation: No.
Flow meters: Yes, on new wells.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes, in sub-areas.
Rainfall Yearly Average: 22"-24"

Allocation: No.
Flow meters: Yes.
Well Drilling Moratorium: Yes, on new irrigated acres for 2014.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 24"-28"

Allocation: 54"/4yrs.
Flow meters: Yes, all wells.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 15"-19"

Allocation: 13"-14"/1yr., in sub-areas.
Flow meters: Yes, for new wells District-wide & all wells in sub-areas.
Well Drilling Moratorium: Yes, plus no new irrigated acre development.
Required Water Use Reports: Yes, for all District required flow meters.
Rainfall Yearly Average: 26"-30"

Allocation: 70"/5yrs. & Pumpkin Creek = 36"/3yrs.
Flow meters: Yes, in over-appropriated and Pumpkin Creek areas.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 14"-18"

Allocation: No.
Flow meters: No.
Well Drilling Moratorium: Yes, in sub-areas.
Required Water Use Reports: No.
Rainfall Yearly Average: 30"-32"

Allocation: 27"/3yrs., in sub-areas.
Flow meters: Yes, in sub-areas.
Well Drilling Moratorium: Yes, in sub-areas.
Required Water Use Reports: Yes-volunteer report.
Rainfall Yearly Average: 26"-30"

Allocation: 42"- 54"/3yrs. by sub-area.
Flow meters: Yes, all wells.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 14"-18"

Allocation: 21"/3yrs. 9"/yr. maximum, in NW sub-area.
Flow meters: Yes.
Well Drilling Moratorium: Yes, in NW sub-area.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 28"-30"

Allocation: No.
Flow meters: Yes-new wells.
Well Drilling Moratorium: Yes, in sub-areas, plus limited acre expansion.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 18"-22"

Allocation: No.
Flow meters: Yes, on new wells.
Well Drilling Moratorium: No.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 34"-36"

Allocation: No.
Flow meters: No.
Well Drilling Moratorium: Yes.
Required Water Use Reports: No.
Rainfall Yearly Average: 18"-22"

Allocation: Set when triggered.
Flow meters: Yes, on new wells.
Well Drilling Moratorium: Yes-180 day, temporary stay.
Required Water Use Reports: No.
Rainfall Yearly Average: 28"-30"

Allocation: 27"/3yrs., in sub-areas.
Flow meters: Yes-Republican Basin.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 22"-24"

Allocation: 65"/5yrs.
Flow meters: Yes, all wells.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 17"-20"

Allocation: When triggered = 30"/3yrs., then 45"/5yrs.
Flow meters: Yes, on new wells; and all wells by 1/1/16, or if trigger hit first.
Well Drilling Moratorium: No.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 26"-28"

Allocation: No.
Flow meters: No.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 18"-26"

Allocation: 60"/5yrs.
Flow meters: Yes, all wells.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 20"-22"

Allocation: 45"/5yrs.
Flow meters: Yes, all wells.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 22"-24"

Allocation: No.
Flow meters: No.
Well Drilling Moratorium: Yes, in sub-area.
Required Water Use Reports: Yes-volunteer report.
Rainfall Yearly Average: 26"-31"

EDITOR's NOTE: *The information presented statewide reflects water management and conservation data as of February 2014.*

This map is intended for general reference only. District, and sub-area specific rules and regulations are put in place by a locally elected board of directors for each Natural Resources District. As a result, rules and regulations are subject to change per local board action. Not all restrictions pertaining to water management are represented on this map. Please contact your local NRD to obtain the most current rules and regulations for that District.

Information gathered and published by:
Upper Big Blue Natural Resources District-York, NE;
Updated: February 14, 2014

Surface/Groundwater Controls

- Review of some National examples
  - Kansas
  - Texas
  - Wyoming
  - California
  - New Mexico
- Focus on legislative setting, administrative authorities and responsibilities, and potential applicability to Nebraska

Water Banking in Nebraska

The Lower Platte River Basin Coalition is in the process of identifying a common methodology and accounting system that would provide a guideline for the member NRDs in the event that individual member NRDs should decide in the future to adopt a water bank to support water management activities. This summary document provides background information and current status of water banking efforts in Nebraska.

What is a **Water Bank?**

The words "water bank" have been used to describe several different things in the state of Nebraska, and an even greater number of things across other parts of the United States. Water banks are often brought up in Nebraska during discussions involving water management, but probably more people than would care to admit —including many with significant experience in water resources—would struggle to define a "water bank".

So what exactly is a water bank? At a very general level, a water bank usually refers to a mechanism used to facilitate the transfer of water between parties, often using market-driven transactions. Water banks can be institutional mechanisms, physical projects or both.

What **Water Banks** Already Exist in **Nebraska?**

The **Central Platte NRD Water Banking Program**, established in 2007, involves the transfer of water to manage river depletions. It is designed to help meet the objectives of an Integrated Management Plan (developed jointly by the NRD and DNR) and the Platte River Recovery and Implementation Program. The Central Platte NRD Water Banking Program has elements of an institutional water bank, but also can involve structural components, and may be unique in the U.S. in the way it tracks consumptive use changes based on land use and the resulting changes to river depletions.

Lower Loup NRD Irrigated Acres Transfer Program is an initiative which requires deposits into a water bank for certain types of water transfers.

Other NRDs and the Central Nebraska Public Power and Irrigation District (CNPPID) Delivery Location Transfer Program use elements of water banking operations in their water management practices as well.

Is **Water Banking** in Nebraska **Legal?**

YES!

As long as a water bank follows existing state statutes and regulations, water banking systems are legal in Nebraska.

While Nebraska does not currently have explicit statutory language governing water banks, there are several laws and regulations relating to water transfers, water storage, and other aspects that can (depending on the particular type of water bank involved) provide guidance on how to operate a particular bank.

Sample of NEBRASKA Laws related to water banking*

Nebraska Revised Statute	Topic
§ 46-290 to 46-294.05	Intrabasin surface water transfers
§ 46-288 to 46-289	Interbasin surface water transfers
§ 46-691	Agricultural groundwater transfers
§ 46-691.01	Domestic groundwater transfers
§ 46-638 to 46-650	Municipal and rural domestic groundwater transfers
§ 46-675 to 46-690	Industrial groundwater transfers
§ 46-295 to 46-2106	Besides the standard permit to divert surface water, banking operations may also require a permit for intentional underground water storage
§ 46-242	In order to then use, or "recover" the intentionally stored underground water, a separate permit may be required
§ 46-739	Groundwater controls for designated management areas (includes transfers)

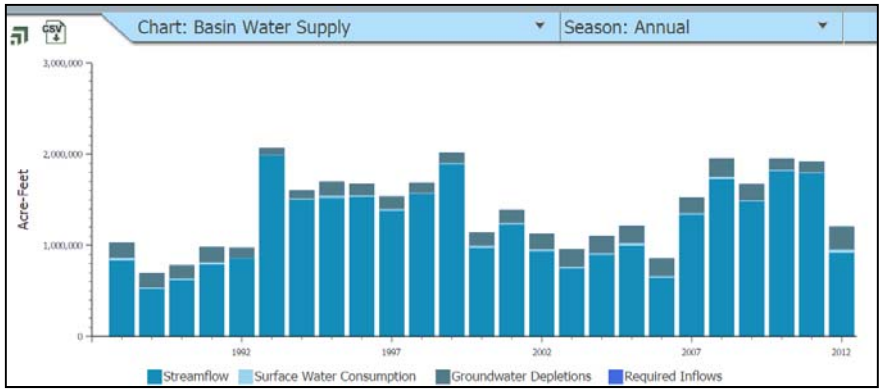
* Applicable statutes will depend on the particular type of water bank in question.

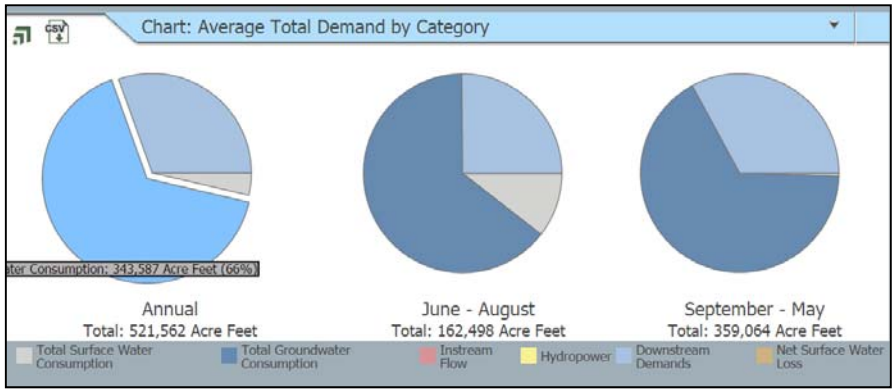
Water Banking Examples

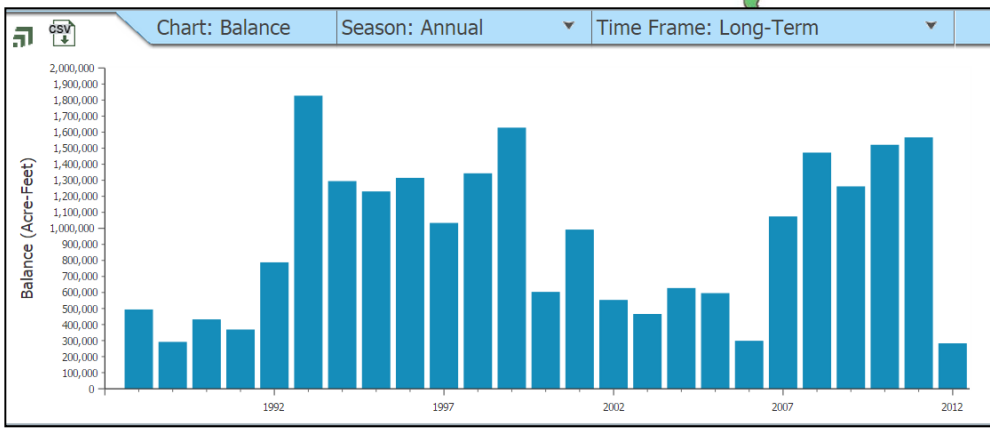
- Nebraska Examples
  - Lower Loup NRD
  - Central Platte NRD
  - Central Nebraska Public Power and Irrigation District
- Kern (California)
- Edwards Aquifer (Texas)
- Focus on legislative setting, structure, and accounting methods

DNR New Methodologies/INSIGHT Database

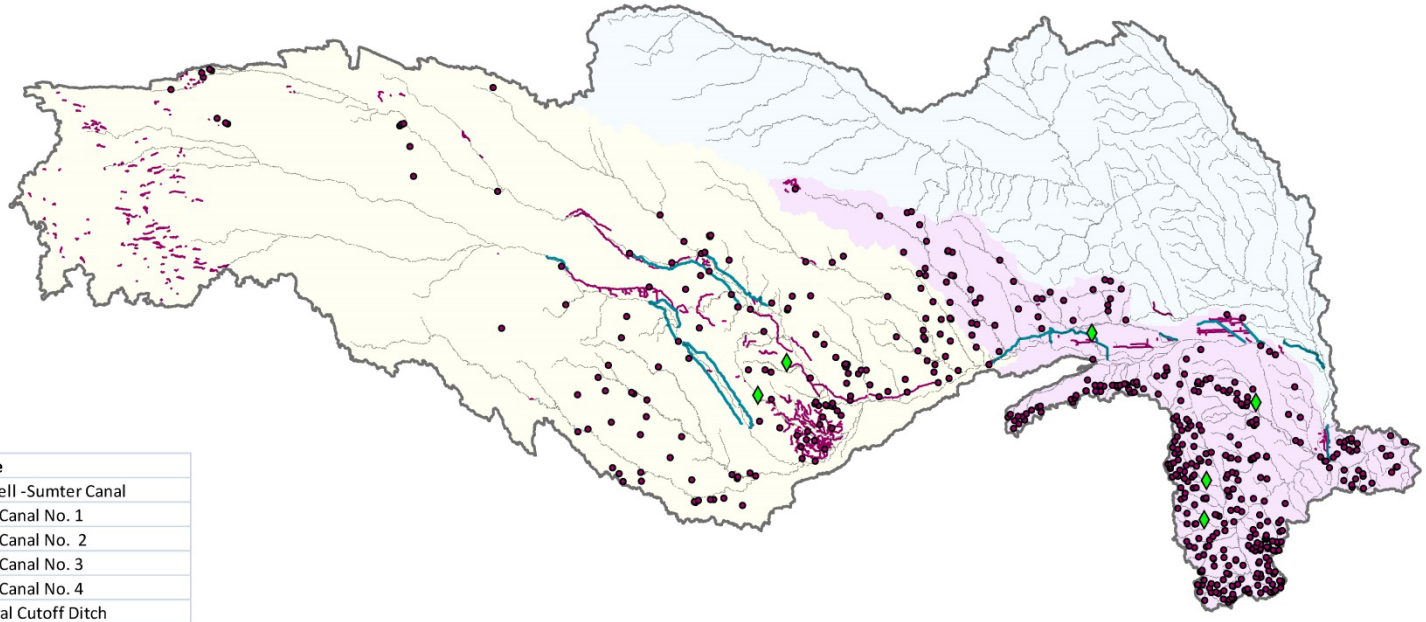
- Focus on its applicability as an accounting/database for use in basinwide management







Data Collection and Infrastructure Inventory



Name
Burwell -Sumter Canal
Loup Canal No. 1
Loup Canal No. 2
Loup Canal No. 3
Loup Canal No. 4
Central Cutoff Ditch
Fremont Cutoff Ditch
Hughes Payzant Ditch
Lost Creek Ditch
Loup River Canal
Rankin Ditch*
Rawhide Creek (Old Channel)
Scott Ditch
Taylor-Ord Canal
Western Sarpy Ditch

Legend

- Dam > 1 sq. mi. surface area
- Dams
- Named Canals
- Unnamed Canals

NHD Canals and "Artificial Path" & Existing Dam Locations

Lower Platte Basin-wide Management Plan

DATE 2014 Dec

FIGURE Figure

GOAL 1: Develop and maintain a water supply and use inventory based on the best available data and analysis.

OBJECTIVES

1. Develop and maintain a comprehensive inventory of the location and source of the Basin's current and future water supplies, water uses and outflows.

1.1 Develop a better understanding of basin-wide inflows/outflows to enable development of a more comprehensive water inventory.

ACTION ITEMS

A. Compile a tabular summary of basin-wide inflows and outflows using existing gage measurements where available, and estimates or calculated components where unavailable.

B. Evaluate and prioritize estimated components based on uncertainty and relative impact of water inventory.

C. Identify locations where additional gaging data or further study/modeling would reduce uncertainty in the basin-wide water inventory.

1.2 Project changes to water inventory due to changes in urban and rural population and land use.

ACTION ITEMS

A. Develop projected municipal and industrial growth estimates, incorporating current city growth plans if available.

B. Develop projected agricultural land use trends to estimate future change in inventory.

C. Utilize existing tools to evaluate the impacts on water inventory due to changes in both urban and rural land use scenarios.

1.3 Evaluate potential effects on water inventory of coordination, innovation and technology.

ACTION ITEMS

A. Evaluate impacts of soil and water conservation practices on the water inventory.

B. Review scientific studies that quantify consumptive water use reductions that result from applying water saving conservation practices.

C. Evaluate potential new supply due to new or improved technology (deep aquifer recover, horizontal wells, etc.).

1.4 Refine the extent of hydrologically connected ground and surface waters in the Lower Platte Basin.

ACTION ITEMS

A. Utilize best available data and tools to develop refined extents of the hydrologically connected ground and surface waters in the Lower Platte Basin.

1.5 Evaluate variations in water inventory due to climate cycles.

ACTION ITEMS

A. Work with other state and federal agencies to develop a baseline climate scenario as well as a set of projected climate scenarios.

B. Utilize available tools to test and evaluate resiliency of water inventory under baseline and projected climate scenarios. Evaluation to consider delta between baseline and projected climate scenarios and consider both elements of use and supply.

2. Monitor current and future water demands in the Basin.

ACTION ITEMS

A. Develop a standard data collection and reporting system for all NRDs in Lower Platte Basin for documenting water uses in Basin.

B. Identify significant unmeasured demands and develop and maintain a standard methodology for estimating. Unmeasured demands may include unmetered groundwater irrigation pumping, livestock use, riparian ET, unmeasured municipal and industrial use, environmental remediation.

GOAL 2: Implement a water management plan for the Lower Platte Basin that maintains a balance between current and future water supplies and demands.

OBJECTIVES

1. Collaborate with state and local governments to identify opportunities to augment water supplies within the Lower Platte Basin and, if necessary, identify opportunities to supplement with imported water from outside the Lower Platte Basin.

ACTION ITEMS

- A. Utilize information from the water inventory to determine need, quantities, and locations of water shortages to define water augmentation needs and goals of augmentation projects.
- B. Identify potential excess surface water sources within the basin and determine locations, timing, quantities, and reliability of excess surface water sources.
- C. Identify potential groundwater sources within the basin and determine locations, timing, quantities, and reliability of groundwater sources.
- D. Based on potential supplies and goals, identify potential partners, develop and prioritize augmentation plans.
- E. Identify potential partners and collaborate to develop opportunities for imported water supplies, as necessary.

2. Monitor the instream flow needs in the Lower Platte Basin to foster an understanding of the existing appropriation priorities and locations, and provide a basis for evaluating impacts of existing and future uses.

ACTION ITEMS

- A. Assess USGS and DNR gage flows as well as DNR administrative records and actions to identify change of use or location of existing appropriations, new appropriation applications, and priority calls within the basin.

3. Evaluate options for Basin wide water banking methodologies.

ACTION ITEMS

- A. Identify potential water banking methods that have applicability in the Lower Platte Basin relative to current physical, administrative, legal and legislative framework.
- B. Establish uniform and consistent accounting methodology (depletions, offsets, etc.) for use in developing and maintaining a water bank.
- C. Develop an administrative framework (agreements, rules, etc.) for establishing a water bank in the Lower Platte Basin.

GOAL 3: Develop and implement water use policies and practices that contribute to the protection of existing surface and groundwater uses while allowing for future water development.

OBJECTIVES

1. Identify available water storage opportunities throughout the Lower Platte Basin.

ACTION ITEMS

A. Inventory past project studies (US Bureau of Reclamation, US Army Corps of Engineers, Natural Resource Conservation Service, individual NRDs) to assess if any opportunities exist to utilize those analyses, whole or in part, as potential projects for purposes of this Plan.

B. Inventory existing infrastructure to assess potential for rehabilitation/expanding/modifying physical or operational components for purposes identified in this Plan.

C. Identify potential new opportunities for water storage in consideration of proximity to available water, return flow options, physical site characteristics, etc.

2. Evaluate, understand, and develop policies to address impacts on stream flows of uses outside of management control.

ACTION ITEMS

A. Inventory and review existing studies/reports on uses outside management control (conservation measures , riparian uses, etc.) and determine impacts on water inventory.

3. Expand public education programs on general awareness of water supplies and to encourage water conservation measures .

ACTION ITEMS

A. 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.

B. Coordinate with public water systems to develop or expand educational materials and programs on water supplies, water quality, and best conservation practices.

C. Coordinate with cities, counties, and others to encourage water education and conservation.

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

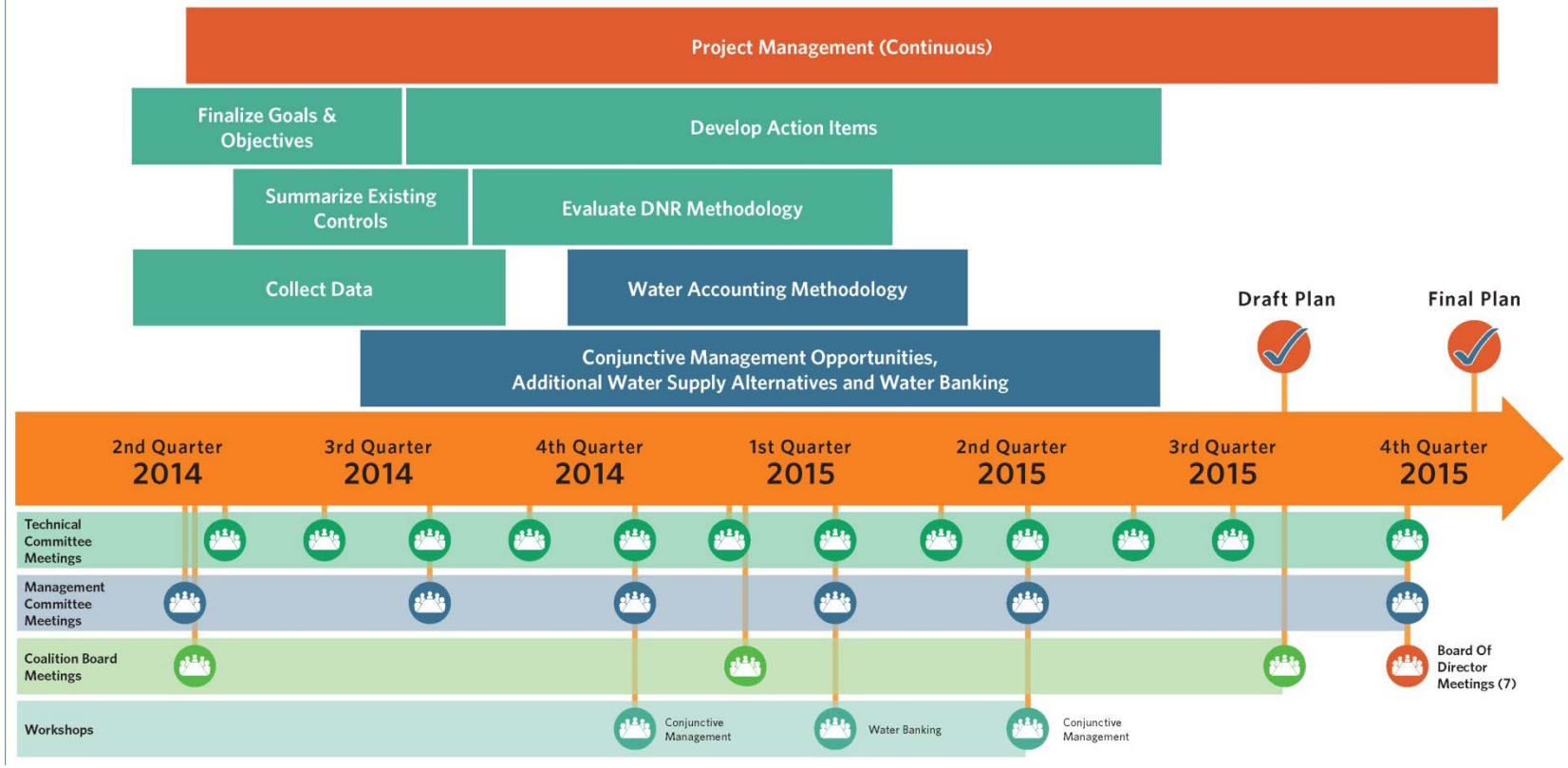
E. Support school environmental education programs focused on water.

F. Impose mandatory educational requirements designed to stabilize or reduce the incidence of groundwater depletion, or conflict between users and appropriators.

02 Update on Scope of Work & Schedule

Lower Platte River Basin Water Management Plan Coalition

Summary of Scope of Services & Milestones



Official Nebraska Government Website

Lower Platte River Basin Coalition

COALITION | MEMBERSHIP | STRUCTURE | BASIN-WIDE PLAN | RESOURCES | CONTACT US

Lower Platte River Basin Coalition

The seven Natural Resources Districts in the Lower Platte Basin and the Nebraska Department of Natural Resources (the Coalition) have signed an interlocal agreement to pursue and discuss water management components that could comprise a voluntary basin-wide water management plan. This effort could be incorporated into individual NRD's Integrated Management Plans. The agreement was approved in April 2013 and continues for five years.

This Coalition has the following powers:

- To hold Coalition meetings, public meetings and hearings.
- To contract and enter into agreements with agencies and others.
- To retain a coordinator.
- To receive and expend funding from various sources, including members and grants.
- To undertake studies, investigations, or surveys.
- To retain legal and other professional services.

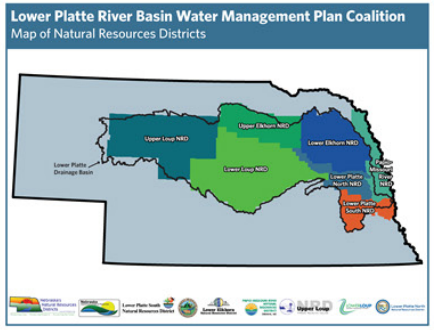
Membership

Members include the Nebraska Department of Natural Resources and the seven NRDs within the Lower Platte River Basin:

- Lower Loup NRD (Lead party for Coalition; contracting member on behalf of Coalition)
- Lower Platte North NRD
- Lower Platte South NRD
- Lower Elkhorn NRD
- Papio-Missouri River NRD
- Upper Loup NRD
- Upper Elkhorn NRD

Map of the Lower Platte Basin Coalition membership

http://dnr.nebraska.gov/LPRBC



Water Banking Workshop #1

- March 10, 2015 at Central Community College in Columbus; 1:00 to 3:00 pm

LOWER PLATTE RIVER BASIN COALITION WATER MANAGEMENT PLAN

Coalition Board Update

January 27, 2015