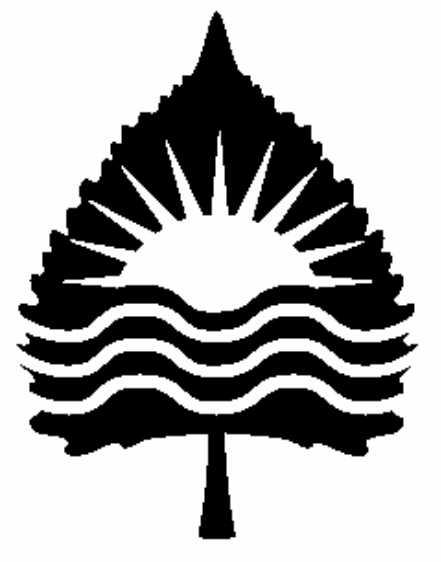

2010 Water Quality Integrated Report

Nebraska Department of Environmental Quality

Water Quality Division

April 01, 2010

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1.0 Introduction

Section 303(d) of the federal Clean Water Act (CWA), which Congress enacted in 1972, requires states, territories, and authorized tribes (states) to identify and establish a priority ranking for all waterbodies where technology-based effluent limitations required by section 301 are not stringent enough to attain and maintain applicable water quality standards. Once identified, states are to establish total maximum daily loads (TMDLs) for the pollutants causing impairment in those waterbodies, and submit, from time to time, the (revised) list of impaired waterbodies and TMDLs to the U.S. Environmental Protection Agency (EPA). The requirements to identify and establish TMDLs apply to all waterbodies regardless of whether a waterbody is impaired by point sources, nonpoint sources, or a combination of both (*Pronsolino v. Marcus,* 2000 WL 356305 (N.D. Cal. March 30, 2000)).

EPA issued regulations governing identification of impaired waterbodies and establishment of TMDLs in 40 CFR 130.7 in 1985 and revised them in 1992 and again in 2000. However, on March 19, 2003, a final rule to formally and completely withdraw the 2000 regulations was published in the *Federal Register*. Therefore, the 2010 listing of impaired waters will be conducted under the 1985 TMDL regulations, as amended in 1992.

Section 305(b) of the CWA directs states to prepare a report every two (2) years that describes the status and trends of existing water quality, the extent to which designated uses are supported, pollution problems and sources, and the effectiveness of the water pollution control programs.

Section 314 of the CWA requires that each Section 305(b) submittal include an assessment of trends of significant public owned lakes including the extent of point and nonpoint source impacts due to toxics, conventional pollutants, and acidification.

On May 09, 2009 EPA issued guidance for the 2010 waterbody assessments and reporting requirements for Section 303(d), Section 305(b), and Section 314 of the Clean Water Act. The final product is again being referred to as an "Integrated Report". EPA's goal for this report is to provide the general public with a comprehensive summary of state and national water quality. The NDEQ has opted to prepare such a report not only for the general public but also for water quality management planning purposes (e.g. future monitoring, TMDL development, best management practice implementation).

To facilitate the waterbody assessment process and accommodate the above recognized needs the Department prepared and utilized the *Methodologies for Waterbody Assessment and Developing the 2010 Integrated Report for Nebraska* (available on NDEQ's website at *http://deq.ne.gov/)*. These procedures lay out the step-by-step process that was undertaken to characterize surface waterbodies.

2.0 Surface Water Waterbody Categories

Similar to the previous Integrated Reports (IR), the 2010 IR includes multiple categories of waterbodies to present information in a descriptive and comprehensive manner. The five waterbody categories are as follows:

Category 1 – Waterbodies where all designated uses are met.

Category 2 – Waterbodies where some of the designated uses are met but there is insufficient information to determine if all uses are being met.

Category 3 – Waterbodies where there is insufficient data to determine if any beneficial uses are being met.

Category 4 – Waterbody is impaired, but a TMDL is not needed. Sub-categories 4A, 4B, 4C and 4R outline the rationale for the waters not needing a TMDL:

Category 4A – Waterbody assessment indicates the waterbody is impaired, but all of the required TMDLs have been completed.

Category 4B – Waterbody is impaired, but "other pollution control requirements" are expected to address the water quality impairment(s) within a reasonable period of time. Other pollution control requirements include but are not limited to, National Pollutant Discharge Elimination System (NPDES) permits and best management practices.

Category 4C – Waterbody is impaired but the impairment is not caused by a pollutant. This category also includes waters where natural causes/sources have been determined to be the cause of the impairment. In general, natural causes/sources shall refer to those pollutants that originate from landscape geology and climactic conditions. It should be noted, this general description does not exclude parameters and can be utilized when appropriate justification is provided.

Category 4R – Waterbody data exceeds the impairment threshold, however a TMDL may not be needed. The category will only be used for nutrient assessments in new or renovated lakes and reservoirs. Newly filled reservoirs usually go through a period of trophic instability – a trophic upsurge followed by the trophic decline (Holdren, et. al. 2001). Erroneous or non representative water quality assessments are likely to occur during this period. To account for this, all new or renovated reservoirs will be placed in this category for a period not to exceed eight years following the fill or re-fill process. After the eighth year monitoring data will be assessed and the waterbody will be appropriately placed into category 1, 2, or 5.

Category 5 – Waterbodies where one or more beneficial uses are determined to be impaired by one or more pollutants and all of the TMDLs have not been developed. ***Category 5 waters constitute the Section 303(d) list subject to EPA approval/disapproval***.

3.0 Surface Water Data Sources

40 CFR Part 130.7 requires that "each state assemble and evaluate all existing and readily available water quality related data and information" to make the listing and assessment decisions. To facilitate this requirement, data was requested via email on October 01, 2009 from numerous sources, including federal, state and local agencies and other entities. A copy of the data request email will be submitted to EPA Region 7 as an attachment to this Integrated Report.

4.0 Surface Water Assessment Outcomes and Interpretation

Based on the procedures cited above, a waterbody beneficial use assessment can have one of four outcomes:

S = Supported Beneficial Use
I = Impaired Beneficial Use
NA = Not assessed
A blank cell in the tables will indicate the beneficial use is not assigned to this waterbody in Title 117-Nebraska's Surface Water Quality Standards

The format of the Integrated Report is set to allow the user to navigate through a river basin, similar to the tables found in Title 117 – Nebraska Surface Water Quality Standards. The tables list the waterbody identification number, name, and applicable beneficial uses.

5.0 Surface Water Waterbody Beneficial Uses

Beneficial uses are assigned to all designated surface waters within or bordering the State and descriptions of each can be found in Title 117 – Nebraska Surface Water Quality Standards (Title 117), Chapter 4. All uses are not assigned to all waters and use attainability analyses are utilized on a waterbody by waterbody basis to determine whether or not the use(s) are applicable. The beneficial uses defined by Title 117 are:

- Primary Contact Recreation
- Aquatic Life – Coldwater A, Coldwater B, Warmwater A and Warmwater B
- Water Supply – Public Drinking Water, Agriculture and Industrial
- Aesthetics

Title 117 includes 1567 designated stream segments and 529 lakes/impounded waters. Table 5a presents the beneficial use totals by river basin for streams and 5b presents the beneficial use totals by river basin for the lakes/impounded waters.

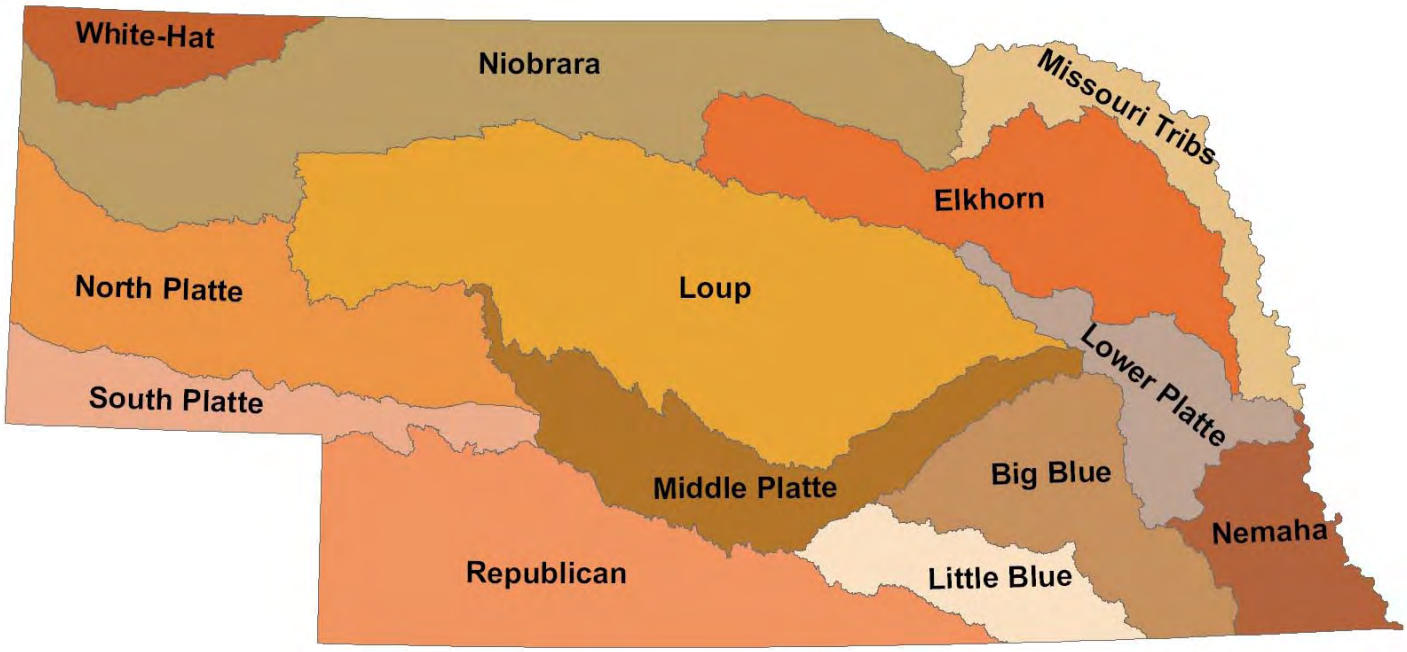

Figure 1. Nebraska's Major River Basins. Nebraska's surface water quality assessments are organized by major river basin.

Table 5a – Beneficial Use Totals for Streams

	Big Blue	Elkhorn	Little Blue	Loup	Lower Platte	Middle Platte	Missouri Tributaries	Nemaha	Niobrara	North Platte	Republican	South Platte	White River-Hat Creek	Total Segments
Total Segments	63	135	38	107	126	29	136	326	269	136	102	28	63	1558
Primary Contact Recreation	10	23	6	37	16	13	21	20	53	42	33	16	18	308
Aquatic Life – Coldwater Class A	0	0	0	0	0	0	0	0	14	21	0	1	15	51
Aquatic Life – Coldwater Class B	0	1	0	36	1	3	3	0	164	79	19	13	36	355
Aquatic Life – Warmwater Class A	16	38	14	26	13	12	15	40	15	7	24	11	1	232
Aquatic Life – Warmwater Class B	47	96	24	45	112	14	118	286	76	29	59	3	11	920
Water Supply – Public Drinking Water	0	0	1	0	2	1	2	2	0	0	0	0	7	15
Water Supply – Industrial	0	0	0	0	1	1	1	1	1	1	0	4	0	10
Water Supply – Agriculture Class A	63	135	38	107	121	29	136	326	269	136	102	28	63	1553
Water Supply – Agriculture Class B	0	0	0	0	5	0	0	0	0	0	0	0	0	5
Aesthetics	63	135	38	107	126	29	136	326	269	136	102	28	63	1558
Total														**1558**

Table 5b – Beneficial Use Totals for Lakes/Reservoirs

	Big Blue	Elkhorn	Little Blue	Loup	Lower Platte	Middle Platte	Missouri Tributaries	Nemaha	Niobrara	North Platte	Republican	South Platte	White River-Hat Creek	Total Lakes
Total Lakes	31	31	13	47	75	95	30	33	65	48	20	13	27	528
Primary Contact Recreation	31	31	13	47	75	95	30	33	65	48	20	13	27	528
Aquatic Life – Coldwater Class A	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aquatic Life – Coldwater Class B	0	0	0	1	1	0	0	0	2	3	1	1	14	23
Aquatic Life – Warmwater Class A	31	31	13	46	74	95	29	33	63	45	19	12	13	505
Aquatic Life – Warmwater Class B	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Supply – Public Drinking Water	0	0	3	0	0	0	1	0	0	0	0	0	0	4
Water Supply – Industrial	0	0	0	0	2	2	1	0	2	1	0	2	0	10
Water Supply – Agriculture Class A	31	31	13	47	75	95	29	33	65	48	20	13	27	528
Water Supply – Agriculture Class B	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aesthetics	31	31	13	47	75	95	30	33	65	48	20	13	27	528
Total														**528**

6.0 Surface Water Waterbody Assessment Results

The results of the assessments by river basin and the state as a whole can be found in Table 6a for stream segments and 6b for lakes/reservoirs. As well, table 6c provides a summary of the monitoring and assessment activities for the number and sizes of waterbodies designated in Title 117.

Table 6a –Summary of 2010 Assessments for Streams

Basin	Category 1	Category 2	Category 3	Category 4A	Category 4B	Category 4C	Category 5	Basin Total
Big Blue	0	15	32	0	0	0	16	63
Elkhorn	0	18	103	4	0	0	10	135
Little Blue	0	5	24	0	0	0	9	38
Loup	7	11	64	11	0	3	11	107
Lower Platte	3	19	76	3	1	8	16	126
Middle Platte	4	3	14	2	0	0	6	29
Missouri Tributaries	3	22	94	4	0	1	12	136
Nemaha	3	27	284	3	0	0	9	326
Niobrara	5	20	226	7	0	0	11	269
North Platte	1	16	100	4	0	4	11	136
Republican	4	11	54	4	0	1	28	102
South Platte	1	10	11	0	0	0	6	28
White-Hat	3	10	46	1	0	0	3	63
Total	**34**	**187**	**1128**	**43**	**1**	**17**	**148**	**1558**

Table 6b – Summary of 2010 Assessments for Lakes/reservoirs

Basin	Category 1	Category 2	Category 3	Category 4A	Category 4B	Category 4C	Category 4R	Category 5	Basin Total
Big Blue	0	8	13	0	0	0	0	10	31
Elkhorn	0	8	18	0	0	0	2	3	31
Little Blue	0	4	3	0	0	0	0	6	13
Loup	0	7	31	0	0	0	1	8	47
Lower Platte	3	9	38	0	0	0	4	21	75
Middle Platte	1	19	63	0	0	0	0	12	95
Missouri Tributaries	0	3	14	0	0	0	1	12	30
Nemaha	1	2	23	0	0	0	0	7	33
Niobrara	0	18	37	0	0	1	0	9	65
North Platte	1	7	32	1	0	2	0	5	48
Republican	0	4	6	0	0	0	1	9	20
South Platte	2	2	2	0	0	1	0	6	13
White-Hat	0	3	19	0	0	0	0	5	27
Total	**8**	**94**	**299**	**1**	**0**	**4**	**9**	**113**	**528**

Table 6c – Statewide Monitoring and Assessment Summary for 2010

Streams	**Number of Segments**	**Percentage of Total Segments**	**Size Stream = miles, Lakes = acres**	**Percentage of Total Size**
Total	**1,558**		**16,483**	
Category 1	34	2%	793	5%
Category 2	187	12%	2,636	16%
Category 3	1,128	72%	7,475	45%
Category 4A	43	3%	1,359	8%
Category 4B	1	0.1%	3.4	0%
Category 4C	17	2%	516	3%
Category 5	148	7%	3,700	22%
Assessed	**430**	**28%**	**9,008**	**55%**
Lakes				
Total	**528**		**148,920**	
Category 1	8	2%	6,038	4%
Category 2	94	18%	13,902	9%
Category 3	299	57%	10,083	7%
Category 4A	1	0.2%	435	0.3%
Category 4B	0	0%	0	0%
Category 4C	4	0.8%	619	0.4%
Category 4R	9	2%	1287	0.9%
Category 5	113	22%	116,555	78%
Assessed	**229**	**43%**	**138,837**	**93%**

7.0 Completed TMDLs and TMDLs Targeted for Completion in Next Two Years

Section 303(d) of the CWA required that TMDLs be established for all identified impaired waters and set at a level to achieve the applicable water quality standards and assigned beneficial uses. Over the last several listing cycles the Department has made significant progress in the preparation and completion of the needed TMDLs. Table 7 provides a listing of the completed TMDLs within each river basin.

As required by 40 CFR Part 130.7, the TMDLs targeted for development within the next two years include all waterbodies in the Big Blue, Little Blue, Middle Platte, and Republican River basins. TMDLs may also be completed for additional waterbodies not in these basins in order to accompany Section 319 or other water quality improvement projects.

Table 7 – Waterbodies with Established/Approved TMDLs

River Basin	Stream TMDLs	Lake/Reservoir TMDLs	Total
Big Blue	3	2	5
Elkhorn	8	0	8
Little Blue	2	0	2
Loup	11	0	11
Lower Platte	12	9	21
Middle Platte	4	1	5
Missouri Tributaries	5	9	14
Nemaha	10	4	14
Niobrara	8	0	8
North Platte	8	1	9
Republican	5	0	5
South Platte	0	0	0
White-Hat	1	0	1
Total	**77**	**26**	**103**

8.0 Surface Water Quality Trends

8.1 Streams and Rivers

In 2001, the Department re-established a fixed station ambient network whereby several streams across the state would be systematically monitored. In 2002, the network was expanded by the inclusion of additional monitoring locations.

Stream monitoring locations can be segregated into one of two categories; basin *integrator* sites and basin *indicator* sites. Basin integrator sites are chosen to represent water-quality conditions of rivers and streams in large heterogeneous basins that are affected by complex combinations of land use settings and natural and human influences. Only one basin integrator site shall be selected for each major river basin. Basin indicator sites are those sites selected to characterize one or more factors influencing water quality such as significant point and non-point sources. A consideration given to site selection is the presence of a stream gauging station.

In 2004, the frequency of sampling was increased from once per month to twice per month during the months of April through September. The increase was aimed at obtaining data across the hydrograph.

For the purposes of evaluating trends in stream water quality, four parameters where considered: Dissolved oxygen, conductivity, atrazine, and ammonia. Time series trends analysis was conducted for each of the four parameters at the basin integrator site and one basin indicator site.

A summary is provided in Table 8.1. The results of the analysis can be: increasing trend observed, decreasing trend observed and stable water quality (not increasing or decreasing). The Department considers a trend to be significant when the p-value is ≤ 0.05 (the probability of the observed trend being due to random chance is less than 5%).

Table 8.1 – Stream Water Quality Trend Information for Four Parameters

Waterbody ID	Waterbody Name	Dissolved Oxygen		Conductivity		Atrazine		Ammonia	
		Trend Status	P-value	Trend Status	P-value	Trend Status	P-value	Trend Status	P-value
BB1-10000	Big Blue River	Stable	0.097	Stable	0.086	Stable	0.627	Stable	0.372
BB3-10000	W. Fork Big Blue River	Stable	0.833	Decrease	0.064	Decrease	0.326	Stable	0.431
EL1-10000	Elkhorn River	Stable	0.056	Stable	0.957	Stable	0.344	Decrease	0.056
EL1-20100	Pebble Creek	Stable	0.499	Increase	0.223	Decrease	0.308	Decrease	0.01
LB1-10000	Little Blue River	Stable	0.74	Stable	0.89	Stable	0.443	Stable	0.916
LB2-10100	Big Sandy Creek	Stable	0.365	Decrease	0.009	Stable	0.328	Stable	0.919
LO1-20200	Loup River Power Canal	Decrease	0.162	Increase	0.05	Increase	0.159	Increase	0.121
LO4-10000	South Loup River	Increase	0.07	Stable	0.436	Stable	0.571	Stable	0.07
LP1-10000	Platte River	Stable	0.774	Stable	0.491	Stable	0.765	Stable	0.91
LP2-10000	Salt Creek	Increase	0.01	Increase	0.009	Stable	.493	Decrease	0.001
MP1-20000	Platte River	Stable	0.271	Stable	0.605	Stable	0.216	Increase	0.139
MP2-20000	Platte River	Stable	0.932	Stable	0.129	Increase	0.02	Stable	0.414
MT1-10000	Missouri River	Stable	0.882	Decrease	0.15	Decrease	0.237	Decrease	0.114
MT1-10100	Papillion Creek	Stable	0.824	Stable	0.584	Decrease	0.406	Increase	0.246
NE2-10000	Big Nemaha River	Stable	0.957	Stable	0.175	Stable	0.389	Stable	0.802
NE3-10000	Little Nemaha River	Increase	0.663	Stable	0.898	Decrease	0.512	Stable	0.386
NI2-10000	Niobrara River	Stable	0.679	Stable	0.441	Stable	0.692	Stable	0.643
NI2-13100	Plum Creek	Stable	0.658	Stable	0.551	Stable	0.158	Increase	0.036
NP1-10000	North Platte River	Increase	0.006	Stable	0.882	Decrease	0.003	Stable	0.148
NP3-12600	Winters Creek	Stable	0.525	Increase	0.17	Stable	0.238	Increase	0.025
RE1-10000	Republican River	Stable	0.06	Stable	0.184	Increase	0.191	Stable	0.347
RE3-10200	Medicine Creek	Stable	0.403	Stable	0.01	Increase	0.021	Increase	0.03
SP1-20000	South Platte River	Stable	0.124	Stable	0.087	Decrease	0.087	Stable	0.10
SP2-50000	Lodgepole Creek	Decrease	0.07	Stable	0.073	Decrease	0.073	Stable	0.87
WH1-10000	White River	Decrease	0.051	Stable	0.02	Stable	0.811	Stable	0.334
WH1-11300	Chadron Creek	Decrease	0.14	Stable	0.131	Stable	0.657	Stable	0.064

8.2 Lakes and Reservoirs

Trend information was evaluated for seven waterbodies based on the quality and quantity of the existing data set. Future IRs will include additional waterbodies as the data sets are updated. For the purpose of evaluating trends in lake water quality, five parameters where considered: transparency, atrazine, chlorophyll a, total phosphorus, and total nitrogen. Trend analysis for these five parameters can be found in Table 8.2. Similar to streams, significant trends are those with a p-value of ≤ 0.05.

8.3 Assessment of Lake Trophic Status

Along with the reporting on the beneficial use status of lakes and reservoirs, Section 314 of the CWA requires that states submit information on the eutrophic condition of publicly owned lakes. While the Department has not monitored all classified public lakes, there is sufficient information to report on 92 waterbodies. The assessment and classification was conducted using Carlson's Trophic State Index (Carlson, 1977) and the results can be found in Table 8.3.

9.0 Cost/Benefit Assessment

The cost of protecting and improving water quality can be measured or estimated using grant, loans and other programs. In contrast, estimating the monetary value of the benefits of water quality protection and improvements is more difficult. Rather than attempt to identify specific monetary values, the overwhelming belief that the ecological and societal benefits outweigh the costs will be accepted. Following is information on some of the costs associated with water quality protection and improvement.

9.1 Clean Water State Revolving Loan Fund

The Clean Water State Revolving Loan Fund (CWSRF) provides low interest loans to municipalities for construction of wastewater treatment facilities and sanitary sewer collection systems. The sources of funding for this program include federal grants, an initial state general fund appropriation, and funds from Nebraska Investment Financial Authority (NIFA) through bond issuance. In FY2008, loans totaling $12 million were allocated and $15 million was disbursed.

9.2 Nebraska Environmental Partnerships

The Nebraska Environmental Partnership (NEP) used CWSRF administrative cash funds to provide financial assistance to eligible municipalities for facility planning reports for wastewater treatment system improvement projects that will seek funding through the Water Wastewater Advisory Committee (WWAC) Common Pre-application Process. This financial assistance is provided to communities to identify capital improvement needs as well as increase their readiness to proceed in accomplishing these improvements.

Facility planning grants may be provided to municipalities with populations of 10,000 or fewer people that are identified with a financial hardship. This includes any city, town, village, sanitary improvement district, natural resource district, or other public body created by or pursuant to state law having jurisdiction over a wastewater treatment facility. Privately owned wastewater treatment systems are not eligible for assistance.

Grants are provided for up to 90% of the eligible facility plan project cost, but cannot exceed $20,000. Grant awards for SFY2008, totaling $155,200, were awarded to eight communities: Ansley, Auburn, Duncan, Ewing, Lewiston, Madrid, Ohiowa and Ulysses.
Since its inception in SFY2004, NEP, through the CWSRF, has awarded planning grants to 36 communities, for a total of $504,340.

9.3 Nonpoint Source Management

The Nonpoint Source Management program provides pass through funding for the prevention and abatement of nonpoint source water pollution and the restoration of watershed resources under Section 319 of the federal Clean Water Act. This funding is provided to units of government, educational institutions, and non-profit organizations, for projects that facilitate implementation of the state Nonpoint Source Management Plan. From 2003 through 2009, 53 individual projects utilizing $12,135,806 in Section 319 funds were funded by the NDEQ. Of the 53 projects, 42 dealt with surface water, six with ground water, and five with both surface and ground water. Also of the 53 projects, 23 focused on a specific watershed, two focused on a specific area, 18 focused on a specific waterbody, eight had a statewide focus, and two had a regional focus.

10.0 Groundwater Monitoring and Assessment

The 2001 Nebraska Legislature passed LB329 (Neb. Rev. Stat. §46-1304) which, in part, directed the Nebraska Department of Environmental Quality (NDEQ) to report on groundwater quality monitoring in Nebraska. Specifically:

"The Department of Environmental Quality shall prepare a report outlining the extent of ground water quality monitoring conducted by natural resources districts during the preceding calendar year. The department shall analyze the data collected for the purpose of determining whether or not ground water quality is degrading or improving and shall present the results to the Natural Resources Committee of the Legislature beginning December 1, 2001, and each year thereafter. The districts shall submit in a timely manner all ground water quality monitoring data collected to the department or its designee. The department shall use the data submitted by the districts in conjunction with all other readily available and compatible data for the purpose of the annual ground water quality trend analysis."

Rather than regenerate this information, a copy of the *2009 Groundwater Quality Report* has been included as an appendix.

11.0 Public Participation

On October 1, 2009, NDEQ issued a request for all existing and readily available surface water quality data to Federal, State, and Local agencies, members of the public, and academic institutions. Data were received from the United States Fish and Wildlife Service and is included in Appendix B. Additionally, the availability of the draft version of this document and a request for comments and corrections was published in the Omaha World Herald, Lincoln Journal Star, Grand Island Independent, Norfolk Daily News, North Platte Telegraph, McCook Gazette, and Scottsbluff Star-Herald on February 4, 2010. The draft version of this document was available for public viewing via the Departments website *http://deq.ne.gov/* beginning February 4, 2010 and remained available for viewing through March 8, 2010.

Table 8.2 Lake Water Quality Trend Information

Waterbody ID	Waterbody Name	Transparency		Atrazine		Chlorophyll a		Total Phosphorus		Total Nitrogen	
		Trend Status	P-value	Trend Status	P-value	Trend Status	P-value	Trend Status	P-value	Trend Status	P-value
BB2-L0020	Swan 5A	Stable	0.154	Decreasing	0.373	Increasing	0.439	Increasing	0.154	Increasing	0.037
LP2-L0050	Stagecoach	Decreasing	0.033	Increasing	0.746	Decreasing	0.05	Increasing	0.63	Increasing	0.303
LP2-L0130	Conestoga	Decreasing	0.842	Decreasing	0.009	Increasing	0.72	Increasing	0.03	Increasing	0.007
MT1-L0030	Wehrspann	Decreasing	0.24	Decreasing	0.021	Increasing	0.364	Decreasing	0.11	Decreasing	0.03
MT1-L0100	Standing Bear	Increasing	0.829	Decreasing	0.072	Increasing	0.637	Increasing	0.75	Increasing	0.001
MT1-L0150	Summit	Decreasing	0.07	Increasing	0.398	Decreasing	0.59	Increasing	0.02	Increasing	0.004
NE2-L0040	Kirkman's Cove	Decreasing	0.312	Decreasing	0.174	Increasing	0.026	Decreasing	0.982	Decreasing	0.03

Table 8.3 Eutrophic Conditions of Public Lakes Using the Trophic State Index (TSI)

Description	Number of Lakes	Waterbody Acres
Total Identified in Title 117	522	150,422
Total Assessed for TSI	92	113,047
Oligotrophic (TSI <40)	0	0
Mesotrophic (TSI 40-50)	11	1,813
Eutrophic (TSI (51-70)	48	101,025
Hypereutrophic (TSI >70)	33	10,209

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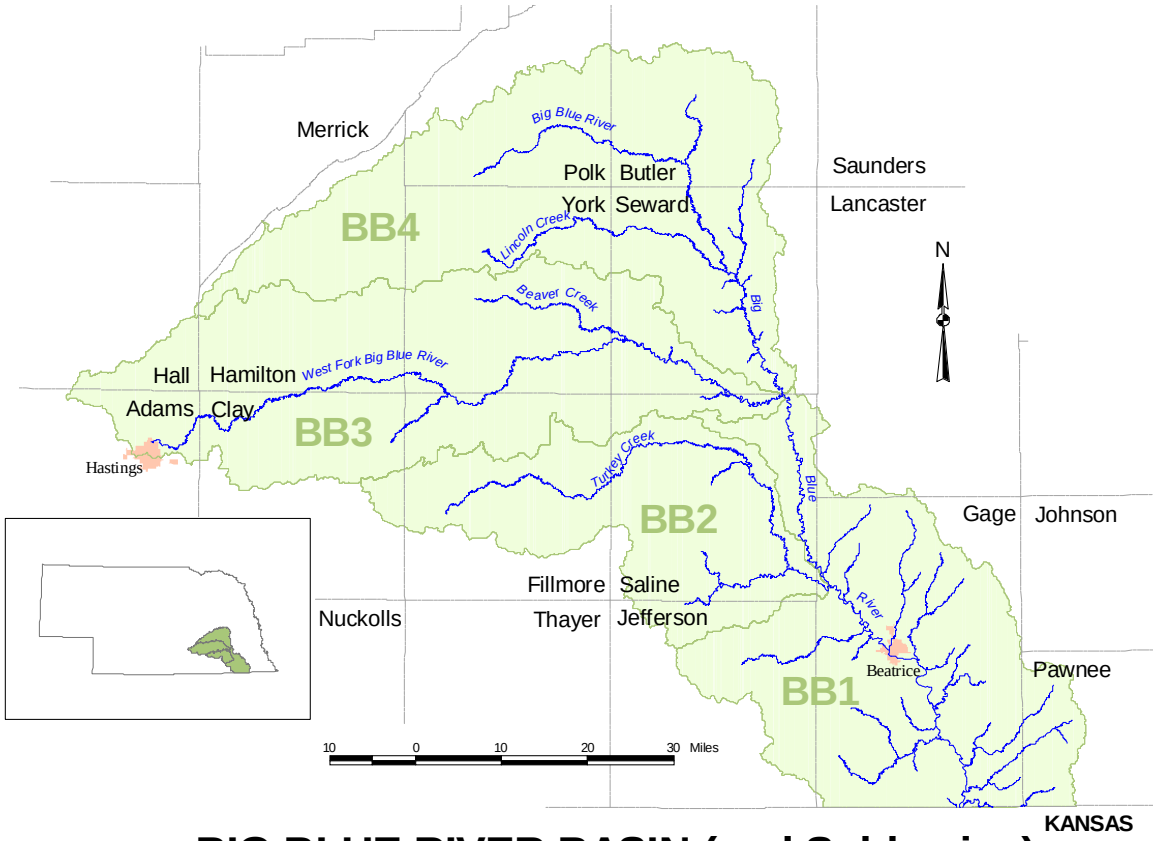


BIG BLUE RIVER BASIN (and Subbasins)

Big Blue Basin – Hydrologic Units 10270201, 10270202, 10270203, 10270204 and 10270205

The Big Blue River Basin includes 63 designated stream segments and 31 lakes/reservoirs. Beneficial uses assigned to designated water in the basin can be found in the below table.

Waterbody Type	Primary Contact Recreation	Aquatic Life CA[1]	Aquatic Life CB[1]	Aquatic Life WA[1]	Aquatic Life WB[1]	Water Supply – Public Drinking	Water Supply – Ag	Water Supply-Ind.	Aesthetics
Lakes	31	0	0	31	0	0	31	0	31
Streams	10	0	0	16	47	0	63	0	63

[1] CA = Coldwater Class A, CB = Coldwater Class B, WA = Warmwater Class A and WB = Warmwater Class B

Delisting/ Changes from 2006 & 2008 IRs

The following are waters and or parameters that were delisted – removed from category 5 or other significant changes from the 2006 and 2008 Integrated Reports (IRs).

BB1-L0065: Bear Creek Lake - The 2008 IR included this waterbody as impaired by excessive nutrients. The nutrient assessment process for 2008 was designed to provide numeric translators to the narrative aesthetic beneficial use criteria as defined in the State of Nebraska approved Title 117 – Nebraska Surface Water Quality Standards. EPA concluded that the nutrient values used to derive the numeric translators were not acceptable and could not be used for Clean Water Act purposes. For the 2010 Integrated Report,

EPA and NDEQ agreed to an alternative set of nutrient assessment end points for this reporting cycle. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient data exits for this waterbody to assess for a nutrient impairment, therefore the nutrient impairment will be delisted. Additional parameters designed to protect aquatic life indicate this waterbody is supporting the aquatic life beneficial use. Lastly, the 2010 aesthetics beneficial use assessment for this waterbody demonstrates full support; therefore this waterbody will be relocated to category 2.

BB1-L0090: Clatonia Lake, BB3-L0010: Smith Creek Lake – These waterbodies were listed as impaired for nutrients in the 2006 Integrated Report. EPA indicated that the nutrient values NDEQ used for the 2006 assessments were not acceptable and not suitable for Clean Water Act purposes. In February 2009, EPA deferred taking action on these waterbodies until the 2010 Integrated Report when mutually agreed upon nutrient assessment end points would be used to assess for nutrient impairments. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient samples exist for these waterbodies to assess for nutrient impairments, therefore the nutrient impairments will be delisted. Additional parameters designed to protect aquatic life indicate these waterbodies are supporting the aquatic life beneficial use. Lastly, the 2010 aesthetics beneficial use assessment for these waterbodies demonstrates full support; therefore these waterbodies will be placed in category 2.

BB2-L0010: Swan Creek Lake 2A – The 2008 IR included this waterbody as impaired by excessive nutrients. The nutrient assessment process for 2008 was designed to provide numeric translators to the narrative aesthetic beneficial use criteria as defined in the State of Nebraska approved Title 117 – Nebraska Surface Water Quality Standards. EPA concluded that the nutrient values used to derive the numeric translators were not acceptable and could not be used for Clean Water Act purposes. For the 2010 Integrated Report, EPA and NDEQ agreed to an alternative set of nutrient assessment end points for this reporting cycle. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient data exits for this waterbody to assess for a nutrient impairment, therefore the nutrient impairment will be delisted. This lake will remain in category 5 due to low dissolved oxygen levels impairing the aquatic life beneficial use.

BB2-L0020: Swan Creek Lake 5A - The 2008 IR included this waterbody as impaired by algal toxins. Assessment of additional algal toxin data shows this lake is now fully supporting the recreation beneficial use and the algal toxin impairment will be delisted. This lake will remain in category 5 because the aquatic life beneficial use is impaired by a fish consumption advisory, excess nutrients, and high pH.

BB3-L0080: Recharge Lake - The 2008 IR listed this waterbody as impaired due to elevated atrazine concentrations. Assessment of additional atrazine data finds that this lake now meets Nebraska's Water Quality Standards for atrazine and the atrazine impairment will be delisted. However, this lake will remain in category 5 because the aquatic life beneficial use is impaired by a fish consumption advisory and excess nutrients.

BB3-10000: West Fork Big Blue River – The 2008 IR listed this waterbody as impaired because of a fish consumption advisory, as well as, because of atrazine and selenium concentrations. Analysis of additional fish tissue data finds that a fish consumption advisory is no longer needed for this waterbody and the fish consumption advisory will be delisted. This stream segment will remain in category 5 because elevated atrazine and selenium concentrations impair the aquatic life beneficial use.

BB4-20000: Big Blue River – The 2008 IR listed this waterbody as impaired due to elevated atrazine concentrations. Assessment of additional atrazine data finds that this stream segment now meets Nebraska's Water Quality Standards for atrazine and the atrazine impairment will be delisted. However, this stream segment will remain in category 5 because E. coli concentrations were found to exceed Nebraska's Water Quality Standards.

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
Lakes												
BB1-L0010	Donald Whitney Memorial Lake	NA	NA		NA		NA		3			
BB1-L0020	Diamond Lake South	NA	NA		NA		NA		3			
BB1-L0030	Big Indian Lake (11A)	S	I		S		I	I	4a	Nutrients, Sediment	Total Phosphorus, Total Nitrogen, Sediment	Nutrient and Sediment TMDL approved 9/09, Fish consumption assessment
BB1-L0040	Arrowhead Lake	NA	NA		NA		NA		3			
BB1-L0050	Wolf Wildcat Lake	NA	I		NA		NA	I	5	Fish consumption advisory	Mercury	Fish consumption assessment
BB1-L0060	Rockford Lake	S	I		S		S	I	5	Fish consumption advisory, Nutrients	Hazard index compounds*, Mercury, Total Phosphorus, Total Nitrogen, Chlorophyll a	Fish consumption assessment
BB1-L0065	Bear Creek Lake	NA	S		S		S	S	2			Delist nutrients - insufficient data for assessment procedures
BB1-L0070	Leisure Lake	NA	S		NA		S	S	2			
BB1-L0080	Cub Creek Lake	I	I		S		S	I	5	E. coli, Nutrients	E. coli, Total Phosphorus	Delist chlorophyll a assessment shows full support, Delist total nitrogen insufficient data for assessment procedures

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
BB1-L0090	Clatonia Lake (3A)	NA	S		S		S	S	2			Delist nutrients - insufficient data for assessment procedures
BB1-L0100	Walnut Creek Lake (2A)	NA	NA		NA		NA		3			
BB2-L0005	Swanton Lake	NA	NA		NA		NA		3			
BB2-L0010	Swan Creek Lake 2A	NA	I		S		S	I	5	Dissolved Oxygen	Unknown	Fish consumption assessment, Delist nutrients- insufficient data for assessment procedures
BB2-L0020	Swan Creek Lake (5A)	S	I		S		S	I	5	Fish consumption advisory, Nutrients, High pH	Hazard index compounds*, Mercury, Total phosphorus, Total nitrogen, Chlorophyll a	Delist algal toxins- assessment shows full support, Fish consumption assessment
BB2-L0030	Friend City Park Lake	NA	NA		NA		S	S	2			
BB2-L0040	Geneva City Lake	NA	NA		NA		NA		3			
BB3-L0010	Smith Creek Lake	NA	S		S		S	S	2			Delist nutrients - insufficient data for assessment procedures
BB3-L0030	Waco Basin	NA	NA		NA		NA		3			
BB3-L0035	Overland Trail Reservoir	NA	NA		NA		NA		3			
BB3-L0040	Henderson Pond	NA	NA		NA		S	S	2			
BB3-L0045	Clark's Pond	NA	NA		NA		S	S	2			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
BB3-L0050	Lake Hastings	NA	I		NA		I	I	5	Fish consumption advisory, Sedimentation	Cancer risk compounds*, Hazard index compounds*, Sediment	Fish consumption assessment
BB3-L0060	Hastings Northwest Dam Lake	NA	NA		NA		NA		3			
BB3-L0070	Heartwell Lake	NA	NA		NA		I	I	5	Algal blooms	Nutrients	
BB3-L0080	Recharge Lake	NA	I		S		S	I	5	Fish consumption advisory, Nutrients	Hazard index compounds*, Mercury, Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment, Delist atrazine-assessment shows full support
BB4-L0010	David City Park Lake	NA	NA		NA		S	S	2			
BB4-L0020	Seward City Park Pond	NA	NA		NA		NA		3			
BB4-L0030	Surprise City Lake	NA	NA		NA		NA		3			
BB4-L0035	Oxbow Trail Reservoir	NA	I		S		S	I	5	Nutrients	Total phosphorus, Chlorophyll a	
BB4-L0040	Pioneer Trails Lake	NA	NA		NA		NA		3			
BB4-L0045	Aurora Leadership Center Lake	NA	NA		NA		NA		3			
Streams												
BB1-10000	Big Blue River	I	I		S		S	I	5	E. coli, May-June atrazine, Fish consumption advisory	E. coli, Atrazine, Cancer risk compounds*, Hazard index compounds*	E. coli TMDL approved 3/05, Fish consumption assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
BB1-10100	Mission Creek	I	I		S		S	I	5	E. coli, May-June atrazine	E. coli, Atrazine	
BB1-10200	Mission Creek		NA		NA		NA		3			
BB1-10300	Spring Creek		S		NA		NA	S	2			Aquatic community assessment
BB1-10400	Plum Creek		NA		NA		NA		3			
BB1-10410	Arkeketa Creek		NA		NA		NA		3			
BB1-10500	Plum Creek		NA		NA		NA		3			
BB1-10510	Tipps Creek		NA		NA		NA		3			
BB1-10600	Wildcat Creek		NA		NA		NA		3			
BB1-10610	Wolf Creek		S		NA		NA	S	2			Aquatic community assessment
BB1-10700	Wildcat Creek		NA		NA		NA		3			
BB1-10800	Big Indian Creek	I	I		S		S	I	5	E. coli, May-June atrazine	E. coli, Atrazine	
BB1-10810	Squaw Creek		NA		NA		NA		3			
BB1-10820	Sicily Creek		NA		NA		NA		3			
BB1-10900	Big Indian Creek	NA	I		NA		NA	I	5	May-June atrazine	Atrazine	Fish consumption assessment
BB1-11000	Bills Creek		NA		NA		NA		3			
BB1-11100	Mud Creek		S		NA		NA	S	2			Aquatic community assessment
BB1-11110	Bloody Run		NA		NA		NA		3			
BB1-11200	Mud Creek		NA		NA		NA		3			
BB1-11300	Cedar Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
BB1-11400	Bear Creek		NA		NA		NA		3			
BB1-11410	Pierce Creek		S		NA		NA	S	2			Aquatic community assessment
BB1-11500	Bear Creek		S		NA		NA	S	2			Aquatic community assessment
BB1-11600	Indian Creek		NA		NA		NA		3			
BB1-11610	Town Creek		NA		NA		NA		3			
BB1-11700	Indian Creek		NA		NA		NA		3			
BB1-11800	Bottle Creek		NA		NA		NA		3			
BB1-11900	Cub Creek		S		NA		NA	S	2			Aquatic community assessment
BB1-12000	Soap Creek		S		NA		NA	S	2			Aquatic community assessment
BB1-20000	Big Blue River	I	I		S		S	I	5	E. coli, May-June atrazine, Selenium	E. coli, Atrazine Selenium, Unknown	E. coli TMDL approved 3/05, Fish consumption assessment
BB1-20100	Clatonia Creek		NA		NA		NA		3			
BB2-10000	Turkey Creek	I	I		S		S	I	5	E. coli, May-June atrazine, Selenium, Impaired aquatic community	E. coli, Atrazine, Selenium, Unknown	Aquatic community and Fish consumption assessment
BB2-10100	Swan Creek		S		NA		S	S	2			
BB2-10110	South Fork Swan Creek		S		NA		NA	S	2			Aquatic community assessment
BB2-10120	North Fork Swan Creek		NA		NA		NA		3			
BB2-20000	Turkey Creek	I	I		NA		S	I	5	E. coli, May-June atrazine	E. coli, Atrazine	Aquatic community assessment

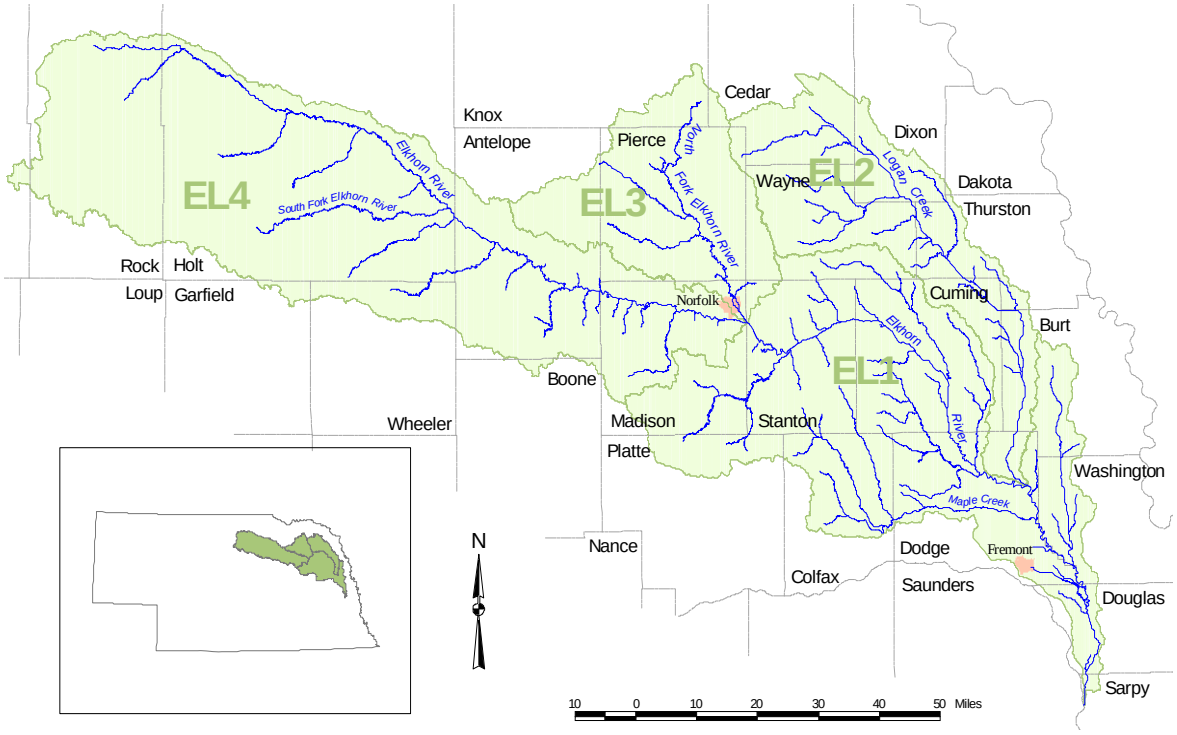
Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
BB2-20100	Spring Creek		NA		NA		NA		3			
BB2-30000	Turkey Creek		S		NA		NA	S	2			Aquatic community assessment
BB2-40000	Turkey Creek		S		NA		NA	S	2			Aquatic community assessment
BB3-10000	West Fork Big Blue River	I	I		S		S	I	5	E. coli, May-June atrazine, Selenium	E. coli, Atrazine, Selenium	E. coli TMDL approved 3/05, Delist fish consumption advisory based on new assessment
BB3-10100	Johnson Creek		NA		NA		NA		3			
BB3-10200	Walnut Creek		NA		NA		NA		3			
BB3-10300	Beaver Creek		I		NA		S	I	5	May-June atrazine	Atrazine	
BB3-10400	Beaver Creek		I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
BB3-20000	West Fork Big Blue River	I	I		S		S	I	5	E. coli, May-June atrazine, Impaired aquatic community	E. coli, Atrazine, Unknown	Aquatic community and Fish consumption assessment
BB3-20100	School Creek		NA		NA		NA		3			
BB3-30000	West Fork Big Blue River		S		NA		NA	S	2			Aquatic community assessment
BB4-10000	Big Blue River	I	I		S		S	I	5	E. coli, May-June atrazine	E. coli, Atrazine	
BB4-20000	Big Blue River	I	S		S		S	I	5	E. coli	E. coli	Delist atrazine-assessment shows full support
BB4-20100	Coon Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
BB4-20200	Wolf Creek		NA		NA		NA		3			
BB4-20300	Crooked Creek		NA		NA		NA		3			
BB4-20400	Clark Creek		NA		NA		NA		3			
BB4-20500	Unnamed Creek		S		NA		NA	S	2			Aquatic community assessment
BB4-20600	Plum Creek		S		NA		NA	S	2			Aquatic community assessment
BB4-20610	Big Weedy Creek		NA		NA		NA		3			
BB4-20700	Plum Creek		S		NA		NA	S	2			Aquatic community assessment
BB4-20800	Lincoln Creek		I		S		S	I	5	May-June atrazine, Selenium, Impaired aquatic community	Atrazine, Selenium, Unknown	Aquatic community and Fish consumption assessment
BB4-20900	Lincoln Creek		I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
BB4-30000	Big Blue River		NA		NA		NA		3			
BB4-30100	North Fork Big Blue River		NA		NA		NA		3			
BB4-30200	North Fork Big Blue River		NA		NA		NA		3			
BB4-40000	Big Blue River		I		S		S	I	5	Low dissolved oxygen, Atrazine	Unknown, Atrazine	Aquatic community assessment
Wetlands												
BB3-Undesig.	County Line WPA†		NA		NA		NA		3			
BB3-Undesig.	Harvard WPA†		NA		NA		NA		3			
BB3-Undesig.	Real WPA†		NA		NA		NA		3			
BB3-Undesig.	Sininger WPA†		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
BB3-Undesig.	Wilkins WPA†		NA		NA		NA		3			

* ***Cancer risk compounds*** -Aroclor-1248 (PCB-1248), Aroclor-1254 (PCB-1254), Aroclor-1260 (PCB-1260), cis-chlordane, Chlordane, trans-chlordane, DDD, DDE, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin
Hazard index compounds- Aroclor-1254 (PCB-1254), Lindane (g-BHC), cis-chlordane, Chlordane, trans-chlordane, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin, Mercury, Cadmium, Selenium

† See Appendix B: External Data for USFWS atrazine data collected from these wetlands.



ELKHORN RIVER BASIN (and Subbasins)

Elkhorn Basin – Hydrologic Units 10220001, 10220002, 10220003 and 10220004

The Elkhorn River Basin includes 137 designated stream segments and 31 lakes/reservoirs. Beneficial uses assigned to designated water in the basin can be found in the below table.

Waterbody Type	Primary Contact Recreation	Aquatic Life CA[1]	Aquatic Life CB[1]	Aquatic Life WA[1]	Aquatic Life WB[1]	Water Supply – Public Drinking	Water Supply – Ag	Water Supply-Ind.	Aesthetics
Lakes	31	0	0	31	0	0	31	0	31
Streams	23	0	1	38	99	0	137	0	137

[1] CA = Coldwater Class A, CB = Coldwater Class B, WA = Warmwater Class A and WB = Warmwater Class B

Delisting/ Changes from 2006 & 2008 IRs

The following are waters and or parameters that were delisted – removed from category 5 or other significant changes from the 2006 and 2008 Integrated Reports (IRs).

EL1-L0070: Pilger Lake and EL1-L0140: Dead Timber Lake – These waterbodies were listed as impaired for nutrients in the 2006 Integrated Report. EPA indicated that the nutrient values NDEQ used for the 2006 assessments were not acceptable and not suitable for Clean Water Act purposes. In February 2009, EPA deferred taking action on these waterbodies until the 2010 Integrated Report when mutually agreed upon nutrient assessment end points would be used to assess for nutrient impairments. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient samples exist for these waterbodies to assess for nutrient impairments, therefore the nutrient impairments will be delisted.

Additional parameters designed to protect aquatic life indicate these waterbodies are supporting the aquatic life beneficial use. Lastly, the 2010 aesthetics beneficial use assessment for these waterbodies demonstrates full support; therefore these waterbodies will be placed in category 2.

EL4-L0090: Overton Lake - The 2008 Integrated Report included this waterbody as impaired by excessive nutrients. The nutrient assessment process for 2008 was designed to provide numeric translators to the narrative aesthetic beneficial use criteria as defined in the State of Nebraska approved Title 117 – Nebraska Surface Water Quality Standards. EPA concluded that the nutrient values used to derive the numeric translators were not acceptable and could not be used for Clean Water Act purposes. For the 2010 Integrated Report, EPA and NDEQ agreed to an alternative set of nutrient assessment end points for this reporting cycle. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient data exits for this waterbody to assess for a nutrient impairment, therefore the nutrient impairment will be delisted. Additional parameters designed to protect aquatic life indicate this waterbody is supporting the aquatic life beneficial use. Lastly, the 2010 aesthetics beneficial use assessment for this waterbody demonstrates full support; therefore this waterbody will be relocated to category 2.

EL1-20000: Elkhorn River and EL3-20000 North Fork Elkhorn River - These waterbodies were listed as impaired due to E. coli and selenium pollution in the 2008 Integrated Report. In March 2009, NDEQ provided information to EPA that indicated the elevated selenium concentrations in these waterbodies was due to natural conditions and not anthropogenic pollution. EPA accepted NDEQ's documentation and indicated the selenium impairment could be considered naturally occurring. On September 29, 2009, EPA Region 7 approved the E. coli TMDLs that were prepared for these waterbodies. Due to these actions these waterbodies will be removed from category 5 and placed in category 4a,c.

EL4-10000: Elkhorn River and EL4-20000 Elkhorn River - These waterbodies were listed as impaired due to E. coli in the 2008 Integrated Report. On September 29, 2009, EPA Region 7 approved the E. coli TMDLs that were prepared for these waterbodies and they will now be placed in category 4a.

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
Lakes												
EL1-L0010	Highway 275 Bypass Lake No. 1	NA	NA		NA		NA		3			
EL1-L0020	Highway 275 Bypass Lake No. 2	NA	NA		NA		NA		3			
EL1-L0030	Highway 275 Bypass Lake No. 4	NA	NA		NA		NA		3			
EL1-L0040	Highway 275 Bypass Lake No. 3	NA	NA		NA		NA		3			
EL1-L0050	Hooper City Lake	NA	NA		NA		S		2			
EL1-L0060	West Point City Lake	NA	I		S		S	I	4r	Nutrients	Total phosphorus, Total Nitrogen, Chlorophyll a	Lake recently renovated
EL1-L0070	Pilger Reservoir	NA	S		S		S	S	2			Delist nutrients -insufficient data for assessment procedures
EL1-L0080	Maskenthine Reservoir	S	I		S		S	I	5	Fish consumption advisory, Nutrients, Low dissolved oxygen	Hazard index compounds*, Mercury, Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment
EL1-L0090	Leigh Tri-County Lake	NA	NA		NA		NA		3			
EL1-L0100	Wood Duck Lake (WMA)	NA	NA		NA		NA		3			
EL1-L0110	Loes Lake (Wood Duck WMA)	NA	NA		NA		NA		3			
EL1-L0120	Pillar Lake (Wood Duck WMA)	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
EL1-L0130	Wood Duck Pond (Wood Duck WMA)	NA	NA		NA		NA		3			
EL1-L0140	Dead Timber Lake	NA	S		S		S	S	2			Fish consumption assessment, Delist nutrients - insufficient data for assessment procedures
EL2-L0010	Lyons City Park Lake	NA	NA		NA		NA		3			
EL2-L0020	Wayne Issac Walton Lake	NA	NA		NA		NA		3			
EL3-L0010	Willow Creek Reservoir	S	I		S		S	I	5	Fish consumption advisory, Nutrients, High pH	Hazard index compounds*, Mercury, Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment
EL3-L0020	Pierce City Lake	NA	NA		NA		NA		3			
EL4-L0005	Andy's Lake	NA	NA		NA		NA		3			
EL4-L0010	Ta-Ha-Zouka Park Lagoon	NA	S		NA		S	S	2			Fish consumption assessment
EL4-L0020	Skyview Lake	NA	I		S		S	I	5	Fish consumption advisory	Hazard index compounds	Fish consumption assessment
EL4-L0025	Horseshoe Bend	NA	I		S		S	I	4r	Nutrients	Chlorophyll a	Lake recently renovated
EL4-L0030	Antelope County Country Club Lake	NA	NA		NA		NA		3			
EL4-L0040	Penn Park Lake (Neligh)	NA	NA		NA		NA		3			
EL4-L0050	Goose Lake	NA	S		NA		S		2			Fish consumption assessment
EL4-L0060	O'Neill City Lake	NA	NA		NA		NA		3			
EL4-L0070	Atkinson Lake (SRA)	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
EL4-L0080	Swan Lake	NA	S		NA		NA	S	2			Fish consumption assessment
EL4-L0090	Overton Lake	NA	S		S		S	S	2			Fish consumption assessment, Delist nutrients - insufficient data for assessment procedures
EL4-L0100	Fish Lake	NA	S		NA		S	S	2			Fish consumption assessment
EL4-L0110	Peterson Lake	NA	NA		NA		NA		3			
Streams												
EL1-10000	Elkhorn River	I	I		S		S	I	5	E. coli, Selenium, Fish consumption advisory	E. coli, Selenium, Hazard index compounds	E. coli TMDL approved 9/09 Selenium impairment re-categorized to 4c 3/09†, Fish consumption assessment
EL1-10100	Unnamed Creek		NA		NA		NA		3			
EL1-10200	Big Slough		NA		NA		NA		3			
EL1-10300	Rawhide Creek		NA		NA		NA		3			
EL1-10400	Rawhide Creek		S		NA		NA	S	2			Aquatic community assessment
EL1-10500	Rawhide Creek		NA		NA		NA		3			
EL1-10600	Bell Creek		NA		NA		NA		3			
EL1-10610	Brown Creek		NA		NA		NA		3			
EL1-10620	Little Bell Creek		NA		NA		NA		3			
EL1-10630	Unnamed Creek		NA		NA		NA		3			
EL1-10700	Bell Creek		S		NA		NA	S	2			Aquatic community assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
EL1-10800	Unnamed Creek		NA		NA		NA		3			
EL1-10900	Maple Creek	I	I		S		S	I	5	E. coli, Selenium, Impaired aquatic community	E. coli, Selenium, Unknown	E. coli TMDL approved 9/09 Selenium impairment re-categorized to 4c 3/09†, Aquatic community & Fish consumption assessment
EL1-10910	Crystal Creek		NA		NA		NA		3			
EL1-10920	East Fork Maple Creek		S		NA		NA	S	2			Aquatic community assessment
EL1-10930	West Fork Maple Creek		NA		NA		NA		3			
EL1-10931	Dry Creek		NA		NA		NA		3			
EL1-10931.1	South Fork Dry Creek		NA		NA		NA		3			
EL1-10932	Dry Creek		I		NA		NA	I	5	Impaired aquatic community		Aquatic community assessment
EL1-10933	Unnamed Creek		NA		NA		NA		3			
EL1-10934	Unnamed Creek		NA		NA		NA		3			
EL1-10940	West Fork Maple Creek		I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
EL1-11000	Clark Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
EL1-20000	Elkhorn River	I	I		S		S	I	4a,c	E. coli, Selenium	E. coli, Selenium	E. coli TMDL approved 9/09 Selenium impairment re-categorized to 4c 3/09†, Aquatic community & Fish consumption assessment
EL1-20100	Pebble Creek	I	I		S		S	I	5	E. coli, Selenium, Impaired aquatic community	E. coli,, Selenium, Unknown	E. coli TMDL approved 9/09 Selenium impairment re-categorized to 4c 3/09†, Aquatic community assessment
EL1-20110	Silver Creek		NA		NA		NA		3			
EL1-20120	Unnamed Creek		NA		NA		NA		3			
EL1-20121	Unnamed Creek		NA		NA		NA		3			
EL1-20130	Unnamed Creek		S		NA		NA	S	2			Aquatic community assessment
EL1-20200	Pebble Creek		NA		NA		NA		3			
EL1-20210	South Branch Pebble Creek		NA		NA		NA		3			
EL1-20220	North Branch Pebble Creek		NA		NA		NA		3			
EL1-20300	Pebble Creek		NA		NA		NA		3			
EL1-20400	Cuming Creek		NA		NA		NA		3			
EL1-20410	Willow Creek		NA		NA		NA		3			
EL1-20500	Cuming Creek		NA		NA		NA		3			
EL1-20600	Fisher Creek		NA		NA		NA		3			
EL1-20700	Plum Creek		NA		NA		NA		3			
EL1-20800	Plum Creek		NA		NA		NA		3			
EL1-20810	Dry Creek		NA		NA		NA		3			
EL1-20820	Kane Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
EL1-20900	Plum Creek		NA		NA		NA		3			
EL1-21000	Rock Creek	NA	NA		NA		NA		3			
EL1-21100	Leisy Creek		NA		NA		NA		3			
EL1-21200	Sand Creek		NA		NA		NA		3			
EL1-21300	Humbug Creek		S		NA		NA	S	2			Aquatic community assessment
EL1-21310	South Humbug Creek		NA		NA		NA		3			
EL1-21400	Humbug Creek		NA		NA		NA		3			
EL1-21500	Payne Creek		NA		NA		NA		3			
EL1-21600	Cedar Creek		NA		NA		NA		3			
EL1-21700	Indian Creek		NA		NA		NA		3			
EL1-21800	Butterfly Creek		NA		NA		NA		3			
EL1-21900	Union Creek	NA	NA		NA		NA		3			
EL1-21910	Sand Creek		NA		NA		NA		3			
EL1-21920	Meridian Creek		NA		NA		NA		3			
EL1-21921	Tracy Creek		S		NA		NA	S	2			Aquatic community assessment
EL1-21930	Meridian Creek		NA		NA		NA		3			
EL1-22000	Union Creek	NA	NA		NA		NA		3			
EL1-22010	Taylor Creek		NA		NA		NA		3			
EL1-22100	Union Creek		I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
EL1-22200	Unnamed Creek		NA		NA		NA		3			
EL1-22300	Unnamed Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
EL2-10000	Logan Creek	NA	I		S		S	I	5	Selenium, Fish consumption advisory	Selenium, Cancer risk compounds*, Hazard index compounds*	Selenium impairment re-categorized to 4c 3/09†, Fish consumption assessment
EL2-10100	Unnamed Creek		NA		NA		NA		3			
EL2-10200	Little Logan Creek		NA		NA		NA		3			
EL2-10210	Unnamed Creek		NA		NA		NA		3			
EL2-10300	Little Logan Creek		NA		NA		NA		3			
EL2-10400	Big Slough Creek		NA		NA		NA		3			
EL2-20000	Logan Creek	NA	NA		NA		NA		3			
EL2-20100	Rattlesnake Creek		NA		NA		NA		3			
EL2-20200	Unnamed Creek		S		NA		NA	S	2			Aquatic community assessment
EL2-20300	Middle Creek		NA		NA		NA		3			
EL2-20400	Rattlesnake Creek		NA		NA		NA		3			
EL2-20500	Unnamed Creek		NA		NA		NA		3			
EL2-20600	Unnamed Creek		NA		NA		NA		3			
EL2-20700	Coon Creek		NA		NA		NA		3			
EL2-20800	South Logan Creek	NA	NA		NA		NA		3			
EL2-20810	Dog Creek		S		NA		NA	S	2			Aquatic community assessment
EL2-20900	South Logan Creek		NA		NA		NA		3			
EL2-20910	Deer Creek		NA		NA		NA		3			
EL2-20911	Unnamed Creek		NA		NA		NA		3			
EL2-20920	Deer Creek		NA		NA		NA		3			
EL2-21000	South Logan Creek		NA		NA		NA		3			
EL2-30000	Logan Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
EL2-30100	North Logan Creek		NA		NA		NA		3			
EL2-40000	Logan Creek		NA		NA		NA		3			
EL2-40100	Baker Creek		S		NA		NA	S	2			Aquatic community assessment
EL2-40200	Middle Logan Creek		I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
EL2-40300	Perrin Creek		NA		NA		NA		3			
EL3-10000	North Fork Elkhorn River	NA	S		NA		NA	S	2			Fish consumption assessment
EL3-10100	Spring Creek		NA		NA		NA		3			
EL3-20000	North Fork Elkhorn River	I	I		S		S	I	4a,c	E. coli, Selenium	E. coli, Selenium	E. coli TMDL approved 9/09 Selenium impairment re-categorized to 4c 3/09†, Aquatic community and Fish consumption assessment
EL3-20100	Hadar Creek		NA		NA		NA		3			
EL3-20200	Willow Creek	NA	NA		NA		NA		3			
EL3-20300	Willow Creek	NA	NA		NA		NA		3			
EL3-20400	Dry Creek	NA	S		NA		NA	S	2			Aquatic community assessment
EL3-20500	Dry Creek		S		NA		NA	S	2			Aquatic community assessment
EL3-30000	North Fork Elkhorn River		NA		NA		NA		3			
EL3-30100	West Branch North Fork Elkhorn River		NA		NA		NA		3			
EL3-30110	Breslau Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
EL3-40000	North Fork Elkhorn River		NA		NA		NA		3			
EL4-10000	Elkhorn River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 9/09, Aquatic community & fish consumption assessment
EL4-10100	Unnamed Creek		NA		NA		NA		3			
EL4-10200	Unnamed Creek		NA		NA		NA		3			
EL4-10300	Unnamed Creek		NA		NA		NA		3			
EL4-10400	Battle Creek	NA	S		NA		NA	S	2			Aquatic community & fish consumption assessment
EL4-10500	Battle Creek		S		NA		NA	S	2			Aquatic community assessment
EL4-10600	Deer Creek		NA		NA		NA		3			
EL4-10700	Buffalo Creek		NA		NA		NA		3			
EL4-10800	Dry Creek		NA		NA		NA		3			
EL4-10900	Al Hopkins Creek		NA		NA		NA		3			
EL4-11000	Giles Creek		NA		NA		NA		3			
EL4-11100	Ives Creek		NA		NA		NA		3			
EL4-11200	Trueblood Creek		NA		NA		NA		3			
EL4-11300	Cedar Creek	NA	NA		NA		NA		3			
EL4-11310	Blacksnake Creek		NA		NA		NA		3			
EL4-11400	Cedar Creek		NA		NA		NA		3			
EL4-20000	Elkhorn River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 9/09
EL4-20100	Belmer Creek		NA		NA		NA		3			
EL4-20200	Antelope Creek		NA		NA		NA		3			

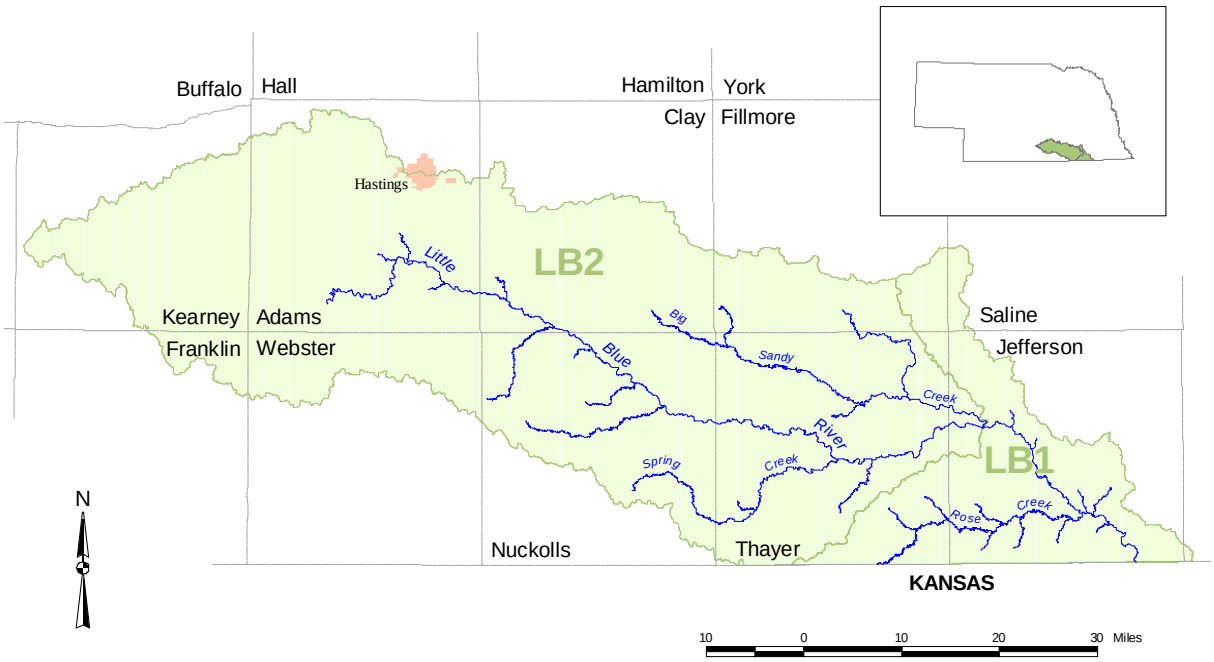
Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
EL4-20300	Clearwater Creek	NA	S		NA		NA	S	2			Aquatic community assessment, ICI score impacted by extreme flow events‡
EL4-20400	Clearwater Creek		NA		NA		NA		3			
EL4-20500	Cache Creek		NA		NA		NA		3			
EL4-20600	Cache Creek		NA		NA		NA		3			
EL4-20700	South Fork Elkhorn River	NA	S		S		S	S	2			Aquatic community assessment
EL4-20800	South Fork Elkhorn River		NA		NA		NA		3			
EL4-30000	Elkhorn River	I	I		S		S	I	5	E. coli, Fish consumption advisory	E. coli, Hazard index compounds*, Mercury	E. coli TMDL approved 9/09 Aquatic community & Fish consumption assessment, ICI score impacted by extreme flow events‡
EL4-30100	Willow Swamp Creek		NA		NA		NA		3			
EL4-30200	Dry Creek		NA		NA		NA		3			
EL4-30300	Dry Creek		NA		NA		NA		3			
EL4-30400	Holt Creek		S		NA		NA	S	2			Aquatic community assessment
EL4-30500	Holt Creek		S		NA		NA	S	2			Aquatic community assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
EL4-40000	Elkhorn River	NA	I		S		S	I	5	High pH	Unknown	Aquatic community assessment, ICI score impacted by extreme flow events‡
EL4-40100	South Fork Elkhorn River								3			
EL4-40200	North Fork Elkhorn River								3			

* ***Cancer risk compounds*** -Aroclor-1248 (PCB-1248), Aroclor-1254 (PCB-1254), Aroclor-1260 (PCB-1260), cis-chlordane, Chlordane, trans-chlordane, DDD, DDE, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin
Hazard index compounds- Aroclor-1254 (PCB-1254), Lindane (g-BHC), cis-chlordane, Chlordane, trans-chlordane, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin, Mercury, Cadmium, Selenium

† See Appendix C: Natural Occurrence of Selenium in the Elkhorn River Basin

‡ See Appendix D: Ecological Justification for Excluding Specific Bio-Indicator Results When Determining Attainment Status of the Aquatic Life Beneficial Use for Nebraska's 2010 Water Quality Integrated Report



LITTLE BLUE RIVER BASIN (and Subbasins)

Little Blue Basin – Hydrologic Units 10270206 and 10270207

The Little Blue River Basin includes 38 designated stream segments and 13 designated lakes/reservoirs.

Waterbody Type	Primary Contact Recreation	Aquatic Life CA[1]	Aquatic Life CB[1]	Aquatic Life WA[1]	Aquatic Life WB[1]	Water Supply – Public Drinking	Water Supply – Ag	Water Supply-Ind.	Aesthetics
Lakes	13	0	0	13	0	3	13	0	13
Streams	6	0	0	14	24	1	38	0	38

[1] CA = Coldwater Class A, CB = Coldwater Class B, WA = Warmwater Class A and WB = Warmwater Class B

Delisting/ Changes from 2006 & 2008 IRs

The following are waters and or parameters that were delisted – removed from category 5 or other significant changes from the 2006 and 2008 Integrated Reports (IRs).

LB2-L0040: Bruning Dam Lake and LB2-L0090 Roseland Lake- These waterbodies were listed as impaired for nutrients in the 2006 Integrated Report. EPA indicated that the nutrient values NDEQ used for the 2006 assessments were not acceptable and not suitable for Clean Water Act purposes. In February 2009, EPA deferred taking action on these waterbodies until the 2010 Integrated Report when mutually agreed upon nutrient assessment end points would be used to assess for nutrient impairments. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient samples exist for these waterbodies to assess for nutrient impairments, therefore the nutrient impairments will be delisted. Additional parameters designed to protect aquatic life indicate these waterbodies are supporting the aquatic

life beneficial use. Lastly, the 2010 aesthetics beneficial use assessment for these waterbodies demonstrates full support; therefore these waterbodies will be placed in category 2.

LB2-L0080: Prairie Lake (32-Mile H) – This waterbody was listed as impaired by excess nutrients in the 2006 IR. EPA indicated that the nutrient values NDEQ used for the 2006 assessments were not acceptable and not suitable for Clean Water Act purposes. In February 2009, EPA deferred taking action on this lake until the 2010 Integrated Report when a mutually agreed upon nutrient criteria would be used to assess for nutrient impairments. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient samples exist for this waterbody to assess for a nutrient impairment, therefore the nutrient impairment will be delisted. This lake will remain in category 5 because the aquatic life beneficial use is impaired by high pH.

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
Lakes												
LB1-L0010	Buckley Reservoir (3F)	NA	I		S		S	I	5	Nutrients	Total phosphorus, Total nitrogen	
LB1-L0020	Crystal Springs Northwest Lake	NA	S		S		S	S	2			Fish consumption assessment
LB1-L0030	Crystal Springs Center Lake	NA	NA		NA		NA		3			
LB1-L0040	Crystal Springs East Lake	NA	NA		NA		NA		3			
LB1-L0050	Lone Star Reservoir	S	I		S		S	I	5	Nutrients, Low dissolved oxygen	Total phosphorus, Total nitrogen, Chlorophyll a	Lake recently renovated
LB2-L0010	Alexandria Lake No. 1 & 2	S	NA		NA		S	S	2			
LB2-L0030	Alexandria Lake No. 3	I	I		S		S	I	5	Algal Toxins, High pH, Low dissolved oxygen	Nutrients	Fish consumption assessment
LB2-L0040	Bruning Dam Lake	NA	S		S		S	S	2			Delist nutrients -insufficient data for assessment procedures
LB2-L0050	Liberty Cove Lake	NA	I		S		I	I	5	Fish consumption advisory, Nutrients, High pH	Hazard index compounds*, Mercury, Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment
LB2-L0060	Brick Yard Park Pond	NA	NA		NA		NA		3			
LB2-L0070	Crystal Lake (SRA)	NA	I		S		S	I	5	High pH	Unknown	

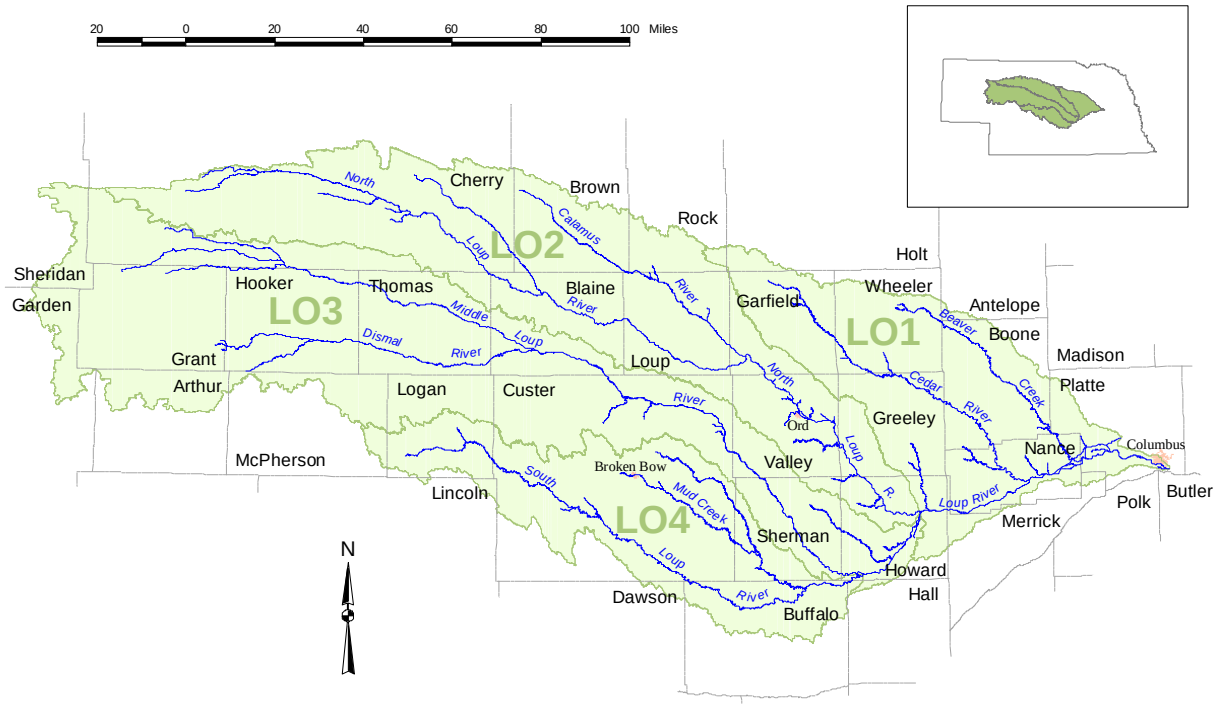
Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LB2-L0080	Prairie Lake (32-Mile H)	NA	I		S		S	I	5	High pH	Unknown	Fish consumption assessment, Delist nutrients- insufficient data for assessment procedures
LB2-L0090	Roseland Lake (32-Mile D)	NA	S		S		S	S	2			Delist nutrients -insufficient data for assessment procedures
Streams												
LB1-10000	Little Blue River	I	I	I	S		S	I	5	E. coli, May-June atrazine, Atrazine-water supply	E. coli, Atrazine	E. coli TMDL approved 3/05, Aquatic community & Fish consumption assessment
LB1-10100	Coon Creek		S		NA		NA	S	2			Aquatic community assessment
LB1-10200	Rock Creek	I	S		NA		NA	I	5	E. coli	E. coli	Aquatic community assessment
LB1-10300	Smith Creek		NA		NA		NA		3			
LB1-10400	Rose Creek		NA		NA		NA		3			
LB1-10410	Dry Branch		S		NA		S	S	2			Aquatic community assessment
LB1-10420	Silver Creek		NA		NA		NA		3			
LB1-10430	Buckley Creek		NA		NA		NA		3			
LB1-10500	Rose Creek		NA		NA		NA		3			
LB1-10510	Wiley Creek		NA		NA		NA		3			
LB1-10520	Balls Branch		NA		NA		NA		3			
LB1-10530	Spring Branch		NA		NA		NA		3			
LB1-10600	Rose Creek		NA		NA		NA		3			
LB1-10700	Whisky Run		NA		NA		NA		3			
LB1-10800	Little Sandy Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LB2-10000	Little Blue River	I	I		S		S	I	5	E. coli, May-June atrazine	E. coli, Atrazine	E. coli TMDL approved 3/05
LB2-10100	Big Sandy Creek	I	I		S		S	I	5	E. coli, May-June atrazine	E. coli, Atrazine	Aquatic community assessment
LB2-10110	Dry Sandy Creek		NA		NA		NA		3			
LB2-10200	Big Sandy Creek		I		NA		NA	I	5	Fish consumption advisory	Hazard index compounds*, Mercury	Aquatic community & Fish consumption assessment
LB2-10210	South Fork Big Sandy Creek		NA		NA		NA		3			
LB2-10220	Little Sandy Creek		NA		NA		NA		3			
LB2-10300	Big Sandy Creek		NA		NA		NA		3			
LB2-10400	Dry Creek		NA		NA		NA		3			
LB2-10500	Spring Creek		I		NA		S	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
LB2-10510	Unnamed Creek		NA		NA		NA		3			
LB2-10600	Spring Creek		I		NA		S	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
LB2-20000	Little Blue River	I	I		S		S	I	5	E. coli, May-June atrazine	E. coli, Atrazine	Aquatic community & Fish consumption assessment
LB2-20100	Elk Creek		NA		NA		NA		3			
LB2-20200	Elk Creek		S		NA		S	S	2			Aquatic community assessment
LB2-20300	Ox Bow Creek		NA		NA		NA		3			
LB2-20400	Walnut Creek		NA		NA		NA		3			
LB2-20500	Liberty Creek		S		NA		NA	S	2			Aquatic community assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LB2-30000	Little Blue River	I	S		S		S	I	5	E. coli	E. coli	Aquatic community assessment
LB2-30100	Pawnee Creek		NA		NA		NA		3			
LB2-30200	Ash Creek		NA		NA		NA		3			
LB2-30300	Thirty-two Mile Creek		NA		NA		NA		3			
LB2-40000	Little Blue River		S		NA		NA	S	2			Aquatic community assessment
LB2-40100	Scott Creek		NA		NA		NA		3			
Wetlands												
LB2-Undesig.	Gleason WPA†		NA		NA		NA		3			
LB2-Undesig.	Massie WPA†		NA		NA		NA		3			
LB2-Undesig.	McMurtrey WPA†		NA		NA		NA		3			
LB2-Undesig.	Moger WPA†		NA		NA		NA		3			

* ***Cancer risk compounds*** -Aroclor-1248 (PCB-1248), Aroclor-1254 (PCB-1254), Aroclor-1260 (PCB-1260), cis-chlordane, Chlordane, trans-chlordane, DDD, DDE, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin
Hazard index compounds- Aroclor-1254 (PCB-1254), Lindane (g-BHC), cis-chlordane, Chlordane, trans-chlordane, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin, Mercury, Cadmium, Selenium

† See Appendix B: External Data for USFWS atrazine data collected from these wetlands.



LOUP RIVER BASIN (and Subbasins)

Loup River Basin – Hydrologic Units 10210001, 10210002, 10210003, 10210004, 10210005, 10210006, 10210007, 10210008, 10210009 and 10210010

The Loup River Basin includes 110 designated stream segments and 47 designated lakes/reservoirs. Beneficial uses assigned to designated water in the basin can be found in the below table.

Waterbody Type	Primary Contact Recreation	Aquatic Life CA[1]	Aquatic Life CB[1]	Aquatic Life WA[1]	Aquatic Life WB[1]	Water Supply – Public Drinking	Water Supply – Ag	Water Supply-Ind.	Aesthetics
Lakes	47	0	1	46	0	0	47	0	47
Streams	37	0	36	26	48	0	110	0	110

[1] CA = Coldwater Class A, CB = Coldwater Class B, WA = Warmwater Class A and WB = Warmwater Class B

Delisting/ Changes from 2006 & 2008 IRs

The following are waters and or parameters that were delisted – removed from category 5 or other significant changes from the 2006 and 2008 Integrated Reports (IRs).

LO3-L0090Alkali Lake **-** This lake was listed as impaired due to pH in the 2006 Integrated Report and placed in category 4c as a naturally alkaline lake. NDEQ has since modified Title 117 – Nebraska Surface Water Quality Standards to state "Hydrogen Ion concentrations, expressed as pH shall be maintained between 6.5 and 9.0; unless pH values outside this range are due to natural conditions". Chemical and geological data indicate the pH in this lake is the result of natural conditions (McCarraher, 1964, 1977). The pH impairment will be delisted and the lake will placed in category 2.

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
Lakes												
LO1-L0010	Columbus City Park Pond	NA	I		NA		S	I	5	Fish consumption advisory	Hazard index compounds*, Mercury	Fish consumption assessment
LO1-L0020	Columbus Issac Walton Lake	NA	NA		NA		NA		3			
LO1-L0030	Pawnee Park Lake (Columbus)	NA	NA		NA		NA		3			
LO1-L0040	Stires Lake	NA	NA		NA		NA		3			
LO1-L0050	Wagner's Lake	NA	NA		NA		NA		3			
LO1-L0060	Loup Power District Headgate Pond No. 1	NA	NA		NA		NA		3			
LO1-L0070	Loup Power District Headgate Pond No. 2	NA	NA		NA		NA		3			
LO1-L0080	Loup Power District Headgate Pond No. 3	NA	NA		NA		NA		3			
LO1-L0090	Loup Power District Headgate Pond No. 4	NA	NA		NA		NA		3			
LO1-L0100	Loup Power District Headgate Pond No. 5	NA	NA		NA		NA		3			
LO1-L0110	Stevenson's Lake	NA	NA		NA		NA		3			
LO1-L0120	Wolbach City Lake	NA	NA		NA		NA		3			
LO1-L0130	Pibel Lake	NA	I		S		S	I	5	Fish consumption advisory, Nutrients, Low dissolved oxygen, High pH	Mercury, Total phosphorus, Total nitrogen, Chlorophyll a,	Fish consumption assessment
LO1-L0140	Lake Ericson	NA	S		S		S	S	2			Fish consumption assessment
LO1-L0150	Fullerton City Lake	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LO2-L0010	North Loup Lake (SRA)	NA	I		NA		NA	I	5	Fish consumption advisory	Hazard index compounds*	Fish consumption assessment
LO2-L0015	Davis Creek Reservoir	S	I		S		S	I	5	Nutrients, Low dissolved oxygen	Total phosphorus, Chlorophyll a	Fish consumption assessment
LO2-L0020	Ord City Lake	NA	NA		NA		S	S	2			
LO2-L0030	Burwell Lake	NA	NA		NA		NA		3			
LO2-L0040	Burwell Park Lake	NA	NA		NA		NA		3			
LO2-L0050	Calamus Reservoir	S	I		S		S	S	5	High pH	Unknown	Fish consumption assessment
LO2-L0055	Willow Lake B.C.	NA	NA		NA		NA		3			
LO2-L0060	Clear Lake	NA	S		S		S	S	2			
LO2-L0070	Enders Overflow Lake	NA	NA		NA		NA		3			
LO2-L0080	Long Lake (SRA)	NA	S		S		S	S	2			
LO2-L0090	South Twin Lake (WMA)	NA	NA		NA		NA		3			
LO2-L0100	Dew Lake (Valentine NWR)	NA	NA		NA		NA		3			
LO2-L0110	Crooked Lake (Valentine NWR)	NA	NA		NA		NA		3			
LO2-L0120	East Long Lake (Valentine NWR)	NA	NA		NA		NA		3			
LO2-L0180	Cow Lake (Valentine NWR)	NA	NA		NA		NA		3			
LO2-L0250	Coleman Lake (Valentine NWR)	NA	NA		NA		NA		3			
LO2-L0260	Rat and Beaver Lake (WMA)	NA	NA		NA		NA		3			
LO2-L0270	Mule Lake (Valentine NWR)	NA	NA		NA		NA		3			
LO2-L0280	Devil's Punch Bowl Lake (Valentine NWR)	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LO3-L0010	Farwell South Reservoir	NA	I		NA		NA	I	5	Fish consumption advisory	Mercury	Fish consumption assessment
LO3-L0020	Sherman Reservoir	S	I		S		S	I	5	Fish consumption advisory, Nutrients, Low dissolved oxygen	Mercury, Total phosphorus	Fish consumption assessment
LO3-L0030	Bowman Lake (SRA)	NA	NA		NA		NA		3			
LO3-L0040	Victoria Springs Lake (SRA)	NA	NA		NA		NA		3			
LO3-L0050	Halsey Trout Pond (Nebraska National Forest)	NA	NA		NA		NA		3			
LO3-L0060	Spring Valley Lake	NA	NA		NA		NA		3			
LO3-L0070	Frey Lake	NA	S		S		S	S	2			
LO3-L0090	Alkali Lake	NA	S		S		S	S	2			Naturally alkaline Sandhills lake
LO4-L0010	Ravenna Lake (SRA)	NA	I		NA		NA	I	5	Fish consumption advisory	Mercury	Fish consumption assessment
LO4-L0020	Beaver Creek Lake (SWA)	NA	NA		NA		NA		3			
LO4-L0030	Ansley City Lake	NA	I		S		S	I	4r	Nutrients	Total nitrogen, Chlorophyll a	Lake recently renovated, Fish consumption assessment
LO4-L0040	Melham Park Lake (Broken Bow)	NA	NA		NA		NA		3			
LO4-L0050	Arnold Lake (SRA)	NA	S		NA		NA		2			Fish consumption assessment
Streams												
LO1-10000	Loup River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 1/06, Fish consumption assessment
LO1-10100	Barnum Creek		NA		NA		NA		3			
LO1-10200	Cherry Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LO1-10300	Unnamed Creek		NA		NA		NA		3			
LO1-10400	Looking Glass Creek		NA		NA		NA		3			
LO1-10500	Looking Glass Creek		NA		NA		NA		3			
LO1-10600	Beaver Creek	I	S		S		S	I	5	E. coli	E. coli	
LO1-10610	Bogus Creek		NA		NA		NA		3			
LO1-10700	Beaver Creek	I	I		S		S	I	5	E. coli, Impaired aquatic community	E. coli, Unknown	Aquatic community & Fish consumption assessment
LO1-10800	Beaver Creek		S		NA		NA	S	2			Aquatic community assessment
LO1-10900	Beaver Creek		NA		NA		NA		3			
LO1-10910	Unnamed Tributary		NA		NA		NA		3			
LO1-11000	Beaver Creek		NA		NA		NA		3			
LO1-20000	Loup River	NA	NA		NA		NA		3			
LO1-20100	Unnamed Creek		NA		NA		NA		3			
LO1-20200	Loup River Canal	I	S		S		S	I	5	E. coli	E. coli	
LO1-30000	Loup River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 1/06
LO1-30100	Council Creek		NA		NA		NA		3			
LO1-30200	Plum Creek		NA		NA		NA		3			
LO1-30300	Cedar River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 1/06, Fish consumption assessment
LO1-30310	Timber Creek		S		S		S	S	1			
LO1-30311	South Branch Timber Creek		S		NA		NA	S	2			Aquatic community assessment
LO1-30312	North Branch Timber Creek		NA		NA		NA		3			
LO1-30320	Clear Creek		NA		NA		NA		3			
LO1-30400	Cedar River		NA		NA		NA		3			
LO1-30500	Cedar River		S		NA		NA	S	2			Aquatic community assessment
LO1-30510	Dry Cedar Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LO1-30600	Cedar River		NA		NA		NA		3			
LO1-30610	Little Cedar Creek		NA		NA		NA		3			
LO1-30620	Big Cedar Creek		NA		NA		NA		3			
LO1-30700	Spring Creek		NA		NA		NA		3			
LO1-30710	West Branch Spring Creek		NA		NA		NA		3			
LO1-30800	Spring Creek		NA		NA		NA		3			
LO2-10000	North Loup River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 1/06, Aquatic community & Fish consumption assessment
LO2-10100	Auger Creek		NA		NA		NA		3			
LO2-10200	Munson Creek		S		NA		NA	S	2			Aquatic community assessment
LO2-10300	Davis Creek		S		NA		NA	S	2			Aquatic community assessment
LO2-10400	Mira Creek		S		S		S	S	1			Aquatic community assessment
LO2-10410	South Branch Mira Creek		NA		NA		NA		3			
LO2-10420	North Branch Mira Creek		NA		NA		NA		3			
LO2-10500	Messenger Creek		NA		NA		NA		3			
LO2-10600	Spring Creek		NA		NA		NA		3			
LO2-10700	Elm Creek		NA		NA		NA		3			
LO2-10800	Unnamed Creek		NA		NA		NA		3			
LO2-10900	Dane Creek		NA		NA		NA		3			
LO2-11000	Haskell Creek		NA		NA		NA		3			
LO2-11100	Turtle Creek		S		NA		NA	S	2			Aquatic community assessment
LO2-11200	Bean Creek		NA		NA		NA		3			
LO2-11300	Calamus River	I	I		S		S	I	5	E. coli, High temperature	E. coli, Temperature	
LO2-11310	Gracie Creek		NA		NA		NA		3			
LO2-11320	Bloody Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LO2-11330	Skull Creek		NA		NA		NA		3			
LO2-11400	Calamus River	I	I		S		S	I	4a,c	E. coli, High temperature	E. coli, Temperature	E. coli TMDL approved 1/06
LO2-11500	Calamus River	NA	NA		NA		NA		3			
LO2-11600	Calamus River		NA		NA		NA		3			
LO2-20000	North Loup River	S	I		S		S	I	4c	High temperature	Temperature	Fish consumption assessment
LO2-20100	Goose Creek	NA	S		NA		NA	S	2			Aquatic community assessment
LO2-20200	Goose Creek		NA		NA		NA	NA	3			Aquatic community assessment results were inconclusive - site will be reassessed†
LO2-30000	North Loup River	I	I		S		S	I	4a,c	E. coli, High temperature	E. coli, Temperature	E. coli TMDL approved 1/06
LO2-30100	Pass Creek		NA		NA		NA		3			
LO2-40000	North Loup River	I	I		S		S	I	4a,c	E. coli, High temperature	E. coli, Temperature	E. coli TMDL approved 1/06, Aquatic community assessment, ICI score not representative of water quality conditions†
LO2-40100	Brush Creek		NA		NA		NA		3			
LO2-40200	Big Creek		S		NA		NA	S	2			Aquatic community assessment
LO2-50000	North Loup River								3			
LO2-60000	North Loup River		S		NA		NA	S	2			Aquatic community assessment
LO2-70000	North Loup River		NA		NA		NA		3			
LO2-70100	Mud Creek		NA		NA		NA		3			
LO3-10000	Middle Loup River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 1/06, Fish consumption assessment
LO3-10100	Lake Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LO3-10200	Turkey Creek		I		S		S	I	5	May-June atrazine	Atrazine	
LO3-10300	Oak Creek		NA		NA		NA		3			
LO3-10400	Oak Creek	NA	I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
LO3-20000	Middle Loup River	S	S		S		S	S	1			
LO3-30000	Middle Loup River	S	S		S		S	S	1			Aquatic community & Fish consumption assessment
LO3-40000	Middle Loup River	S	S		S		S	S	1			Fish consumption assessment
LO3-40100	Unnamed Creek		NA		NA		NA		3			
LO3-40200	Wagner Creek		NA		NA		NA		3			
LO3-40300	Lillian Creek		NA		NA		NA		3			
LO3-40400	Victoria Creek		S		NA		NA	S	2			Aquatic community assessment
LO3-50000	Middle Loup River	S	S		S		S	S	1			
LO3-50100	Dismal River	S	I		S		S	I	4c	High temperature	Temperature	Fish consumption assessment
LO3-50200	Dismal River	S	S		S		S	S	1			Aquatic community assessment
LO3-50300	Dismal River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 1/06
LO3-50310	South Fork Dismal River	NA	NA		NA		NA		3			
LO3-50320	South Fork Dismal River		NA		NA		NA		3			
LO3-50330	North Fork Dismal River	NA	S		NA		NA	S	2			Aquatic community assessment
LO3-50340	North Fork Dismal River		NA		NA		NA		3			
LO3-60000	Middle Loup River	S	I		S		S	I	4c	High temperature	Temperature	Aquatic community assessment
LO3-70000	Middle Loup River	I	S		S		S	I	5	E. coli	E. coli	
LO3-70100	South Branch Middle Loup River		NA		NA		NA		3			
LO3-70200	North Branch Middle Loup River		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LO3-70210	Middle Branch Middle Loup River		NA		NA		NA		3			
LO3-70300	North Branch Middle Loup River		NA		NA		NA		3			
LO4-10000	South Loup River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 1/06, Aquatic community & Fish consumption assessment
LO4-10100	Mud Creek	I	I		S		S	I	5	E. coli, May-June atrazine	E. coli, Atrazine	
LO4-10110	Spring Branch		NA		NA		NA		3			
LO4-10120	Clear Creek		NA		NA		NA		3			
LO4-10200	Mud Creek	I	I		S		S	I	5	E. coli, Impaired aquatic community	E. coli, Unknown	Aquatic community assessment
LO4-10210	Dutchman Valley		NA		NA		NA		3			
LO4-20000	South Loup River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 1/06, Aquatic community & Fish consumption assessment
LO4-20100	Spring Creek		NA		NA		NA		3			
LO4-30000	South Loup River	I	S		S		S	I	5	E. coli	E. coli	Aquatic community assessment
LO4-30100	Sand Creek		NA		NA		NA		3			
LO4-30200	Unnamed Creek		NA		NA		NA		3			
LO4-40000	South Loup River	I	S		S		S	I	5	E. coli	E. coli	
LO4-40100	North Fork South Loup River		NA		NA		NA		3			
LO4-50000	South Loup River		NA		NA		NA		3			

* ***Cancer risk compounds*** -Aroclor-1248 (PCB-1248), Aroclor-1254 (PCB-1254), Aroclor-1260 (PCB-1260), cis-chlordane, Chlordane, trans-chlordane, DDD, DDE, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin
Hazard index compounds- Aroclor-1254 (PCB-1254), Lindane (g-BHC), cis-chlordane, Chlordane, trans-chlordane, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin, Mercury, Cadmium, Selenium

† See Appendix D: Ecological Justification for Excluding Specific Bio-Indicator Results When Determining Attainment Status of the Aquatic Life Beneficial Use for Nebraska's 2010 Water Quality Integrated Report

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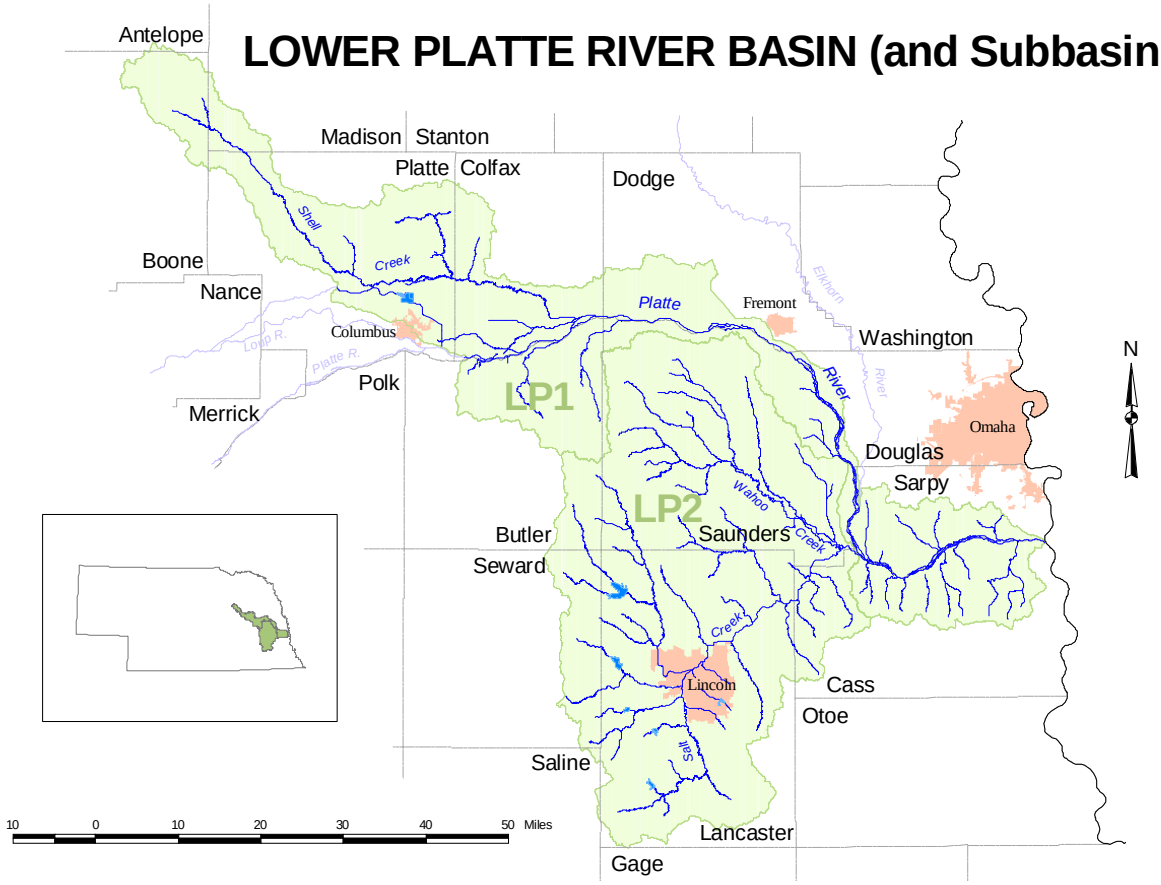


Lower Platte River Basin – Hydrologic Units 10200201, 10200202 and 10200203

The Lower Platte River Basin includes 127 designated stream segments and 75 designated lakes/reservoirs.

Waterbody Type	Primary Contact Recreation	Aquatic Life CA[1]	Aquatic Life CB[1]	Aquatic Life WA[1]	Aquatic Life WB[1]	Water Supply – Public Drinking	Water Supply –Ag	Water Supply-Ind.	Aesthetics
Lakes	75	0	1	74	0	0	75	2	75
Streams	16	0	1	13	112	2	121	1	127

[1] CA = Coldwater Class A, CB = Coldwater Class B, WA = Warmwater Class A and WB = Warmwater Class B

Delisting/ Changes from 2006 & 2008 IRs

The following are waters and or parameters that were delisted – removed from category 5 or other significant changes from the 2006 and 2008 Integrated Reports (IRs).

LP1-L0250: Fremont Lake No. 20-The 2008 Integrated Report placed this lake in category 4a because it was impaired for algal toxins and chlorophyll and an approved nutrient TMDL was in place. This lake was renovated in 2007 and new data assessments indicate this lake is fully supporting all designated uses. Nutrients will be delisted and this lake will be placed in category 1.

LP1-L0440: Lake North –This waterbody was listed as impaired for nutrients in the 2006 Integrated Report. EPA indicated that the nutrient values NDEQ used for the 2006 assessments were not acceptable and not suitable for Clean Water Act purposes. In February 2009, EPA deferred taking action on this lake

until the 2010 Integrated Report when mutually agreed upon nutrient assessment end points would be used to assess for nutrient impairments. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient samples exist for this waterbody to assess for a nutrient impairment, therefore the nutrient impairment will be delisted. This lake will remain in category 5 because the aquatic life beneficial use is impaired due to high pH.

LP1-21010: Shonka Ditch - This waterbody has been listed as impaired due to ammonia and placed in category 4b since the 1996 303(d) list. Monitoring data from the past four years (January 2006-present) documents that discharge from Cargill Meat Solutions Inc. is in compliance with NDPES permit NE0000765 and the ammonia water quality standards are not longer being violated. The ammonia impairment will be delisted and this waterbody will be placed in category 2.

LP2-10100: Wahoo Creek – This waterbody was listed as impaired in the 2008 IR due to an impaired aquatic community score, as well as, E. coli and selenium. Results of a new aquatic community assessment document that the aquatic community is no longer impaired and will be delisted. However, this stream will remain in category 5 because of the E. coli and selenium impairments.

LP2-20612: Bates Branch-This stream was listed as having an impaired aquatic community in the 2008 Integrated Report and placed in category 5. A new aquatic community assessment indicates this stream is fully supporting the aquatic community. The impaired aquatic community will be delisted and this stream will be placed in category 2.

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
Lakes												
LP1-L0010	Louisville Lake No. 1 (SRA)	NA	S		NA		S	S	2			Fish consumption assessment
LP1-L0020	Louisville Lake No. 1A (SRA)	NA	NA		NA		NA		3			
LP1-L0030	Louisville Lake No. 2 (SRA)	S	NA		NA		S	S	2			
LP1-L0040	Louisville Lake No. 3 (SRA)	NA	NA		NA		NA		3			
LP1-L0050	Louisville Lake No. 2A (SRA)	NA	NA		NA		NA		3			
LP1-L0060	Jenny Newman Lake (Platte River State Park)	NA	NA		NA		NA		3			
LP1-L0070	Schramm Park Ponds (10 Ponds) (SRA)	NA	NA		NA		NA		3			
LP1-L0080	U.S. West Lake (Mahoney State Park)	NA	NA		NA		NA		3			
LP1-L0090	Marina Lake (Mahoney State Park)	NA	NA		NA		NA		3			
LP1-L0100	Two Rivers Lake No. 5 (SRA)	NA	NA		NA		NA		3			
LP1-L0110	Two Rivers Carp Lake (SRA)	NA	NA		NA		NA		3			
LP1-L0120	Two Rivers Lake No. 6 (SRA)	NA	NA		NA		NA		3			
LP1-L0130	Two Rivers Lake No. 1 and 2 (SRA)	NA	NA		NA		NA		3			
LP1-L0140	Two Rivers Lake No. 3 (SRA)	NA	NA		NA		NA		3			
LP1-L0150	Two Rivers Lake No. 4 (SRA)	S	NA		NA		S	S	2			
LP1-L0160	Fremont Lake No. 14 (SRA)	NA	NA		NA		NA		3			
LP1-L0170	Fremont Lake No. 13 (SRA)	NA	NA		NA		NA		3			
LP1-L0180	Fremont Lake No. 12 (SRA)	NA	S		S		S	S	2			
LP1-L0190	Fremont Lake No. 19 (SRA)	NA	NA		NA		NA		3			
LP1-L0200	Fremont Lake No. 15 (SRA)	S	NA		NA		S	S	2			
LP1-L0210	Fremont Lake No. 11 (SRA)	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LP1-L0220	Fremont Lake No. 18 (SRA)	S	S		S		S	S	1			
LP1-L0230	Fremont Lake No. 17 (SRA)	S	I		S		S	I	5	High pH	Unknown	
LP1-L0240	Fremont Lake No. 10 (SRA)	S	S		NA		S	S	2			Fish consumption assessment
LP1-L0250	Fremont Lake No. 20(SRA)	S	S		S		S	S	1			Delist nutrients- new assessment, Fish consumption assessment
LP1-L0270	Fremont Lake No. 16 (SRA)	S	I		S		S	I	5	High pH	Unknown	
LP1-L0280	Fremont Lake No. 9 (SRA)	S	NA		NA		S	S	2			
LP1-L0290	Fremont Lake No. 1 (SRA)	S	I		S		S	I	5	Low dissolved oxygen, High pH, Fish consumption advisory	Unknown, Mercury	Fish consumption assessment
LP1-L0300	Fremont Lake No. 2 (SRA)	I	I		S		S	I	5	Algal toxins, Nutrients	Chlorophyll a	
LP1-L0310	Fremont Lake No. 3 (SRA)	S	I		S		S	I	5	Nutrients, Low dissolved oxygen	Total phosphorus, Total nitrogen, Chlorophyll a	
LP1-L0315	Fremont Lake No. 3A (SRA)	NA	NA		NA		NA		3			
LP1-L0320	Fremont Lake No. 5 (SRA)	S	I		S		S	I	5	Nutrients, Low dissolved oxygen, High pH	Total phosphorus, Total nitrogen, Chlorophyll a	
LP1-L0330	Fremont Lake No. 4 (SRA)	S	S		S		S	S	1			
LP1-L0340	Fremont Lake No. 6 (SRA)	NA	NA		NA		NA		3			
LP1-L0350	Fremont Lake No. 7 and 8 (SRA)	S	I		S		S	I	5	High pH	Unknown	
LP1-L0355	Homestead Lake	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LP1-L0360	Schuyler East Park Pond	NA	NA		NA		NA		3			
LP1-L0370	Schuyler City Lake	NA	NA		NA		I	I	4r	Algae Blooms	Nutrients	Lake recently renovated
LP1-L0380	Camp Luther Pond	NA	NA		NA		NA		3			
LP1-L0390	McAllister Lake	NA	NA		NA		NA		3			
LP1-L0400	Christopher Cove Lake	NA	NA		NA		NA		3			
LP1-L0410	Country Club Shores Lake	NA	NA		NA		NA		3			
LP1-L0420	Columbus Country Club Lake	NA	NA		NA		NA		3			
LP1-L0430	Oconee Siphon Pond	NA	NA		NA		NA		3			
LP1-L0440	Lake North	S	I		S	S	S	I	5	High pH	Unknown	Fish consumption assessment, Delist nutrients- insufficient data for assessment procedures
LP1-L0450	Lake Babcock	I	S			S	S	I	5	E. coli		Fish consumption assessment
LP2-L0010	Memphis Lake (SRA)	NA	NA		NA		NA		3			
LP2-L0020	Hedgefield Lake (WMA)	NA	NA		NA		NA		3			
LP2-L0030	Wagon Train Lake	S	I		S		S	I	5	Arsenic, Nutrients, Fish consumption advisory	Arsenic, Total phosphorus, Total nitrogen, Chlorophyll a, Hazard index compounds*, Mercury	Fish consumption assessment, Lake recently renovated
LP2-L0040	Holmes Lake	S	I		S		S	I	4r	Nutrients, High pH	Total phosphorus, Total nitrogen, Chlorophyll a	Lake recently renovated

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LP2-L0050	Stagecoach Lake	S	I		S		I	I	5	Nutrients, Sedimentation	Total phosphorus, Total nitrogen, Chlorophyll a, Sediment	Fish consumption assessment
LP2-L0060	Oak Lake	NA	I		NA		S	I	5	Low dissolved oxygen, Chlorides	Unknown	Salinity is natural. List for D.O., Fish consumption assessment
LP2-L0065	Regional Center Pond	NA	NA		NA		NA		3			
LP2-L0070	Cottontail Lake (17A)	NA	NA		NA		NA		3			
LP2-L0080	Killdeer Lake (WMA)	NA	S		NA		S	S	2			Fish consumption assessment
LP2-L0090	Yankee Hill Lake	NA	I		S		S	I	4r	High pH	Unknown	Lake recently renovated
LP2-L0100	Bowling Lake	NA	NA		NA		S	S	2			
LP2-L0110	Bluestem Lake	S	I		S		I	I	5	Nutrients, Sediment	Total phosphorus, Total nitrogen, Chlorophyll a, Sediment	Fish consumption assessment
LP2-L0120	Wildwood Lake	S	I		S		S	I	4r	Nutrients, High pH	Total phosphorus, Total nitrogen, Chlorophyll a	Lake recently renovated
LP2-L0130	Conestoga Lake	I	I		S		I	I	5	Algal toxins, Nutrients, Sedimentation	Total phosphorus, Total nitrogen, Chlorophyll a, Sediment	Fish consumption assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LP2-L0140	Olive Creek Lake	S	I		S		S	I	5	Ammonia, Arsenic Nutrients, High pH, Low dissolved oxygen	Ammonia, Arsenic, Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment, Lake recently renovated
LP2-L0150	Branched Oak Lake	S	I		S		S	I	5	Nutrients	Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment
LP2-L0160	Pawnee Lake	I	I		S		I	I	5	Nutrients, Arsenic, Algal Toxins, Sedimentation	Total phosphorus, Total nitrogen, Chlorophyll a, Arsenic, Sediment	Fish consumption assessment
LP2-L0170	Merganser Lake (25A)	NA	NA		NA		NA		3			
LP2-L0180	Teal Lake (27C)	NA	NA		NA		NA		3			
LP2-L0190	Red Cedar Lake	NA	NA		NA		NA		3			
LP2-L0200	Wild Plum Lake (26A)	NA	NA		NA		NA		3			
LP2-L0210	Tanglewood Lake (27C)	NA	NA		NA		NA		3			
LP2-L0220	Meadowlark Lake	NA	I		S		S	I	5	Nutrients, Low dissolved oxygen	Total phosphorus, Total nitrogen, Chlorophyll a	
LP2-L0230	Twin Lakes WMA Pond	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LP2-L0240	East Twin Lake	S	I		S		S	I	5	Nutrients	Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment
LP2-L0250	Timber Point Lake (6C)	NA	NA		NA		NA		3			
LP2-L0260	West Twin Lake	NA	I		S		S	I	5	Ammonia, Nutrients	Ammonia Total phosphorus, Total nitrogen, Chlorophyll a,	
LP2-L0270	Czechland Lake	NA	I		S		S	I	5	Nutrients, Fish consumption advisory	Total phosphorus, Total nitrogen, Chlorophyll a, Mercury	Fish consumption assessment
LP2-L0280	Redtail Lake	NA	NA		NA		NA		3			
Streams												
LP1-10000	Platte River	I	I	I	S		S	I	5	E. coli, Selenium, Atrazine-water supply, High pH	E. coli, Selenium, Atrazine, Unknown	E. coli TMDL approved 9/07, Fish consumption assessment
LP1-10100	Fourmile Creek		S		NA		NA	S	2			Aquatic community assessment
LP1-10110	Eightmile Creek		S		NA		NA	S	2			Aquatic community assessment
LP1-10111	Bachelor Branch		NA		NA		NA		3			
LP1-10200	Fourmile Creek		NA		NA		NA		3			
LP1-10210	Unnamed Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LP1-10300	Fourmile Creek		NA		NA		NA		3			
LP1-10400	Zwiebel Creek		NA		NA		NA	I	4b	High pH	pH	NPDES permit enforcement
LP1-10410	Unnamed Creek		NA		NA		NA		3			
LP1-10500	Zwiebel Creek		NA		NA		NA		3			
LP1-10600	Turkey Creek		NA		NA		NA		3			
LP1-10700	Cedar Creek		NA		NA		NA		3			
LP1-10710	Unnamed Creek		NA		NA		NA		3			
LP1-10800	Cedar Creek		NA		NA		NA		3			
LP1-10900	Springfield Creek		NA		NA		NA		3			
LP1-11000	Buffalo Creek		NA		NA		NA		3			
LP1-11100	Mill Creek		NA		NA		NA		3			
LP1-11200	Decker Creek	NA	S		NA		NA	S	2			Aquatic community assessment
LP1-11300	Fountain Creek		NA		NA		NA		3			
LP1-11400	Unnamed Creek		NA		NA		NA		3			
LP1-11500	Pawnee Creek		S		NA		NA	S	2			Aquatic community assessment
LP1-11510	West Branch Pawnee Creek		NA		NA		NA		3			
LP1-11600	Pawnee Creek		S		NA		NA	S	2			Aquatic community assessment
LP1-11700	Western Sarpy Ditch		NA		NA		NA		3			
LP1-20000	Platte River	I	I	I	S		S	I	5	E. coli, Atrazine-water supply, Fish consumption advisory	E. coli, Atrazine, Cancer risk & Hazard index compounds*	E. coli TMDL approved 9/07, Fish consumption assessment
LP1-20100	Clear Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LP1-20110	Upper Clear Creek		NA		NA		NA		3			
LP1-20200	Clear Creek		NA		NA		NA		3			
LP1-20300	Otoe Creek		NA		NA		NA		3			
LP1-20400	Skull Creek		NA		NA		NA		3			
LP1-20410	Unnamed Creek		NA		NA		NA		3			
LP1-20500	Skull Creek		NA		NA		NA		3			
LP1-20600	Shell Creek	NA	NA		NA		NA		3			
LP1-20610	Taylor Creek		NA		NA		NA		3			
LP1-20620	Loseke Creek		NA		NA		NA		3			
LP1-20621	Schaad Creek		NA		NA		NA		3			
LP1-20621.1	Unnamed Creek		NA		NA		NA		3			
LP1-20630	Loseke Creek		NA		NA		NA		3			
LP1-20631	Unnamed Creek		NA		NA		NA		3			
LP1-20640	Loseke Creek		NA		NA		NA		3			
LP1-20700	Shell Creek		I		S		S	I	5	May-June atrazine, Selenium	Atrazine, Selenium	Atrazine TMDL approved 9/07
LP1-20710	Unnamed Creek		NA		NA		NA		3			
LP1-20720	Elm Creek		NA		NA		NA		3			
LP1-20800	Shell Creek		I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
LP1-20810	North Shell Creek		NA		NA		NA		3			
LP1-20900	Shell Creek		NA		NA		NA		3			
LP1-21000	Lost Creek		NA		NA		NA		3			
LP1-21010	Shonka Ditch		S		NA		NA	S	2			Delist ammonia-compliance with NPDES permit
LP1-21100	Lost Creek		S		NA		NA	S	2			Aquatic community assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LP1-21200	Lost Creek		NA		NA		NA		3			
LP1-21300	Bone Creek		NA		NA		NA		3			
LP1-21310	Unnamed Creek		NA		NA		NA		3			
LP1-21400	Bone Creek		NA		NA		NA		3			
LP1-21500	Unnamed Creek		NA		NA		NA		3			
LP1-21600	Deer Creek		NA		NA		NA		3			
LP1-21700	Unnamed Creek		NA		NA		NA		3			
LP1-21800	Loup River Canal	S	I		NA	S	S	I	5	Fish consumption advisory	Hazard index compounds*	Fish consumption assessment
LP2-10000	Salt Creek	I	I		S		S	I	5	E. coli, Chloride Fish consumption advisory,	E. coli, Chloride, Hazard index compounds*	E. coli TMDL approved 9/07, Fish consumption assessment
LP2-10100	Wahoo Creek	I	I		S		S	I	5	E. coli, Selenium	E. coli, Selenium	E. coli TMDL approved 9/07, Aquatic community & Fish consumption assessment, Delist impaired aquatic community-new assessment shows full support
LP2-10110	Clear Creek	NA	S		S		S	S	2			Aquatic community assessment
LP2-10111	Silver Creek		NA		NA		NA		3			
LP2-10120	Clear Creek		NA		NA		NA		3			
LP2-10121	Johnson Creek		NA		NA		NA		3			
LP2-10130	Clear Creek		NA		NA		NA		3			
LP2-10140	Silver Creek		S		NA		NA	S	2			Aquatic community assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LP2-10150	Mosquito Creek		NA		NA		NA		3			
LP2-10160	Sand Creek		S		NA		NA	S	2			Aquatic community assessment
LP2-10161	Duck Creek		S		S		S	S	1			Aquatic community assessment
LP2-10170	Sand Creek		S		S		S	S	1			Aquatic community assessment
LP2-10171	Spring Creek		NA		NA		NA		3			
LP2-10180	Sand Creek		NA		NA		NA		3			
LP2-10200	Wahoo Creek		NA		NA		NA		3			
LP2-10210	Cottonwood Creek		I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
LP2-10211	Unnamed Creek		S		NA		NA	S	2			Aquatic community assessment
LP2-10220	Miller Branch		S		NA		NA	S	2			Aquatic community assessment
LP2-10230	North Fork Wahoo Creek		NA		NA		NA		3			
LP2-10231	Unnamed Creek		NA		NA		NA		3			
LP2-10240	North Fork Wahoo Creek		NA		NA		NA		3			
LP2-10300	Wahoo Creek		NA		NA		NA		3			
LP2-10310	Dunlap Creek		NA		NA		NA		3			
LP2-10400	Wahoo Creek		S		NA		NA	S	2			Aquatic community assessment
LP2-10500	Callahan Creek		I		NA		NA	I	4c		Iron	
LP2-10600	Robinson Creek		I		NA		NA	I	4c		Iron	
LP2-10700	Greenwood Creek		I		NA		NA	I	4c		Iron	

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LP2-10800	Dee Creek		I		NA		NA	I	4c		Iron	Aquatic community assessment
LP2-10900	Camp Creek		I				NA	I	4c		Iron	
LP2-11000	Rock Creek		I		S		S	I	4c		Iron	Fish consumption assessment
LP2-11010	North Fork Rock Creek		I		NA		NA	I	4c		Iron	Aquatic community assessment
LP2-11100	Rock Creek		S		NA		NA	S	2			Aquatic community assessment
LP2-11110	Ash Hollow Creek		NA		NA		NA		3			
LP2-11120	Little Rock Creek		NA		NA		NA		3			
LP2-11200	Rock Creek		NA		NA		NA		3			
LP2-20000	Salt Creek	I	I		S		S	I	5	E. coli, Ammonia, Chloride Fish consumption advisory, Impaired aquatic community	E. coli, Ammonia, Chloride Cancer risk & Hazard index compounds*, Mercury, Unknown	E. coli TMDL approved 9/07, Aquatic community & Fish consumption assessment
LP2-20100	Jordan Creek		NA		NA		NA		3			
LP2-20200	Stevens Creek		NA		NA		NA		3			
LP2-20300	Little Salt Creek		I		S		S	I	5	Copper, Chloride Selenium	Copper, Chloride, Selenium	
LP2-20400	Dead Man's Run	I	I		S		S	I	4a,c	E. coli, High pH	E. coli, Unknown	E. coli TMDL approved 9/07

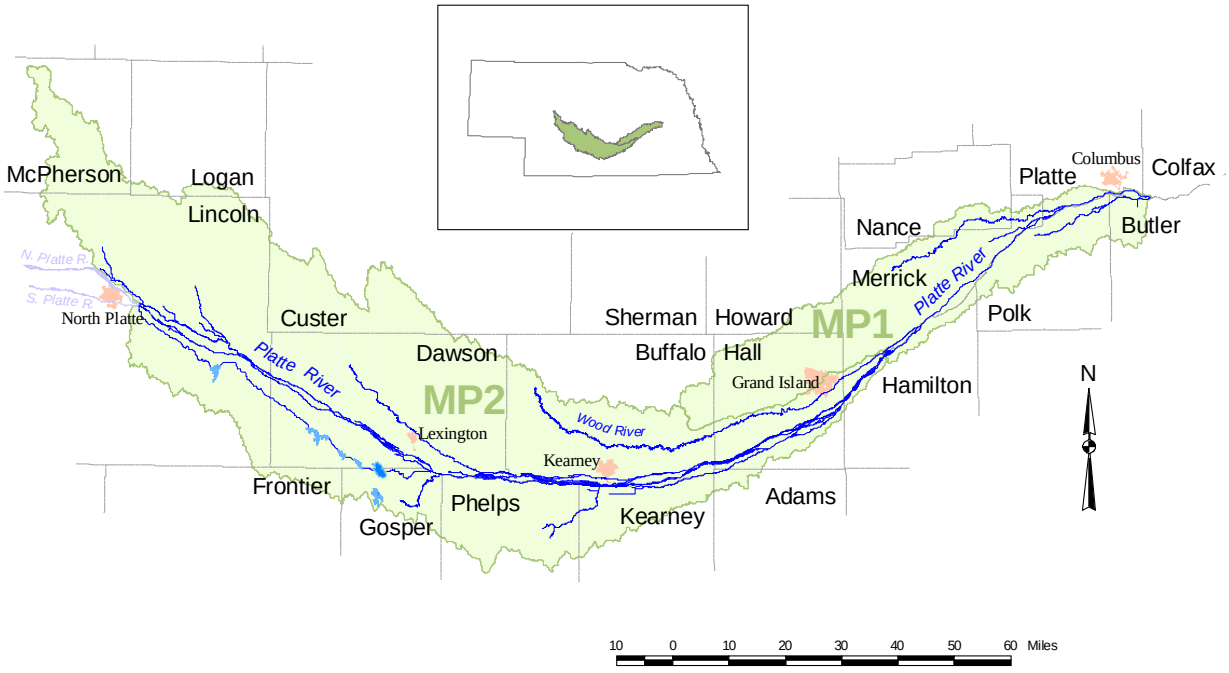
Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LP2-20500	Oak Creek	I	S		S		S	I	5	E. coli, Chloride	E. coli, Chloride	E. coli TMDL approved 9/07, Fish consumption assessment
LP2-20510	Elk Creek		NA		NA		NA		3			
LP2-20511	West Oak Creek		NA		NA		NA		3			
LP2-20520	Elk Creek		NA		NA		NA		3			
LP2-20600	Oak Creek	NA	NA		NA		NA		3			
LP2-20610	North Oak Creek		S		NA		NA	S	2			Aquatic community assessment
LP2-20611	Wagon Tongue Creek		NA		NA		NA		3			
LP2-20612	Bates Branch		S		NA		NA	S	2			Aquatic community assessment, Delist impaired aquatic community-new assessment shows full support
LP2-20700	Oak Creek		S		NA		NA	S	2			Aquatic community assessment
LP2-20710	Middle Oak Creek		I		S		S	I	5	Atrazine	Atrazine	Aquatic community assessment
LP2-20800	Oak Creek		I		S		S	I	5	Atrazine	Atrazine	
LP2-20900	Antelope Creek	I	I		S		S	I	5	E. coli, Selenium, Copper, Chloride, Conductivity	E. coli, Chloride, Selenium, Copper	E. coli and ammonia TMDL approved 9/07
LP2-21000	Middle Creek		I		S		S	I	5	Impaired aquatic community	Unknown	Aquatic community assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
LP2-21010	South Branch Middle Creek		NA		NA		NA		3			
LP2-21100	Middle Creek		I		S		S	I	4a	Atrazine	Atrazine	Atrazine TMDL approved 9/07
LP2-21200	Haines Branch		NA		NA		NA		3			
LP2-21210	Holmes Creek		S		S		S	S	1			
LP2-21300	Haines Branch		NA		NA		NA		3			
LP2-21310	Cheese Creek		NA		NA		NA		3			
LP2-21400	Haines Branch		NA		NA		NA		3			
LP2-21500	Beal Slough	NA	I		S		S	I	4c	High pH	Unknown	
LP2-30000	Salt Creek	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 9/07, Fish consumption assessment
LP2-30100	Cardwell Branch		NA		NA		NA		3			
LP2-30200	Hickman Branch		S		NA		NA	S	2			Aquatic community assessment
LP2-40000	Salt Creek		NA		NA		NA		3			
LP2-40100	Wittstruck Creek		NA		NA		NA		3			
LP2-40200	Spring Branch		NA		NA		NA		3			
LP2-40300	Olive Branch		I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community Assessment
LP2-40310	North Branch		S		NA		NA	S	2			Aquatic community assessment

* ***Cancer risk compounds*** -Aroclor-1248 (PCB-1248), Aroclor-1254 (PCB-1254), Aroclor-1260 (PCB-1260), cis-chlordane, Chlordane, trans-chlordane, DDD, DDE, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin

Hazard index compounds- Aroclor-1254 (PCB-1254), Lindane (g-BHC), cis-chlordane, Chlordane, trans-chlordane, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin, Mercury, Cadmium, Selenium

MIDDLE PLATTE RIVER BASIN (and Subbasins)



Middle Platte River Basin – Hydrologic Units 10200101, 10200102 and 10200103

The Middle Platte River Basin includes 29 designated stream segments and 95 designated lakes/reservoirs

Waterbody Type	Primary Contact Recreation	Aquatic Life CA[1]	Aquatic Life CB[1]	Aquatic Life WA[1]	Aquatic Life WB[1]	Water Supply – Public Drinking	Water Supply – Ag	Water Supply-Ind.	Aesthetics
Lakes	95	0	0	95	0	0	95	2	95
Streams	13	0	3	12	14	1	29	1	29

[1] CA = Coldwater Class A, CB = Coldwater Class B, WA = Warmwater Class A and WB = Warmwater Class B

Delisting/ Changes from 2006 & 2008 IRs

The following are waters and or parameters that were delisted – removed from category 5 or other significant changes from the 2006 and 2008 Integrated Reports (IRs).

MP2-L0230: Bassway Strip Lake No.1, MP2-L0240: Bufflehead Lake, MP2-L0580: Cozad Lake-
These lakes were listed as impaired for nutrients in the 2006 Integrated Report. EPA indicated that the nutrient values NDEQ used for the 2006 assessments were not acceptable and not suitable for Clean Water Act purposes. In February 2009, EPA deferred taking action on these waterbodies until the 2010 Integrated Report when mutually agreed upon nutrient assessment end points would be used to assess for nutrient impairments. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient samples exist for these waterbodies to assess for nutrient impairments, therefore the nutrient impairments will be delisted. These lakes will remain in category 5 because the aquatic life beneficial use is impaired by high pH.

MP2-L0540: Elwood Reservoir-This waterbody was impaired due to a fish consumption advisory in the 2008 Integrated Report and fish consumption advisory and nutrients in the 2006 IR. The most recent fish consumption assessment and nutrient data indicates that this waterbody no longer requires a fish consumption advisory and is not violating the 2010 nutrient criteria. This waterbody is now fully supporting all assigned designated uses and will be placed in category 1.

MP2-L0710: Jeffery Reservoir- The 2008 IR included this waterbody as impaired by excessive nutrients. The nutrient assessment process for 2008 was designed to provide numeric translators to the narrative aesthetic beneficial use criteria as defined in the State of Nebraska approved Title 117 – Nebraska Surface Water Quality Standards. EPA concluded that the nutrient values used to derive the numeric translators were not acceptable and could not be used for Clean Water Act purposes. For the 2010 Integrated Report, EPA and NDEQ agreed to an alternative set of nutrient assessment end points for this reporting cycle. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient data exits for this waterbody to assess for a nutrient impairment, therefore the nutrient impairment will be delisted. Additional parameters designed to protect aquatic life indicate this waterbody is supporting the aquatic life beneficial use. Lastly, the 2010 aesthetics beneficial use assessment for this waterbody demonstrates full support; therefore this waterbody will be relocated to category 2.

MP1-10100: Clear Creek – This stream was listed as impaired by pH and E. coli in the 2008 IR. Review of the assessment data shows that the pH in this stream meets Nebraska Water Quality Standards and the pH impairment will be delisted. However this stream will remain in category 5 due to E. coli and temperature impairments.

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
Lakes												
MP1-L0010	Lease Lake	NA	NA		NA		NA		3			
MP1-L0015	Silver Creek City Pond	S	NA		NA		S	S	2			
MP1-L0020	Mormon Trail Lake (SWA)	NA	S		NA		S	S	2			Fish consumption assessment
MP1-L0030	Hord Lake East	NA	S		NA		S	S	2			Fish consumption assessment
MP1-L0040	Hord Lake West	NA	NA		NA		NA		3			
MP1-L0050	Bader Memorial Lake No. 7	NA	NA		NA		NA		3			
MP1-L0060	Bader Memorial Lake No. 6	NA	NA		NA		NA		3			
MP1-L0070	Bader Memorial Lake No. 5	NA	NA		NA		NA		3			
MP1-L0080	Bader Memorial Lake No. 4	NA	NA		NA		NA		3			
MP1-L0090	Bader Memorial Lake No. 2	S	NA		NA		S	S	2			
MP1-L0100	Bader Memorial Lake No. 3	NA	NA		NA		NA		3			
MP1-L0110	Bader Memorial Lake No. 1	NA	NA		NA		NA		3			
MP1-L0120	Grand Island Detention Cell	NA	NA		NA		NA		3			
MP1-L0130	Cornhusker Lake (WMA)	NA	NA		NA		NA		3			
MP2-L0010	Grand Island Rest Area Lake (I-80 mile 315.0 S)	NA	NA		NA		NA		3			
MP2-L0020	Grand Island Pier Lake	NA	NA		NA		NA		3			
MP2-L0030	Grand Island L. E. Ray Lake	NA	S		NA		S	S	2			Fish consumption assessment
MP2-L0040	Grand Island Such's Lake	NA	I		NA		S	I	5	Nutrients	Total phosphorus, Total nitrogen, Chlorophyll a	
MP2-L0050	Mormon Island Lake (SWA)	NA	S		S		S	S	2			Fish consumption assessment
MP2-L0060	East Mormon Island Lake (SRA)	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
MP2-L0070	West Morman Island Lake (SRA)	S	I		S		S	I	5	Low DO	Unknown	
MP2-L0090	Alda Rest Area Lake (I-80 mile 306.0 N)	NA	S		S		S	S	2			
MP2-L0100	Cheyenne Lake (SRA)	NA	S		S		S	S	2			Fish consumption assessment
MP2-L0110	West Wood River Lake (WMA)	NA	NA		NA		NA		3			
MP2-L0120	War Axe Lake (SRA)	NA	S		S		S	S	2			
MP2-L0130	Windmill Lake No. 4 (SRA)	NA	NA		NA		NA		3			
MP2-L0140	Windmill Lake No. 5 (SRA)	NA	NA		NA		NA		3			
MP2-L0150	Windmill Lake No. 3 (SRA)	NA	NA		NA		NA		3			
MP2-L0160	Windmill Lake No. 2 (SRA)	NA	NA		NA		NA		3			
MP2-L0170	Windmill Lake No. 1 (SRA)	NA	NA		NA		NA		3			
MP2-L0180	Windmill Lake No. 6 (SRA)	NA	NA		NA		NA		3			
MP2-L0190	Bassway Strip Lake No. 5 (WMA)	NA	I		NA		S	I	5	Fish consumption advisory	Hazard index compounds*, Mercury	Fish consumption assessment
MP2-L0200	Bassway Strip Lake No. 4 (WMA)	NA	NA		NA		NA		3			
MP2-L0210	Bassway Strip Lake No. 3 (WMA)	NA	NA		NA		NA		3			
MP2-L0220	Bassway Strip Lake No. 2 (WMA)	NA	NA		NA		NA		3			
MP2-L0230	Bassway Strip Lake No. 1 (WMA)	NA	I		S		S	I	5	High pH	Unknown	Delist nutrients- insufficient data for assessment procedures
MP2-L0240	Bufflehead Lake (WMA)	NA	I		S		S	I	5	High pH	Unknown	Delist nutrients- insufficient data for assessment procedures

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
MP2-L0250	Ft. Kearny Lake No. 1	NA	NA		NA		NA		3			
MP2-L0260	Ft. Kearny Lake No. 2	NA	NA		NA		NA		3			
MP2-L0270	Ft. Kearny Lake No. 3	NA	NA		NA		NA		3			
MP2-L0280	Ft. Kearny Lake No. 4	NA	NA		NA		NA		3			
MP2-L0290	Ft. Kearny Lake No. 5	NA	NA		NA		NA		3			
MP2-L0300	Ft. Kearny Lake No. 6	NA	NA		NA		NA		3			
MP2-L0310	Ft. Kearny Lake No. 7	NA	NA		NA		NA		3			
MP2-L0320	Kea Lake (WMA)	NA	I		NA		S	I	5	Fish consumption advisory	Hazard index compounds*, Mercury	Fish consumption assessment
MP2-L0330	Kearney Lake	NA	NA		NA		NA		3			
MP2-L0340	Kea West Lake (WMA)								3			
MP2-L0350	North Kearney Rest Area Lake (I-80 mile 271.0 N)	NA	NA		NA		NA		3			
MP2-L0360	Cottonmill Lake	NA	I		S		S	I	5	Fish consumption advisory	Mercury	Fish consumption assessment
MP2-L0370	South Kearney Rest Area Lake (I-80 mile 269.0 S)	NA	NA		NA		NA		3			
MP2-L0380	East Odessa Lake (WMA)	NA	NA		NA		NA		3			
MP2-L0390	Union Pacific Lake (SRA)	NA	NA		NA		NA		3			
MP2-L0400	Coot Shallows Lake (WMA)	NA	S		S		S	S	2			
MP2-L0410	Blue Hole East Lake (WMA)	NA	I		S		S	I	5	Nutrients, High pH	Total phosphorus, Chlorophyll a	
MP2-L0420	Sandy Channel Lake (WMA)	NA	S		S		S	S	2			Fish consumption assessment
MP2-L0430	Blue Hole Lake (Elm Creek) (WMA)	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
MP2-L0440	West Elm Creek Lake (WMA)	NA	NA		NA		NA		3			
MP2-L0450	Overton Lake (WMA)	NA	NA		NA		NA		3			
MP2-L0460	Dogwood Lake (WMA)	NA	NA		NA		NA		3			
MP2-L0470	Dawson County Museum Lake	NA	NA		NA		NA		3			
MP2-L0480	Interstate lake (Lexington)	NA	NA		NA		NA		3			
MP2-L0490	Plum Creek Park Lake (Lexington)	NA	NA		NA		NA		3			
MP2-L0500	Phillips Lake	NA	I		NA		S	I	5	Fish consumption advisory	Hazard index compounds*, Mercury	Fish consumption assessment
MP2-L0510	Bossung Lake	NA	NA		NA		NA		3			
MP2-L0520	Johnson Lake	S	I		S	S	S	I	5	Nutrients	Total phosphorus, Chlorophyll a	Fish consumption assessment
MP2-L0530	Buffalo Creek Lake	NA	NA		NA		NA		3			
MP2-L0540	Elwood Reservoir	S	S		S		S	S	1			Delist fish consumption advisory-new assessment indicates full support, Delist nutrients- insufficient data for assessment procedures
MP2-L0550	Darr Lake (WMA)	NA	NA		NA		NA		3			
MP2-L0560	Plum Creek Lake	NA	S		NA		S	S	2			Fish consumption assessment
MP2-L0570	Gallagher Canyon Reservoir	NA	S		S		S	S	2			Fish consumption assessment
MP2-L0580	Cozad Lake (WMA)	NA	I		S		S	I	5	High pH	Unknown	Fish consumption assessment, Delist nutrients- insufficient data for assessment procedures
MP2-L0590	West Cozad Lake (WMA)	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
MP2-L0600	East Willow Island Lake (WMA)	NA	NA		NA		NA		3			
MP2-L0610	Willow Island Lake (WMA)	NA	NA		NA		NA		3			
MP2-L0620	Midway Lakes (8 Lakes)	NA	S		NA		S		2			Fish consumption assessment
MP2-L0630	East Gothenburg Lake (WMA)	NA	NA		NA		NA		3			
MP2-L0640	Little Canyon Lake No. 2	NA	NA		NA		NA		3			
MP2-L0650	Lake Helen	NA	I		NA		S	I	5	Low dissolved oxygen	Unknown	
MP2-L0660	Little Canyon Lake No. 1	NA	NA		NA		NA		3			
MP2-L0680	West Gothenburg Lake (WMA)	NA	S		S		S	S	2			
MP2-L0690	Brady Lake (WMA)	NA	S		S		S	S	2			
MP2-L0700	Chester Island Lake (WMA)	NA	NA		NA		NA		3			
MP2-L0710	Jeffery Reservoir	NA	S		S		S	S	2			Fish consumption assessment, Delist nutrients- insufficient data for assessment procedures
MP2-L0720	West Brady Lake (WMA)	NA	NA		NA		NA		3			
MP2-L0730	Snell Canyon Lake No. 2	NA	NA		NA		NA		3			
MP2-L0740	Snell Canyon Lake No. 1	NA	NA		NA		NA		3			
MP2-L0750	Maxwell Rest Area Lake (I-80 mile 194.0 N)	NA	NA		NA		NA		3			Lake misidentified in 2008 IR, assessment on MP2-L0800
MP2-L0760	Target Lake	NA	NA		NA		NA		3			
MP2-L0770	Fort McPherson Lake (SWA)	NA	S		NA		S	S	2			Fish consumption assessment
MP2-L0780	Cottonwood Canyon Lake	NA	NA		NA		NA		3			
MP2-L0790	I-80 BLM Lake	NA	NA		NA		NA		3			
MP2-L0800	West Maxwell Lake (WMA)	NA	S		NA		S	S	2			Fish consumption assessment
MP2-L0810	Box Elder Canyon Lake	NA	NA		NA		NA		3			
MP2-L0820	Crystal Lake	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
MP2-L0840	Fremont Slough Lake (WMA)	NA	NA		NA		NA		3			
Streams												
MP1-10000	Platte River	I	S		S		S	I	4a	Fecal-E. coli	E. coli	Fecal coliform TMDL approved 5/03
MP1-10100	Clear Creek	I	I		S		S	I	5	E. coli, High Temperature	E. coli, Temperature	Delist pH mistakenly listed in 2008, Aquatic community assessment
MP1-10110	Wilson Creek		NA		NA		NA		3			
MP1-10120	South Channel Platte River		NA		NA		NA		3			
MP1-10200	Loup Power Canal	I	NA		NA		NA	I	5	E. coli	E. coli	
MP1-20000	Platte River	S	S		S		S	S	1			Fecal coliform TMDL approved 5/03
MP1-20100	Prairie Creek		I		S		S	I	5	Low dissolved oxygen	Unknown	Aquatic community assessment
MP1-20200	Silver Creek		NA		NA		NA		3			
MP1-20300	Silver Creek		S		NA		NA	S	2			Aquatic community assessment
MP2-10000	Platte River	S	S	S	S		S	S	1			
MP2-10100	Wood River		NA		NA		NA		3			
MP2-10200	Wood River		I		S		S	I	5	Selenium	Selenium	
MP2-10300	Wood River		NA		NA		NA		3			
MP2-10400	Crooked Creek		NA		NA		NA		3			
MP2-20000	Platte River	I	S		S		S	I	4a	E. coli	E. coli	Fecal coliform TMDL approved 5/03, Aquatic community & Fish consumption assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
MP2-20100	North Dry Creek		S		NA		NA	S	2			Aquatic community assessment
MP2-20110	Whiskey Slough		NA		NA		NA		3			
MP2-20120	Unnamed Creek		NA		NA		NA		3			
MP2-20200	Turkey Creek	NA	NA		NA		NA		3			
MP2-20300	Spring Creek	I	S		S		S	I	5	E. coli	E. coli	Aquatic community assessment, IBI score impacted by low water†
MP2-20400	Plum Creek		S		S		S	S	1			
MP2-20500	Tri-County Canal	NA	NA		NA	NA	NA		3			
MP2-30000	Platte River	I	S		S		S	I	5	E. coli	E. coli	
MP2-40000	Platte River	S	S		S		S	S	1			Fecal coliform TMDL approved 5/03, Aquatic community assessment
MP2-40100	Pawnee Creek		S		NA		NA	S	2			Aquatic community assessment
MP2-40200	Pawnee Slough	NA	NA		NA		NA		3			
MP2-40300	Unnamed Slough		NA		NA		NA		3			
MP2-40400	White Horse Creek	NA	NA		NA		NA		3			
MP2-40410	Unnamed Creek		NA		NA		NA		3			
Wetlands												
MP2-Undesig.	Cottonwood WPA‡		NA		NA		NA		3			
MP2-Undesig.	Linder WPA‡		NA		NA		NA		3			

* ***Cancer risk compounds*** -Aroclor-1248 (PCB-1248), Aroclor-1254 (PCB-1254), Aroclor-1260 (PCB-1260), cis-chlordane, Chlordane, trans-chlordane, DDD, DDE, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin.
Hazard index compounds- Aroclor-1254 (PCB-1254), Lindane (g-BHC), cis-chlordane, Chlordane, trans-chlordane, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin, Mercury, Cadmium, Selenium.

†See Appendix D: Ecological Justification for Excluding Specific Bio-Indicator Results When Determining Attainment Status of the Aquatic Life Beneficial Use for Nebraska's 2010 Water Quality Integrated Report

‡ See Appendix B: External Data for USFWS atrazine data collected from these wetlands.

MISSOURI TRIBUTARIES RIVER BASIN

Missouri Tributaries Basin – Hydrologic Units 10170101, 10230001 and 10230006

The Missouri Tributaries Basin includes 136 designated stream segments and 30 designated lakes. The waterbody assessment also included a lake that has not been identified in Title 117 – Nebraska Surface Water Quality Standards.

Waterbody Type	Primary Contact Recreation	Aquatic Life CA[1]	Aquatic Life CB[1]	Aquatic Life WA[1]	Aquatic Life WB[1]	Water Supply – Public Drinking	Water Supply – Ag	Water Supply-Ind.	Aesthetics
Lakes	30	0	0	30	0	1	29	1	30
Streams	21	0	3	15	118	2	136	1	136

[1] CA = Coldwater Class A, CB = Coldwater Class B, WA = Warmwater Class A and WB = Warmwater Class B

Delisting/ Changes from 2006 & 2008 IRs

The following are waters and or parameters that were delisted – removed from category 5 or other significant changes from the 2006 and 2008 Integrated Reports (IRs).

MT1-L0120: Glenn Cunningham Lake-This waterbody was impaired by nutrients in the 2008 Integrated Report and placed in category 5. This reservoir was recently renovated and will now be placed in category 4r.

MT1-10110: Big Papillion Creek, MT-10111: Little Papillion Creek, MT1-10120: Big Papillion Creek and MT1-10200: Papillion Creek- The 2008 Integrated Report listed these waterbodies as impaired due to excessive E. coli concentrations and they were placed in category 5. On September 29, 2009, EPA Region 7 approved the required E. coli TMDLs for these waterbodies. These waterbodies have no other water quality impairments and will now be placed in category 4a.

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
Lakes												
MT1-L0010	Offutt Lake	NA	NA		NA		NA		3			
MT1-L0020	Haworth Park Lake (Bellevue)	NA	NA		NA		NA		3			
MT1-L0023	Halleck Park Lake(Papillion)	NA	NA		NA		S	S	2			
MT1-L0025	Walnut Creek Lake	S	I		S		S	I	5	Fish consumption advisory, Nutrients	Hazard index compounds*, Mercury, Total phosphorous, Total nitrogen, Chlorophyll a	Fish consumption assessment
MT1-L0030	Wehrspann Lake (Site No. 20)	S	I		S		S	I	5	Fish consumption advisory, Nutrients	Hazard index compounds*, Mercury, Total phosphorous, Total nitrogen, Chlorophyll a	Fish consumption assessment
MT1-L0040	Hitchcock Park Lake (Omaha)	NA	NA		NA		NA		3			
MT1-L0050	Ed Zorinsky Lake (Site No. 18)	S	I		S		S	I	5	Fish consumption advisory, Nutrients	Hazard index compounds*, Mercury, Total phosphorous, Total nitrogen, Chlorophyll a	Sedimentation and Nutrient TMDLs approved September 2002, Fish consumption assessment
MT1-L0060	Hanscom Park Lake (Omaha)	NA	NA		NA		NA		3			
MT1-L0070	Fontenelle Park Lake (Omaha)	NA	NA		NA		NA		3			
MT1-L0080	Benson Park Lake	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
MT1-L0090	Carter Lake (Omaha)	I	I		S		I	I	5	Algal toxins, Fish consumption advisory, Nutrients, Algae blooms	Hazard index compounds*, Total phosphorus, Total nitrogen, Chlorophyll a	TMDL approved September 2007, Delist pH data shows full support, Fish consumption assessment
MT1-L0100	Standing Bear Lake (Site No. 16)	S	I		S		I	I	5	Fish consumption advisory, Nutrients, Sedimentation	Hazard index compounds*, Mercury, Total phosphorus, Total nitrogen, Chlorophyll a, Sediment	Sedimentation and Nutrient TMDL approved July 2003. Fish consumption assessment
MT1-L0110	Miller Park Lake (Omaha)	NA	NA		NA		NA		3			
MT1-L0120	Glenn Cunningham Lake (Site No. 11)	S	I		S		S	I	4r	Nutrients	Total phosphorus, Total nitrogen, Chlorophyll a	Delist nutrients-lake recently renovated
MT1-L0130	Papio D-4 Lake	NA	NA		NA		NA		3			
MT1-L0140	DeSoto Lake (DeSoto NWR)	NA	S		NA		S	S	2			Fish consumption assessment
MT1-L0150	Summit Lake	S	I		S		S	I	5	Fish consumption advisory, Nutrients	Hazard index compounds*, Mercury, Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment, Lake recently renovated
MT1-L0160	Mud Creek SCS Pond	NA	NA		NA		NA		3			
MT1-L0170	Middle Decatur Bend Lake (WMA)	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
MT1-L0180	Omadi Bend Lake (WMA)	NA	NA		NA		NA		3			
MT1-L0190	Gateway Lake	NA	NA		NA		NA		3			
MT1-L0200	Crystal Cove Lake (South Sioux City)	S	I		NA		S	I	5	Fish consumption advisory	Hazard index compounds*, Mercury	Fish consumption assessment
MT1-ND	Candlewood Lake	S	S		NA		I	I	5	Sediment	Sediment	
MT2-L0005	Powder Creek Lake	NA	I		S		S	I	5	Nutrients	Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment
MT2-L0010	Buckskin Hills Lake	NA	I		S		S	I	5	Nutrients	Total phosphorus, Chlorophyll	Fish consumption assessment
MT2-L0020	Chalkrock Lake	NA	I		S		S	I	5	Fish consumption advisory, Nutrients	Hazard index compounds*, Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment
MT2-L0030	Cottonwood Lake (Lake Yankton)	S	S		NA		S	S	2			Fish consumption assessment
MT2-L0040	Lewis and Clark Lake	S	I	S	S	S	S	I	5	Nutrients	Total phosphorus, Total nitrogen	Fish consumption assessment
MT2-L0050	Crofton City Lake	NA	NA		NA		NA		3			
MT2-L0060	Plainview Country Club Lake	NA	NA		NA		NA		3			
Streams												
MT1-10000	Missouri River	S	I	S	S	S	S	I	5	Fish consumption advisory	Cancer Risk & Hazard Index compounds*	Fish consumption assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
MT1-10100	Papillion Creek	I	I		S		S	I	5	E. coli, Selenium, Fish consumption advisory	E. coli, Selenium, Cancer Risk & Hazard Index compounds*	E. coli TMDL approved 9/09, Fish consumption assessment
MT1-10110	Big Papillion Creek	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 9/09, Fish consumption assessment
MT1-10111	Little Papillion Creek	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 9/09
MT1-10111.1	Cole Creek	I	I		S		S	I	5	E. coli, Low dissolved oxygen	E. coli, Unknown	E. coli TMDL approved 9/09
MT1-10111.2	Thomas Creek		NA		NA		NA		3			
MT1-10112	Little Papillion Creek		S		S		S	S	1			
MT1-10120	Big Papillion Creek	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 9/09, Aquatic community assessment
MT1-10121	Butter Flat Creek		NA		NA		NA		3			
MT1-10130	Big Papillion Creek		NA		NA		NA		3			
MT1-10131	Unnamed Creek		NA		NA		NA		3			
MT1-10132	Northwest Branch		NA		NA		NA		3			
MT1-10140	Big Papillion Creek		NA		NA		NA		3			
MT1-10200	Papillion Creek	I	NA		NA		NA	I	4a	E. coli	E. coli	E. coli TMDL approved 9/09
MT1-10210	Walnut Creek		I		S		S	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
MT1-10220	Hell Creek		NA		NA		NA		3			
MT1-10230	South Papillion Creek		NA		NA		NA		3			
MT1-10231	Unnamed Creek		S		S		S	S	2			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
MT1-10240	South Papillion Creek		I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
MT1-10250	West Papillion Creek		I		NA		NA	I	5	Fish consumption advisory	Cancer Risk & Hazard Index compounds*	Fish consumption assessment
MT1-10251	Boxelder Creek		S		S		S	S	1			
MT1-10252	North Branch West Papillion Creek		NA		NA		NA		3			
MT1-10260	West Papillion Creek		NA		NA		NA		3			
MT1-10300	Ponca Creek		NA		NA		NA		3			
MT1-10400	Deer Creek		NA		NA		NA		3			
MT1-10500	Turkey Creek		NA		NA		NA		3			
MT1-10600	Moores Creek		NA		NA		NA		3			
MT1-10700	Long Creek		S		NA		NA	S	2			Aquatic community assessment
MT1-10710	Mill Creek		NA		NA		NA		3			
MT1-10800	Long Creek		I		NA		NA	I	4c	Impaired aquatic community	In-stream structures prevent fish passage	Aquatic community assessment
MT1-10900	Cameron Ditch		NA		NA		NA		3			
MT1-10910	Couble Creek		NA		NA		NA		3			
MT1-10920	South Creek		NA		NA		NA		3			
MT1-10930	North Creek		NA		NA		NA		3			
MT1-10940	Stuart Creek		NA		NA		NA		3			
MT1-11000	Cameron Ditch		NA		NA		NA		3			
MT1-11100	Hill Creek		NA		NA		NA		3			
MT1-11110	New York Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
MT1-11120	Carr Creek		NA		NA		NA		3			
MT1-11121	Davis Creek		NA		NA		NA		3			
MT1-11200	Hill Creek		NA		NA		NA		3			
MT1-11300	Combination Ditch		NA		NA		NA		3			
MT1-11400	Combination Ditch		NA		NA		NA		3			
MT1-11500	Tekamah Creek		NA		NA		NA		3			
MT1-11510	Silver Creek		I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
MT1-11600	Tekamah Creek		S		NA		NA	S	2			Aquatic community assessment
MT1-11700	Elm Creek		NA		NA		NA		3			
MT1-11710	Lone Tree Creek		NA		NA		NA		3			
MT1-11800	Wood Creek		S		NA		NA	S	2			Aquatic community assessment
MT1-11900	Blackbird Creek	NA	NA		NA		NA		3			
MT1-11910	South Blackbird Creek		NA		NA		NA		3			
MT1-11920	South Blackbird Creek		NA		NA		NA		3			
MT1-11930	North Blackbird Creek		NA		NA		NA		3			
MT1-11931	Unnamed Creek		S		NA		NA	S	2			Aquatic community assessment
MT1-11940	North Blackbird Creek		NA		NA		NA		3			
MT1-12000	Omaha Creek	NA	NA		NA		NA		3			
MT1-12100	Omaha Creek		I		S		S	I	5	Fish consumption advisory	Cancer Risk & Hazard Index compounds*	Aquatic community & Fish consumption assessment
MT1-12110	Fiddlers Creek		NA		NA		NA		3			
MT1-12120	Wigle Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
MT1-12130	Turtle Creek		NA		NA		NA		3			
MT1-12140	Morgan Creek		NA		NA		NA		3			
MT1-12150	North Omaha Creek		I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
MT1-12151	Unnamed Creek		NA		NA		NA		3			
MT1-12152	Unnamed Creek		NA		NA		NA		3			
MT1-12160	North Omaha Creek		NA		NA		NA		3			
MT1-12170	South Omaha Creek		NA		NA		NA		3			
MT1-12171	Cow Creek		I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
MT1-12180	South Omaha Creek		NA		NA		NA		3			
MT1-12200	Pigeon Creek		S		NA		NA	S	2			Aquatic community assessment
MT1-12300	Pigeon Creek		S		NA		NA	S	2			Aquatic community assessment
MT2-10000	Missouri River	S	S	S	S		S	S	1			Fish consumption assessment
MT2-10100	Elk Creek	NA	NA		NA		NA		3			
MT2-10200	Elk Creek		S		NA		NA	S	2			Aquatic community assessment
MT2-10210	Otter Creek		NA		NA		NA		3			
MT2-10211	Minnow Creek		NA		NA		NA		3			
MT2-10220	Otter Creek		NA		NA		NA		3			
MT2-10300	Elk Creek		I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
MT2-10310	Pigeon Creek		NA		NA		NA		3			
MT2-10400	Elk Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
MT2-10500	Aowa Creek	NA	S		NA		NA	S	2			Aquatic community and fish consumption assessment
MT2-10510	Badger Creek		NA		NA		NA		3			
MT2-10520	South Creek	NA	NA		NA		NA		3			
MT2-10521	Daily Branch	NA	NA		NA		NA		3			
MT2-10530	South Creek	NA	NA		NA		NA		3			
MT2-10531	Jordan Creek		S		NA		NA	S	2			Aquatic community assessment
MT2-10540	South Creek		NA		NA		NA		3			
MT2-10600	Aowa Creek		NA		NA		NA		3			
MT2-10610	Silver Creek		NA		NA		NA		3			
MT2-10620	Powder Creek		NA		NA		NA		3			
MT2-10700	Aowa Creek		NA		NA		NA		3			
MT2-10800	Turkey Creek		NA		NA		NA		3			
MT2-10900	Walnut Creek		NA		NA		NA		3			
MT2-11000	Lime Creek		I		NA		NA	I	5	Impaired aquatic community	unknown	
MT2-11010	West Branch Lime Creek		NA		NA		NA		3			
MT2-11100	Lime Creek		NA		NA		NA		3			
MT2-11200	Ames Creek		NA		NA		NA		3			
MT2-11300	Bow Creek	NA	NA		NA		NA		3			
MT2-11310	West Bow Creek	NA	S		NA		NA	S	2			Aquatic community assessment
MT2-11311	Second Bow Creek		NA		NA		NA		3			
MT2-11311.1	Unnamed Creek		NA		NA		NA		3			
MT2-11312	Second Bow Creek		NA		NA		NA		3			

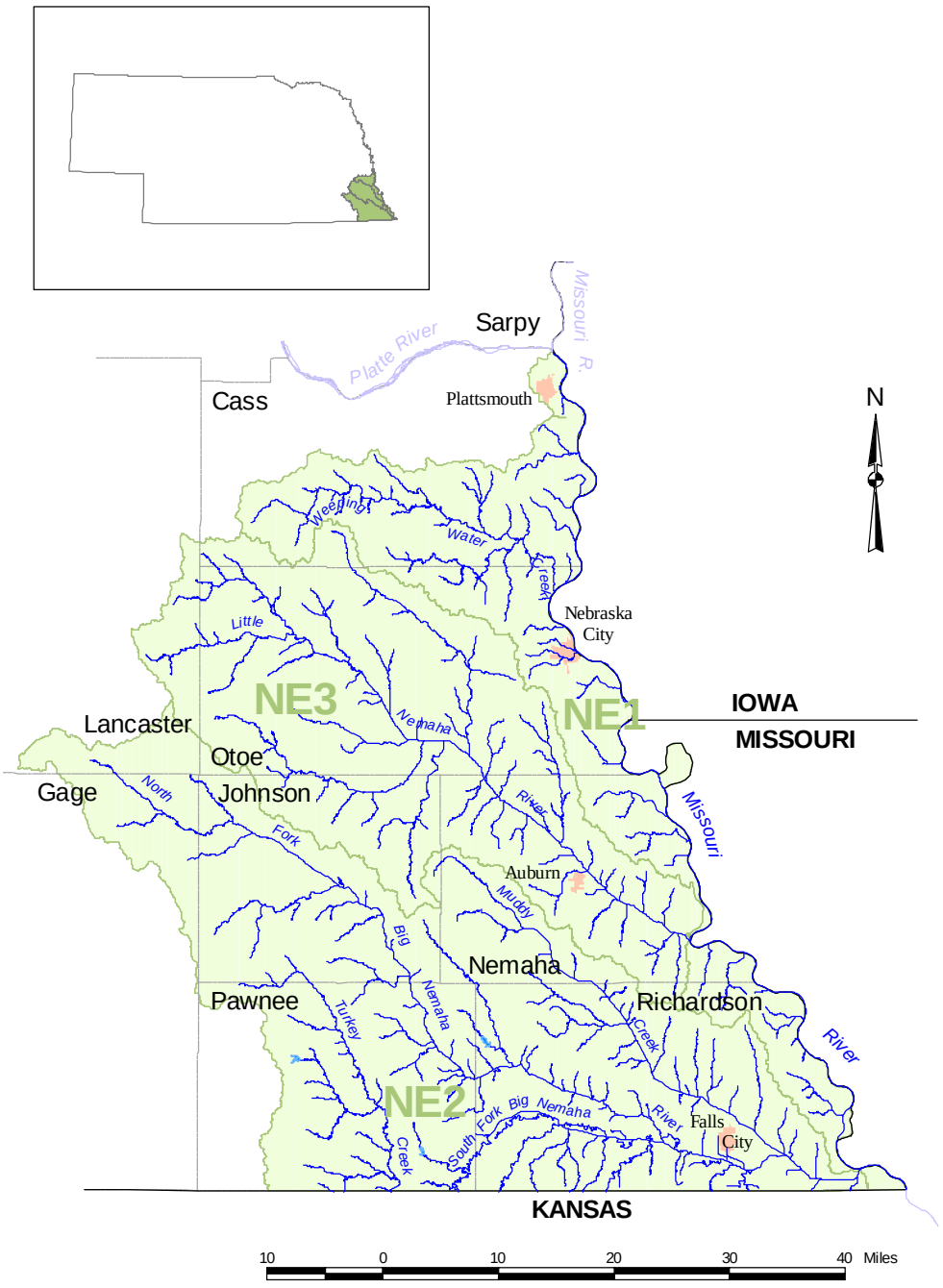
Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
MT2-11320	West Bow Creek		S		NA		NA	S	2			Aquatic community assessment
MT2-11400	Bow Creek	NA	S		NA		NA	S	2			Fish consumption assessment
MT2-11410	East Bow Creek	NA	S		NA		NA	S	2			Aquatic community assessment
MT2-11411	Unnamed Creek		NA		NA		NA		3			
MT2-11412	Unnamed Creek		NA		NA		NA		3			
MT2-11420	East Bow Creek		NA		NA		NA		3			
MT2-11500	Bow Creek		S		NA		NA	S	2			Aquatic community assessment
MT2-11510	Dead Creek		NA		NA		NA		3			
MT2-11520	Norwegian Bow Creek		S		NA		NA	S	2			Aquatic community assessment
MT2-11521	Unnamed Creek		S		NA		NA	S	2			Aquatic community assessment
MT2-11600	Bow Creek		NA		NA		NA		3			
MT2-11610	Pearl Creek		NA		NA		NA		3			
MT2-11611	Kerloo Creek		NA		NA		NA		3			
MT2-11620	Pearl Creek		NA		NA		NA		3			
MT2-11700	Bow Creek		NA		NA		NA		3			
MT2-11710	Unnamed Creek		NA		NA		NA		3			
MT2-11800	Antelope Creek		NA		NA		NA		3			
MT2-11900	Beaver Creek		NA		NA		NA		3			
MT2-12000	Beaver Creek		S		NA		NA	S	2			Aquatic community assessment
MT2-12100	Weigand Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
MT2-12200	Devils Nest Creek		NA		NA		NA		3			
MT2-12300	Cooks Creek		NA		NA		NA		3			
MT2-12400	Bazile Creek	NA	S		NA		NA	S	2			Aquatic community and fish consumption assessment
MT2-12410	Lost Creek		NA		NA		NA		3			
MT2-12420	Howe Creek		S		NA		NA	S	2			Aquatic community assessment
MT2-12421	Unnamed Creek		NA		NA		NA		3			
MT2-12500	Bazile Creek	NA	NA		NA		NA		3			
MT2-12510	Little Bazile Creek		S		NA		NA	S	2			Aquatic community assessment
MT2-12511	Unnamed Creek		NA		NA		NA		3			
MT2-12520	Little Bazile Creek		NA		NA		NA		3			
MT2-12600	Bazile Creek		NA		NA		NA		3			
MT2-12610	Spring Creek		NA		NA		NA		3			
MT2-12620	Unnamed Creek		S		NA		NA	S	2			Aquatic community assessment
MT2-12630	Unnamed Creek		NA		NA		NA		3			
MT2-12700	Bazile Creek		NA		NA		NA		3			

* ***Cancer risk compounds*** -Aroclor-1248 (PCB-1248), Aroclor-1254 (PCB-1254), Aroclor-1260 (PCB-1260), cis-chlordane, Chlordane, trans-chlordane, DDD, DDE, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin

Hazard index compounds- Aroclor-1254 (PCB-1254), Lindane (g-BHC), cis-chlordane, Chlordane, trans-chlordane, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin, Mercury, Cadmium, Selenium

† See Appendix D: Ecological Justification for Excluding Specific Bio-Indicator Results When Determining Attainment Status of the Aquatic Life Beneficial Use for Nebraska's 2010 Water Quality Integrated Report



NEMAHA RIVER BASIN (and Subbasins)

Nemaha Basin – Hydrologic Units 10240001, 10240005, 10240006 and 10240007

The Nemaha River Basin includes 326 designated stream segments and 33 designated lake/reservoirs.

Waterbody Type	Primary Contact Recreation	Aquatic Life CA[1]	Aquatic Life CB[1]	Aquatic Life WA[1]	Aquatic Life WB[1]	Water Supply – Public Drinking	Water Supply – Ag	Water Supply-Ind.	Aesthetics
Lakes	33	0	0	33	0	0	33	0	33
Streams	20	0	0	40	286	2	326	1	326

[1] CA = Coldwater Class A, CB = Coldwater Class B, WA = Warmwater Class A and WB = Warmwater Class B

Delisting/ Changes from 2006 & 2008 IRs

The following are waters and or parameters that were delisted – removed from category 5 or other significant changes from the 2006 and 2008 Integrated Reports (IRs).

NE3-L0045: Wirth Brothers Lake (Site 27)- This lake was listed as impaired by excessive E. coli in the 2008 Integrated Report. The assessment of additional data for the 2010 Integrated Report found this lake to be fully supporting all beneficial uses. The E. coli impairment will be delisted and this lake will be moved to category 1.

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
Lakes												
NE1-L0010	Steinhart Park Lake (Nebraska City)	NA	NA		NA		NA		3			
NE1-L0020	Weeping Water City Lake	NA	NA		NA		S	S	2			
NE1-L0030	Plattsmouth City Lake	NA	NA		NA		NA		3			
NE1-L0040	Randall Schilling Lake No 1 (WMA)	NA	NA		NA		NA		3			
NE1-L0050	Randall Schilling Lake No 2 (WMA)	NA	NA		NA		NA		3			
NE2-L0010	Falls City Lake (Stanton Lake)	NA	NA		NA		NA		3			
NE2-L0020	Verdon Lake (SRA)	NA	I		S		S	I	5	Fish consumption advisory	Hazard index compounds*, Mercury	Fish consumption assessment
NE2-L0030	Humboldt City Lake	NA	NA		NA		NA		3			
NE2-L0040	Kirkman's Cove Lake	I	I		S		S	I	5	Algal toxins, Nutrients	Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment, Phosphorus TMDL approved October 2002
NE2-L0050	Kinters Ford Lake (WMA)	NA	NA		NA		NA		3			
NE2-L0060	Twin Oaks Lake No. 9 (WMA)	NA	NA		NA		NA		3			
NE2-L0070	Twin Oaks Lake No. 7 (WMA)	NA	NA		NA		NA		3			
NE2-L0080	Prairie Knoll Lake (WMA)	NA	I		NA		S	I	5	Fish consumption advisory	Hazard index compounds*, Mercury	Fish consumption assessment
NE2-L0090	Iron Horse Trail Lake (WMA)	I	I		S		I	I	5	Algal Toxins, Nutrients, Fish consumption advisory, Sedimentation	Total phosphorus, Total nitrogen, Chlorophyll a, Mercury, Sediment	Phosphorus & Sediment TMDLs approved January 2006, Delist pH- data shows full support, Fish consumption assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE2-L0100	Pawnee City Lake	NA	I		NA		S	I	5	Nutrients	Total phosphorus, Total nitrogen, Chlorophyll a	
NE2-L0110	Techumseh City Lake	NA	NA		NA		S	S	2			
NE2-L0120	Burchard Lake (WMA)	NA	I		S		S	I	5	Nutrients	Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment
NE2-L0130	Pawnee Prairie Lake No. 3 (WMA)	NA	NA		NA		NA		3			
NE2-L0140	Pawnee Prairie Lake No. 6 (WMA)	NA	NA		NA		NA		3			
NE2-L0150	Pawnee Prairie Lake No. 8 (WMA)	NA	NA		NA		NA		3			
NE2-L0160	Pawnee Prairie Lake No. 10 (WMA)	NA	NA		NA		NA		3			
NE2-L0170	Pawnee Prairie Lake No. 1 (WMA)	NA	NA		NA		NA		3			
NE2-L0180	Pawnee Prairie Lake No. 7 (WMA)	NA	NA		NA		NA		3			
NE2-L0190	Pawnee Prairie Lake No. 9 (WMA)	NA	NA		NA		NA		3			
NE2-L0200	Site 41-B Lake	NA	NA		NA		NA		3			
NE2-L0210	Big Nemaha Lake (27R)	NA	NA		NA		NA		3			
NE3-L0010	Auburn City Park Lake	NA	NA		NA		NA		3			
NE3-L0020	Gritzka Lake (Talmage)	NA	NA		NA		NA		3			
NE3-L0030	Prairie Owl Lake	NA	I		S		S	I	5	Nutrients	Total phosphorus	
NE3-L0040	Wilson Creek Lake 2X (WMA)	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE3-L0045	Wirth Brothers Lake (Site 27)	S	S		S		S	S	1			Delist E. coli-new assessment shows full support
NE3-L0050	Osage Lake No .1 (WMA)	NA	NA		NA		NA		3			
NE3-L0060	Osage Lake No. 3 (WMA)	NA	NA		NA		NA		3			
Streams												
NE1-10000	Missouri River	I	I	S	S	S	S	I	5	E. coli, Fish consumption advisory	E. coli, Cancer Risk & Hazard Index compounds*	E. coli TMDL approved 9/07 Fish consumption assessment
NE1-10100	Winnebago Creek		NA		NA		NA		3			
NE1-10110	Bean Creek		NA		NA		NA		3			
NE1-10200	Winnebago Creek		I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
NE1-10210	Unnamed Creek		NA		NA		NA		3			
NE1-10220	Unnamed Creek		NA		NA		NA		3			
NE1-10300	Unnamed Creek		NA		NA		NA		3			
NE1-10400	Unnamed Creek		NA		NA		NA		3			
NE1-10500	Cottier Creek		S		NA		NA	S	2			Aquatic community assessment
NE1-10510	Wine Branch		NA		NA		NA		3			
NE1-10600	Cottier Creek		NA		NA		NA		3			
NE1-10610	Unnamed Creek		NA		NA		NA		3			
NE1-10700	Unnamed Creek	NA	NA		NA		NA		3			
NE1-10800	Beadow Creek		NA		NA		NA		3			
NE1-10810	Unnamed Creek	NA	NA		NA		NA		3			
NE1-10900	Beadow Creek		NA		NA		NA		3			
NE1-10910	Unnamed Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE1-11000	Deroin Creek		NA		NA		NA		3			
NE1-11100	Unnamed Creek		NA		NA		NA		3			
NE1-11200	Unnamed Creek		NA		NA		NA		3			
NE1-11300	Honey Creek		NA		NA		NA		3			
NE1-11400	Honey Creek		NA		NA		NA		3			
NE1-11410	Unnamed Creek		NA		NA		NA		3			
NE1-11500	Honey Creek		S		NA		NA	S	2			Aquatic community assessment
NE1-11600	Buck Creek		NA		NA		NA		3			
NE1-11610	Duck Creek		S		NA		NA	S	2			Aquatic community assessment
NE1-11700	Buck Creek		NA		NA		NA		3			
NE1-11800	Camp Creek		NA		NA		NA		3			
NE1-11810	South Branch Camp Creek		NA		NA		NA		3			
NE1-11900	Camp Creek		NA		NA		NA		3			
NE1-12000	Fourmile Creek		NA		NA		NA		3			
NE1-12100	Fourmile Creek		NA		NA		NA		3			
NE1-12110	Threemile Creek		NA		NA		NA		3			
NE1-12200	Fourmile Creek		NA		NA		NA		3			
NE1-12300	South Table Creek		NA		NA		NA		3			
NE1-12310	Unnamed Creek	NA	NA		NA		NA		3			
NE1-12400	South Table Creek		NA		NA		NA		3			
NE1-12500	North Table Creek		NA		NA		NA		3			
NE1-12600	Walnut Creek		NA		NA		NA		3			
NE1-12700	Squaw Creek		NA		NA		NA		3			
NE1-12800	Weeping Water Creek		S		S		S	S	1			Fish consumption assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE1-12810	Wolf Creek		NA		NA		NA		3			
NE1-12820	Coal Creek		NA		NA		NA		3			
NE1-12830	South Branch Weeping Water Creek		NA		NA		NA		3			
NE1-12831	Big Slough		S		NA		NA	S	2			Aquatic community assessment
NE1-12832	Goose Creek		NA		NA		NA		3			
NE1-12840	South Branch Weeping Water Creek		NA		NA		NA		3			
NE1-12841	Jordan Creek		NA		NA		NA		3			
NE1-12842	Flood Creek		NA		NA		NA		3			
NE1-12843	Wilson Creek		NA		NA		NA		3			
NE1-12850	South Branch Weeping Water Creek		NA		NA		NA		3			
NE1-12851	Unnamed Creek		NA		NA		NA		3			
NE1-12860	Tyson Creek		NA		NA		NA		3			
NE1-12870	North Branch Weeping Water Creek		NA		NA		NA		3			
NE1-12871	Unnamed Creek		NA		NA		NA		3			
NE1-12880	North Branch Weeping Water Creek		S		NA		NA	S	2			Aquatic community assessment
NE1-12881	Unnamed Creek		NA		NA		NA		3			
NE1-12900	Weeping Water Creek		NA		NA		NA		3			
NE1-12910	Unnamed Creek		NA		NA		NA		3			
NE1-12920	South Cedar Creek		S		NA		NA	S	2			Aquatic community assessment
NE1-13000	Weeping Water Creek	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE1-13010	Cascade Creek		NA		NA		NA		3			
NE1-13020	Unnamed Creek		NA		NA		NA		3			
NE1-13030	Unnamed Creek		NA		NA		NA		3			
NE1-13040	Unnamed Creek		NA		NA		NA		3			
NE1-13050	Unnamed Creek		NA		NA		NA		3			
NE1-13060	Unnamed Creek		NA		NA		NA		3			
NE1-13070	Unnamed Creek		NA		NA		NA		3			
NE1-13080	Unnamed Creek		NA		NA		NA		3			
NE1-13090	Unnamed Creek		NA		NA		NA		3			
NE1-13100	Beaver Creek		NA		NA		NA		3			
NE1-13110	Stove Creek		NA		NA		NA		3			
NE1-13200	Weeping Water Creek		NA		NA		NA		3			
NE1-13300	East Chute		NA		NA		NA		3			
NE1-13400	Ervine Creek		S		NA		NA	S	2			Aquatic community assessment
NE1-13500	Rakes Creek		S		NA		NA	S	2			Aquatic community assessment
NE1-13600	Unnamed Creek		NA		NA		NA		3			
NE1-13700	Rock Creek		NA	NA	NA		NA		3			
NE1-13710	Squaw Creek		NA		NA		NA		3			
NE1-13800	Unnamed Creek		NA		NA		NA		3			
NE2-10000	Big Nemaha River	I	I		S		S	I	5	E. coli, Impaired aquatic community	E. coli, Unknown	E. coli & Atrazine TMDL approved 9/07, Aquatic community & Fish consumption assessment
NE2-10100	Roys Creek		NA		NA		NA		3			
NE2-10200	Noharts Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE2-10300	Mooney Creek		NA		NA		NA		3			
NE2-10400	Snake Creek		NA		NA		NA		3			
NE2-10500	Canada Creek		NA		NA		NA		3			
NE2-10600	Muddy Creek	I	I		S		S	I	5	E. coli, Impaired aquatic community	E. coli, Unknown	E. coli TMDL approved 9/07, Aquatic community assessment
NE2-10610	Berard Creek		NA		NA		NA		3			
NE2-10620	Halfbreed Creek		NA		NA		NA		3			
NE2-10630	Silver Creek		NA		NA		NA		3			
NE2-10640	Goolsby Branch		NA		NA		NA		3			
NE2-10641	Temple Creek		NA		NA		NA		3			
NE2-10650	Unnamed Creek		NA		NA		NA		3			
NE2-10660	Mackelroy Creek		NA		NA		NA		3			
NE2-10670	Unnamed Creek		NA		NA		NA		3			
NE2-10680	Unnamed Creek		NA		NA		NA		3			
NE2-10690	Unnamed Creek		NA		NA		NA		3			
NE2-10700	Sardine Creek		NA		NA		NA		3			
NE2-10710	Wolf Creek		NA		NA		NA		3			
NE2-10711	Spring Creek		NA		NA		NA		3			
NE2-10720	Wolf Creek		NA		NA		NA		3			
NE2-10730	Deer Creek		NA		NA		NA		3			
NE2-10740	Unnamed Creek		NA		NA		NA		3			
NE2-10750	Little Muddy Creek	NA	NA		NA		NA		3			
NE2-10751	Whiskey Run		S		NA		NA	S	2			Aquatic community assessment
NE2-10751.1	Dry Branch		NA		NA		NA		3			
NE2-10751.2	Porter Branch		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE2-10752	Whiskey Run		NA		NA		NA		3			
NE2-10760	Little Muddy Creek		S		NA		NA	S	2			Aquatic community assessment
NE2-10761	Unnamed Creek		NA		NA		NA		3			
NE2-10770	Little Muddy Creek		NA		NA		NA		3			
NE2-10800	Muddy Creek		NA		NA		NA		3			
NE2-10810	Hoosier Creek		S		NA		NA	S	2			Aquatic community assessment
NE2-10820	Unnamed Creek		NA		NA		NA		3			
NE2-10830	Unnamed Creek		NA		NA		NA		3			
NE2-10840	Unnamed Creek		NA		NA		NA		3			
NE2-10850	Unnamed Creek		NA		NA		NA		3			
NE2-10860	Unnamed Creek		NA		NA		NA		3			
NE2-10870	Unnamed Creek		NA		NA		NA		3			
NE2-10880	Unnamed Creek		NA		NA		NA		3			
NE2-10881	Unnamed Creek		NA		NA		NA		3			
NE2-10900	Muddy Creek		NA		NA		NA		3			
NE2-11000	Walnut Creek		NA		NA		NA		3			
NE2-11010	Unnamed Creek		NA		NA		NA		3			
NE2-11020	Unnamed Creek		NA		NA		NA		3			
NE2-11100	Unnamed Creek		NA		NA		NA		3			
NE2-11200	Pony Creek	NA	S		NA		NA	S	2			Aquatic community assessment
NE2-11300	Unnamed Creek		NA		NA		NA		3			
NE2-11400	Unnamed Creek		NA		NA		NA		3			
NE2-11500	Unnamed Creek		NA		NA		NA		3			
NE2-11600	Unnamed Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE2-11700	Wildcat Creek		NA		NA		NA		3			
NE2-11800	Old Channel Big Nemaha River		NA		NA		NA		3			
NE2-11900	South Fork Big Nemaha River	S	S		S		S	S	1			Aquatic community & Fish consumption assessment
NE2-11910	Unnamed Creek		NA		NA		NA		3			
NE2-11920	Rock Creek		NA		NA		NA		3			
NE2-11921	Contrary Creek		NA		NA		NA		3			
NE2-11922	Rabbit Creek		NA		NA		NA		3			
NE2-11930	Old Channel South Fork Big Nemaha River		NA		NA		NA		3			
NE2-11940	Unnamed Creek		NA		NA		NA		3			
NE2-11950	Honey Creek		NA		NA		NA		3			
NE2-11960	Old Channel South Fork Big Nemaha River		NA		NA		NA		3			
NE2-11970	Holy Creek		NA		NA		NA		3			
NE2-11980	Rattlesnake Creek		S		NA		NA	S	2			Aquatic community assessment
NE2-11981	Easly Creek		NA		NA		NA		3			
NE2-11982	Spring Creek		NA		NA		NA		3			
NE2-11990	Rattlesnake Creek		NA		NA		NA		3			
NE2-12000	Fourmile Creek		S		NA		NA	S	2			Aquatic community assessment
NE2-12010	Unnamed Creek		NA		NA		NA		3			
NE2-12020	Unnamed Creek		NA		NA		NA		3			
NE2-12100	South Fork Big Nemaha River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 9/07

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE2-12110	Lores Branch		S		NA		NA	S	2			Aquatic community assessment
NE2-12120	Negro Branch		NA		NA		NA		3			
NE2-12130	Turkey Creek	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 9/07
NE2-12131	Unnamed Creek		NA		NA		NA		3			
NE2-12132	Johnson Creek		I		S		S	I	5	Low dissolved oxygen	Unknown	
NE2-12132.1	Beebe Creek		NA		NA		NA		3			
NE2-12132.2	Wildcat Creek		NA		NA		NA		3			
NE2-12133	Johnson Creek		NA		NA		NA		3			
NE2-12134	Chatawa Creek		NA		NA		NA		3			
NE2-12135	West Branch Turkey Creek		S		S		S	S	1			
NE2-12135.1	Balls Branch		NA		NA		NA		3			
NE2-12135.11	Unnamed Creek		NA		NA		NA		3			
NE2-12135.12	Unnamed Creek		NA		NA		NA		3			
NE2-12135.2	Balls Branch		NA		NA		NA		3			
NE2-12135.21	Unnamed Creek		S		NA		NA	S	2			Aquatic community assessment
NE2-12136	West Branch Turkey Creek		NA		NA		NA		3			
NE2-12140	Turkey Creek		NA		NA		NA		3			
NE2-12141	Unnamed Creek		S		NA		NA	S	2			Aquatic community assessment
NE2-12142	Unnamed Creek		NA		NA		NA		3			
NE2-12143	Unnamed Creek		NA		NA		NA		3			
NE2-12144	Unnamed Creek		NA		NA		NA		3			
NE2-12145	Rock Creek		NA		NA		NA		3			
NE2-12150	Turkey Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE2-12151	Sampson Branch		NA		NA		NA		3			
NE2-12152	Unnamed Creek		NA		NA		NA		3			
NE2-12200	North Fork Big Nemaha River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 9/07, Fish consumption assessment
NE2-12210	Unnamed Creek		NA		NA		NA		3			
NE2-12220	Deer Branch		NA		NA		NA		3			
NE2-12230	Unnamed Creek		S		NA		NA	S	2			Aquatic community assessment
NE2-12240	Unnamed Creek		NA		NA		NA		3			
NE2-12250	Bradley Branch		NA		NA		NA		3			
NE2-12260	Barneys Branch		NA		NA		NA		3			
NE2-12270	Unnamed Creek		NA		NA		NA		3			
NE2-12280	Cottonwood Creek		NA		NA		NA		3			
NE2-12290	Unnamed Creek		NA		NA		NA		3			
NE2-12300	Unnamed Creek		NA		NA		NA		3			
NE2-12310	Unnamed Creek		NA		NA		NA		3			
NE2-12320	Unnamed Creek		NA		NA		NA		3			
NE2-12330	Long Branch Creek	I	I		S		S	I	5	E. coli, Impaired aquatic community	E. coli, Unknown	E. coli TMDL approved 9/07, Aquatic community assessment
NE2-12331	Kirkham Creek		NA		NA		NA		3			
NE2-12340	Unnamed Creek		NA		NA		NA		3			
NE2-12350	Round Grove Creek		NA		NA		NA		3			
NE2-12360	Dry Branch		NA		NA		NA		3			
NE2-12370	Unnamed Creek		NA		NA		NA		3			
NE2-12380	Unnamed Creek		NA		NA		NA		3			
NE2-12390	Unnamed Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE2-12400	Unnamed Creek		NA		NA		NA		3			
NE2-12410	Unnamed Creek		NA		NA		NA		3			
NE2-12420	Taylor Branch		NA		NA		NA		3			
NE2-12421	Unnamed Creek		NA		NA		NA		3			
NE2-12430	Taylor Branch		NA		NA		NA		3			
NE2-12440	Clear Creek		NA		NA		NA		3			
NE2-12441	Coopers Branch		NA		NA		NA		3			
NE2-12450	Clear Creek		NA		NA		NA		3			
NE2-12460	Unnamed Creek		NA		NA		NA		3			
NE2-12470	Robinson Creek		NA		NA		NA		3			
NE2-12480	Todd Creek		NA		NA		NA		3			
NE2-12481	Elk Creek		NA		NA		NA		3			
NE2-12490	Todd Creek		NA		NA		NA		3			
NE2-12500	North Fork Big Nemaha River	I	I		S		S	I	5	E. coli, Impaired aquatic community	E. coli, Unknown	E. coli TMDL approved 9/07, Aquatic community & Fish consumption assessment
NE2-12510	Unnamed Creek		NA		NA		NA		3			
NE2-12520	Corson Branch		NA		NA		NA		3			
NE2-12530	Town Branch		NA		NA		NA		3			
NE2-12540	Badger Branch		NA		NA		NA		3			
NE2-12541	Unnamed Creek		NA		NA		NA		3			
NE2-12550	Badger Branch		NA		NA		NA		3			
NE2-12560	Unnamed Creek		NA		NA		NA		3			
NE2-12570	Yankee Creek		S		NA		NA	S	2			Aquatic community assessment
NE2-12571	Brewers Branch		NA		NA		NA		3			
NE2-12572	Lost Branch		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE2-12580	Yankee Creek		NA		NA		NA		3			
NE2-12590	Hooker Creek		NA		NA		NA		3			
NE2-12600	Middle Branch Big Nemaha River		S		NA		NA	S	2			Aquatic community assessment
NE2-12601	Shaw Creek		NA		NA		NA		3			
NE2-12610	Middle Branch Big Nemaha River		I		NA		NA	I	5	Impaired aquatic community	Unknown	Aquatic community assessment
NE2-12700	North Fork Big Nemaha River		S		NA		NA	S	2			Aquatic community assessment
NE3-10000	Little Nemaha River	I	I		S		S	I	5	E. coli, Fish consumption advisory	E. coli, Cancer Risk & Hazard Index compounds*	E. coli TMDL approved 9/07, Aquatic community & Fish consumption assessment
NE3-10100	Whiskey Run		NA		NA		NA		3			
NE3-10200	Jarvis Creek		NA		NA		NA		3			
NE3-10210	Unnamed Creek		NA		NA		NA		3			
NE3-10220	Unnamed Creek		NA		NA		NA		3			
NE3-10300	Jarvis Creek		NA		NA		NA		3			
NE3-10400	Happy Hollow Creek		NA		NA		NA		3			
NE3-10500	Swartz Run		NA		NA		NA		3			
NE3-10510	Unnamed Creek		NA		NA		NA		3			
NE3-10600	Swartz Run		NA		NA		NA		3			
NE3-10700	Indian Creek		NA		NA		NA		3			
NE3-10800	Indian Creek		S		NA		NA	S	2			Aquatic community assessment
NE3-10900	Unnamed Creek		NA		NA		NA		3			
NE3-11000	Hughes Creek		NA		NA		NA		3			
NE3-11100	Codington Creek		NA		NA		NA		3			

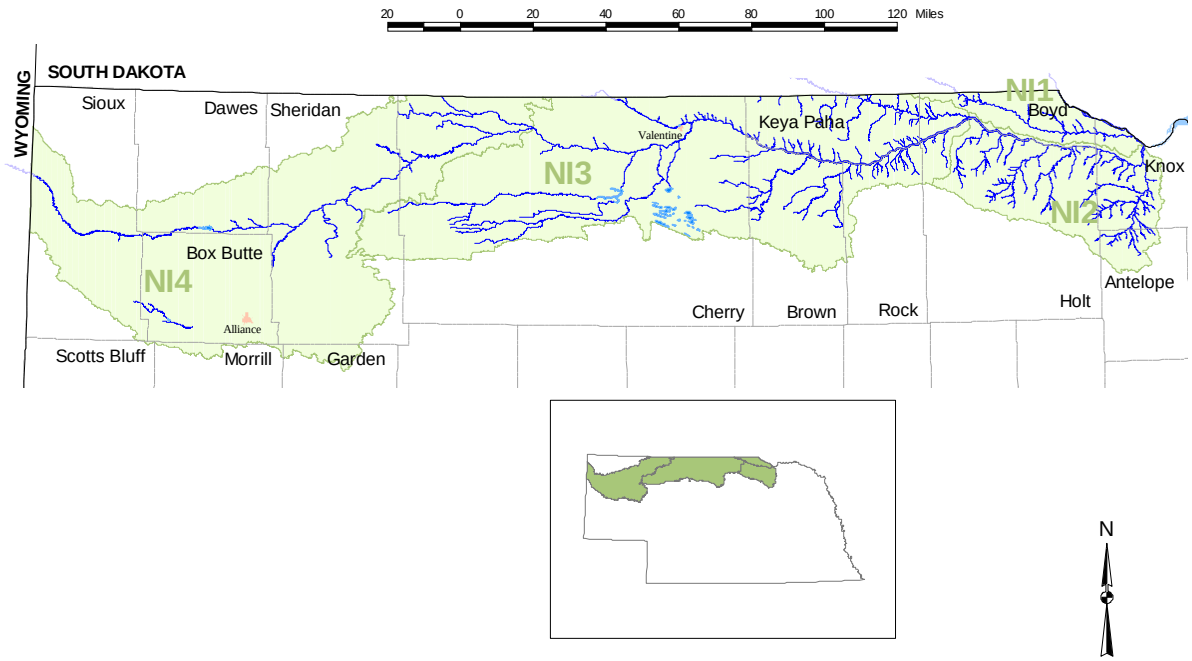
Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE3-11200	Unnamed Creek		NA		NA		NA		3			
NE3-11300	Unnamed Creek		NA		NA		NA		3			
NE3-11400	Longs Creek		NA		NA		NA		3			
NE3-11410	Scotch Branch		NA		NA		NA		3			
NE3-11500	Longs Creek		NA		NA		NA		3			
NE3-11600	Willow Creek		NA		NA		NA		3			
NE3-11700	Ord Creek		NA		NA		NA		3			
NE3-11800	Rock Creek		NA		NA		NA		3			
NE3-11810	Plum Run		NA		NA		NA		3			
NE3-11820	Unnamed Creek		NA		NA		NA		3			
NE3-11900	Rock Creek		NA		NA		NA		3			
NE3-11910	Unnamed Creek		NA		NA		NA		3			
NE3-11920	Unnamed Creek		NA		NA		NA		3			
NE3-11930	Unnamed Creek		NA		NA		NA		3			
NE3-12000	Rock Creek		NA		NA		NA		3			
NE3-12100	Unnamed Creek		NA		NA		NA		3			
NE3-12200	Unnamed Creek		NA		NA		NA		3			
NE3-12210	Unnamed Creek		NA		NA		NA		3			
NE3-12300	Unnamed Creek		NA		NA		NA		3			
NE3-12400	Houchen Creek		NA		NA		NA		3			
NE3-12500	Unnamed Creek		NA		NA		NA		3			
NE3-12600	Piper Creek		NA		NA		NA		3			
NE3-12700	Sand Creek		S		NA		NA	S	2			Aquatic community assessment
NE3-12710	Unnamed Creek		NA		NA		NA		3			
NE3-12800	Sand Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE3-12900	Jones Creek		NA		NA		NA		3			
NE3-12910	East Branch Jones Creek		NA		NA		NA		3			
NE3-13000	Jones Creek		NA		NA		NA		3			
NE3-13100	North Fork Little Nemaha River	NA	NA		NA		NA		3			
NE3-13110	Unnamed Creek		NA		NA		NA		3			
NE3-13120	Unnamed Creek		NA		NA		NA		3			
NE3-13130	Fox Creek		NA		NA		NA		3			
NE3-13140	Wilson Creek		NA		NA		NA		3			
NE3-13150	Deer Creek		NA		NA		NA		3			
NE3-13200	North Fork Little Nemaha River		NA		NA		NA		3			
NE3-13210	Unnamed Creek		NA		NA		NA		3			
NE3-13220	Unnamed Creek		NA		NA		NA		3			
NE3-13300	North Fork Little Nemaha River		NA		NA		NA		3			
NE3-20000	Little Nemaha River	NA	NA		NA		NA		3			
NE3-20100	Spring Creek		S		NA		NA	S	2			Aquatic community assessment
NE3-20110	Ayres Creek		NA		NA		NA		3			
NE3-20120	Manns Branch		NA		NA		NA		3			
NE3-20200	Spring Branch		NA		NA		NA		3			
NE3-20300	South Fork Little Nemaha River	NA	NA		NA		NA		3			
NE3-20310	Coon Creek		NA		NA		NA		3			
NE3-20320	Unnamed Creek		NA		NA		NA		3			
NE3-20330	Turkey Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE3-20400	South Fork Little Nemaha River		NA		NA		NA		3			
NE3-20410	Silver Creek		NA		NA		NA		3			
NE3-20420	Saunders Creek		NA		NA		NA		3			
NE3-20421	Unnamed Creek		NA		NA		NA		3			
NE3-20430	Saunders Creek		NA		NA		NA		3			
NE3-20500	South Fork Little Nemaha River		NA		NA		NA		3			
NE3-20510	Unnamed Creek		NA		NA		NA		3			
NE3-20520	Unnamed Creek		NA		NA		NA		3			
NE3-30000	Little Nemaha River	NA	NA		NA		NA		3			
NE3-30100	Unnamed Creek		NA		NA		NA		3			
NE3-30200	Muddy Creek		S		NA		NA	S	2			Aquatic community assessment
NE3-30210	Little Muddy Creek		S		NA		NA	S	2			Aquatic community assessment
NE3-30300	Brownell Creek		NA		NA		NA		3			
NE3-30310	Unnamed Creek		NA		NA		NA		3			
NE3-30400	Brownell Creek		NA		NA		NA		3			
NE3-30500	Boxelder Creek		NA		NA		NA		3			
NE3-30600	Unnamed Creek		NA		NA		NA		3			
NE3-30700	Ziegler Creek		NA		NA		NA		3			
NE3-30800	Wolf Creek		NA		NA		NA		3			
NE3-30810	Owl Creek		NA		NA		NA		3			
NE3-30900	Wolf Creek		NA		NA		NA		3			
NE3-30910	Unnamed Creek		NA		NA		NA		3			
NE3-31000	Russell Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NE3-31100	Henry Creek		NA		NA		NA		3			
NE3-31200	Hooper Creek		S		NA		NA	S	2			Aquatic community assessment
NE3-31210	Unnamed Creek		NA		NA		NA		3			
NE3-31220	Unnamed Creek		NA		NA		NA		3			
NE3-31230	Unnamed Creek		NA		NA		NA		3			
NE3-31300	Hooper Creek		NA		NA		NA		3			
NE3-31310	Unnamed Creek		NA		NA		NA		3			
NE3-31320	Unnamed Creek		NA		NA		NA		3			
NE3-40000	Little Nemaha River		NA		NA		NA		3			
NE3-40100	Silver Creek		NA		NA		NA		3			
NE3-50000	Little Nemaha River		NA		NA		NA		3			
NE3-50100	Unnamed Creek		NA		NA		NA		3			
NE3-50200	Unnamed Creek		NA		NA		NA		3			
NE3-50300	Unnamed Creek		NA		NA		NA		3			

* ***Cancer risk compounds*** -Aroclor-1248 (PCB-1248), Aroclor-1254 (PCB-1254), Aroclor-1260 (PCB-1260), cis-chlordane, Chlordane, trans-chlordane, DDD, DDE, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin
Hazard index compounds- Aroclor-1254 (PCB-1254), Lindane (g-BHC), cis-chlordane, Chlordane, trans-chlordane, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin, Mercury, Cadmium, Selenium



Niobrara River Basin (and Subbasins)

Niobrara River Basin – Hydrologic Units 10150001, 10150002, 10150003, 10150004, 10150005, 10150006, 10150007 and 10140203

The Niobrara River Basin includes 270 designated stream segments and 65 designated lakes/reservoirs.

Waterbody Type	Primary Contact Recreation	Aquatic Life CA[1]	Aquatic Life CB[1]	Aquatic Life WA[1]	Aquatic Life WB[1]	Water Supply – Public Drinking	Water Supply – Ag	Water Supply-Ind.	Aesthetics
Lakes	65	0	2	63	0	0	65	2	65
Streams	53	14	164	15	77	0	269	1	270

[1] CA = Coldwater Class A, CB = Coldwater Class B, WA = Warmwater Class A and WB = Warmwater Class B

Delisting/ Changes from 2006 & 2008 IRs

The following are waters and or parameters that were delisted – removed from category 5 or other significant changes from the 2006 and 2008 Integrated Reports (IRs).

NI3-L0200: Hackberry Lake, NI3-L0220: Big Alkali Lake, NI3-L0290: Watts Lake, and NI3-L0300: West Long Lake – These lakes were listed as impaired due to pH in the 2006 Integrated Report and placed in category 4c as naturally alkaline lakes. NDEQ has since modified Title 117 – Nebraska Surface Water Quality Standards to state "Hydrogen Ion concentrations, expressed as pH shall be maintained between 6.5 and 9.0; unless pH values outside this range are due to natural conditions". Chemical and geological data indicate the pH in these lakes is the result of natural conditions (McCarraher, 1964, 1977). The pH impairment will be delisted and these lakes will be placed in category 2.

NI3-L0240: Dewey Lake - This lake was listed as impaired by pH in the 2008 Integrated Report and placed in category 5 because pH violations were considered an indicator of a nutrient impairment. For the 2010 Integrated Report, EPA and NDEQ agreed to an alternative set of nutrient assessments for this reporting cycle. Following the agreed upon 2010 assessment methodologies, naturally occurring sandhills lakes are not assessed for nutrient impairments. Additionally, chemical and geological data indicate the pH in this lake is the result of natural conditions (McCarraher, 1964, 1977). Due to the change in assessment procedures and the fact that this lake is supporting all of the assessed beneficial uses the nutrient impairment will be delisted and lake will be placed in category 2.

NI3-L0270: Pelican Lake - This lake was listed as impaired due to excessive nutrients in the 2006 Integrated Report. For the 2010 Integrated Report, EPA and NDEQ agreed to an alternative set of nutrient assessments for this reporting cycle. Following the agreed upon 2010 assessment methodologies, naturally occurring sandhills lakes are not assessed for nutrient impairments. Due to the change in assessment procedures the nutrient impairment will be delisted. This waterbody supports all of the assessed beneficial uses and will be placed in category 2.

NI3-L0330 Merritt Reservoir – This waterbody was listed as impaired by nutrients, as well as, a fish consumption advisory and high pH in the 2008 IR. The nutrient assessment process for 2008 was designed to provide numeric translators to the narrative aesthetic beneficial use criteria as defined in Nebraska Surface Water Quality Standards. EPA concluded that the nutrient values used to derive the numeric translators were not acceptable and could not be used for Clean Water Act purposes. For the 2010 Integrated Report, EPA and NDEQ agreed to an alternative set of nutrient assessment end points for this reporting cycle. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient data exits for this waterbody to assess for a nutrient impairment, therefore the nutrient impairment will be delisted. This waterbody will remain in category 5 due to the fish consumption advisory and high pH.

NI3-L0370: Round Lake - This lake was listed as impaired in the 2008 Integrated Report due to elevated pH and excessive conductivity and placed in category 5. NDEQ has since modified Title 117 – Nebraska Surface Water Quality Standards to state “Hydrogen Ion concentrations, expressed as pH shall be maintained between 6.5 and 9.0; unless pH values outside this range are due to natural conditions”. It has been determined that both the elevated pH and conductivity in this lake are the results of natural conditions and not anthropogenic pollution (McCarraher, 1964, 1977). Therefore, the pH impairment will be delisted this lake will be placed in category 4c for elevated conductivity.

NI4-L0090: Kilpatrick Lake – This lake was listed as impaired by nutrients and pH in the 2008 IR. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient data exits for this waterbody to assess it for a nutrient impairment, therefore the nutrient impairment will be delisted. This waterbody will remain in category 5 due to high pH.

NI3-22400: Snake River - This river was listed as impaired for high pH in the 2008 Integrated Report. The assessment of additional data now shows this river is fully supporting all beneficial uses. The pH impairment will be delisted and this river will now be place in category 1.

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
Lakes												
NI1-L0010	Hull Lake (WMA)	NA	NA		NA		NA		3			
NI2-L0010	Creighton Rod and Gun Club Lake	NA	NA		NA		NA		3			
NI2-L0020	Niobrara State Park Lake No. 1	NA	NA		NA		NA		3			
NI2-L0030	Niobrara State Park Lake No. 2	NA	NA		NA		NA		3			
NI2-L0050	Grove Sandpit Lake (WMA)	NA	NA		NA		NA		3			
NI2-L0060	Grove Lake (WMA)	NA	I		S		S	I	5	Nutrients, High pH	Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment
NI2-L0070	Spencer Hydro Dam Lake	NA	NA		NA		NA		3			
NI3-L0010	F. Peterson Pond	NA	NA		NA		NA		3			
NI3-L0020	Keller Park Lake No. 1 (SRA)	NA	NA		NA		NA		3			
NI3-L0030	Keller Park Lake No. 2 (SRA)	NA	S		NA		NA	S	2			Fish consumption assessment
NI3-L0040	Keller Park Lake No. 3 (SRA)	NA	NA		NA		NA		3			
NI3-L0050	Keller Park Lake No. 4 (SRA)	NA	NA		NA		NA		3			
NI3-L0060	Keller Park Lake No. 5 (SRA)	NA	NA		NA		NA		3			
NI3-L0070	Cub Creek Lake	NA	I		S		S	I	5	Fish consumption advisory	Hazard index compounds*, Mercury	Fish consumption assessment
NI3-L0080	Williams Pond	NA	NA		NA		NA		3			
NI3-L0090	Cornell Dam Lake	NA	NA		NA		NA		3			
NI3-L0100	North Marsh Lake (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0110	Middle Marsh Lake (Valentine NWR)	NA	S		S		S	S	2			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NI3-L0120	South Marsh Lake (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0130	East Twin Lake (Valentine NWR)	NA	S		S		S	S	2			
NI3-L0140	Valentine Fish Hatchery Lake	NA	NA		NA		NA		3			
NI3-L0150	Calf Camp Marsh (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0160	Little Hay Lake (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0170	Valentine Mill Pond	S	I		S		S	I	5	Fish consumption advisory, Nutrients	Hazard index compounds*, Mercury, Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment, Lake recently renovated
NI3-L0180	Ballards Marsh (WMA)	NA	NA		NA		NA		3			
NI3-L0181	Twenty-one Lake (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0182	Center Lake (Valentine NWR)	NA	S		S		S	S	2			
NI3-L0183	Lee Lake (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0184	Pony Lake (Valentine NWR)	NA	S		S		S	S	2			
NI3-L0185	East Sweetwater Lake (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0190	West Twin Lake (Valentine NWR)	NA	S		S		S	S	2			
NI3-L0191	Round Lake (Tom's Lake) (Valentine NWR)	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NI3-L0192	Homestead Lake (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0193	Campbell Lake (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0194	Lost Lake (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0195	Dad's Lake (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0196	Baker Lake (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0200	Hackberry Lake (Valentine NWR)	NA	S		S		S	S	2			Fish consumption assessment, Delist pH- naturally high pH
NI3-L0210	Willow Lake (WMA)	NA	S		NA		NA	S	2			Fish consumption assessment
NI3-L0220	Big Alkali Lake (WMA)	NA	S		S		S	S	2			Fish consumption assessment, Delist pH- naturally high pH
NI3-L0230	McKeel Lake (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0240	Dewey Lake (Valentine NWR)	NA	S		S		S	S	2			Delist pH-naturally high pH
NI3-L0250	School Lake (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0260	Clear Lake (Valentine NWR)	NA	S		S		S	S	2			
NI3-L0270	Pelican Lake (Valentine NWR)	NA	S		S		S	S	2			Fish consumption assessment, Delist nutrients-Sandhills lake
NI3-L0280	Whitewater Lake (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0290	Watts Lake (Valentine NWR)	NA	S		S		S	S	2			Delist pH- naturally high pH
NI3-L0300	West Long Lake (Valentine NWR)	NA	S		S		S	S	2			Delist pH- naturally high pH
NI3-L0310	Rice Lake (Valentine NWR)	NA	NA		NA		NA		3			
NI3-L0320	Duck Lake (Valentine NWR)	NA	S		S		S	S	2			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NI3-L0330	Merritt Reservoir	S	I		S		S	I	5	Fish consumption advisory, High pH	Mercury, Unknown	Fish consumption assessment, Delist nutrients -insufficient data for assessment procedures
NI3-L0340	Cody Lake	NA	S		NA		S	S	2			Fish consumption assessment
NI3-L0350	Shaup Lake	NA	S		S		S	S	2			
NI3-L0360	Medicine Lake								3			
NI3-L0370	Round Lake	NA	S		I		S	I	4c	High conductivity	None	Sandhills lakes have naturally elevated conductivity
NI3-L0380	Three Corners Lake	NA	NA		NA		NA		3			
NI4-L0010	Cottonwood Lake (SRA)	NA	I		NA		NA	I	5	Fish consumption advisory	Mercury	Fish consumption assessment
NI4-L0020	Shell Lake	NA	I		NA		NA	I	5	Fish consumption advisory	Mercury	Fish consumption assessment
NI4-L0030	Leistrintz-Meyer Lake	NA	NA		NA		NA		3			
NI4-L0040	Smith Lake (WMA)	NA	S		NA		S	S	2			Fish consumption assessment
NI4-L0050	Walgren Lake (SRA)	NA	I		S		S	I	5	Fish consumption advisory	Hazard index compounds*, Mercury	Fish consumption assessment
NI4-L0060	Alliance City Lake	NA	NA		NA		NA		3			
NI4-L0070	Maxwell Pond	NA	NA		NA		NA		3			
NI4-L0080	Box Butte Reservoir	S	I		S		S	I	5	Fish consumption advisory	Mercury	Fish consumption assessment
NI4-L0090	Kilpatrick Lake	NA	I		S		I	I	5	High pH	Unknown	Delist nutrients -insufficient data for assessment procedures

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
Streams												
NI1-10000	Missouri River	S	S		S		S	S	1			Fish consumption assessment
NI1-10100	Ponca Creek	I	I		S		S	I	5	E. coli, Selenium	E. coli, Selenium	
NI1-10110	Unnamed Creek		NA		NA		NA		3			
NI1-10120	Unnamed Creek		NA		NA		NA		3			
NI1-10130	Unnamed Creek		NA		NA		NA		3			
NI1-10140	Unnamed Creek		NA		NA		NA		3			
NI1-10150	Whiskey Creek		NA		NA		NA		3			
NI1-10151	Silver Creek		NA		NA		NA		3			
NI1-10160	Whiskey Creek		NA		NA		NA		3			
NI1-10170	Unnamed Creek		NA		NA		NA		3			
NI1-10180	Beaver Creek	NA	NA		NA		NA		3			
NI1-10200	Ponca Creek		S		NA		NA	S	2			Aquatic community assessment
NI1-10210	Unnamed Creek		NA		NA		NA		3			
NI1-10220	Unnamed Creek		NA		NA		NA		3			
NI1-10230	Unnamed Creek		S		NA		NA	S	2			Aquatic community assessment
NI1-10240	Unnamed Creek		NA		NA		NA		3			
NI1-10250	Unnamed Creek		NA		NA		NA		3			
NI1-10260	Unnamed Creek		NA		NA		NA		3			
NI2-10000	Niobrara River	I	I		S	S	S	I	5	E. coli, Fish consumption advisory	E. coli, Hazard Index compounds*	E. coli TMDL approved 1/06, Aquatic community and Fish consumption assessment
NI2-10100	Verdigre Creek	I	S		S		S	I	5	E. coli, Impaired aquatic community	E. coli	Aquatic community assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NI2-10110	Unnamed Creek		NA		NA		NA		3			
NI2-10120	Unnamed Creek		NA		NA		NA		3			
NI2-10130	Unnamed Creek		NA		NA		NA		3			
NI2-10140	North Branch Verdigre Creek	NA	NA		NA		NA		3			
NI2-10141	Unnamed Creek		NA		NA		NA		3			
NI2-10142	Unnamed Creek		S		NA		NA	S	2			Aquatic community assessment
NI2-10143	Unnamed Creek		NA		NA		NA		3			
NI2-10144	Unnamed Creek		NA		NA		NA		3			
NI2-10200	Verdigre Creek	NA	S		NA		NA	S	2			Aquatic community assessment
NI2-10210	Unnamed Creek		NA		NA		NA		3			
NI2-10220	Unnamed Creek		NA		NA		NA		3			
NI2-10221	Unnamed Creek		NA		NA		NA		3			
NI2-10222	Unnamed Creek		NA		NA		NA		3			
NI2-10230	Middle Branch Verdigre Creek	NA	NA		NA		NA		3			
NI2-10231	Unnamed Creek		NA		NA		NA		3			
NI2-10232	Unnamed Creek		NA		NA		NA		3			
NI2-10233	Unnamed Creek		NA		NA		NA		3			
NI2-10234	Unnamed Creek		NA		NA		NA		3			
NI2-10235	Unnamed Creek		NA		NA		NA		3			
NI2-10236	Lamb Creek		NA		NA		NA		3			
NI2-10237	Unnamed Creek		NA		NA		NA		3			
NI2-10238	Unnamed Creek		NA		NA		NA		3			
NI2-10239	Unnamed Creek		S		NA		NA	S	2			Aquatic community assessment
NI2-10240	Unnamed Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NI2-10250	Unnamed Creek		NA		NA		NA		3			
NI2-10260	Unnamed Creek		NA		NA		NA		3			
NI2-10270	Merriman Creek	NA	NA		NA		NA		3			
NI2-10271	Unnamed Creek		S		NA		NA	S	2			Aquatic community assessment
NI2-10280	Merriman Creek		NA		NA		NA		3			
NI2-10281	Unnamed Creek		NA		NA		NA		3			
NI2-10290	Cottonwood Creek		NA		NA		NA		3			
NI2-10300	South Branch Verdigre Creek	NA	NA		NA		NA		3			
NI2-10310	East Branch Verdigre Creek	NA	NA		NA		NA		3			
NI2-10311	Hay Creek		NA		NA		NA		3			
NI2-10320	East Branch Verdigre Creek	I	S		S		S	I	5	E. coli	E. coli	
NI2-10330	Unnamed Creek		NA		NA		NA		3			
NI2-10340	Unnamed Creek		NA		NA		NA		3			
NI2-10350	Big Springs Creek		NA		NA		NA		3			
NI2-10351	Hathoway Slough		NA		NA		NA		3			
NI2-10352	Unnamed Creek		NA		NA		NA		3			
NI2-10400	Schindler Creek		NA		NA		NA		3			
NI2-10500	Unnamed Creek		NA		NA		NA		3			
NI2-10600	Soldier Creek		NA		NA		NA		3			
NI2-10610	Unnamed Creek		NA		NA		NA		3			
NI2-10700	Pishel Creek		NA		NA		NA		3			
NI2-10800	Steel Creek	I	S		S		S	I	5	E. coli	E. coli	
NI2-10810	Long Gulch		NA		NA		NA		3			
NI2-10900	Squaw Creek		NA		NA		NA		3			
NI2-11000	Unnamed Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NI2-11100	Sand Creek		NA		NA		NA		3			
NI2-11200	Louse Creek	NA	NA		NA		NA		3			
NI2-11300	Louse Creek		S		S		S	S	1			All parameters support beneficial uses
NI2-11400	Redbird Creek	NA	NA		NA		NA		3			
NI2-11410	Unnamed Creek		NA		NA		NA		3			
NI2-11420	Spring Creek		S		NA		NA	S	2			Aquatic community assessment, ICI score influenced by extreme flows†
NI2-11430	Blackbird Creek		NA		NA		NA		3			
NI2-11500	Redbird Creek		NA		NA		NA		3			
NI2-11510	Unnamed Creek		NA		NA		NA		3			
NI2-11520	Unnamed Creek		NA		NA		NA		3			
NI2-11600	Unnamed Creek		NA		NA		NA		3			
NI2-11700	Eagle Creek	I	S		S		S	I	5	E. coli	E. coli	
NI2-11710	Camp Creek		NA		NA		NA		3			
NI2-11720	Unnamed Creek		NA		NA		NA		3			
NI2-11730	Honey Creek		NA		NA		NA		3			
NI2-11740	Unnamed Creek		NA		NA		NA		3			
NI2-11750	Oak Creek		NA		NA		NA		3			
NI2-11760	Unnamed Creek		NA		NA		NA		3			
NI2-11770	East Branch Eagle Creek		NA		NA		NA		3			
NI2-11771	Unnamed Creek		NA		NA		NA		3			
NI2-11772	Unnamed Creek		NA		NA		NA		3			
NI2-11780	Middle Branch Eagle Creek	NA	S		NA		NA	S	2			Aquatic community assessment, ICI score influenced by extreme flows†

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NI2-11781	North Branch Eagle Creek	NA	NA		NA		NA		3			
NI2-11781.1	Unnamed Creek		NA		NA		NA		3			
NI2-11781.2	Unnamed Creek		NA		NA		NA		3			
NI2-11781.3	Unnamed Creek		NA		NA		NA		3			
NI2-11782	Unnamed Creek		NA		NA		NA		3			
NI2-11783	Unnamed Creek		NA		NA		NA		3			
NI2-11784	Unnamed Creek		NA		NA		NA		3			
NI2-11800	Unnamed Creek		NA		NA		NA		3			
NI2-11900	Turkey Creek		NA		NA		NA		3			
NI2-12000	Brush Creek		NA		NA		NA		3			
NI2-12010	Spring Creek		NA		NA		NA		3			
NI2-12020	Unnamed Creek		NA		NA		NA		3			
NI2-12030	Unnamed Creek		NA		NA		NA		3			
NI2-12040	Unnamed Creek		NA		NA		NA		3			
NI2-12041	Unnamed Creek		NA		NA		NA		3			
NI2-12100	Brush Creek		NA		NA		NA		3			
NI2-12200	Little Sandy Creek		NA		NA		NA		3			
NI2-12300	Big Sandy Creek	NA	NA		NA		NA		3			
NI2-12310	Unnamed Creek		NA		NA		NA		3			
NI2-12320	Unnamed Creek		NA		NA		NA		3			
NI2-12330	Unnamed Creek		NA		NA		NA		3			
NI2-12340	Unnamed Creek		NA		NA		NA		3			
NI2-12350	Spring Creek		NA		NA		NA		3			
NI2-12400	Big Sandy Creek	NA	NA		NA		NA		3			
NI2-12410	Unnamed Creek		NA		NA		NA		3			
NI3-10000	Niobrara River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 1/06

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NI3-10100	Keya Paha River	I	S		S		S	I	5	E. coli	E. coli	Fish consumption assessment
NI3-10110	Morse Creek		NA		NA		NA		3			
NI3-10111	Unnamed Creek		NA		NA		NA		3			
NI3-10120	Big Creek		NA		NA		NA		3			
NI3-10130	Meglin Creek		NA		NA		NA		3			
NI3-10140	Oak Creek		NA		NA		NA		3			
NI3-10141	Unnamed Creek		NA		NA		NA		3			
NI3-10142	Unnamed Creek		NA		NA		NA		3			
NI3-10150	Alkali Creek		NA		NA		NA		3			
NI3-10160	Spotted Tail Creek		NA		NA		NA		3			
NI3-10170	Coon Creek		NA		NA		NA		3			
NI3-10171	Unnamed Creek		NA		NA		NA		3			
NI3-10180	Wolf Creek		NA		NA		NA		3			
NI3-10190	Spring Creek		NA		NA		NA		3			
NI3-10200	Dry Creek		NA		NA		NA		3			
NI3-10210	Buffalo Creek		NA		NA		NA		3			
NI3-10211	Unnamed Creek		NA		NA		NA		3			
NI3-10220	Burton Creek		S		NA		NA	S	2			Aquatic community assessment
NI3-10230	Lute Creek		NA		NA		NA		3			
NI3-10240	Jordan Creek		NA		NA		NA		3			
NI3-10250	Holt Creek		NA		NA		NA		3			
NI3-10251	East Branch Holt Creek		NA		NA		NA		3			
NI3-10260	Holt Creek		NA		NA		NA		3			
NI3-10261	Unnamed Creek		NA		NA		NA		3			
NI3-10270	Timber Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NI3-10280	Cottonwood Creek		NA		NA		NA		3			
NI3-10290	Lost Creek		NA		NA		NA		3			
NI3-10300	Shadley Creek		NA		NA		NA		3			
NI3-10400	Beaver Creek		NA		NA		NA		3			
NI3-10500	Clay Creek		NA		NA		NA		3			
NI3-10510	West Branch Clay Creek		NA		NA		NA		3			
NI3-10600	Unnamed Creek		NA		NA		NA		3			
NI3-10700	Otter Creek		NA		NA		NA		3			
NI3-10800	Unnamed Creek		NA		NA		NA		3			
NI3-10900	Simpson Creek		NA		NA		NA		3			
NI3-10910	Unnamed Creek		NA		NA		NA		3			
NI3-11000	Big Anne Creek		NA		NA		NA		3			
NI3-11010	Haughin Creek		NA		NA		NA		3			
NI3-11011	Unnamed Creek		NA		NA		NA		3			
NI3-11100	Ash Creek		NA		NA		NA		3			
NI3-11110	Unnamed Creek		NA		NA		NA		3			
NI3-11120	Unnamed Creek		NA		NA		NA		3			
NI3-11200	Oak Creek		NA		NA		NA		3			
NI3-11210	Unnamed Creek		NA		NA		NA		3			
NI3-11220	Unnamed Creek		NA		NA		NA		3			
NI3-11300	Willow Creek		NA		NA		NA		3			
NI3-11310	Sand Creek		NA		NA		NA		3			
NI3-11400	Unnamed Creek		NA		NA		NA		3			
NI3-11500	Rock Creek		NA		NA		NA		3			
NI3-11600	Unnamed Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NI3-11700	West Branch Laughing Water Creek		NA		NA		NA		3			
NI3-11710	East Branch Laughing Water Creek		NA		NA		NA		3			
NI3-11720	Middle Branch Laughing Water Creek		NA		NA		NA		3			
NI3-11800	Coon Creek		NA		NA		NA		3			
NI3-11900	Elk Creek		NA		NA		NA		3			
NI3-12000	Wyman Creek		NA		NA		NA		3			
NI3-12100	Sand Creek		NA		NA		NA		3			
NI3-12200	Long Pine Creek	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 1/06, Aquatic community assessment
NI3-12210	Short Pine Creek		S		NA		NA	S	2			Aquatic community assessment
NI3-12220	Bone Creek	I	I		S		S	I	5	E. coli, High temperature	E. coli, temperature	Aquatic community assessment
NI3-12221	Sand Draw		NA		NA		NA		3			
NI3-12222	Unnamed Creek		NA		NA		NA		3			
NI3-12230	Bone Creek		NA		NA		NA		3			
NI3-12300	Long Pine Creek	NA	NA		NA		NA		3			
NI3-12310	Willow Creek		S		NA		NA	S	2			Aquatic community assessment
NI3-12400	Long Pine Creek	I	S		S		S	I	5	E. coli	E. coli	Fish consumption assessment
NI3-12500	Thomas Creek		NA		NA		NA		3			
NI3-12600	Prosser Creek		NA		NA		NA		3			
NI3-12700	Jewett Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NI3-12800	Dutch Creek		NA		NA		NA		3			
NI3-12900	Rock Creek		NA		NA		NA		3			
NI3-12910	Unnamed Creek		NA		NA		NA		3			
NI3-13000	Plum Creek	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 1/06, Aquatic community assessment
NI3-13010	Little Minnie Creek		NA		NA		NA		3			
NI3-13020	Evergreen Creek		NA		NA		NA		3			
NI3-13021	Cedar Creek		NA		NA		NA		3			
NI3-13021.1	Dry Creek		NA		NA		NA		3			
NI3-13100	Plum Creek	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 1/06
NI3-13110	North Branch Plum Creek		NA		NA		NA		3			
NI3-13111	Brush Creek		NA		NA		NA		3			
NI3-13120	South Branch Plum Creek		S		NA		NA	S	2			Aquatic community assessment
NI3-20000	Niobrara River	S	S		S		S	S	1			Fish consumption assessment
NI3-20100	Cub Creek		NA		NA		NA		3			
NI3-20110	Unnamed Creek		NA		NA		NA		3			
NI3-20200	Chimney Creek		NA		NA		NA		3			
NI3-20210	Unnamed Creek		S		NA		NA	S	2			Aquatic community assessment
NI3-20300	Turkey Creek		NA		NA		NA		3			
NI3-20400	Middle Creek		NA		NA		NA		3			
NI3-20410	East Middle Creek		NA		NA		NA		3			
NI3-20500	Fairfield Creek	NA	S		NA		NA	S	2			Aquatic community assessment
NI3-20510	South Fork Fairfield Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NI3-20600	McGill Creek		NA		NA		NA		3			
NI3-20700	Muleshoe Creek		S		NA		NA	S	2			Aquatic community assessment
NI3-20800	Coleman Creek		NA		NA		NA		3			
NI3-20900	Unnamed Creek		NA		NA		NA		3			
NI3-21000	Clapp Creek		NA		NA		NA		3			
NI3-21100	Unnamed Creek		NA		NA		NA		3			
NI3-21200	Unnamed Creek		NA		NA		NA		3			
NI3-21300	Unnamed Creek		NA		NA		NA		3			
NI3-21400	Unnamed Creek		NA		NA		NA		3			
NI3-21500	Crooked Creek		NA		NA		NA		3			
NI3-21600	Little Beaver Creek		NA		NA		NA		3			
NI3-21700	Big Beaver Creek		NA		NA		NA		3			
NI3-21800	Coon Creek		NA		NA		NA		3			
NI3-21900	Minnechaduza Creek	I	I		S		S	I	4a,c	E. coli, High Temperature	E. coli, Temperature	E. coli TMDL approved 1/06, Aquatic community assessment
NI3-21910	Spring Creek		NA		NA		NA		3			
NI3-21920	Fishberry Creek		NA		NA		NA		3			
NI3-21930	Dry Creek		NA		NA		NA		3			
NI3-22000	Minnechaduza Creek	NA	NA		NA		NA		3			
NI3-22010	Bull Creek		NA		NA		NA		3			
NI3-22100	Schlagel Creek	NA	NA		NA		NA		3			
NI3-22200	Gordon Creek		S		NA		NA	S	2			Aquatic community assessment
NI3-22210	Betsy Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NI3-22300	Gordon Creek	NA	NA		NA		NA	NA	3			Aquatic community assessment results were inconclusive - site will be reassessed†
NI3-22310	Arkansas Flats		NA		NA		NA		3			
NI3-22320	Sandy Richards Creek		NA		NA		NA		3			
NI3-22400	Snake River	S	S		S		S	S	1			Delist pH based on additional data assessments
NI3-22500	Snake River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 1/06
NI3-22510	Boardman Creek		NA		NA		NA	NA	3			Aquatic community assessment results were inconclusive - site will be reassessed†
NI3-22511	Unnamed Creek		NA		NA		NA		3			
NI3-22520	Clifford Creek	NA	NA		NA		NA		3			
NI3-22521	Willow Creek		NA		NA		NA		3			
NI3-22600	Snake River		NA		NA		NA		3			
NI3-30000	Niobrara River	S	S		S		S	S	1			All parameters support beneficial use
NI3-30100	Unnamed Creek		NA		NA		NA		3			
NI3-30200	McCann Canyon		NA		NA		NA		3			
NI3-30300	Medicine Creek		NA		NA		NA		3			
NI4-10000	Niobrara River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 1/06, Aquatic community assessment
NI4-10100	Bear Creek	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NI4-10110	Dry Creek	NA	NA		NA		NA	NA	3			Aquatic community assessment results were inconclusive - site will be reassessed†
NI4-10120	Dry Creek	NA	NA		NA		NA		3			
NI4-10121	Unnamed Creek		NA		NA		NA		3			
NI4-10200	Leander Creek	NA	NA		NA		NA		3			
NI4-10300	Hay Creek		NA		NA		NA		3			
NI4-10400	Antelope Creek		NA		NA		NA		3			
NI4-10500	Pole Creek		NA		NA		NA		3			
NI4-10600	Rush Creek		S		NA		NA	S	2			Aquatic community assessment, ICI score influenced by low water conditions†
NI4-10700	Deer Creek	NA	NA		NA		NA		3			
NI4-10800	Pine Creek	NA	S		S		S	S	2			
NI4-10900	Pine Creek		NA		NA		NA		3			
NI4-11000	Box Butte Creek		NA		NA		NA		3			
NI4-20000	Niobrara River	NA	S		NA		NA	S	2			Aquatic community assessment
NI4-20100	Pepper Creek		NA		NA		NA		3			
NI4-20200	Cottonwood Creek		NA		NA		NA		3			
NI4-20300	Snake Creek		NA		NA		NA		3			
NI4-20310	Spring Creek		NA		NA		NA		3			
NI4-20320	North Branch Snake Creek		NA		NA		NA		3			
NI4-20330	South Branch Snake Creek		NA		NA		NA		3			
NI4-30000	Niobrara River	I	S		S		S	I	5	E. coli	E. coli	

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NI4-40000	Niobrara River	I	S		S		S	I	5	E. coli	E. coli	Fish consumption assessment
NI4-40100	Whistle Creek		NA		NA		NA		3			
NI4-50000	Niobrara River	NA	S		NA		NA	S	2			Aquatic community assessment

* ***Cancer risk compounds*** -Aroclor-1248 (PCB-1248), Aroclor-1254 (PCB-1254), Aroclor-1260 (PCB-1260), cis-chlordane, Chlordane, trans-chlordane, DDD, DDE, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin
Hazard index compounds- Aroclor-1254 (PCB-1254), Lindane (g-BHC), cis-chlordane, Chlordane, trans-chlordane, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin, Mercury, Cadmium, Selenium

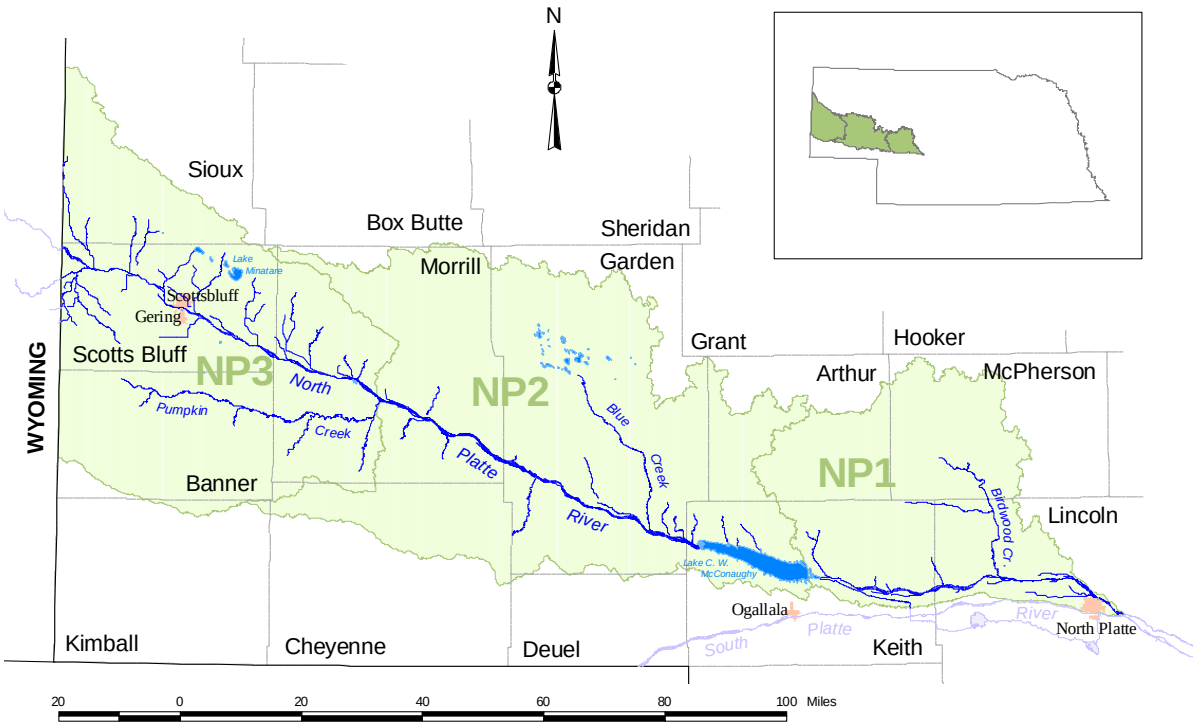
† See Appendix D: Ecological Justification for Excluding Specific Bio-Indicator Results When Determining Attainment Status of the Aquatic Life Beneficial Use for Nebraska's 2010 Water Quality Integrated Report

Literature Cited:

McCarraher, D. B. 1964. Limnology of carbonate – bicarbonate lakes in Nebraska. Nebraska Game and Parks Commission: White Papers and Manuscripts. http://digitalcommons.unl.edu/nebgamewhitepap/8.

McCarraher, D. B. 1977. Nebraska's Sandhills Lakes. Nebraska Game and Parks Commission. Lincoln, NE.

NORTH PLATTE RIVER BASIN (and Subbasins)



North Platte River Basin – Hydrologic Units 10180009, 10180012, 10180013 and 10180014

The North Platte River Basin includes 137 designated stream segments and 49 designated lakes/reservoirs.

Waterbody Type	Primary Contact Recreation	Aquatic Life CA[1]	Aquatic Life CB[1]	Aquatic Life WA[1]	Aquatic Life WB[1]	Water Supply – Public Drinking	Water Supply – Ag	Water Supply-Ind.	Aesthetics
Lakes	49	0	3	46	0	0	48	1	49
Streams	42	21	79	7	30	0	136	1	137

[1] CA = Coldwater Class A, CB = Coldwater Class B, WA = Warmwater Class A and WB = Warmwater Class B

Delisting/ Changes from 2006 & 2008 IRs

The following are waters and or parameters that were delisted – removed from category 5 or other significant changes from the 2006 and 2008 Integrated Reports (IRs).

NP1-L0030: Lake Ogallala-The 2008 Integrated Report listed this lake as impaired by low dissolved oxygen and high chlorophyll a concentrations with the parameter of concern being nutrients. In September 2007, EPA Region 7 approved the dissolved oxygen TMDL that was prepared for this lake. This lake was recently renovated and nutrient assessments will fall into category 4r. This lake will be moved from category 5 to 4a,r.

NP2-L0090: Crane Lake -This lake was listed as impaired by pH in the 2008 Integrated Report and placed in category 5 because pH violations were considered an indicator of a nutrient impairment. NDEQ has

since modified Title 117 – Nebraska Surface Water Quality Standards to state "Hydrogen Ion concentrations, expressed as pH shall be maintained between 6.5 and 9.0; unless pH values outside this range are due to natural conditions". The chemical and geological data indicate the pH in this lake is the result of natural conditions (McCarraher, 1964, 1977). Additionally, for the 2010 Integrated Report, EPA and NDEQ agreed to an alternative set of nutrient assessments for this reporting cycle. Following the agreed upon 2010 nutrient assessment methodologies, naturally occurring sandhills lakes are not assessed for nutrient impairments. Due to the change in assessment procedures and the fact that this lake is supporting all of the assessed beneficial uses the nutrient impairment will be delisted and lake will be placed in category 2.

NP2-L0100: Hackberry Lake- This lake was listed as impaired in the 2008 Integrated Report and placed in category 5 because pH and chlorophyll a exceedances were considered an indicator of a nutrient impairment. For the 2010 Integrated Report, EPA and NDEQ agreed to an alternative set of nutrient assessments for this reporting cycle. Following the agreed upon 2010 assessment methodologies, naturally occurring sandhills lakes are not assessed for nutrient impairments. Additionally, it has been determined that the elevated pH in this lake is the result of natural conditions (McCarraher, 1964, 1977). Due to the change in assessment procedures and the fact that this lake is supporting all of the assessed beneficial uses the nutrient impairment will be delisted and lake will be placed in category 2.

NP2-L0130: Roundup Lake– This lake was listed as impaired due to pH in the 2006 Integrated Report and placed in category 4c as a naturally alkaline lake. NDEQ has since modified Title 117 – Nebraska Surface Water Quality Standards to state "Hydrogen Ion concentrations, expressed as pH shall be maintained between 6.5 and 9.0; unless pH values outside this range are due to natural conditions". Chemical and geological data indicate the pH in this lake is the result of natural conditions (McCarraher, 1964, 1977). The pH impairment will be delisted and the lake will placed in category 2.

NP2-L0180: Goose Lake-The 2008 Integrated Report listed this lake as impaired for high conductivity and placed it in category 5. Previous studies have documented that this lake has naturally high conductivity and alkalinity therefore this lake will be moved from category 5 to 4c (McCarraher, 1964, 1977).

NP2-L0270: Tree Claim Lake- This lake was listed as impaired in the 2008 Integrated Report and placed in category 5 because of pH and conductivity exceedances. NDEQ has since modified Title 117 – Nebraska Surface Water Quality Standards to state "Hydrogen Ion concentrations, expressed as pH shall be maintained between 6.5 and 9.0; unless pH values outside this range are due to natural conditions." Chemical and geological data indicate the pH in this lake is the result of natural conditions and the pH impairment will be delisted (McCarraher, 1964, 1977). Additionally, previous research has shown that lakes within the Crescent Lake NWR have naturally elevated conductivity (McCarraher, 1964, 1977). The conductivity impairment will be changed from category 5 to 4c.

NP2-L0300: Border Lake - This lake was listed as impaired in the 2008 Integrated Report and placed in category 5 because pH and chlorophyll a exceedances were considered an indicator of a nutrient impairment. For the 2010 Integrated Report, EPA and NDEQ agreed to an alternative set of nutrient assessments for this reporting cycle. Following the agreed upon 2010 assessment methodologies, naturally occurring sandhills lakes are not assessed for nutrient impairments. Additionally, it has been determined that the elevated pH in this lake is the result of natural conditions (McCarraher, 1964, 1977). This lake will remain in category 5 due to low dissolved oxygen.

NP3-L0080: Cochran Lake - This waterbody was listed as impaired by excess nutrients in the 2006 IR. EPA indicated that the nutrient values NDEQ used for the 2006 assessments were not acceptable and not suitable for Clean Water Act purposes. In February 2009, EPA deferred taking action on this lake until the 2010 Integrated Report when mutually agreed upon nutrient assessment end points would be used to assess for nutrient impairments. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient samples exist for this waterbody to assess for a nutrient impairment, therefore the nutrient impairments will be delisted. This lake will remain in category 5 because the aquatic life beneficial use is impaired by high pH.

NP1-20500: Birdwood Creek – This waterbody was listed as impaired in the 2008 IR because of E. coli concentrations and high temperature. Assessment of additional E. coli data finds this stream now meets Nebraska's E. coli standards and the E. coli impairment will be delisted. This stream will remain in category 4c due to the high temperature impairment.

NP2-10000: North Platte River –This waterbody was listed as impaired in the 2008 Integrated Report for a fish consumption advisory. New fish tissue assessments show that the fish consumption advisory can be removed for this waterbody. The fish consumption advisory impairment will be delisted and this waterbody will be placed in category 4a due to an E. coli impairment with an EPA approved TMDL (October 17,2003).

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
Lakes												
NP1-L0010	Cody Park Lake (North Platte)	NA	NA		NA		NA		3			
NP1-L0020	North Platte City Lake	NA	NA		NA		NA		3			
NP1-L0030	Lake Ogallala	NA	I		S		S	I	4a,r	Nutrients, Low dissolved oxygen	Total phosphorus, Total nitrogen, Chlorophyll a	Dissolved oxygen TMDL approved September 2007, Lake recently renovated
NP2-L0010	Lake C. W. McConaughy	S	I		S	S	S	I	5	Nutrients, Low dissolved oxygen	Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment
NP2-L0020	Camp Valley Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0030	Phillips Flats Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0040	Upper East Jones Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0050	Lower West Jones Lake (Crescent Lake NWR	NA	NA		NA		NA		3			
NP2-L0060	Swede Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0070	Deer Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0080	Christ Lake (Crescent Lake NWR	NA	NA		NA		NA		3			
NP2-L0090	Crane Lake (Crescent Lake NWR)	NA	S		S		S	S	2			Delist pH-naturally alkaline Sandhills lake
NP2-L0100	Hackberry Lake (Crescent Lake NWR)	NA	S		S		S	S	2			Delist pH-naturally alkaline Sandhills lake

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NP2-L0110	Island Lake (Crescent Lake NWR)	NA	S		S		S	S	2			Fish consumption assessment
NP2-L0120	Shafer Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0130	Roundup Lake (Crescent Lake NWR)	NA	S		S		S	S	2			Delist pH-naturally alkaline Sandhills lake
NP2-L0140	Mallard Arm (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0150	Blue Lake (Crescent Lake NWR)	NA	I		S		S	I	5	Low dissolved oxygen	None	Low dissolved oxygen occurs naturally in highly productive lakes of the Sandhills
NP2-L0160	Duck Slough (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0170	Gimlet Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0180	Goose Lake (Crescent Lake NWR)	NA	S		I		S	I	4c	High conductivity	None	Sandhills lakes have naturally elevated conductivity
NP2-L0190	West Jones Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0200	Swan Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0210	Boyd Pond (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0220	Lost Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0230	Lower Harrison Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NP2-L0240	Upper Harrison Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0250	Redhead Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0260	Perrin Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0270	Tree Claim Lake (Crescent Lake NWR)	NA	S		I		S	I	4c	High conductivity	None	Sandhills lakes have naturally elevated conductivity
NP2-L0280	Upper Tree Claim Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0290	Smith Lake (Crescent Lake NWR)	NA	S		S		S	S	2			
NP2-L0300	Border Lake (Crescent Lake NWR)	NA	I		I		S	I	5	Low dissolved oxygen, High conductivity	None	Delist pH-naturally alkaline Sandhills lake, low dissolved oxygen and high conductivity occur naturally Sandhills lakes
NP2-L0310	Ramelli Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP2-L0320	Martin Lake (Crescent Lake NWR)	NA	NA		NA		NA		3			
NP3-L0010	Bridgeport Southeast Lake (SRA)	NA	S		S		S	S	2			
NP3-L0020	Bridgeport Northeast Lake (SRA)	NA	NA		NA		NA		3			
NP3-L0030	Bridgeport Middle Lake (SRA)	S	S		S		S	S	1			Fish consumption assessment
NP3-L0040	Bridgeport Southwest Lake (SRA)	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NP3-L0050	Bridgeport Northwest Lake (SRA)	NA	S		S		S	S	2			
NP3-L0060	Lake Minatare (North Platte NWR)	S	I		S		S	S	5	Low dissolved oxygen, Nutrients	Total phosphorus	Fish consumption assessment,
NP3-L0070	Winters Creek Lake (North Platte NWR)	NA	NA		NA		NA		3			
NP3-L0080	Cochran Lake	NA	I		S		S	I	5	High pH	Unknown	Fish consumption assessment, Delist nutrients -insufficient data for assessment procedures
NP3-L0090	Little Lake Alice (No. 2) (North Platte NWR)	NA	NA		NA		NA		3			
NP3-L0100	Buffalo Springs Lake (WMA)	NA	NA		NA		NA		3			
NP3-L0110	Lake Alice (North Platte NWR)	NA	NA		NA		NA		3			
NP3-L0120	Terry's Pit Lake	NA	NA		NA		NA		3			
NP3-L0130	University Lake	NA	NA		NA		NA		3			
Streams												
NP1-10000	North Platte River	I	I		S		S	I	5	E. coli, Fish consumption advisory	E. coli, Hazard Index compounds*, Mercury	Fecal coliform TMDL approved 10/03, Aquatic community & fish consumption assessment
NP1-10100	Scout Creek	NA	NA		NA		NA		3			
NP1-10110	Ditch No. 2	NA	NA		NA		NA		3			
NP1-10200	Scout Creek		NA		NA		NA		3			
NP1-20000	North Platte River	S	S		S		S	S	1			Aquatic community assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NP1-20100	Unnamed Creek		NA		NA		NA		3			
NP1-20200	Unnamed Creek		NA		NA		NA		3			
NP1-20300	Unnamed Creek		NA		NA		NA		3			
NP1-20400	Ditch No. 3		NA		NA		NA		3			
NP1-20500	Birdwood Creek	S	I		S		S	I	4c	High temperature	Temperature	Aquatic community assessment, Delist E. coli-assessment of additional data shows full support
NP1-20510	West Birdwood Creek	NA	NA		NA		NA		3			
NP1-20520	North Fork Birdwood Creek		NA		NA		NA		3			
NP1-20521	Squaw Creek		NA		NA		NA		3			
NP1-20530	North Fork Birdwood Creek		NA		NA		NA		3			
NP1-30000	North Platte River	S	I		S		S	I	4c	High Temperature	Temperature	Aquatic community assessment
NP1-30100	Bull Ditch		NA		NA		NA		3			
NP1-30200	East Clear Creek		NA		NA		NA		3			
NP1-30300	Unnamed Drain		NA		NA		NA		3			
NP1-30400	Unnamed Drain		NA		NA		NA		3			
NP1-30500	Cedar Creek		NA		NA		NA		3			
NP1-30600	Lake Creek		NA		NA		NA		3			
NP1-30700	Unnamed Drain		NA		NA		NA		3			
NP1-30800	Sand Creek		NA		NA		NA		3			
NP1-30900	Whitetail Creek	NA	S		NA		NA	S	2			Aquatic community assessment
NP1-30910	Unnamed Creek		NA		NA		NA		3			
NP1-31000	Whitetail Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NP1-40000	North Platte River	S	I		S		S	I	4c	High Temperature	Temperature	
NP1-40100	Unnamed Drain		NA		NA		NA		3			
NP1-40200	Sutherland Canal	NA	S		NA		NA	S	2			Fish Tissue Assessment
NP2-10000	North Platte River	I	S		S		S	I	4a	E. coli	E. coli	Fecal coliform TMDL approved 10/03, Delist fish consumption advisory-new assessment shows full support, Aquatic community & fish consumption assessment
NP2-10100	Lonergan Creek		NA		NA		NA		3			
NP2-10200	Sand Creek		NA		NA		NA		3			
NP2-10300	Otter Creek	I	S		S		S	I	5	E. coli	E. coli	
NP2-10400	Clear Creek		NA		NA		NA		3			
NP2-10500	Plum Creek		NA		NA		NA		3			
NP2-10600	Plum Creek		NA		NA		NA		3			
NP2-10700	Ash Creek		S		NA		NA	S	2			Aquatic community assessment
NP2-10800	Blue Creek		I		S		S	I	4c	High Temperature	Temperature	Aquatic community assessment
NP2-10900	Blue Creek	NA	NA		NA		NA		3			
NP2-11000	Blue Creek	NA	S		NA		NA	S	2			Aquatic community assessment
NP2-11100	Blue Creek	NA	NA		NA		NA		3			
NP2-11200	Blue Creek	NA	S		NA		NA	S	2			Aquatic community assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NP2-11300	Blue Creek	NA	S		NA		NA	S	2			Aquatic community assessment
NP2-11400	Blue Creek	NA	NA		NA		NA		3			
NP2-11500	Lost Creek		NA		NA		NA		3			
NP2-11600	Rush Creek		S		NA		NA	S	2			Aquatic community assessment
NP2-11700	Coldwater Creek		NA		NA		NA		3			
NP2-11800	Cedar Creek		NA		NA		NA		3			
NP2-11900	Cedar Creek		NA		NA		NA		3			
NP2-12000	Deep Holes Creek		NA		NA		NA		3			
NP2-12100	Lower Dugout Creek		NA		NA		NA		3			
NP2-12200	Silvernail Drain		NA		NA		NA		3			
NP3-10000	North Platte River	I	S		S		S	I	5	E. coli, Fish consumption advisory	E. coli, Hazard index compounds	Fecal coliform TMDL approved 10/03, Aquatic community & Fish consumption assessment
NP3-10100	Pumpkin Creek		I		S		S	I	5	Selenium, Low dissolved oxygen	Selenium, Unknown	
NP3-10200	Pumpkin Creek		NA		NA		NA		3			
NP3-10210	Greenwood Creek		NA		NA		NA		3			
NP3-10300	Pumpkin Creek	NA	NA		NA		NA		3			
NP3-10310	Lawrence Fork		NA		NA		NA		3			
NP3-10400	Pumpkin Creek		NA		NA		NA		3			
NP3-10410	Big Horn Gulch		NA		NA		NA		3			
NP3-10500	Pumpkin Creek		NA		NA		NA		3			
NP3-10510	Willow Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NP3-10600	Upper Dugout Creek		NA		NA		NA		3			
NP3-10700	Indian Creek		NA		NA		NA		3			
NP3-10800	DeGraw Drain		NA		NA		NA		3			
NP3-10900	Red Willow Creek	I	S		S		S	I	5	E. coli	E. coli	
NP3-10910	Wildhorse Drain		S		NA		NA	S	2			Aquatic community assessment
NP3-10911	Wildhorse Canyon		NA		NA		NA		3			
NP3-10920	Wildhorse Drain	NA	NA		NA		NA		3			
NP3-11000	Red Willow Creek		S		NA		NA	S	2			Aquatic community assessment
NP3-11100	Red Willow Creek		S		NA		NA	S	2			Fish consumption assessment
NP3-11110	West Water Creek		NA		NA		NA		3			
NP3-11200	Red Willow Creek		NA		NA		NA		3			
NP3-11300	Bayard Drain		NA		NA		NA		3			
NP3-11400	Bayard Drain	NA	NA		NA		NA		3			
NP3-11410	Stuckenhole Drain		NA		NA		NA		3			
NP3-11500	Bayard Drain		NA		NA		NA		3			
NP3-11600	Cleveland Drain		NA		NA		NA		3			
NP3-11700	Ninemile Creek	I	S		S		S	I	5	E. coli	E. coli	
NP3-11800	Ninemile Creek	NA	NA		NA		NA		3			
NP3-11810	Moffat Drain		NA		NA		NA		3			
NP3-11820	Alliance Drain	NA	NA		NA		NA		3			
NP3-11900	Ninemile Creek	NA	S		NA		NA	S	2			Fish consumption assessment
NP3-11910	East Ninemile Creek		NA		NA		NA		3			
NP3-12000	Ninemile Creek	S	I		S		S	I	5	Dissolved Oxygen	Unknown	
NP3-12100	Fairfield Seep		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NP3-12200	Melbeta Drain		NA		NA		NA		3			
NP3-12300	Scottsbluff Drain No. 2		NA		NA		NA		3			
NP3-12400	Gering Drain	I	S		S		S	I	5	E. coli	E. coli	
NP3-12500	Gering Drain		S		NA		NA	S	2			Aquatic community assessment
NP3-12600	Winters Creek	I	S		S		S	I	5	E. coli	E. coli	
NP3-12610	Scottsbluff Drain No. 1		NA		NA		NA		3			
NP3-12620	Dunham Andrews Drain		NA		NA		NA		3			
NP3-12700	Winters Creek		NA		NA		NA		3			
NP3-12800	Unnamed Creek		NA		NA		NA		3			
NP3-12900	Tub Springs Drain	NA	S		NA		NA	S	2			Fish Tissue Assessment
NP3-12910	Unnamed Creek		NA		NA		NA		3			
NP3-12911	Unnamed Creek		NA		NA		NA		3			
NP3-13000	Tub Springs Drain	I	I		S		S	I	5	E. coli, Selenium	E. coli, Selenium	
NP3-13010	Sunflower Drain		NA		NA		NA		3			
NP3-13100	Tub Springs Drain	NA	S		NA		NA	S	2			Fish consumption assessment
NP3-13110	Hiersche Drain	NA	NA		NA		NA		3			
NP3-13200	Tub Spring Drain		NA		NA		NA		3			
NP3-20000	North Platte River	I	S		S		S	I	4a	E. coli	E. coli	Fecal coliform TMDL approved 10/03, Aquatic community assessment
NP3-20100	Unnamed Creek		NA		NA		NA		3			
NP3-20200	Mitchell Drain		NA		NA		NA		3			
NP3-20300	Spottedtail Creek		NA		NA		NA		3			
NP3-20310	Unnamed Creek		NA		NA		NA		3			
NP3-20400	Spottedtail Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NP3-20500	Browns Canyon		NA		NA		NA		3			
NP3-20600	Dry Spottedtail Creek		NA		NA		NA		3			
NP3-20610	Unnamed Drain		NA		NA		NA		3			
NP3-20700	Dry Spottedtail Creek		S		NA		NA	S	2			Aquatic community assessment
NP3-30000	North Platte River	I	S		S		S	I	4a	E. coli	E. coli	Fecal coliform TMDL approved 10/03, Aquatic community assessment
NP3-30100	Unnamed Drain		NA		NA		NA		3			
NP3-30200	Sheep Creek		NA		NA		NA		3			
NP3-30300	Sheep Creek	NA	NA		NA		NA		3			
NP3-30310	Dry Sheep Creek	NA	NA		NA		NA		3			
NP3-30400	Sheep Creek	NA	S		NA		NA	S	2			Aquatic community & Fish consumption assessment
NP3-30410	Unnamed Creek		NA		NA		NA		3			
NP3-30500	Sheep Creek		NA		NA		NA		3			
NP3-30600	Horse Creek	I	S		S		S	I	5	E. coli	E. coli	
NP3-30610	Unnamed Drain		NA		NA		NA		3			
NP3-30620	Owl Creek		NA		NA		NA		3			
NP3-30621	Dry Creek		NA		NA		NA		3			
NP3-30621.1	Dry Creek-Branch A		NA		NA		NA		3			
NP3-30621.2	Dry Creek-Branch B		NA		NA		NA		3			
NP3-30622	Dry Creek		NA		NA		NA		3			
NP3-30622.1	Unnamed Drain		NA		NA		NA		3			
NP3-30623	Kiowa Creek		NA		NA		NA		3			
NP3-30623.1	Kiowa Creek-Branch B		NA		NA		NA		3			
NP3-30624	Kiowa Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
NP3-30630	Owl Creek		NA		NA		NA		3			
NP3-30640	Owl Creek		NA		NA		NA		3			
NP3-40000	North Platte River	NA	NA		NA		NA		3			
NP3-50000	North Platte River	I	I		S		S	I	4a,c	E. coli, High temperature	E. coli, temperature	Fecal coliform TMDL approved 10/03, Aquatic community & Fish consumption assessment

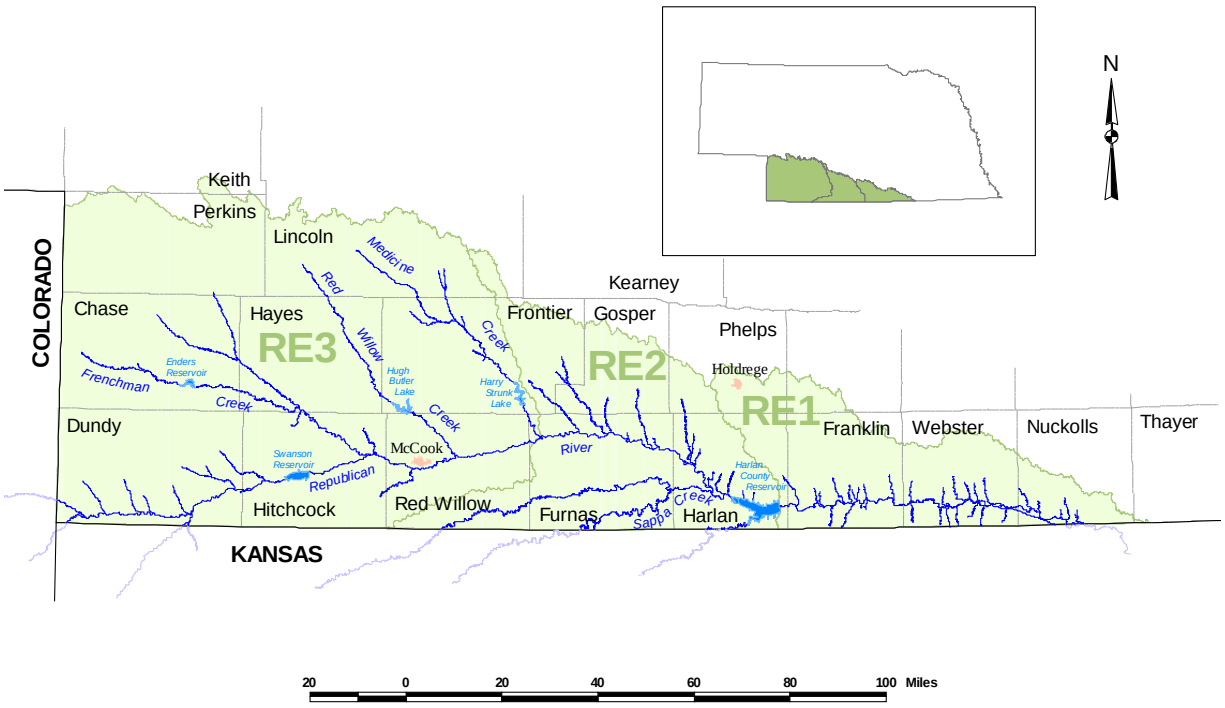
* ***Cancer risk compounds*** -Aroclor-1248 (PCB-1248), Aroclor-1254 (PCB-1254), Aroclor-1260 (PCB-1260), cis-chlordane, Chlordane, trans-chlordane, DDD, DDE, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin
Hazard index compounds- Aroclor-1254 (PCB-1254), Lindane (g-BHC), cis-chlordane, Chlordane, trans-chlordane, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin, Mercury, Cadmium, Selenium

Literature Cited:

McCarraher, D. B. 1964. Limnology of carbonate – bicarbonate lakes in Nebraska. Nebraska Game and Parks Commission: White Papers and Manuscripts. http://digitalcommons.unl.edu/nebgamewhitepap/8/

McCarraher, D. B. 1977. Nebraska's Sandhills Lakes. Nebraska Game and Parks Commission. Lincoln, NE.

REPUBLICAN RIVER BASIN (and Subbasins)



Republican River Basin – Hydrologic Units 10250001, 10250002, 10250003, 10250004, 10250006, 10250007, 10250008, 10250009, 10250011, 10250014, 10250015 and 0250016

The Republican River basin includes 102 designated stream segments and 20 designated lakes/reservoirs.

Waterbody Type	Primary Contact Recreation	Aquatic Life CA[1]	Aquatic Life CB[1]	Aquatic Life WA[1]	Aquatic Life WB[1]	Water Supply – Public Drinking	Water Supply – Ag	Water Supply-Ind.	Aesthetics
Lakes	20	0	1	19	0	0	20	0	20
Streams	33	0	19	24	59	0	102	0	102

[1] CA = Coldwater Class A, CB = Coldwater Class B, WA = Warmwater Class A and WB = Warmwater Class B

Delisting/ Changes from 2006 & 2008 IRs

The following are waters and or parameters that were delisted – removed from category 5 or other significant changes from the 2006 and 2008 Integrated Reports (IRs).

RE3-L0070: Wellfleet Lake - This waterbody was listed as impaired by excess nutrients in the 2006 IR. EPA indicated that the nutrient values NDEQ used for the 2006 assessments were not acceptable and not suitable for Clean Water Act purposes. In February 2009, EPA deferred taking action on this lake until the 2010 Integrated Report when mutually agreed upon nutrient assessment end points would be used to assess for nutrient impairments. Following the agreed upon 2010 nutrient assessment methodologies, insufficient

nutrient samples exist for this waterbody to assess for a nutrient impairment, therefore the nutrient impairment will be delisted. This lake will remain in category 5 because the aquatic life beneficial use is impaired by low dissolved oxygen.

RE3-L0110: Champion Mill Pond – This waterbody was listed as impaired for nutrients in the 2006 Integrated Report. EPA indicated that the nutrient values NDEQ used for the 2006 assessments were not acceptable and not suitable for Clean Water Act purposes. In February 2009, EPA deferred taking action on this waterbody until the 2010 Integrated Report when mutually agreed upon nutrient assessment end points would be used to assess for nutrient impairments. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient samples exist for this waterbody to assess for a nutrient impairment, therefore the nutrient impairment will be delisted. Additional parameters designed to protect aquatic life indicate this waterbody is supporting the aquatic life beneficial use. Lastly, the 2010 aesthetics beneficial use assessment for this waterbody demonstrates full support; therefore this waterbody will be placed in category 2.

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
Lakes												
RE1-L0005	Big Indian Pond (WMA)	NA	NA		NA		NA		3			
RE1-L0010	Sacramento-Wilcox Lake No. 1	NA	S		S		S	S	2			
RE1-L0020	Sacramento-Wilcox Lake No. 2	NA	NA		NA		NA		3			
RE1-L0030	Sacramento-Wilcox Lake No. 3	NA	NA		NA		NA		3			
RE1-L0040	Holdrege Park Lake	NA	I		S		S	I	5	High pH	Unknown	
RE1-L0050	Limestone Bluffs Lake (WMA)	NA	NA		NA		NA		3			
RE2-L0010	Harlan County Reservoir	S	I		S		S	I	5	Nutrients	Total phosphorus, Total nitrogen	Fish consumption assessment
RE2-L0020	Oxford City Lake	NA	NA		NA		I	I	5	Algal blooms	Nutrients	
RE3-L0010	Harry Strunk Lake (Medicine Creek Reservoir)	S	I		S		S	I	5	Nutrients	Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment
RE3-L0020	Bartley Diversion Dam Lake (WMA)	NA	NA		NA		NA		3			
RE3-L0030	Hansen Memorial Reserve Lake	NA	I		S		S	I	4r	Nutrients	Total phosphorus, Total nitrogen	Lake recently renovated
RE3-L0040	Red Willow Diversion Dam Lake (WMA)	NA	NA		NA		NA		3			
RE3-L0050	Barnett Park Lake (McCook)	NA	NA		NA		S	S	2			
RE3-L0060	Hugh Butler Lake (Red Willow Reservoir)	S	I		S		S	I	5	Fish consumption advisory, Nutrients, Low dissolved oxygen	Mercury, Total phosphorus, Total nitrogen	Fish consumption assessment
RE3-L0070	Wellfleet Lake	S	I		S		S	I	5	Low dissolved oxygen	Unknown	Fish consumption assessment, Delist nutrients- insufficient data for assessment procedures

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
RE3-L0080	Camp Hayes Lake (WMA)	NA	S		S		S	S	2			
RE3-L0090	Swanson Reservoir	S	I		S		S	I	5	Nutrients	Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment
RE3-L0100	Enders Reservoir	S	I		S		S	I	5	Fish consumption advisory, Nutrients	Mercury, Total phosphorus, Chlorophyll a	Fish consumption assessment
RE3-L0110	Champion Mill Pond (SRA)	NA	S		S		S	S	2			Delist nutrients- insufficient data for assessment procedures
RE3-L0120	Rock Creek Lake (SRA)	NA	I		S		S	I	5	Fish consumption advisory	Mercury	Fish consumption assessment
Streams												
RE1-10000	Republican River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 3/05, Aquatic community & Fish consumption assessment
RE1-10100	Blakely Creek		NA		NA		NA		3			
RE1-10110	Oak Creek		NA		NA		NA		3			
RE1-10200	Lost Creek	I	I		NA		NA	I	5	E. coli, Low dissolved oxygen	E. coli, unknown	
RE1-10300	Unnamed Creek		NA		NA		NA		3			
RE1-10400	Cottonwood Creek		NA		NA		NA		3			
RE1-10500	Beaver Creek		NA		NA		NA		3			
RE1-20000	Republican River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 3/05
RE1-20100	Rankin Creek		NA		NA		NA		3			
RE1-20200	Willow Creek		NA		NA		NA		3			
RE1-20300	Courtland Canal	I	NA		NA		NA	I	5	E. coli	E. coli	

Waterbody ID	Waterbody Name	**Recreation**	**Aquatic Life**	**Public Drinking Water**	**Agriculture Water Supply**	**Industrial Water Supply**	**Aesthetics**	**Overall Assessment**	**2010 IR**	Impairments	Parameters of Concern	Comments/Action
RE1-30000	Republican River	I	S		S		S	I	5	E. coli	E. coli	
RE1-30100	Elm Creek		S		S		S	S	1			
RE1-30200	Lost Creek		NA		NA		NA		3			
RE1-30300	Hicks Creek		S		NA		NA	S	2			Aquatic community assessment
RE1-30400	Dry Creek		NA		NA		NA		3			
RE1-30500	Crooked Creek		NA		NA		NA		3			
RE1-30600	Cedar Creek		NA		NA		NA		3			
RE1-30700	Indian Creek		NA		NA		NA		3			
RE1-30800	East Penny Creek		S		NA		NA	S	2			Aquatic community assessment
RE1-30900	Louisa Creek		NA		NA		NA		3			
RE1-31000	Walnut Creek		NA		NA		NA		3			
RE1-31100	Farmers Creek		S		NA		NA	S	2			Aquatic community assessment
RE1-31200	Thompson Creek	I	I		S		S	I	5	E. coli, High temperature	E. coli, Temperature	
RE1-40000	Republican River	I	S		S		S	I	5	E. coli	E. coli	Aquatic community & Fish consumption assessment
RE1-40100	Wortham Creek		NA		NA		NA		3			
RE1-40200	Lovely Creek		NA		NA		NA		3			
RE1-40300	Reams Creek		NA		NA		NA		3			
RE1-40400	Coates Creek		NA		NA		NA		3			
RE1-40410	Wasp Creek		NA		NA		NA		3			
RE1-40500	Calumet Creek		NA		NA		NA		3			
RE1-40600	Walnut Run		NA		NA		NA		3			

Waterbody ID	Waterbody Name	**Recreation**	**Aquatic Life**	**Public Drinking Water**	**Agriculture Water Supply**	**Industrial Water Supply**	**Aesthetics**	**Overall Assessment**	**2010 IR**	Impairments	Parameters of Concern	Comments/Action
RE1-40700	Center Creek		S		NA		NA	S	2			Aquatic community assessment
RE1-40800	Lost Creek		NA		NA		NA		3			
RE1-40900	Little Cottonwood Creek		NA		NA		NA		3			
RE1-41000	Cottonwood Creek		S		NA		NA	S	2			Aquatic community assessment
RE1-41100	Turkey Creek		NA		NA		NA		3			
RE1-50000	Republican River	S	I		S		S	I	5	E. coli, May-June atrazine, Low dissolved oxygen	E. coli, atrazine, unknown	
RE2-10000	Republican River	I	S		S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 3/05
RE2-10100	Methodist Creek	I	S		S		S	I	5	E. coli	E. coli	
RE2-10200	Cook Creek	I	S		S		S	I	5	E. coli	E. coli	
RE2-10300	Prairie Dog Creek	I	S		S		S	I	5	E. coli, Low dissolved oxygen	E. coli, unknown	Aquatic community assessment
RE2-10400	Rope Creek		NA		NA		NA		3			
RE2-10500	Flag Creek		S		NA		NA	S	2			Aquatic community assessment
RE2-10600	Sappa Creek		I		S		S	I	5	Low dissolved oxygen	Unknown	Aquatic community assessment
RE2-10610	Beaver Creek	I	I		S		S	I	5	E. coli, Low dissolved oxygen	E. coli, Unknown	Aquatic community assessment
RE2-10620	Sheep Creek		NA		NA		NA		3			
RE2-10630	Dutch Creek		NA		NA		NA		3			
RE2-10700	Milrose Creek		NA		NA		NA		3			
RE2-10800	Foster Creek		NA		NA		NA		3			
RE2-10900	Spring Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	**Recreation**	**Aquatic Life**	**Public Drinking Water**	**Agriculture Water Supply**	**Industrial Water Supply**	**Aesthetics**	**Overall Assessment**	**2010 IR**	Impairments	Parameters of Concern	Comments/Action
RE2-10910	Deep Creek		NA		NA		NA		3			
RE2-11000	Swartz Creek		NA		NA		NA		3			
RE2-11100	Turkey Creek		S		S		S	S	1			
RE2-11200	Dry Creek		NA		NA		NA		3			
RE2-11300	Elk Creek		NA		NA		NA		3			
RE2-11400	Muddy Creek		I		S		S	I	5	Fish consumption advisory	Hazard Index compounds*, Mercury	Aquatic community & Fish consumption assessment
RE2-11410	West Muddy Creek		NA		NA		NA		3			
RE2-11500	Muddy Creek		S		NA		NA	S	2			Aquatic community assessment
RE2-11600	Deer Creek		S		NA		NA	S	2			Aquatic community assessment
RE3-10000	Republican River	I	I		S		S	I	5	E. coli, Selenium	E. coli, Selenium	E. coli TMDL approved 3/05
RE3-10100	Medicine Creek	S	I		S		S	I	5	Low dissolved oxygen	Dissolved oxygen	Aquatic community assessment, ICI score influenced by low water†
RE3-10200	Medicine Creek	I	S		S		S	I	5	E. coli	E. coli	Fish consumption assessment
RE3-10210	Cedar Creek		NA		NA		NA		3			
RE3-10220	Spring Creek		NA		NA		NA		3			
RE3-10230	Curtis Creek		NA		NA		NA		3			
RE3-10240	Fox Creek		NA		NA		NA		3			
RE3-10241	Cut Canyon		NA		NA		NA		3			
RE3-10300	Medicine Creek	I	S		S		S	I	5	E. coli	E. coli	
RE3-10310	Brushy Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	**Recreation**	**Aquatic Life**	**Public Drinking Water**	**Agriculture Water Supply**	**Industrial Water Supply**	**Aesthetics**	**Overall Assessment**	**2010 IR**	Impairments	Parameters of Concern	Comments/Action
RE3-10400	Medicine Creek	I	S		S		S	I	5	E. coli	E. coli	Aquatic community assessment
RE3-10500	Red Willow Creek	I	S		S		S	I	5	E. coli	E. coli	
RE3-10600	Red Willow Creek	I	S		S		S	I	5	E. coli	E. coli	Aquatic community assessment
RE3-10700	Red Willow Creek		NA		NA		NA		3			
RE3-10800	Driftwood Creek		S		S		S	S	1			
RE3-20000	Republican River	I	I		S		S	I	5	E. coli, Low dissolved oxygen	E. coli, unknown	Aquatic community assessment
RE3-20100	Blackwood Creek		NA		NA		NA		3			
RE3-20200	Frenchman Creek	I	I		S		S	I	5	E. coli, Selenium	E. coli, Selenium	Aquatic community assessment
RE3-20210	Bobtail Creek		NA		NA		NA		3			
RE3-20220	Stinking Water Creek	I	I		S		S	I	5	E. coli, High Temperature	E. coli, Temperature	Aquatic community & Fish consumption assessment
RE3-20221	Spring Creek		S		NA		NA	S	2			Aquatic community assessment
RE3-20300	Frenchman Creek	I	I		S		S	I	4a,c	E. coli, High Temperature	E. coli, Temperature	E. coli TMDL approved 3/05
RE3-20400	Frenchman Creek	I	I		S		S	I	5	E. coli, High temperature	E. coli, Temperature	Aquatic community assessment
RE3-20410	Sand Draw		NA		NA		NA		3			
RE3-20500	Frenchman Creek	NA	S		NA		NA	S	2			Fish consumption assessment
RE3-30000	Republican River	NA	S		NA		NA	S	2			Aquatic community assessment
RE3-40000	Republican River	I	S		S		S	I	5	E. coli	E. coli	
RE3-40100	Muddy Creek								3			

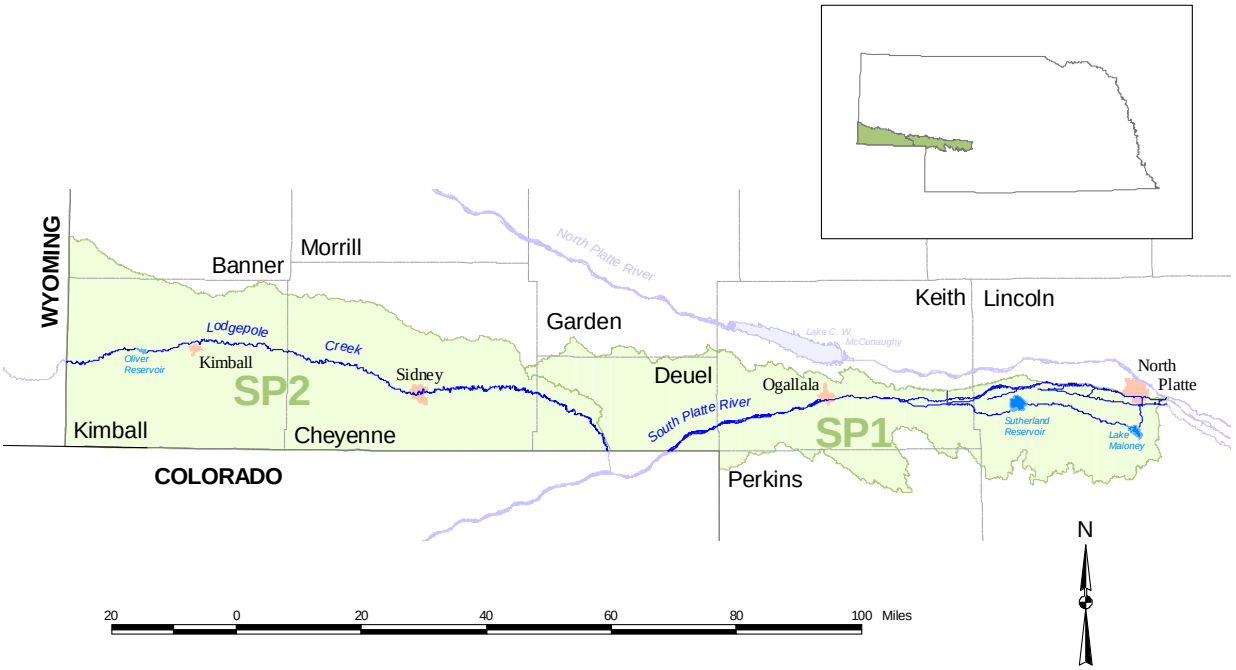
Waterbody ID	Waterbody Name	**Recreation**	**Aquatic Life**	**Public Drinking Water**	**Agriculture Water Supply**	**Industrial Water Supply**	**Aesthetics**	**Overall Assessment**	**2010 IR**	Impairments	Parameters of Concern	Comments/Action
RE3-40200	Burntwood Creek								3			
RE3-40300	Indian Creek								3			
RE3-40310	Rock Canyon								3			
RE3-40400	Indian Creek								3			
RE3-40500	South Fork Republican River	I	S		S		S	I	5	E. coli	E. coli	
RE3-40510	Big Timber Creek								3			
RE3-40600	Spring Creek								3			
RE3-40700	Horse Creek								3			
RE3-40800	Rock Creek	S	I		S		S	I	4c	High Temperature	Temperature	
RE3-50000	Republican River	I	S		S		S	I	5	E. coli	E. coli	Aquatic community assessment
RE3-50100	Buffalo Creek		S		S		S	S	1			
RE3-50200	Buffalo Creek		NA		NA		NA		3			
RE3-50300	North Fork Republican River	I	S		S		S	I	5	E. coli	E. coli	
RE3-50400	Arikaree River	I	S		S		S	I	5	E. coli	E. coli	
Wetlands												
RE1-Undesg.	Killdeer WPA‡		NA		NA		NA		3			
RE1-Undesg.	Prairie Dog WPA‡		NA		NA		NA		3			
RE2-Undesg.	Atlanta WPA‡		NA		NA		NA		3			
RE2-Undesg.	Jones WPA‡		NA		NA		NA		3			

* ***Cancer risk compounds*** -Aroclor-1248 (PCB-1248), Aroclor-1254 (PCB-1254), Aroclor-1260 (PCB-1260), cis-chlordane, Chlordane, trans-chlordane, DDD, DDE, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin
Hazard index compounds- Aroclor-1254 (PCB-1254), Lindane (g-BHC), cis-chlordane, Chlordane, trans-chlordane, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin, Mercury, Cadmium, Selenium

† See Appendix D: Ecological Justification for Excluding Specific Bio-Indicator Results When Determining Attainment Status of the Aquatic Life Beneficial Use for Nebraska's 2010 Water Quality Integrated Report

‡ See Appendix B: External Data for USFWS atrazine data collected from these wetlands.

SOUTH PLATTE RIVER BASIN (and Subbasins)



South Platte Basin – Hydrologic Units 10190012, 10190015, 10190016, 10190017 and 10190018

The South Platte River Basin includes 28 designated stream segments and 13 designated lakes/reservoirs.

Waterbody Type	Primary Contact Recreation	Aquatic Life CA[1]	Aquatic Life CB[1]	Aquatic Life WA[1]	Aquatic Life WB[1]	Water Supply – Public Drinking	Water Supply – Ag	Water Supply-Ind.	Aesthetics
Lakes	13	0	1	12	0	0	13	2	13
Streams	16	1	13	11	3	0	28	4	28

[1] CA = Coldwater Class A, CB = Coldwater Class B, WA = Warmwater Class A and WB = Warmwater Class B

Delisting/ Changes from 2006 & 2008 IRs

The following are waters and or parameters that were delisted – removed from category 5 or other significant changes from the 2006 and 2008 Integrated Reports (IRs).

SP1-L0030: Birdwood Lake and SP1-50000: South Platte River- These waterbodies were listed as impaired in the 2008 Integrated Report for fish consumption advisories. New fish tissue assessments find that the fish consumption advisories can be removed for both of these waterbodies. Additionally, both of these waterbodies support all assessed beneficial uses. The fish consumption advisory impairments will be delisted and both these waterbodies will be placed in category 2.

SP1-L0050: Hershey Lake - This waterbody was listed as impaired by excess nutrients in the 2006 IR. EPA indicated that the nutrient values NDEQ used for the 2006 assessments were not acceptable and not

suitable for Clean Water Act purposes. In February 2009, EPA deferred taking action on this lake until the 2010 Integrated Report when mutually agreed upon nutrient assessment end points would be used to assess for nutrient impairments. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient samples exist for this waterbody to assess for a nutrient impairment, therefore the nutrient impairment will be delisted. This lake will remain in category 5 because the aquatic life beneficial use is impaired by high pH and a fish consumption advisory.

SP1-L0080: Sutherland Reservoir-This waterbody was listed as impaired in the 2008 Integrated Report for a fish consumption advisory. New fish tissue assessments find that the fish consumption advisories can be removed for this reservoir. Additionally, this reservoir fully supports all assigned beneficial uses. The fish consumption advisory impairment will be delisted and this waterbody will be place in category 1.

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
Lakes												
SP1-L0010	Interstate Lake (North Platte)	NA	I		NA		S	I	5	Fish consumption advisory	Hazard index compounds*, Mercury	Fish consumption assessment
SP1-L0020	Lake Maloney	S	S		S	S	S	S	1			Fish consumption assessment
SP1-L0030	Birdwood Lake (WMA)	NA	S		S		S	S	2			Fish consumption assessment, Delist fish consumption advisory-new assessments show full support
SP1-L0040	East Hershey Lake (WMA)	NA	I		NA		NA	I	5	Fish consumption advisory	Hazard index compounds*, Mercury	Fish consumption assessment
SP1-L0050	Hershey Lake (WMA)	NA	I		S		S	I	5	Fish consumption advisory, High pH	Mercury, Unknown	Fish consumption assessment, Delist nutrients-insufficient data for assessment procedures
SP1-L0060	West Hershey Lake (WMA)	NA	NA		NA		NA		3			
SP1-L0070	East Sutherland Lake (WMA)	NA	NA		NA		NA		3			
SP1-L0080	Sutherland Reservoir	S	S		S	S	S	S	1			Fish consumption assessment, Delist fish consumption advisory-new assessments show full support
SP1-L0090	Ogallala City Park Lake	NA	NA		NA		S	S	2			
SP1-L0095	Big Springs Community Lake	NA	NA		NA		I	I	4c	Dead trees	None	Received complaints about dead trees around the lake
SP1-L0100	Goldeneye Pond (WMA)	NA	S		I		S	I	5	Conductivity	Unknown	Fish consumption assessment
SP2-L0010	Chappell Interstate Lake	NA	I		NA		S	I	5	Fish consumption advisory	Hazard index compounds*	Fish consumption assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
SP2-L0030	Oliver Reservoir	S	I		S		S	I	5	Fish consumption advisory, Nutrients, Low dissolved oxygen	Mercury, Total phosphorus, Total nitrogen, Chlorophyll a	Fish consumption assessment
Streams												
SP1-10000	South Platte River	S	I		S		S	I	5	Fish consumption advisory	Hazard Index compounds*	Fish consumption assessment
SP1-10100	Fremont Slough	NA	NA		NA		NA		3			
SP1-10200	Fremont Slough	NA	NA		NA		NA		3			
SP1-10300	Fremont Slough		NA		NA		NA		3			
SP1-10400	Fremont Slough		NA		NA		NA		3			
SP1-10500	Outlet Canal	S	I		NA	S	NA	I	5	Fish consumption advisory	Hazard Index compounds*, Mercury	Fish consumption assessment
SP1-10600	Outlet Canal	NA	I		NA	S	NA	I	5	Fish consumption advisory	Cancer Risk & Hazard Index compounds*	Fish consumption assessment
SP1-10700	Sutherland Canal	NA	NA		NA		NA		3			
SP1-10710	South Platte River Supply Canal		NA		NA	NA	NA		3			
SP1-20000	South Platte River	S	I		S		S	I	5	Selenium	Selenium	Aquatic community & Fish consumption assessment
SP1-20100	Fremont Slough	NA	S		NA		NA	S	2			Aquatic community assessment
SP1-20200	Fremont Slough		NA		NA		NA		3			
SP1-30000	South Platte River	NA	NA		NA		NA		3			
SP1-30100	Fremont Slough		S		NA		NA	S	2			Aquatic community assessment

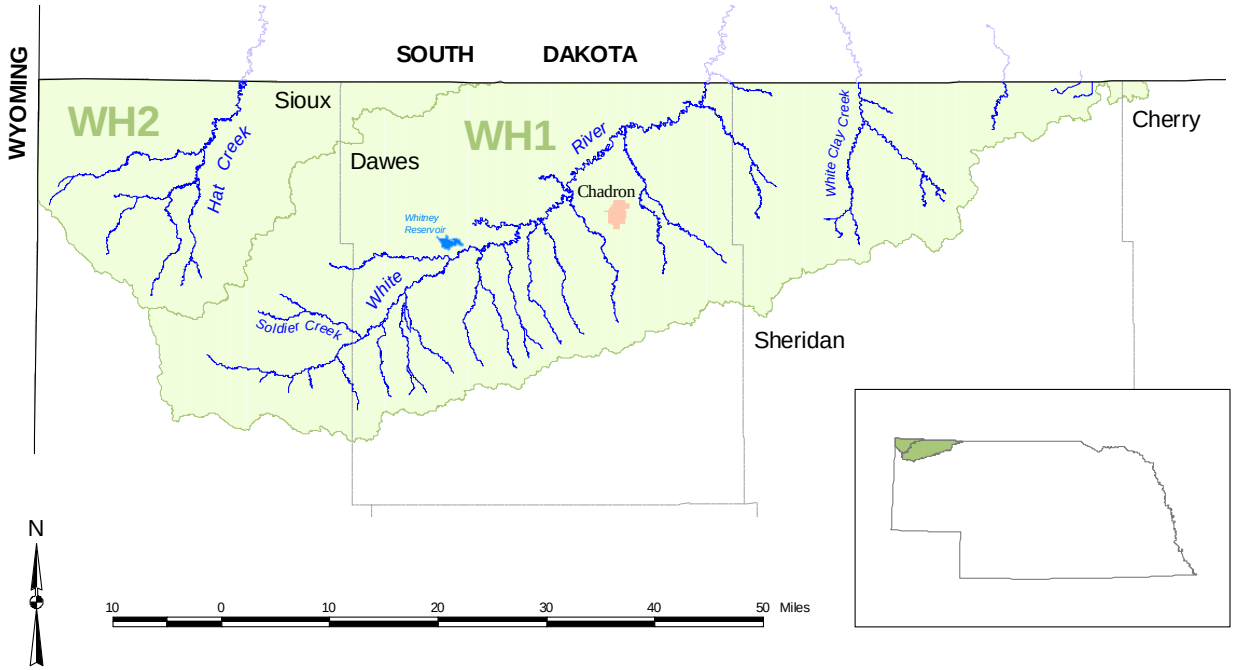
Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
SP1-30200	Unnamed Creek	NA	NA		NA		NA		3			
SP1-40000	South Platte River	NA	S		NA		NA	S	2			Aquatic community assessment
SP1-40100	Unnamed Creek		NA		NA		NA		3			
SP1-50000	South Platte River	NA	S		NA		NA	S	2			Fish consumption assessment, Delist fish consumption advisory based on new assessments
SP1-60000	South Platte River	NA	S		NA		NA	S	2			Aquatic community assessment
SP1-70000	South Platte River	S	S		S		S	S	1			All parameters support beneficial uses
SP1-80000	South Platte River	NA	S		NA		NA	S	2			Aquatic community assessment
SP1-90000	South Platte River	S	I		I		S	I	5	Conductivity, Selenium	Conductivity, Selenium	
SP2-10000	Lodgepole Creek		S		NA		NA	S	4b			Aquatic community assessment, IBI score is influenced by low water†, NPDES permit issues
SP2-20000	Lodgepole Creek		S		NA		NA	S	2			Aquatic community assessment, ICI score is influenced by low water†
SP2-30000	Lodgepole Creek		S		NA		NA	S	2			Aquatic community assessment
SP2-40000	Lodgepole Creek		S		NA		NA	S	2			Aquatic community assessment

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
SP2-50000	Lodgepole Creek		I		S		S	I	5	Low dissolved oxygen	Unknown	
SP2-60000	Lodgepole Creek		NA		NA		NA		3			

* ***Cancer risk compounds*** -Aroclor-1248 (PCB-1248), Aroclor-1254 (PCB-1254), Aroclor-1260 (PCB-1260), cis-chlordane, Chlordane, trans-chlordane, DDD, DDE, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin
Hazard index compounds- Aroclor-1254 (PCB-1254), Lindane (g-BHC), cis-chlordane, Chlordane, trans-chlordane, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin, Mercury, Cadmium, Selenium

† See Appendix D: Ecological Justification for Excluding Specific Bio-Indicator Results When Determining Attainment Status of the Aquatic Life Beneficial Use for Nebraska's 2010 Water Quality Integrated Report

WHITE RIVER - HAT CREEK BASIN (and Subbasins)



White River-Hat Creek Basin – Hydrologic Units 10120108, 10120108 and 10140201

The White River-Hat Creek Basin includes 63 designated stream segments and 27 designated lake/reservoirs

Waterbody Type	Primary Contact Recreation	Aquatic Life CA[1]	Aquatic Life CB[1]	Aquatic Life WA[1]	Aquatic Life WB[1]	Water Supply – Public Drinking	Water Supply – Ag	Water Supply-Ind.	Aesthetics
Lakes	27	0	14	13	0	0	27	0	27
Streams	18	15	36	1	11	7	63	0	63

[1] CA = Coldwater Class A, CB = Coldwater Class B, WA = Warmwater Class A and WB = Warmwater Class B

Delisting/ Changes from 2006 & 2008 IRs

The following are waters and or parameters that were delisted – removed from category 5 or other significant changes from the 2006 and 2008 Integrated Reports (IRs).

WH1-L0010: Isham Lake - This waterbody was listed as impaired by excess nutrients in the 2006 IR. EPA indicated that the nutrient values NDEQ used for the 2006 assessments were not acceptable and not suitable for Clean Water Act purposes. In February 2009, EPA deferred taking action on this lake until the 2010 Integrated Report when mutually agreed upon nutrient assessment end points would be used to assess for nutrient impairments. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient samples exist for this waterbody to assess for a nutrient impairment, therefore the nutrient

impairment will be delisted. This lake will remain in category 5 because the aquatic life beneficial use is impaired by high pH.

WH1-L0060: Whitney Reservoir - The 2008 Integrated Report included this waterbody as impaired by excessive nutrients. The nutrient assessment process for 2008 was designed to provide numeric translators to the narrative aesthetic beneficial use criteria as defined in the State of Nebraska approved Title 117 – Nebraska Surface Water Quality Standards. EPA concluded that the nutrient values used to derive the numeric translators were not acceptable and could not be used for Clean Water Act purposes. For the 2010 Integrated Report, EPA and NDEQ agreed to an alternative set of nutrient assessment end points for this reporting cycle. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient samples exist for this waterbody to assess for a nutrient impairment, therefore the nutrient impairment will be delisted. Additional parameters designed to protect aquatic life indicate this waterbody is supporting the aquatic life beneficial use. Additionally, the 2010 aesthetics beneficial use assessment for this waterbody demonstrates full support; therefore, this waterbody will be relocated to category 2.

WH1-L0180: Boardgate Pond and WH2-L0020: Agate Pond - The 2008 IR included these waterbodies as impaired by excessive nutrients. The nutrient assessment process for 2008 was designed to provide numeric translators to the narrative aesthetic beneficial use criteria as defined in the State of Nebraska approved Title 117 – Nebraska Surface Water Quality Standards. EPA concluded that the nutrient values used to derive the numeric translators were not acceptable and could not be used for Clean Water Act purposes. For the 2010 Integrated Report, EPA and NDEQ agreed to an alternative set of nutrient assessment end points for this reporting cycle. Following the agreed upon 2010 nutrient assessment methodologies, insufficient nutrient data exits for these waterbodies to assess for nutrient impairments, therefore the nutrient impairments will be delisted. These lakes will remain in category 5 due to high pH levels impairing the aquatic life beneficial use.

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
Lakes												
WH1-L0010	Isham Lake	NA	I		S		S	I	5	High pH	Unknown	Delist nutrients -insufficient data for assessment procedures
WH1-L0020	Chadron City Reservoir South	NA	NA		NA		NA		3			
WH1-L0030	Chadron City Reservoir North	NA	S		S		S	S	2			
WH1-L0040	Chadron State Park Pond	NA	NA		NA		NA		3			
WH1-L0050	Snus Lake	NA	NA		NA		NA		3			
WH1-L0060	Whitney Reservoir	NA	S		S		S	S	2			Fish consumption assessment, Delist nutrients -insufficient data for assessment procedures
WH1-L0070	Dodd Dam Lake	NA	NA		NA		NA		3			
WH1-L0080	Rock Bass Dam Lake	NA	S		S		S	S	2			
WH1-L0090	Lake Crawford (Ft. Robinson State Park)	NA	NA		NA		NA		3			
WH1-L0100	Cherry Creek Pond (Ft. Robinson State Park)	NA	NA		NA		NA		3			
WH1-L0105	Cherry Creek Diversion Pond (Ft. Robinson State Park)	NA	NA		NA		NA		3			
WH1-L0110	Lower Ice House Pond (Ft. Robinson State Park)	NA	NA		NA		NA		3			
WH1-L0120	Ice House Diversion Pond (Ft Robinson State Park)	NA	NA		NA		NA		3			
WH1-L0130	Upper Ice House Pond (Ft. Robinson State Park)	NA	NA		NA		NA		3			
WH1-L0140	Grabel Pond No 1 (Ft. Robinson State Park)	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
WH1-L0150	Grabel Pond No 2 (Ft. Robinson State Park)	NA	NA		NA		NA		3			
WH1-L0160	Grabel Pond No 3 (Ft. Robinson State Park)	NA	NA		NA		NA		3			
WH1-L0170	Grabel Pond No 5 (Ft. Robinson State Park)	NA	NA		NA		NA		3			
WH1-L0180	Boardgate Pond	NA	I		S		S	I	5	High pH	Unknown	Delist nutrients -insufficient data for assessment procedures
WH1-L0190	Crazy Horse Lake (Ft. Robinson State Park)	NA	NA		NA		NA		3			
WH1-L0200	Lake Carter P. Johnson (Ft. Robinson State Park)	NA	I		S		S	I	5	Fish consumption advisory, High pH	Hazard Index compounds*, Mercury, Unknown	Fish consumption assessment
WH1-L0210	Beaver Dam Pond	NA	NA		NA		NA		3			
WH1-L0220	Round Top Pond	NA	NA		NA		NA		3			
WH2-L0010	Lundy Pond	NA	NA		NA		NA		3			
WH2-L0020	Agate Pond	NA	I		S		S	I	5	High pH	Unknown	Delist nutrients -insufficient data for assessment procedures
WH2-L0030	Meng Lake	NA	I		I		S	I	5	Nutrients, High pH, Conductivity	Total phosphorus, Unknown	
WH2-L0040	Gilbert-Baker Pond (WMA)	NA	NA		NA		NA		3			
Streams												
WH1-10000	White River		S	S	S		S	S	2			Aquatic community & Fish consumption assessment, IBI score influenced by low water†

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
WH1-10100	Unnamed Creek		NA		NA		NA		3			
WH1-10200	Unnamed Creek		NA		NA		NA		3			
WH1-10300	Wounded Knee Creek		NA		NA		NA		3			
WH1-10400	White Clay Creek		NA		NA		NA		3			
WH1-10410	Patton Creek		NA		NA		NA		3			
WH1-10420	Larabee Creek		S		NA		NA	S	2			Aquatic community assessment
WH1-10421	Unnamed Creek		NA		NA		NA		3			
WH1-10422	Unnamed Creek		NA		NA		NA		3			
WH1-10430	Larabee Creek		NA		NA		NA		3			
WH1-10500	White Clay Creek		NA		NA		NA		3			
WH1-10510	Unnamed Creek		NA		NA		NA		3			
WH1-10600	White Clay Creek		NA		NA		NA		3			
WH1-10610	Unnamed Creek		NA		NA		NA		3			
WH1-10700	Limekiln Creek		NA		NA		NA		3			
WH1-10800	Beaver Creek		NA		NA		NA		3			
WH1-10810	Little Beaver Creek		NA		NA		NA		3			
WH1-10900	Beaver Creek		S		NA		NA	S	2			Aquatic community assessment
WH1-11000	Alkali Creek		NA		NA		NA		3			
WH1-11100	Bordeaux Creek		S		NA		NA	S	2			Fish consumption assessment
WH1-11110	Little Bordeaux Creek	NA	NA		NA		NA		3			
WH1-11120	Big Bordeaux Creek		S		NA		NA	S	2			Aquatic community assessment
WH1-11200	Lone Tree Creek		NA		NA		NA		3			
WH1-11300	Chadron Creek	I	S	S	S		S	I	5	E. coli	E. coli	Fish consumption assessment
WH1-11400	Dead Horse Creek	NA	NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
WH1-11500	Trunk Butte Creek	NA	NA		NA		NA		3			
WH1-11600	Big Cottonwood Creek	NA	NA		NA		NA		3			
WH1-11700	Indian Creek	NA	NA		NA		NA		3			
WH1-11710	Cunningham Creek	NA	NA		NA		NA		3			
WH1-11800	Ash Creek		NA		NA		NA		3			
WH1-11810	East Ash Creek	NA	NA		NA		NA		3			
WH1-11820	West Ash Creek	NA	S		NA		NA	S	2			Aquatic community assessment
WH1-11900	Little Cottonwood Creek		NA		NA		NA		3			
WH1-12000	Little Cottonwood Creek	NA	NA		NA		NA		3			
WH1-20000	White River	I	S	S	S		S	I	4a	E. coli	E. coli	E. coli TMDL approved 1/06, Aquatic community & Fish consumption assessment
WH1-20100	White Clay Creek	I	S		S		S	I	5	E. coli	E. coli	
WH1-20110	Squaw Creek		NA		NA		NA		3			
WH1-20111	English Creek		NA		NA		NA		3			
WH1-20120	Squaw Creek	NA	NA		NA		NA		3			
WH1-20130	Unnamed Creek	NA	NA		NA		NA		3			
WH1-20200	Bozle Creek		NA		NA		NA		3			
WH1-20300	Soldier Creek		S	S	S		S	S	1			Fish consumption assessment
WH1-20310	Middle Fork Soldier Creek		S		NA		NA	S	2			Aquatic community assessment
WH1-20400	Soldier Creek		NA		NA		NA		3			
WH1-30000	White River	I	S	S	S		S	I	5	E. coli	E. coli	Fish consumption assessment
WH1-30100	Dead Man's Creek	NA	NA	NA	NA		NA		3			
WH1-30200	Deep Creek		NA		NA		NA		3			
WH1-30300	Bull Creek		NA		NA		NA		3			

Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2010 IR	Impairments	Parameters of Concern	Comments/Action
WH1-30400	Kyle Creek		NA		NA		NA		3			
WH1-40000	White River		S	NA	NA		NA	S	2			Aquatic community assessment
WH2-10000	Hat Creek	NA	S		S		S	S	2			
WH2-10100	Squaw Creek	NA	NA		NA		NA		3			
WH2-10110	West Squaw Creek		NA		NA		NA		3			
WH2-10200	Warbonnet Creek		S		NA		NA	S	2			Aquatic community assessment
WH2-10210	Sowbelly Creek		NA		NA		NA		3			
WH2-10220	Sowbelly Creek		NA		NA		NA		3			
WH2-10230	Monroe Creek		NA		NA		NA		3			
WH2-10240	Monroe Creek		S		S		S	S	1			
WH2-20000	Hat Creek		NA		NA		NA		3			
WH2-30000	Hat Creek		S		S		S	S	1			
WH2-30100	East Hat Creek		NA		NA		NA		3			
WH2-30200	West Hat Creek		NA		NA		NA		3			
WH2-30300	West Hat Creek		NA		NA		NA		3			

* ***Cancer risk compounds*** -Aroclor-1248 (PCB-1248), Aroclor-1254 (PCB-1254), Aroclor-1260 (PCB-1260), cis-chlordane, Chlordane, trans-chlordane, DDD, DDE, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin
Hazard index compounds- Aroclor-1254 (PCB-1254), Lindane (g-BHC), cis-chlordane, Chlordane, trans-chlordane, DDT, Dieldrin, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, cis-nonachlor, trans-nonachlor, Oxychlordane, Pentachloroanisole, Trifluralin, Mercury, Cadmium, Selenium

† See Appendix D: Ecological Justification for Excluding Specific Bio-Indicator Results When Determining Attainment Status of the Aquatic Life Beneficial Use for Nebraska's 2010 Water Quality Integrated Report

2009 Nebraska Groundwater Quality Monitoring Report

Prepared Pursuant
to Neb. Rev. Stat. §46-1304
(LB329 – 2001)

Nebraska Department of Environmental Quality
Water Quality Assessment Section
Groundwater Unit
December 2009

Photo on front cover:

Lincoln Air Park. (Mr. Dave Carlson, Rural Chadron)

Acknowledgements:
This report would not be possible without the cooperation of the agencies and organizations contributing groundwater data to the "Quality-Assessed Agrichemical Contaminant Database for Nebraska Groundwater", most notably the State's 23 Natural Resources Districts. The University of Nebraska must be thanked for their on-going work on the Database and attention to detail in assessing the quality of data presented for inclusion. The staff of the Nebraska Association of Resources Districts, notably Pat O'Brien, was invaluable providing text and map graphics assistance. Thanks to Marty Link, Dan Inman and Daniel Kroll, NDEQ, for most of the maps and data analysis for this report, while Marty Link and Tom Lamberson, NDEQ, helped with editing. Direct any questions regarding this report to David Miesbach, Groundwater Unit, NDEQ, at 402/471-4982.

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2009 Nebraska Groundwater Quality Monitoring Report

INTRODUCTION

The 2001 Nebraska Legislature passed LB329 (Neb. Rev. Stat. §46-1304) which, in part, directed the Nebraska Department of Environmental Quality (NDEQ) to report on groundwater quality monitoring in Nebraska. Reports have been issued since December 2001. The text of the statute applicable to this report follows:

> "The Department of Environmental Quality shall prepare a report outlining the extent of ground water quality monitoring conducted by natural resources districts during the preceding calendar year. The department shall analyze the data collected for the purpose of determining whether or not ground water quality is degrading or improving and shall present the results to the Natural Resources Committee of the Legislature beginning December 1, 2001, and each year thereafter. The districts shall submit in a timely manner all ground water quality monitoring data collected to the department or its designee. The department shall use the data submitted by the districts in conjunction with all other readily available and compatible data for the purpose of the annual ground water quality trend analysis."

The section following the statute quoted above (§ 46-1305), requires the State's Natural Resources Districts to submit an annual report to the legislature with information on their water quality programs, including financial data. This report has been prepared by the Nebraska Association of Resources Districts and is being issued concurrently with this groundwater quality report.

GROUNDWATER IN NEBRASKA

Groundwater can be defined as water that occurs in the open spaces below the surface of the earth (Figure 1). In Nebraska (as in many places worldwide), useable groundwater occurs in voids or pore spaces in various layers of geologic material such as sand, gravel, silt, sandstone, and limestone. These layers are referred to as aquifers where such geologic units yield sufficient water for human use. In parts of the state, groundwater may be encountered just a few feet below the surface, while in other areas; it may be a few hundred feet underground. This underground water "surface" is usually referred to as the water table, while water which soaks downward through overlying rocks and sediment to the water table is called recharge (Figure 1). The amount of water that can be obtained from a given aquifer may range from a few gallons per minute (which is just enough to supply a typical household) to many hundreds or even thousands of gallons per minute (which is the yield of large irrigation, industrial or public water supply wells).

Groundwater Velocity

In general, groundwater flows very slowly, especially when compared to the flow of water in streams and rivers. Many factors determine the speed of groundwater and most of these factors cannot be measured or observed directly. The most important geologic characteristics that impact groundwater velocity are as follows:

- The sediments in the saturated zone of the aquifer – for example, groundwater generally flows faster through gravel sediments than clay sediments.
- The „sorting" of the sediments. Groundwater in aquifers with a mix of clay, sand, and gravel (poor sorting) generally does not flow as fast as in aquifers that are composed of just one sediment, such as gravel (good sorting).
- The „gradient" of the water table. Groundwater flows from higher elevations toward lower elevations under the force of gravity. In areas of high relief, groundwater flows faster. A typical groundwater gradient in Nebraska is 10 feet of drop over a mile (0.002 ft/ft).
- Well pumping influences. In areas of the State with numerous high capacity wells (mainly irrigation wells), groundwater velocity and direction can be changed seasonally as water is pulled toward these wells.

Ultimately, groundwater scientists have determined that groundwater in Nebraska can flow as fast as one to two feet per day in areas like the Platte River valley and as slow as one to two inches per year in areas like the Pine Ridge in northwest Nebraska or the glacially deposited sediments in southeast Nebraska.

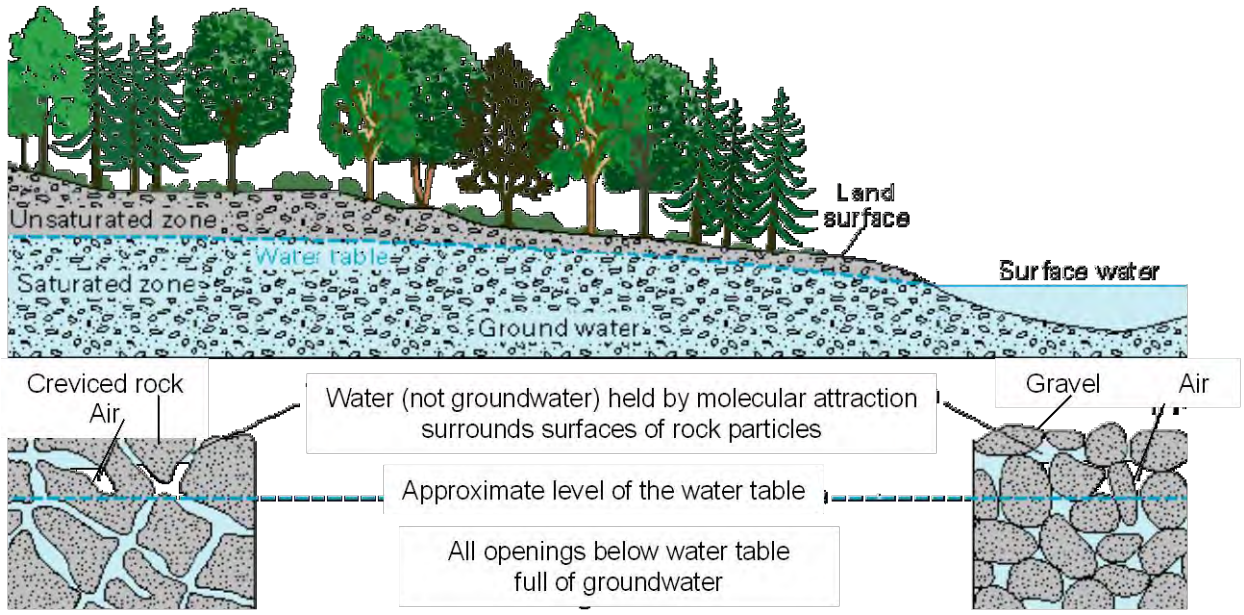


Figure 1. Basic groundwater features and terms (U.S. Geological Survey).

Depth to Groundwater

The depth to groundwater plays a very important role in Nebraska‘s valuable water resource. Obviously, a shallow well is cheaper to drill, construct, and pump. Conversely, shallow groundwater is more at-risk from impacts from human activities. Surface spills, application of agricultural chemicals, effluent from septic tank leach fields, and other sources of contamination will impact shallow groundwater more quickly than groundwater found at depth. The map in Figure 2 shows the great variation of depth to water across the State.

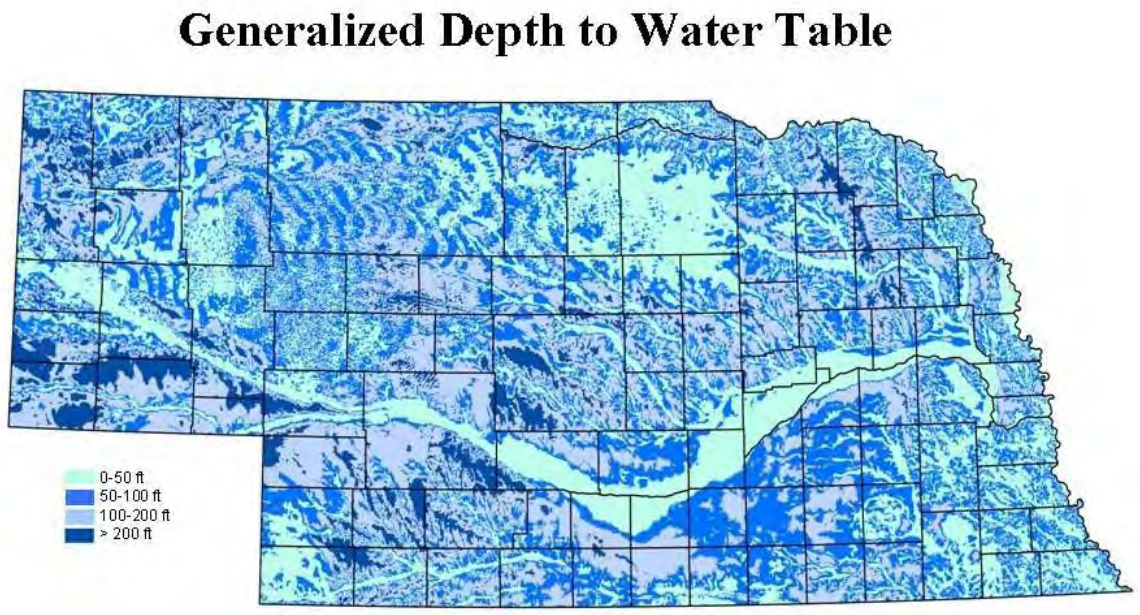


Figure 2. Generalized Depth to Groundwater (University of Nebraska, Conservation and Survey Division, 1998)

Importance of Groundwater

Nebraska is one of the most groundwater-rich places in the entire world. Nearly 85% of the state‘s residents use groundwater as their source of drinking water. If the public water supply for the City of Omaha (which gets about half of its water supply from the Missouri River) isn‘t counted, this rises to nearly 100%. Essentially all of the rural residents of the state use groundwater for their domestic supply. Not only does Nebraska depend on groundwater for its drinking water supply, the state‘s agricultural industry utilizes vast amounts of groundwater to irrigate crops. Most of Nebraska experiences variable amounts of precipitation throughout the year, so irrigation is used, where possible, to ensure adequate amounts of moisture for raising such crops as corn, soybeans, alfalfa, and edible beans. As of October 2009, the Nebraska Department of Natural Resources (NDNR) listed over 92,200 active irrigation wells and nearly 23,100 domestic wells registered in the state. Domestic wells were not required to be registered with the state prior to September 1993, therefore thousands of domestic wells exist that are not registered with the NDNR.

Groundwater Monitoring

The above information shows clearly that groundwater is vital to the well-being of all Nebraskans. Fortunately, our state has a long tradition of progressive action in monitoring, managing, and protecting this most precious resource. Several agencies perform monitoring of groundwater for a variety of purposes.

Those entities include:

- Natural Resources Districts (23)
- Nebraska Department of Agriculture
- Nebraska Department of Environmental Quality
- Nebraska Department of Health and Human Services
- University of Nebraska-Lincoln
- United States Geological Survey

Groundwater monitoring performed by these organizations meets a variety of needs, and therefore is not always directly comparable. For instance, the state's 23 Natural Resources Districts (NRDs) perform groundwater monitoring primarily to address contaminants over which they have some jurisdiction; mainly nitrates and agricultural chemicals. In contrast, the state's nearly 1300 public water suppliers monitor groundwater for a large number of possible pollutants. These include basic field parameters, agricultural compounds, and industrial chemicals. Not only are these samples analyzed for many different parameters, the methods used for sampling and analysis vary widely as well.

Partly in response to this situation, the Nebraska Departments of Agriculture (NDA) and Environmental Quality and the University of Nebraska - Lincoln (UNL) began a project in 1996 to develop a centralized data repository for groundwater quality information that would allow comparison of data obtained at different times and for different purposes. The result of this project is the Quality-Assessed Agrichemical Contaminant Database for Nebraska Groundwater (referred to as the Database in this publication). The Database brings together groundwater data from many different sources and provides public access to this data.

The Database serves two primary functions. First, it provides to the public the results of groundwater monitoring for agricultural compounds in Nebraska as performed by a variety of entities. At present, agricultural contaminants (mainly nitrate and pesticides) are the focus of the Database because of their widespread use, and also because historical data suggests that these compounds pose the greatest threat to the quality of groundwater across Nebraska. Second, the Database provides an indicator of the methodologies that were used in sampling and analysis for each of the results. UNL staff examines the methods used for sampling and analysis to assign a quality –flag" consisting of a number from 1 to 5 to each of the sample results. The flag depends upon the amount and type of quality assurance/quality control (QA/QC) that was identified in obtaining each of the results. The higher the –flag" number, the better the QA/QC, and the higher the confidence in that particular result.

During the past several years, UNL staff have worked vigorously to establish contact with all the entities performing groundwater monitoring of agricultural chemicals (namely nitrates and

pesticides) in Nebraska. Groundwater data is submitted to UNL by these entities each year, where it is assigned a quality –flag" and entered into the Database. The updated information is then forwarded to the Nebraska Department of Natural Resources (NDNR), which places the data on its website (http://www.dnr.ne.gov/ or http://dnrdata.dnr.ne.gov/clearinghouse/). The entire Database can be accessed at NDNR's website, where the database may be searched or _queried' for numerous subsets of data, such as results by county, type of well, Natural Resources District, etc.

GROUNDWATER QUALITY DATA

Groundwater quality data presented in the remainder of this report reflect the data present in the Database as of October 1, 2009. The dates for these data range from mid-1974 to mid-2008. Some groundwater results from some of the agencies working in Nebraska have not to date been entered into the Database, but NDEQ is confident that the information presented represent the majority of sample results available. Table 1 lists **each agency** producing groundwater quality data for Nebraska.

Agency	
Central Platte NRD	Nebraska Health & Human Services/CDC
Lewis & Clark NRD	Nemaha NRD
Little Blue NRD	North Platte NRD
Lower Big Blue NRD	Papio-Missouri River NRD
Lower Elkhorn NRD	South Platte NRD
Lower Loup NRD	Tri-Basin NRD
Lower Niobrara NRD	Twin Platte NRD
Lower Platte North NRD	University of Nebraska - Lincoln
Lower Platte South NRD	Upper Big Blue NRD
Lower Republican NRD	Upper Elkhorn NRD
Middle Niobrara NRD	Upper Loup NRD
Middle Republican NRD	Upper Niobrara-White NRD
Nebraska Dept. of Agriculture	Upper Republican NRD
Nebraska Dept. of Environmental Quality	U.S. Geological Survey

Table 1. Various agencies providing groundwater analyses in Nebraska to be used in the Database. (Source: The Database, 2009)

Types of Wells Sampled

The data summarized in Table 1 represent the quantity of water samples analyzed from a variety of well types. Historically, most wells that have been sampled are irrigation or domestic supply wells. Irrigation and domestic wells are constructed to yield adequate supplies of water, not to provide water quality samples. However, in recent years, monitoring agencies have been installing increasing numbers of dedicated groundwater monitoring wells designed and located specifically to produce samples. By utilizing such varied sources, groundwater data from a wide range of geologic conditions can be obtained. Table 2 shows the number of analyses from the Database for each type of well.

Well Type	Number of Analyses
Monitoring	229,123
Irrigation	83,916
Domestic	58,039
Public Water Supply	19,742
Commercial/Industrial	1,919
Livestock	1,692
Total	**394,431**

Table 2. Total number of groundwater analyses by well type. (Source: The Database, 2009)

Monitoring Parameters

As already mentioned, numerous entities across Nebraska have been monitoring groundwater quality for many years, for a wide variety of possible contaminants. However, much of this monitoring has been for area-specific (part of an NRD), or at most, regional purposes (entire NRDs), and it has been difficult to assess data on a statewide basis for more than a short period of time. Creation of the Database has provided an important tool for such analysis. Table 3 lists the compounds for which groundwater has been sampled and analyzed since 1974. Table 4 lists the compounds from Table 3 for which at least 2 percent of the samples collected exceeded the **Reporting Limit (RL) ***. This comparison gives an indication of which compounds are more prevalent than others in Nebraska's groundwater. For example, only 12 of the 151 compounds sampled met the 2 percent criteria.

***Reporting Limit (RL)** refers to the concentration a laboratory has indicated their analysis method can be validated. For example, if a contaminant were at a level below the reporting limit, the laboratory's analysis method could not detect it and the concentration would be reported as "below the reporting limit".*

Throughout this report, the number of sample analyses for any one contaminant refers only to the number of analyses as reported **in the Quality-Assessed Agrichemical Contaminant Database for Nebraska Groundwater**, and not for the total number of analyses for that contaminant taken in the state. As already mentioned, data which are currently in the process of being entered into the database are not reflected in this report. In addition, there are undoubtedly samples for various contaminants taken by entities other than the agencies referred to in this report (for instance, private consulting firms, or other programs within some of the reporting agencies), which are not included in this database.

Table 3 shows the number of analyses of groundwater samples for a wide variety of compounds, all of which are used in agricultural production. As mentioned previously, there is a large effort in monitoring groundwater for other, non-agricultural contaminants. Examples of such compounds include petroleum products and additives, industrial chemicals, hazardous wastes, contaminants associated with landfills and other waste disposal sites, and effluent from wastewater treatment facilities. Such issues are beyond the scope of §46-1304, and information about such monitoring data is not contained in any centralized database at present.

Collecting a groundwater sample using direct-push technology.

Compound	Compound	Compound	Compound
1,1,1-trichloroethane	carbaryl	ethion	phorate
1,2,4-trichlorobenzene	carbofuran	ethoprop	picloram
1,2-dibromo-3-chloropropane	carbon tetrachloride	ethyl parathion	prometon
1,2-dibromoethane	carboxin	fenuron	prometryn
1,2-dichlorobenzene	chlordane	fluometuron	pronamide
1,2-dichloroethane	chloroform	fonofos	propachlor
1,2-dichloropropane	chlorothalonil	heptachlor	propanil
1,4-dichlorobenzene	chlorpyrifos	heptachlor epoxide	propargite
1-naphthol	cis-permethrin	hexachlorobenzene	propazine
2,4,5-T	clopyralid	hexachlorocyclopentadiene	propham
2,4,6-trichlorophenol	cyanazine	hexazinone	propoxur
2,4-D	cycloate	isofenphos	propyzamide
2,4-DB	cyprazine	isoxaflutole	silvex
2,4-dinitrophenol	DCPA	isoxaflutole benzoic acid	simazine
2,4-DP	DCPA mono and diacids	isoxaflutole diketonitrile	simetryn
2,6-diethylaniline	DDD	lindane	tebuthiuron
3-hydroxycarbofuran	DDE	linuron	terbacil
4,6-dinitro-o-cresol	DDT	malathion	terbufos
4-chloro-3-methylphenol	deethylatrazine	MCPA	terbuthylazine
4-nitrophenol	deisopropylatrazine	MCPB	terbutryn
acenaphthene	delta-HCH	methiocarb	tetrachloroethene
acetochlor	diazinon	methomyl	thiobencarb
acifluorfen	dicamba	methoxychlor	toxaphene
acrylonitrile	dichlobenil	methyl azinphos	triallate
alachlor	dichlorprop	methyl parathion	trichloroethene
aldicarb	didealkyl atrazine	methylene chloride	triclopyr
aldicarb sulfone	dieldrin	metolachlor	trifluralin
aldicarb sulfoxide	dimethenamid	metribuzin	vernolate
aldrin	dimethoate	molinate	
alpha-HCH	dinoseb	naphthalene	
ametryn	diphenamid	napropamide	
atrazine	disulfoton	neburon	
azinphos-methyl	diuron	nitrate-N	
benfluralin	endosulfan I	norflurazon	
bentazon	endosulfan II	oryzalin	
beta-HCH	endosulfan sulfate	oxamyl	
bromacil	endrin	parathion	
bromomethane	endrin aldehyde	pebulate	
bromoxynil	EPTC	pendimethalin	
butachlor	esfenvalerate	pentachlorophenol	
butylate	ethalfluralin	permethrin	

Table 3. Compounds for which groundwater samples have been analyzed. Record runs from May 1974 through mid - 2008. (Source: The Database, 2009)

Compounds	Percent of Samples that exceeded the Reporting Limit (RL)
cyanazine	2%
alachlor	3%
simazine	3%
propazine	7%
metolachlor	22%
metolachlor oxanilic acid	26%
deisopropylatrazine	60%
atrazine	61%
alachlor ethane sulfonic acid	72%
deethylatrazine	77%
nitrate-N	94%
metolachlor ethane sulfonic acid	99%

Table 4. Compounds listed in Table 3 that at least 2% of the samples collected were detected above the Reporting Limit. (Source: The Database, 2009)

DISCUSSION AND ANALYSIS

The information presented previously in this report shows that a considerable amount of effort has gone into groundwater quality monitoring in Nebraska since the mid-1970s, especially in areas that are heavily farmed. It is worth noting that the majority of samples taken during this period show that groundwater in the State is of very high quality. An examination of Table 3 and Table 4 shows that most parameters that have been analyzed have never been detected in the samples. However, these same data show that several contaminants have been detected in numerous samples throughout the monitoring period. Levels and distribution of these compounds are issues of concern to Nebraskans.

As Table 4 shows, the compounds that have been detected more than just a few times throughout the period of record include nitrate-nitrogen, atrazine, alachlor, metolachlor, and simazine. Nitrate is a form of nitrogen common in human and animal waste, plant residue, and commercial fertilizers. Atrazine, alachlor, metolachlor, and simazine are herbicides used for weed control in a variety of crops such as corn and soy beans. In addition, these four herbicides have been identified as priority compounds by the Nebraska Department of Agriculture for development of pesticide State Management Plans, following guidance produced by the U.S. Environmental Protection Agency. Note that several compounds have fairly large numbers of detections but are not included as part of the priority compounds. Cyanazine and propazine are both triazine herbicides (like atrazine and simazine), and their use pattern is similar (the use of cyanazine has been discontinued). Desethyl atrazine and deisopropyl atrazine are degradation products, or metabolites, of atrazine. The three acids are degradation products of alachlor and metolachor.

Occurrence of elevated levels of nitrate and herbicides in groundwater has been associated with the practice of irrigated agriculture, especially corn production. A good summary of this can be found in Exner and Spalding (1990). The Natural Resources Districts have instituted Groundwater Management Areas (GWMAs) over all or parts of nearly all of the 23 districts

based on NRD and NDEQ groundwater sampling. The NRD's institution of these GWMAs indicates a concern and recognition of nonpoint source groundwater contamination. Additionally, NDEQ's Groundwater Management Area program (Title 196, 2002) has completed 20 studies across the state since 1988 identifying areas of nonpoint source contamination from the widespread application of commercial fertilizer and animal waste.

The State of Nebraska is a large geographic area, over 77,000 square miles. Accurately showing the quality of Nebraska's groundwater is becoming an easier task, but this highly complex system is still difficult to characterize. The acquisition of more data is making a trend analysis more viable. However, practices of sampling the "problem" areas have skewed the data and make it very difficult to show the areas in Nebraska where the contaminant levels are decreasing through better management and farming practices.

Another difficulty is obtaining the resources and the logistics of collecting groundwater samples. There are approximately 158,358 active registered wells in Nebraska and only enough resources to collect samples from 3,758 wells in 2008. Also, not all water well owners are receptive to having their well sampled. Figure 3 below is a map showing all registered wells in Nebraska as of October 2009. As discussed earlier in this document, not all water wells are registered and will not show up on this map. Later figures should be compared to Figure 3 as an indicator of where there is a need for additional wells to be sampled. An example of this would be to compare the water wells registered in Cherry County (the largest county) in Figure 3 to the wells that were actually sampled in Figure 4.

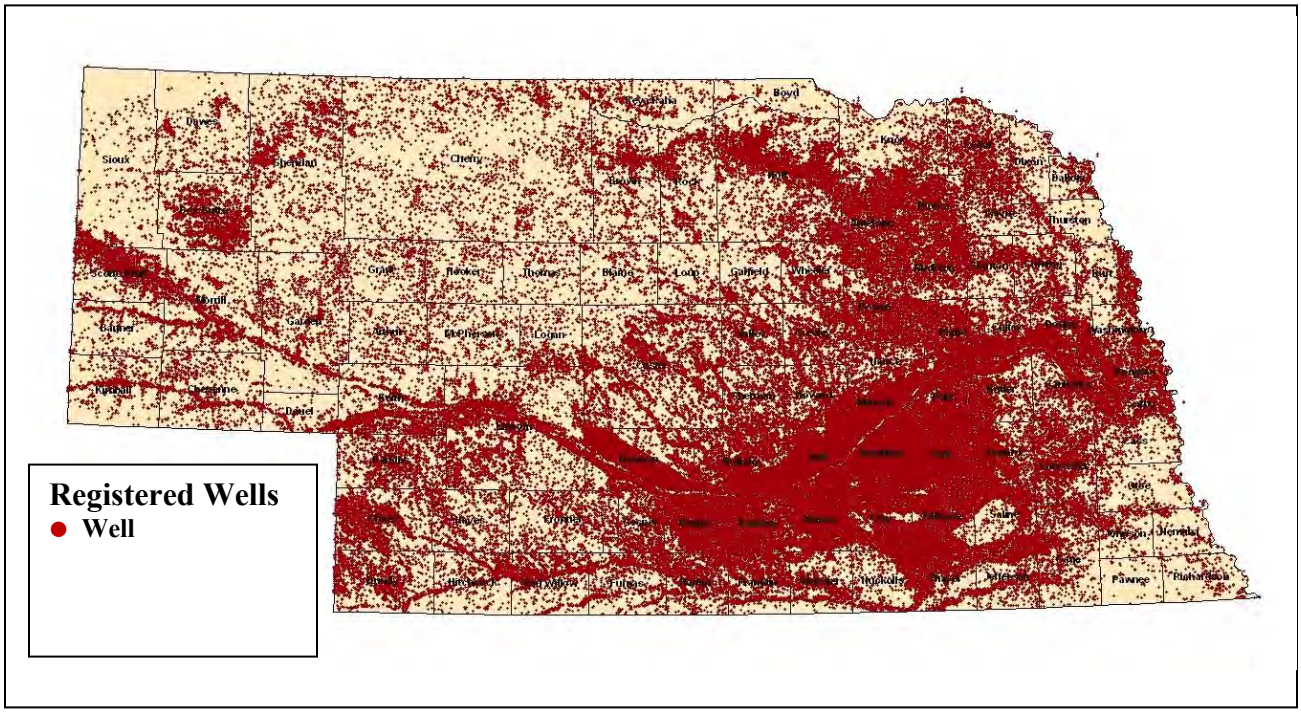


Figure 3. Registered Water Wells as of October 2009. (Source: Nebraska Department of Resources Registered Well Database, 2009)

Nitrates and Trends Utilizing all Clearinghouse Data

Several different methods will be used in an attempt to present and interpret the nitrate data collected over the last 34 years.

First, Table 5 below uses all of the nitrate data collected for each year's report and shows the percentage of analyses that are greater than 10 mg/l, which is the U.S. Environmental Protection Agencies (USEPA) maximum contaminant level (MCL) on which the federal drinking water standard for nitrate-nitrogen is based.

Years	Total # Analyses	> 0 - < 7.5 mg/l	7.5 – 10 mg/l	10 – 20 mg/l	> 20 mg/l	% > 10 mg/l
1974 – 2001 (2002 Report)	33,075	21,504	2,707	5,554	3,310	26.8%
1974 – 2002 (2003 Report)	44,721	28,394	3,931	8,128	4,268	27.7%
1974 – 2003 (2004 Report)	52,798	33,100	4,606	9,857	5,027	28.2%
1974 – 2004 (2005 Report)	66,822	37,346	5,603	12,244	11,629	35.7%
1974 – 2005 (2006 Report)	74,522	42,916	6,573	13,161	11,872	34.2%
1974 – 2006 (2007 Report)	77,820	44,901	6,407	13,864	12,648	34.1%
1974 – 2007 (2008 Report)	83,002	48,010	6,971	14,949	13,072	33.8%
1974 – 2008 (This Report)	86,765	50,450	7,300	15,609	13,406	33.4%

Table 5. Nitrate – nitrogen concentrations sorted by concentration categories. (Source: The Database, 2009) *Note: The colored dots used in the heading will be used in subsequent figures indicating the nitrate concentration.*

Table 5 indicates that since 2004, the percent of analyses greater than 10 mg/l (the federal drinking water standard) has decreased by over 2 percent.

Second, the data in Table 5 will be shown geographically in Figures 4 and 5to get a sense of where that nitrate concentrations are within the state. It should be noted that a single well could have been sampled more than one time per reporting year. For example, 86,765 samples were collected for nitrate from 22,113 wells over the ~~li~~fe" of the Database. Because there would be overlapping ~~d~~ots" when creating a state wide map if all 86,765 nitrate analyses were used, Figure 4 indicates the locations of all the wells sampled for nitrate since 1974 and Figure 5 indicates the most current nitrate concentration for each of those wells, no matter what year the last sample was collected.

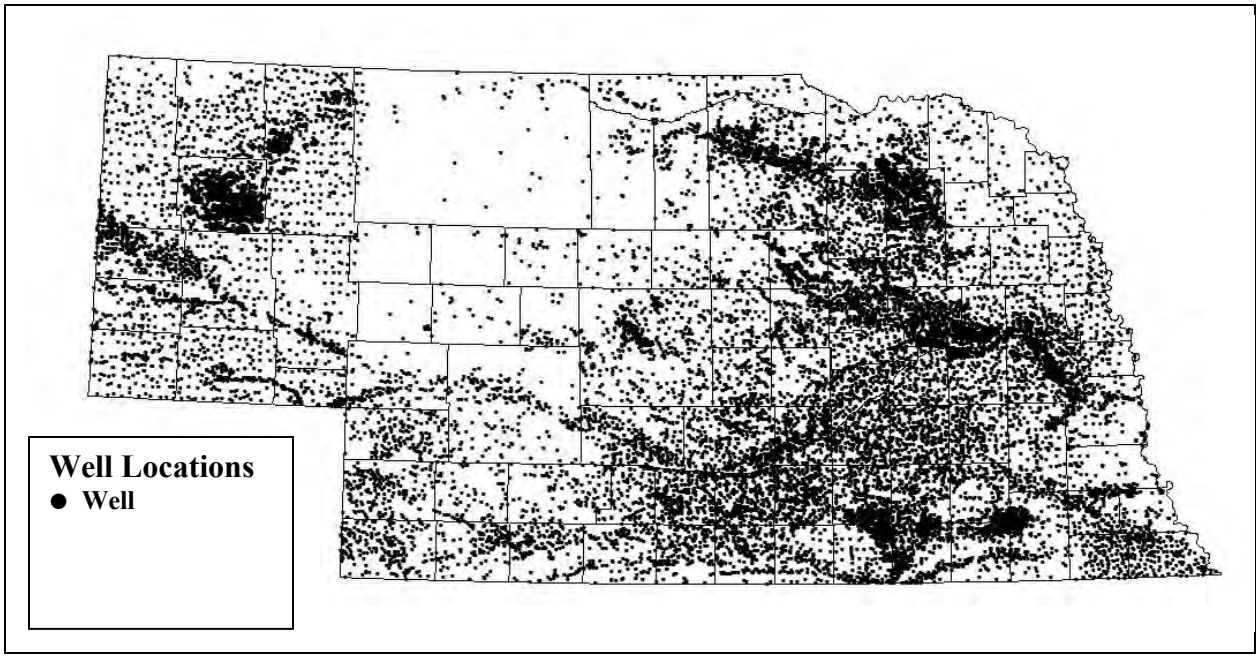


Figure 4. Location of 22,113 wells that have been analyzed for nitrate from 1974 - 2008. (Source: The Database, 2009)

Please note that _empty' areas only denote areas where samples have not been taken or have not yet been reported. In other words, there is no way to tell anything about the groundwater quality in the _empty' parts of the state. **„Empty" areas indicate no data, not a lack of nitrate in the groundwater.**

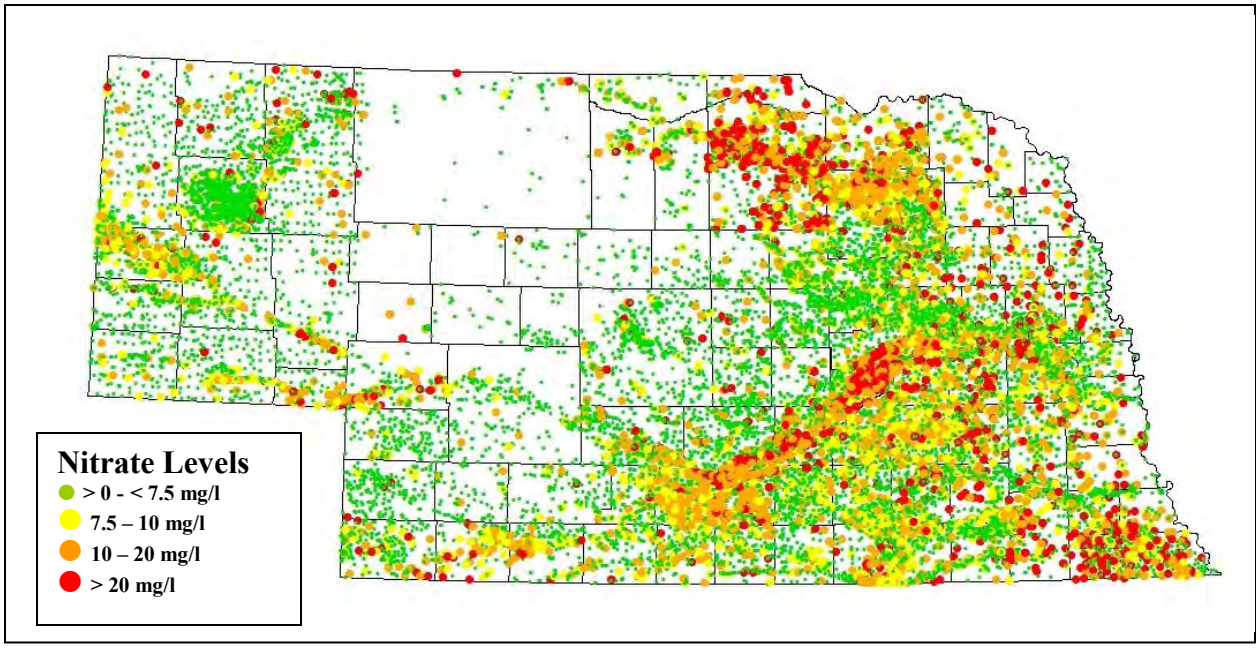


Figure 5. Last recorded concentration of nitrate from 1974 - 2008. (Source: The Database, 2009)

Third, Figure 6 indicates what sampling was conducted in 2008, and Figure 7 indicates the nitrate concentration for each well. Again, _empty' areas indicated that no data was collected in those areas in 2008, or the data collected has not yet been entered into the Database.

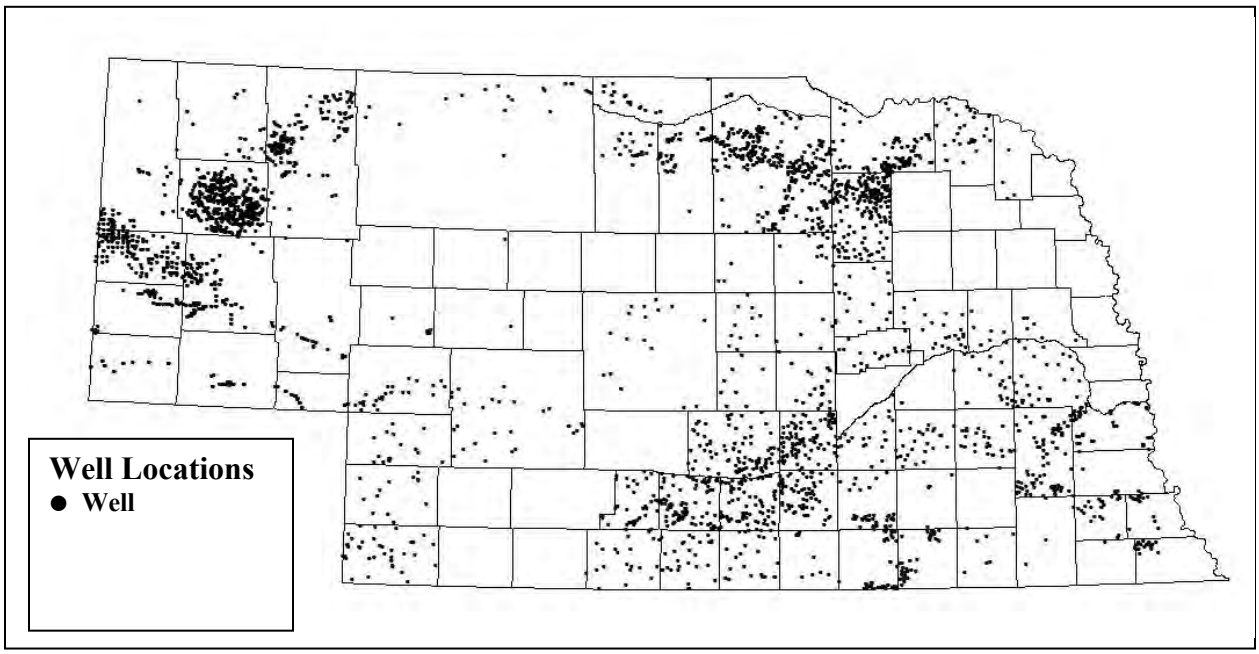


Figure 6. Location of 3,758 wells sampled for nitrate in 2008. (Source: The Database, 2009)

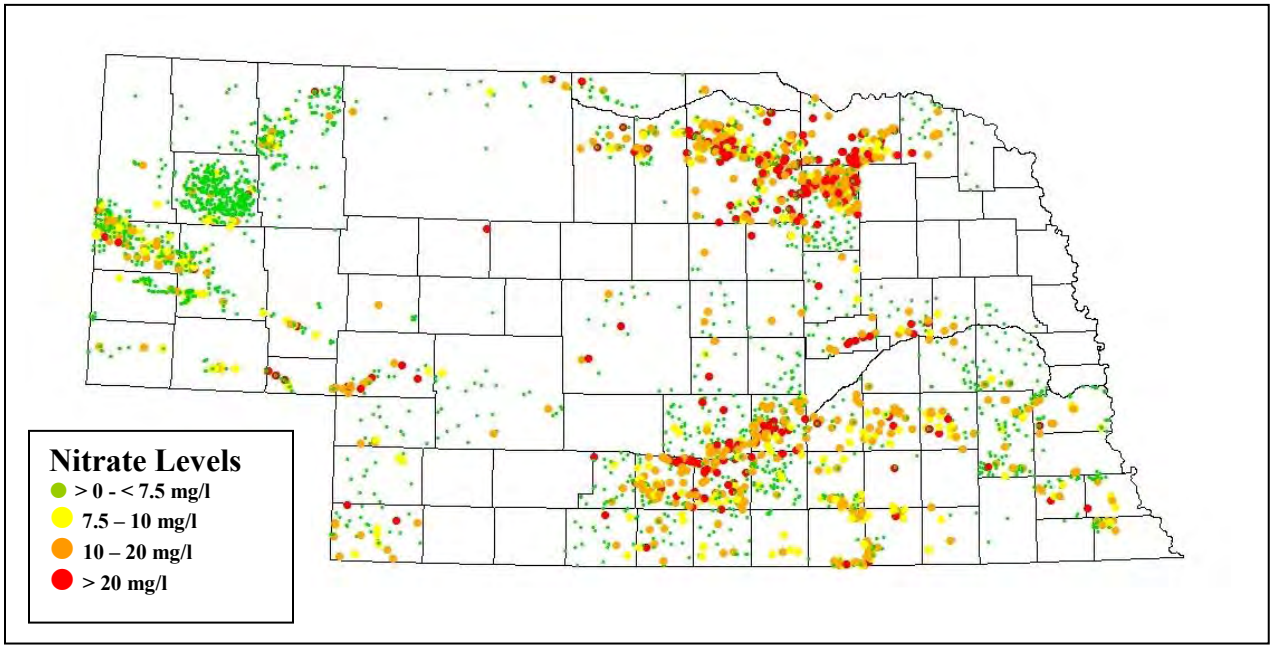


Figure 7. Nitrate concentrations of wells sampled in 2008. (Source: The Database, 2009)

Last, the data will be used to show any trends in nitrate concentrations. Since there is a large number of analyses, the arithmetic mean or average would normally be used to represent the data for any given time period. However, the groundwater sampling program in Nebraska started out by sampling mainly areas in which an NRD was considering a Groundwater Management Area (refer to Figures A-1 through A-4 in Appendix A). As a result, more data was collected from areas of high nitrates and would tend to skew the mean. Therefore, it was determined that a better way to describe the data would be to use the median of the analyses. The median is simply the center of the data set.

An example of how the median is more representative than the mean can be shown by using the data from 1981. In 1981, there were 197 analyses collected from 143 wells with a low concentration of 0.0 mg/l and a high concentration of 121 mg/l. The median of the data set is 6.0 mg/l, while the mean (average) is 12.16 mg/l. Figure 8 below shows a visual representation of this data.

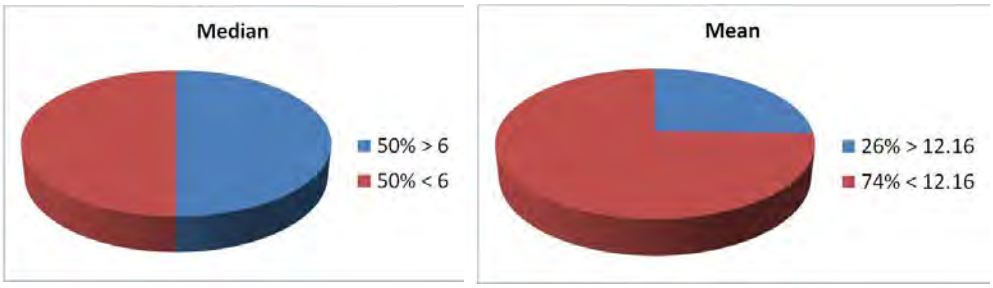


Figure 8. Median and mean.

In simple terms, 50 percent of the sample set is both greater and lesser than the median of 6 mg/l. However, only 26 percent of the samples are greater than the calculated mean. In that 26 percent, 17 of the 197 analyses are greater than 40 mg/l which skews the mean much higher than the median.

To complicate matters even more, not only were samples collected from very specific locations, but multiple samples were collected from the same well during the same year. Again, here is an example from the 1981 data set. There were 197 samples collected from 143 wells, as shown in Figure 9 below. However, 80 of the 197 samples were collected from 24 wells in the same location. The red circle on Figure 9 below shows the location of these wells in Central Nebraska. Reviewing the data one can see how a single location impacts the entire state.

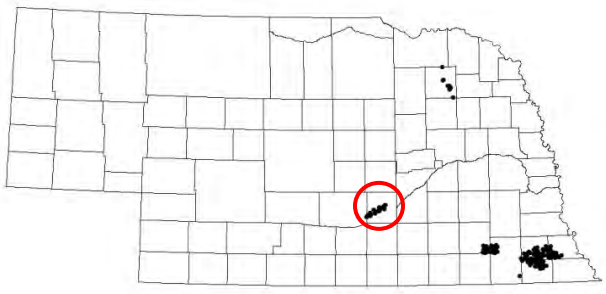


Figure 9. Sampling locations for nitrate in 1981. Red Circle indicates location of 24 wells sampled in Central Nebraska. (Source: The Database, 2009)

If we review all of the samples collected from the 24 wells in Central Nebraska during 1981, it can be seen that there is a wide range of nitrate concentrations (Figure 10).

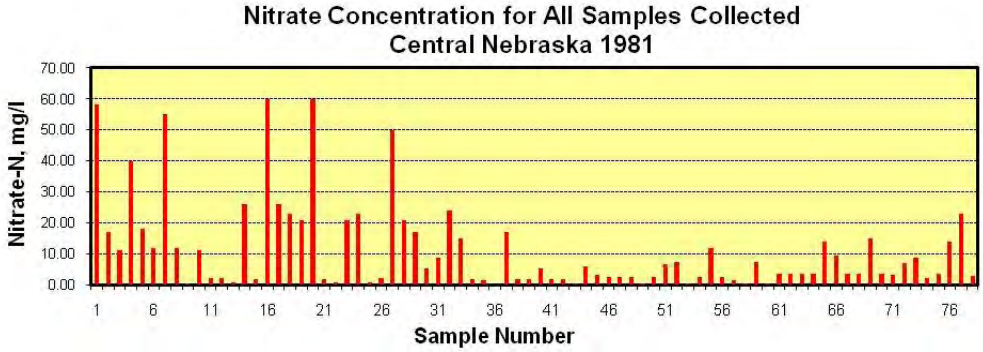


Figure 10. All 80 samples collected from 24 wells in Central Nebraska in 1981. (Source: The Database, 2009)

A closer look at the results from each well not only shows a wide range between samples, but the wells themselves. In Figure 11 below, wells 2, 13 and 18 have variation of greater than 50 mg/l.

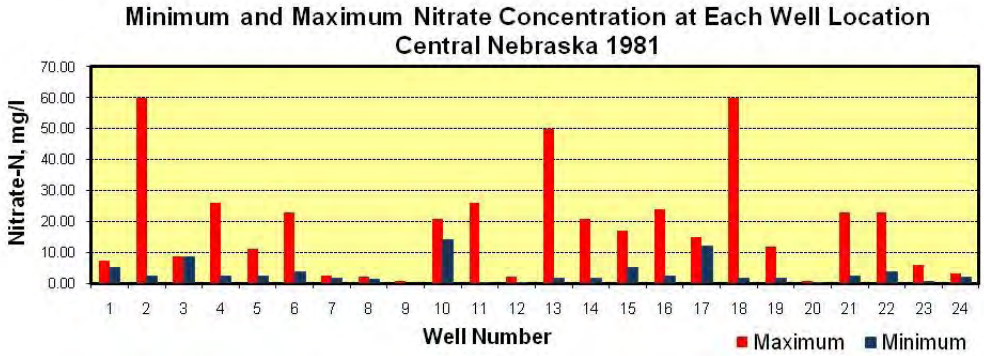
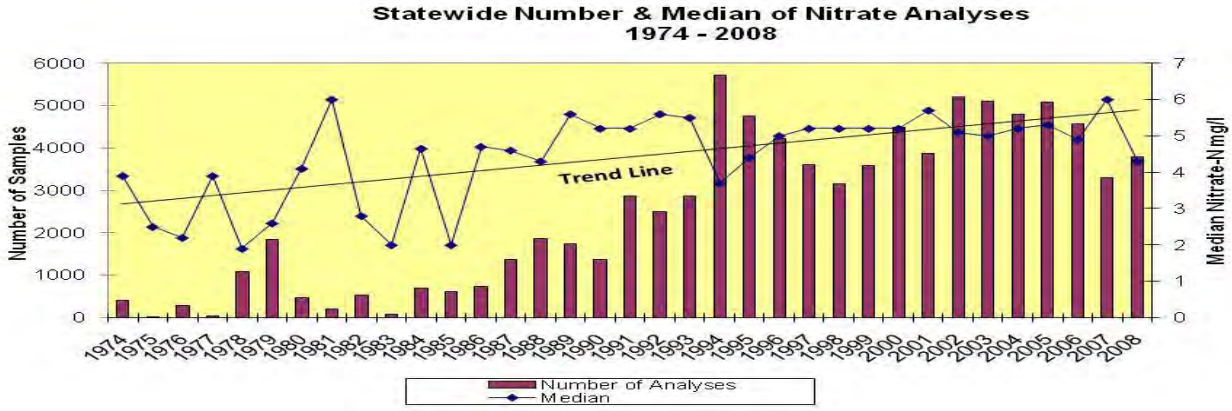


Figure 11. Samples collected from 24 wells in Central Nebraska in 1981 indicating the high and low concentration from each well. (Source: The Database, 2009)

In the past the median concentrations for **ALL** analyses were used to show a trend in nitrates statewide as presented in Figure 12 below. The data indicates a low number of samples results in



an inconsistent mean from 1974 to 1993.

Figure 12. All 86,765 analyses and median nitrate-nitrogen levels for Nebraska, 1974-2008. (Source: The Database, 2009)

If we just chart the data from 1974 to 1993 it becomes even more evident of the sporadic nature of the data (Figure 13). An example would be the 1,845 analyses collected in 1979 with a median of 2.6 mg/l versus 197 samples collected in 1981 with a median of 6 mg/l. From 1991 to 1993, the median starts to level off as a steady number of samples are being collected. The increasing median trend is also relatively steep for this time period.

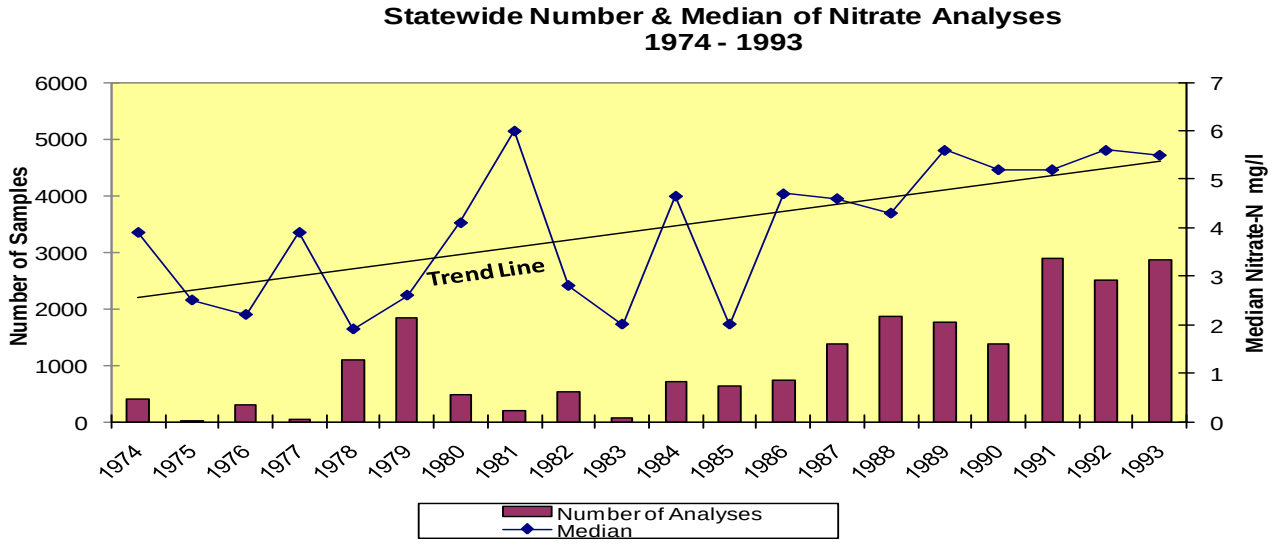


Figure 13. All 21,529 analyses and median nitrate-nitrogen levels for Nebraska, 1974-1993. (Source: The Database, 2009)

Figure 14 was taken from Appendix A of this report and represents the highest (1981) and lowest (1983) median nitrate concentration from the 1974 to 1993. As can be seen from these two maps, sample locations for this time period are not statewide. Figures A-1 through A-4 in Appendix A also indicate how the data from these years is not very representative of ~~"s~~statewide" based on sampling location alone.

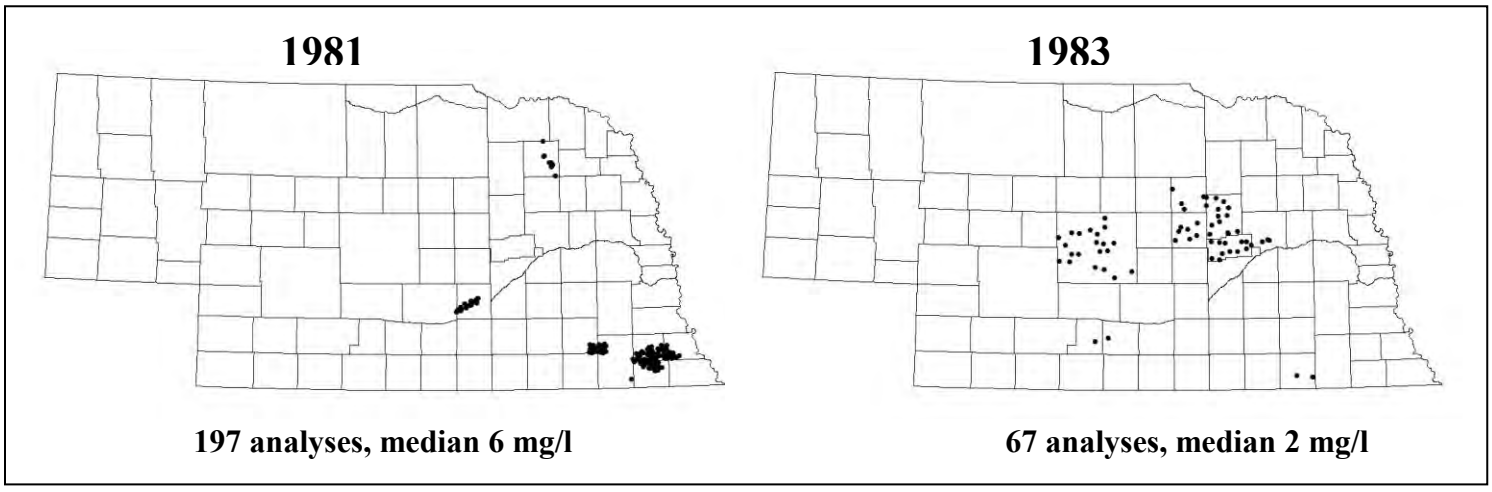


Figure 14. Location of nitrate analyses for highest and lowest nitrate median in Nebraska, 1981 and 1983. (Source: The Database, 2009)

A more representative picture of the statewide median nitrate concentration is from the time period 1994 to 2008. Figure 15 below shows the number of analyses and median nitrate concentration for that time period. The overall trend indicates only a slight increase in nitrate median concentrations statewide.

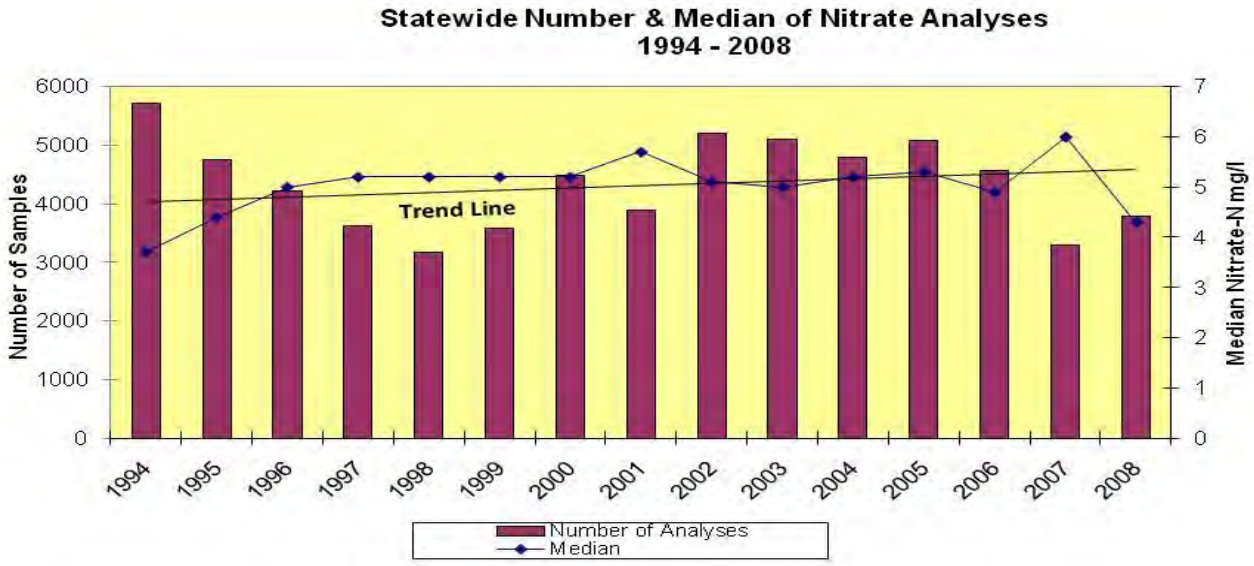


Figure 15. All 65,236 analyses and median nitrate-nitrogen levels for Nebraska, 1994-2008. (Source: The Database, 2009)

Figure 16 was taken from Appendix A of this report and represents the highest (2007) and lowest (1994) median nitrate concentration from the 1994 to 2008. As can be seen from these two maps, sample locations for this time period are statewide. The Statewide Groundwater Monitoring Network was started in 2004 and is very similar to locations sampled throughout 1994 to 2008.

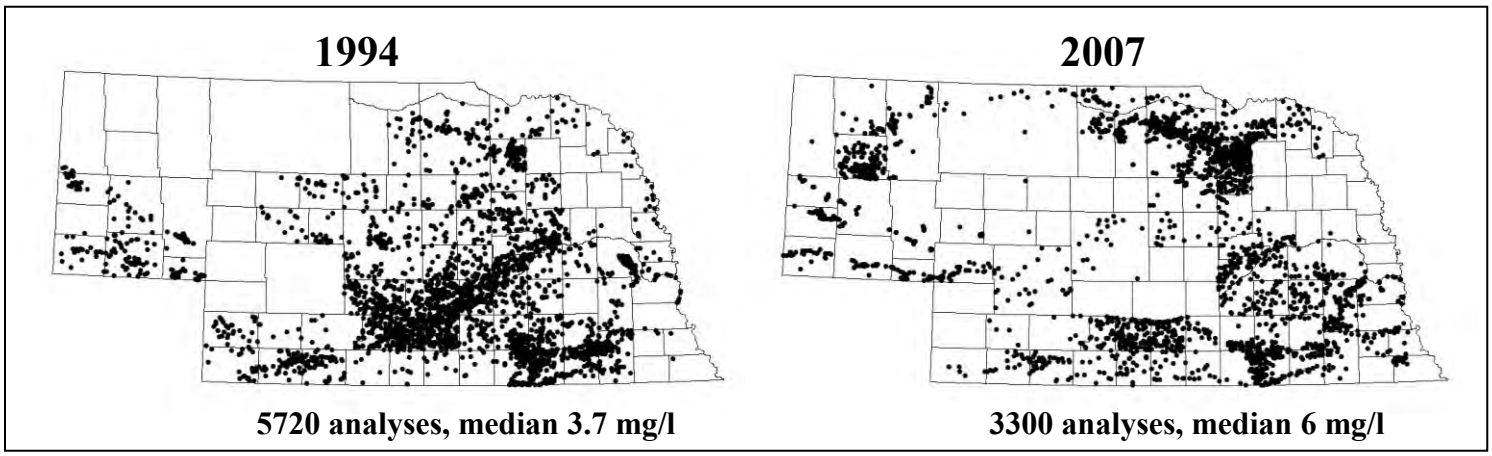


Figure 16. Location of nitrate analyses for highest and lowest nitrate median in Nebraska, 1994 and 2007. (Source: The Database, 2009)

Nitrates in Public Water Supplies

Public water supply systems are required to test for a variety of potential contaminants in the drinking water that they serve to the public. When a contaminant in the drinking water is over the federal Safe Drinking Water Act limit (also known as the maximum contaminant level [MCL]), the water system will receive an Administrative Order for that contaminant from the Nebraska Department of Health and Human Services (DHHS) and must somehow _fix' the problem. The MCL for nitrate-nitrogen is 10 mg/l, but public water supply systems with wells or intakes testing over 5 mg/l may be required to perform quarterly sampling. Approximately 574 of the nearly 1300 groundwater based community water systems in Nebraska must perform quarterly sampling for nitrates. Common methods to solve a nitrate Administrative Order include drilling a new or deeper well, hooking on to a neighboring water system, or building a treatment plant. Figure 17 shows the location of 14 community public water supply systems with Administrative Orders for nitrate, as of October 2009. Please note that the public water supply system data from DHHS is not in the Database. Also note that nitrate Administrative Orders do not necessarily fall in the areas of highest nitrate problems, as indicated in Figure 7 and the figures in Appendix A.

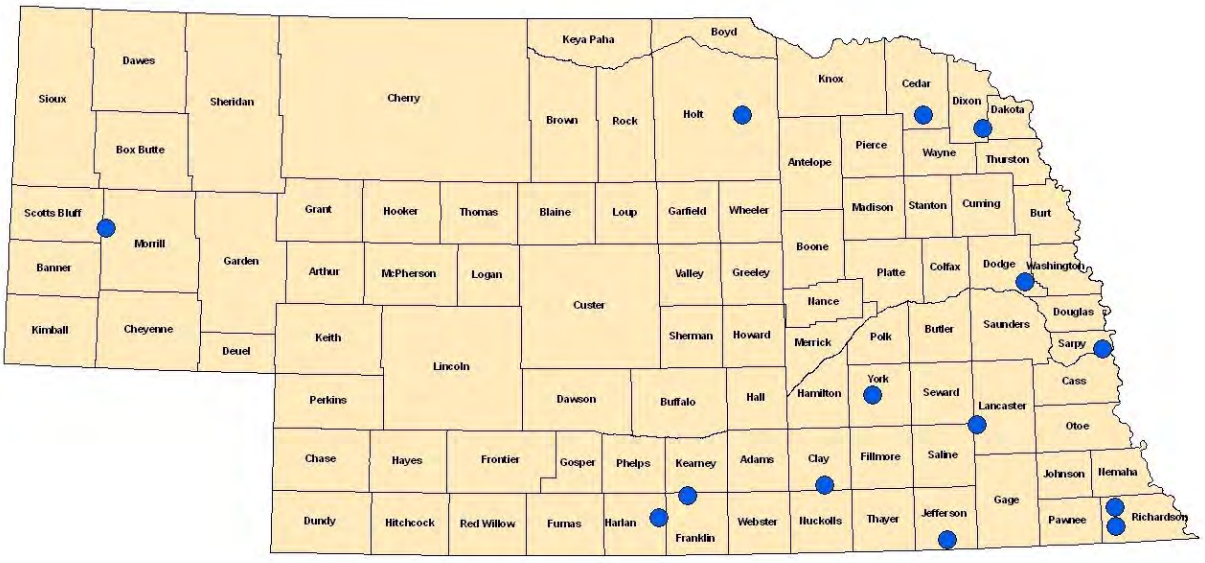


Figure 17. Fourteen groundwater based community public water supply systems on DHHS Administrative Order for nitrate above the 10 mg/l MCL. (Source: DHHS, October 2009)

Nitrates and Trends Utilizing the Statewide Groundwater Monitoring Network

Presenting trend analysis for the entire State of Nebraska using the Database would not be representative due to the lack of data for the entire state on a year-to-year basis (see Appendix A, A-1 – A-7). Nitrate studies were completed for specific areas and were not necessarily repeated the next year in an attempt to eventually cover the entire state. Accurate trends for the state as a whole should be based on large quantities of repeated data collected over a long period of time. In response to this need, the Statewide Groundwater Monitoring Network (Figure 18) has been established by the NRDs and has completed the third year of sampling. Nitrate trends from this report forward will be estimated using the information gathered from this network. The several thousand ~~"a~~ctive" wells, which have already been documented, are likely to continue to be sampled on a more-or-less regular basis by the NRDs. However, this is a large number of well locations to track on a statewide basis, thus the estimated number of network wells which will initially be used in annual analysis has been reduced to approximately 1500. Locations of 1404 network wells have been documented for the state's twenty-three NRDs. Figure 18 shows the locations of network wells in the NRDs; Table 6 shows the number and type of wells being utilized by NRD. It should be noted that the general target number of approximately 1500 wells will vary from year to year. This is due to the fact that, with such a large number of wells spread over the entire state, and with those wells in varying states of activity and ownership, some of the wells in a given year will be eliminated from the network while others will be added. Thus, from year to year, the precise number of wells in the network will change slightly, and this is to be expected in the future.

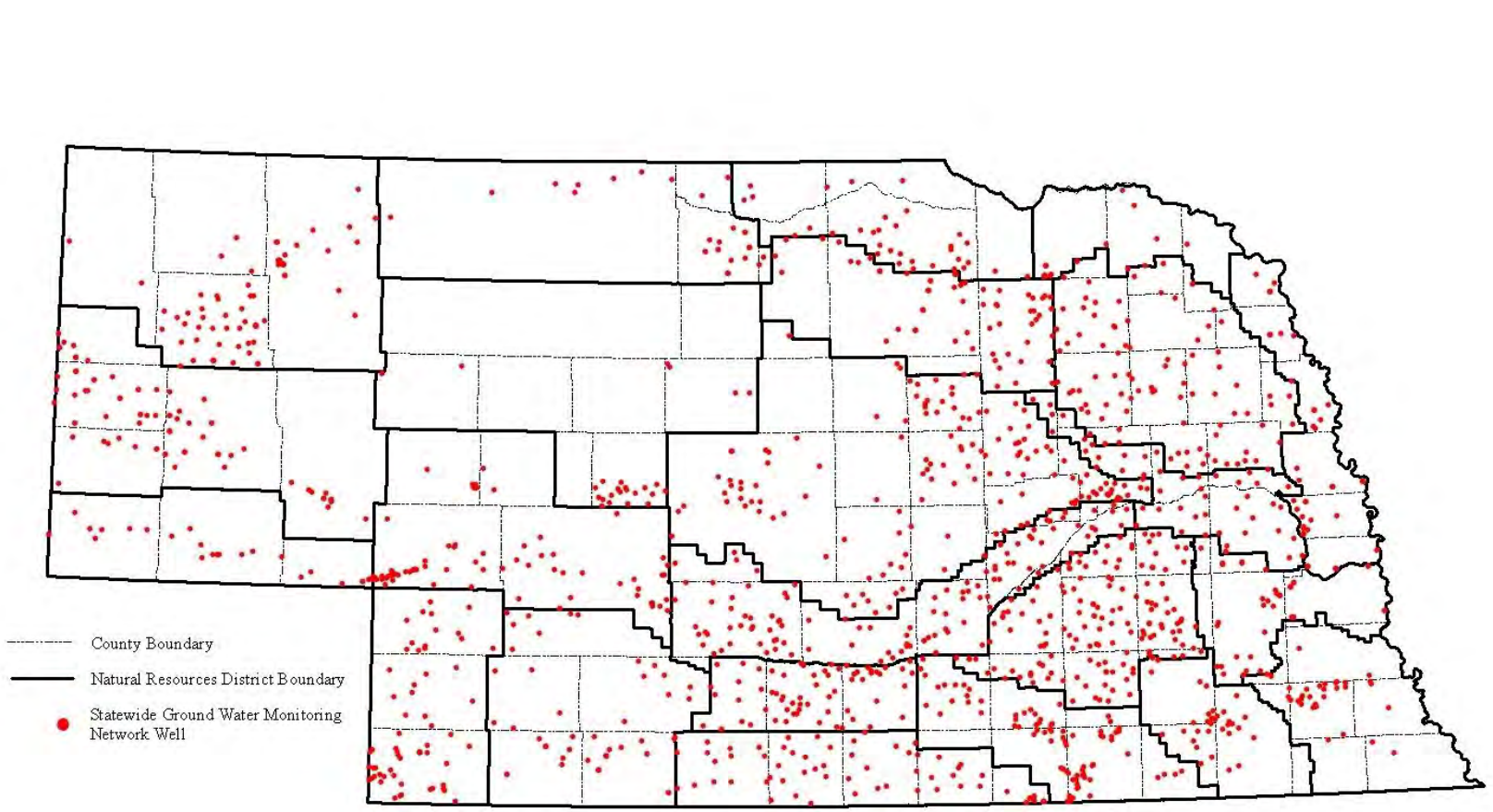


Figure 18. Statewide Groundwater Monitoring Network

Natural Resources District	Total Wells	I	Q	D	S	C
Central Platte	108	104		4		
Lewis & Clark	15	9	6			
Little Blue	78	78				
Lower Big Blue	30	30				
Lower Elkhorn	90	90				
Lower Loup	142	138		2	2	
Lower Niobrara	33	33				
Lower Platte North	49	49				
Lower Platte South	37	12	24			1
Lower Republican	63	54	9			
Middle Niobrara	29	10	17	1	1	
Middle Republican	46	31	15			
Nemaha	35	26		8	1	
North Platte	76	15	60	1		
Papio-Missouri River	45	17	26	1		1
South Platte	25	9	16			
Tri-Basin	63	63				
Twin Platte	73	63	8	2		
Upper Big Blue	150	128	18	4		
Upper Elkhorn	64	47	17			
Upper Loup	25	23		2		
Upper Niobrara White	69	44	25			
Upper Republican	59	59				
TOTALS	**1404**	**1132**	**241**	**25**	**4**	**2**

Explanation:

I	Irrigation Well	**Q**	Monitoring Well
D	Domestic Well	**S**	Stock Well
C	Commercial Well		

Table 6. Well numbers, types, and totals by Natural Resources District for the Statewide Groundwater Monitoring Network.

Figures 19 and 20 and Tables 7 and 8 show the changes in nitrate-nitrogen levels in the 1404 network wells. Figures 19 and 20 show those wells where nitrate levels were increasing, decreasing, or showed no change or insufficient data. Figure 19 shows changes in nitrate levels between the last two monitoring events for each well, giving a general idea of the most recent changes in those levels. This can be considered a map of "short-term" changes in nitrate levels, in most cases showing how nitrates have changed over the last few years. Figure 20 shows changes in nitrate levels over the entire record of each well, which gives a better indication of "long-term" changes in those levels. This "long-term" change usually represents variations in nitrate levels over several years or even a few decades.

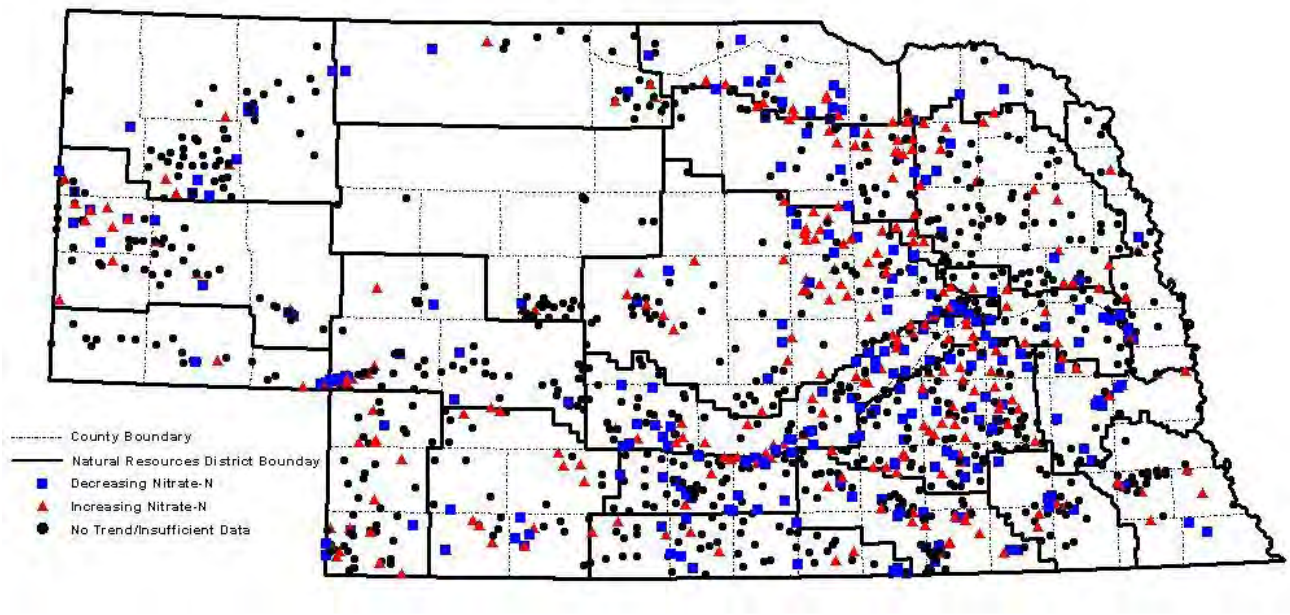


Figure 19. Change in nitrate-N levels between the last two monitoring events (~~–s~~hort-term").

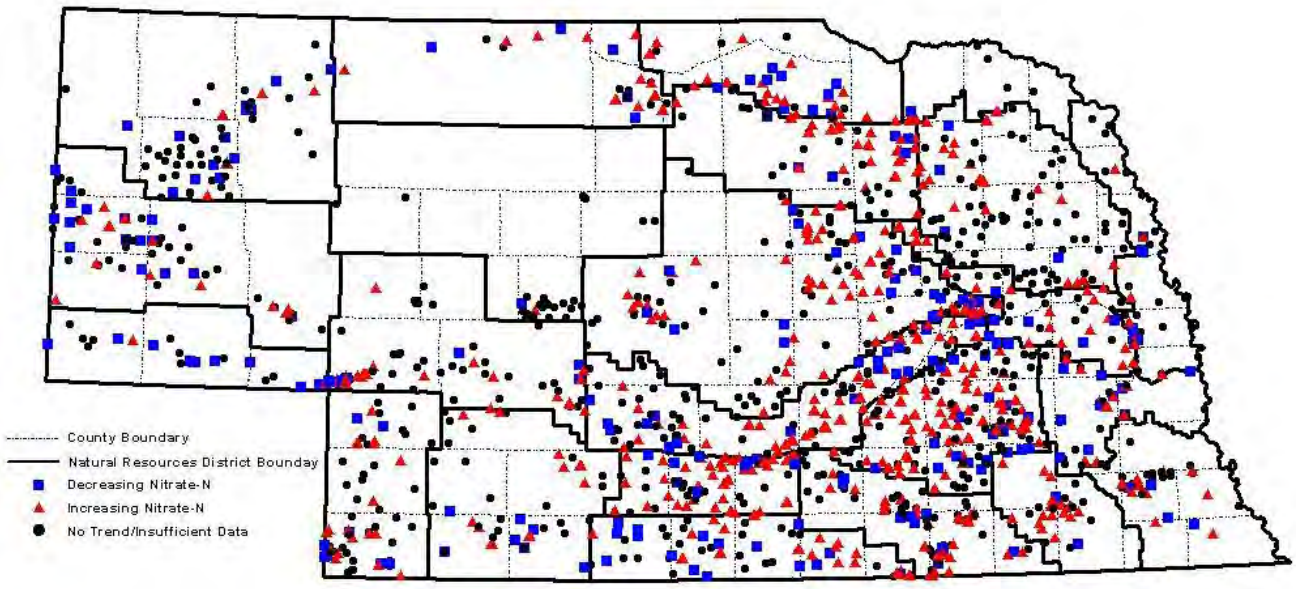


Figure 20. Change in nitrate-N levels between the first and last monitoring events (~~–l~~ong-term").

Tables 7 and 8 give a more detailed breakdown of the magnitude of the ―short-term" and ―long-term" changes in nitrate levels. Table 7 shows the numbers of wells for each category of increase, decrease, no change/no trend, and insufficient data for the ―short-term" wells, while Table 8 shows the numbers for the same categories in the ―long-term" wells.

"Short-Term" Changes in Nitrate Levels (Difference between the two most recent sampling events)	
Category	#
Total Number of Wells Showing "Short-Term" Increases	**286**
Increase >1 to 5 mg/l	214
Increase >5 to 10 mg/l	48
Increase >10 mg/l	24
Total Number of Wells Showing "Short-Term" Decreases	**247**
Decrease >1 to 5 mg/l	179
Decrease >5 to 10 mg/l	42
Decrease > 10 mg/l	26
Total Number of Wells Showing No "Short-Term" Trend	**718**
Total Number of Wells w/ Insufficient Data to Determine Trend	**153**
Total Number of Wells	**1404**

Table 7. Numbers of ―short-term" wells in the Statewide Groundwater Monitoring Network showing increases, decreases, or no change in nitrate levels (this information is summarized in Figure 19).

"Long-Term" Changes in Nitrate Levels (Difference between the initial and most recent sampling events)	
Category	#
Total Number of Wells Showing "Long-Term" Increases	**500**
Increase >1 to 5 mg/l	326
Increase >5 to 10 mg/l	100
Increase >10 mg/l	74
Total Number of Wells Showing "Long-Term" Decreases	**227**
Decrease >1 to 5 mg/l	153
Decrease >5 to 10 mg/l	50
Decrease > 10 mg/l	24
Total Number of Wells Showing No "Long-Term" Trend	**524**
Total Number of Wells w Insufficient Data to Determine Trend	**153**
Total Number of Wells	**1404**

Table 8. Numbers of ―long-term" wells in the Statewide Groundwater Monitoring Network showing increases, decreases, or no change in nitrate levels (this information is summarized in Figure 20).

It is important to keep some qualifications in mind when interpreting these maps. Since each NRD has its own schedule for monitoring, individual samples may not have been taken at the same time as other samples within the same District or between Districts. Thus, at this point, each map does not necessarily represent a –snapshot" in time of nitrate levels or changes, but they do give a very general indication of how nitrate levels are changing over time. However, as time passes and the network becomes more well-established, samples will be more representative of equivalent time periods, and will be more directly comparable. It is also important to remember that aquifer systems and nitrate-nitrogen levels within them are very dynamic, complex, and variable. Although care was taken to select wells that were fairly representative of the geologic conditions present in various areas of the state, it is impossible to extrapolate conditions in a given well to a large area. Therefore, the several hundred wells in the statewide network give a general indication of how nitrate levels are changing over time across the state as a whole, but it would be inappropriate to use one or a few wells in the network to try to analyze nitrate levels in a specific part of the state.

In mid-2004, the NRDs, working with NDEQ and the Nebraska Department of Agriculture (NDA), also began two new monitoring efforts. Using funding from USEPA Region 7, NDEQ and NDA placed in-house monitoring equipment for the analysis of priority herbicides (atrazine, alachlor, metolachlor, and acetochlor) in 10 of the 23 District offices, and for the analysis of coliform bacteria in 22 offices. In 2005, NDEQ obtained additional funding from USEPA to place herbicide units in four additional NRD offices. As of this writing, three monitoring seasons for these parameters have been completed and data is being analyzed. Progress is being made, but since these technologies are still somewhat new to the NRDs, the main focus on the past seasons has been on getting the equipment in place and providing basic training for the staff who operate it. As of now, most of the pesticide data received from this project can be considered qualitative or semi-quantitative, and the results have been roughly similar to the pattern of detections discussed in the sections dealing with pesticides in this report. In addition, due to changing use patterns and budget concerns, alachlor has not typically been analyzed, and numbers of analyses of metolachlor and acetochlor are generally declining. Bacteria data from wells comes mostly from domestic and stock wells, and serves mostly as an indicator of point source contamination and/or poor well construction. This data is being used to assist well owners in decontaminating their wells and/or locating new wells, but it doesn‘t reflect on overall groundwater quality of the state. Future efforts will concentrate on evaluating these methodologies for inclusion of data in the Clearinghouse, improving quality and comparability of data, and obtaining further funding for ongoing sampling and analysis.

Windmill in eastern Nebraska, an aerial geophysical study is being conducted in the background using HEM (helibourne electromagnetic survey).

Atrazine

The locations of all wells sampled for atrazine from 1974 to 2008 and then the last recorded concentration of that herbicide is presented in Figures 21 and 22. Atrazine is used as an herbicide to eradicate broad leaf weeds. Common commercial trademark names include (but are not limited to) Aatrex and Bicep.

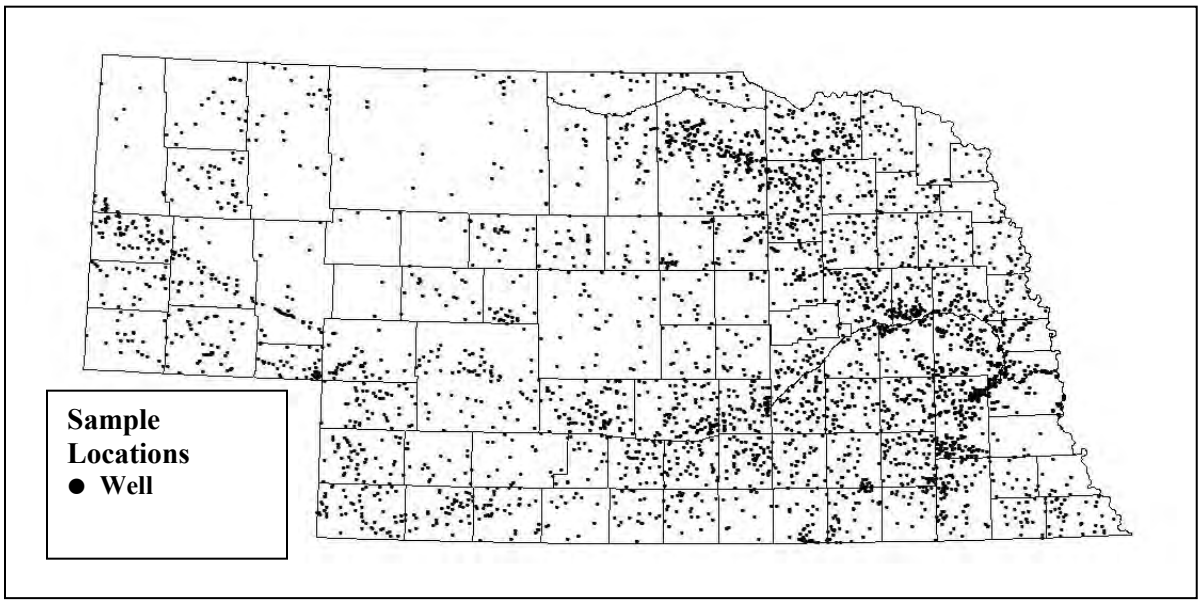


Figure 21. Location of 4,599 wells sampled for atrazine from 1974 – 2008. (Source: The Database, 2009)

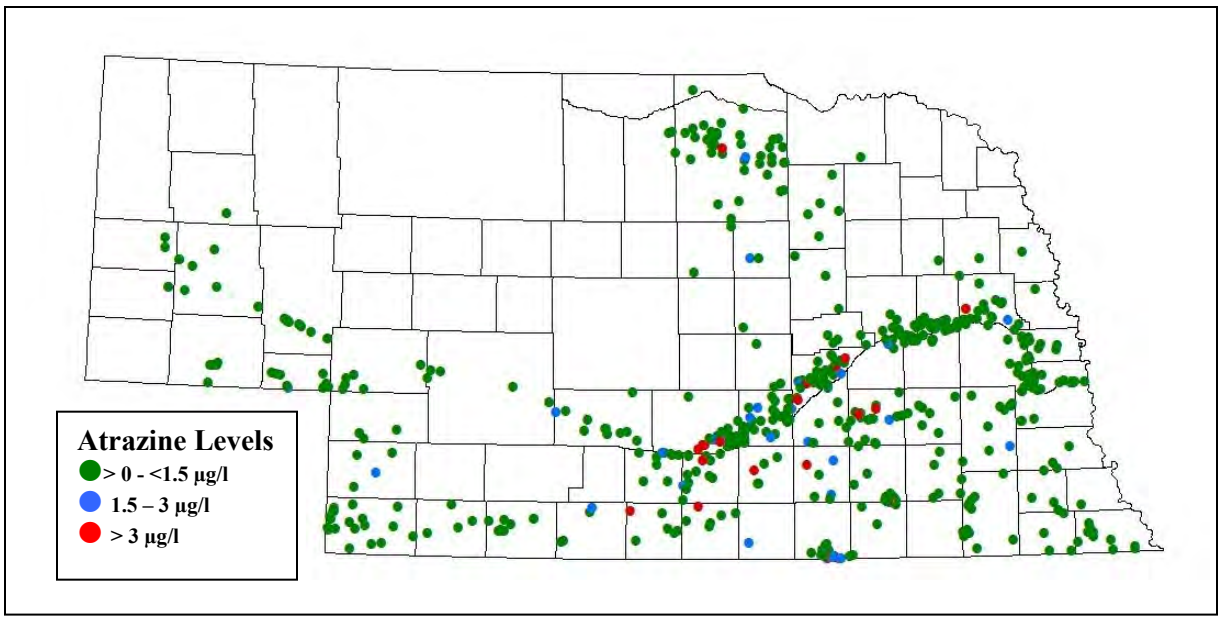


Figure 22. Last recorded concentration of atrazine from 1974 – 2008. (Source: The Database, 2009)

The locations of all wells sampled for atrazine in 2008 and then the concentration of that herbicide is presented in Figures 23 and 24.

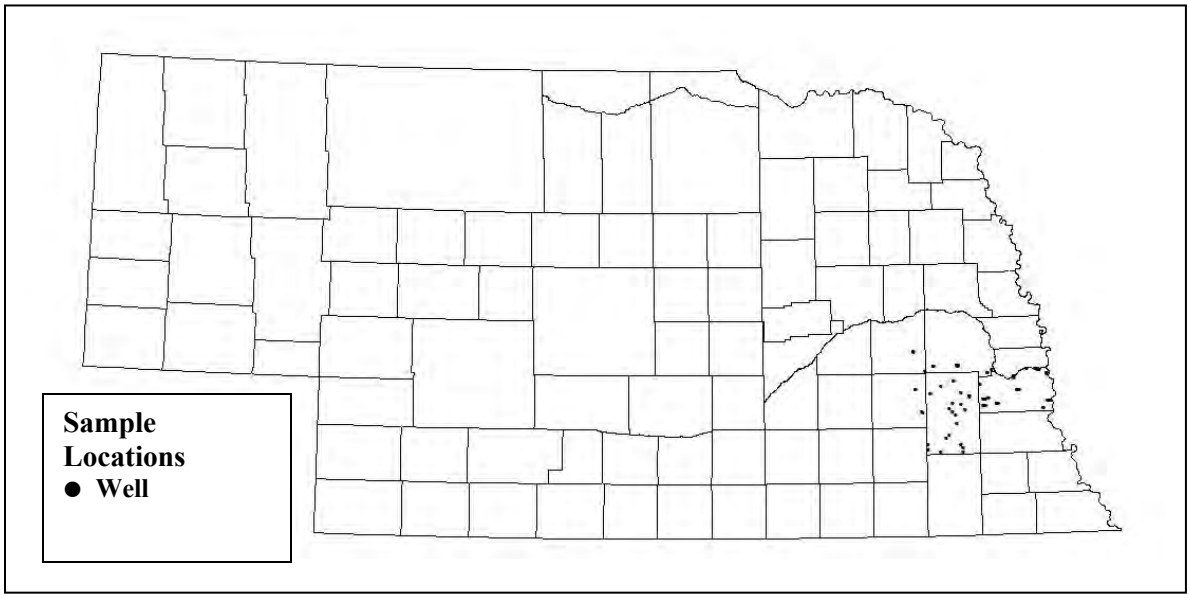


Figure 23. Location of 101 wells sampled for atrazine in 2008. (Source: The Database, 2009)

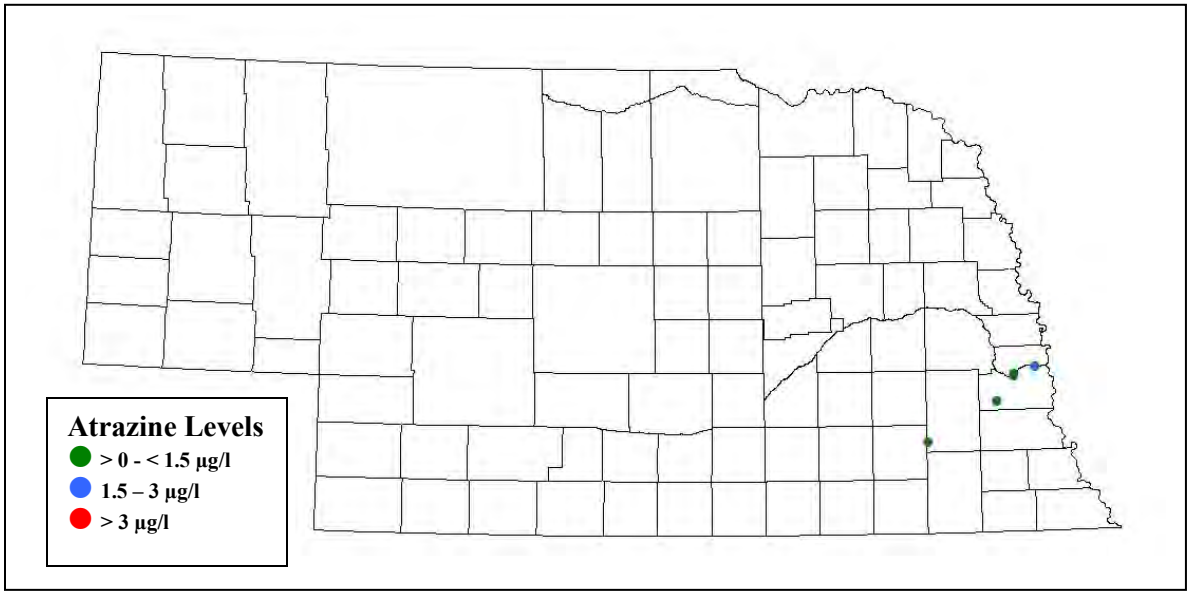


Figure 24. Atrazine concentrations of wells sampled in 2008. (Source: The Database, 2009)

The mean atrazine concentration calculated from the Database for all wells sampled has been less than 1 µg/L since 1979, compared to the USEPAs MCL of 3 µg/L. Fourteen of the 23 NRDs are currently using the in-house analysis described on page 22, but that data is not yet in the Database. Figures 23 and 24 reflect atrazine data generated by analysis at a laboratory.

Alachlor

The locations of all wells sampled for alachlor from 1974 to 2008 and then the last recorded concentration of that herbicide is presented in Figures 25 and 26. Alachor is used as an herbicide to eradicate broad leaf weeds and grasses. Common commercial trademark names include (but are not limited to) Lasso, Bullet, and Lariat.

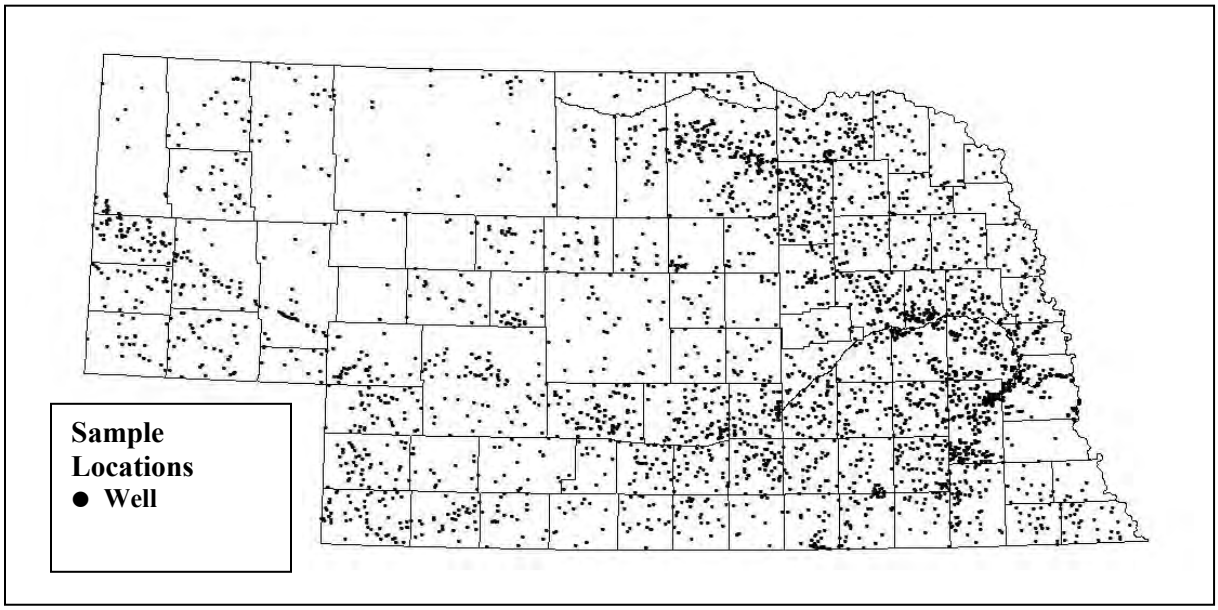


Figure 25. Location of 4,337 wells sampled for alachlor from 1974 – 2008. (Source: The Database, 2009)

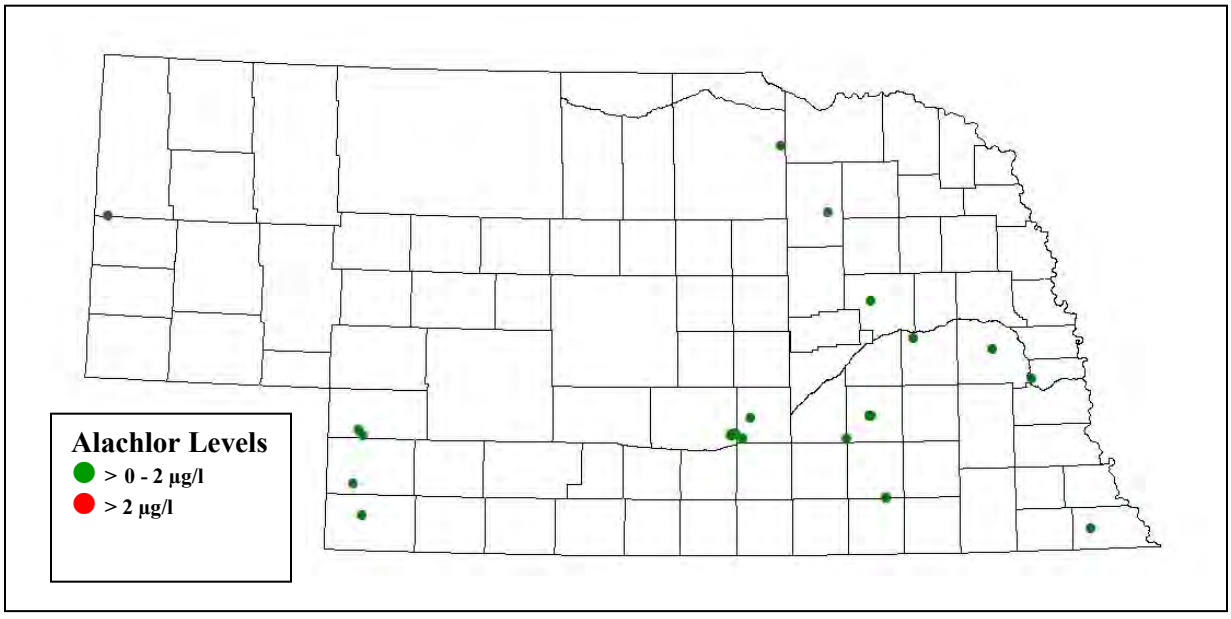


Figure 26. Last recorded concentration of alachlor from 1974 – 2008. (Source: The Datatbase, 2009)

The locations of all wells sampled for alachlor in 2008 and then the concentration of that herbicide is are presented in Figures 27 and 28.

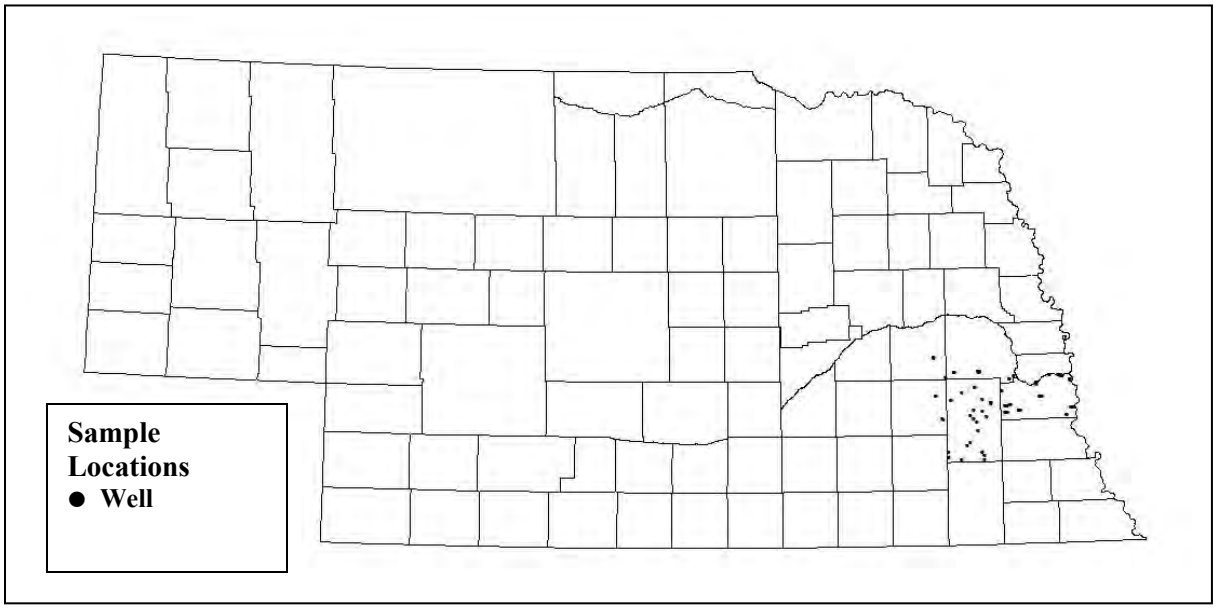


Figure 27. All 101 wells sampled for alachlor in 2008. (Source: The Database, 2009)

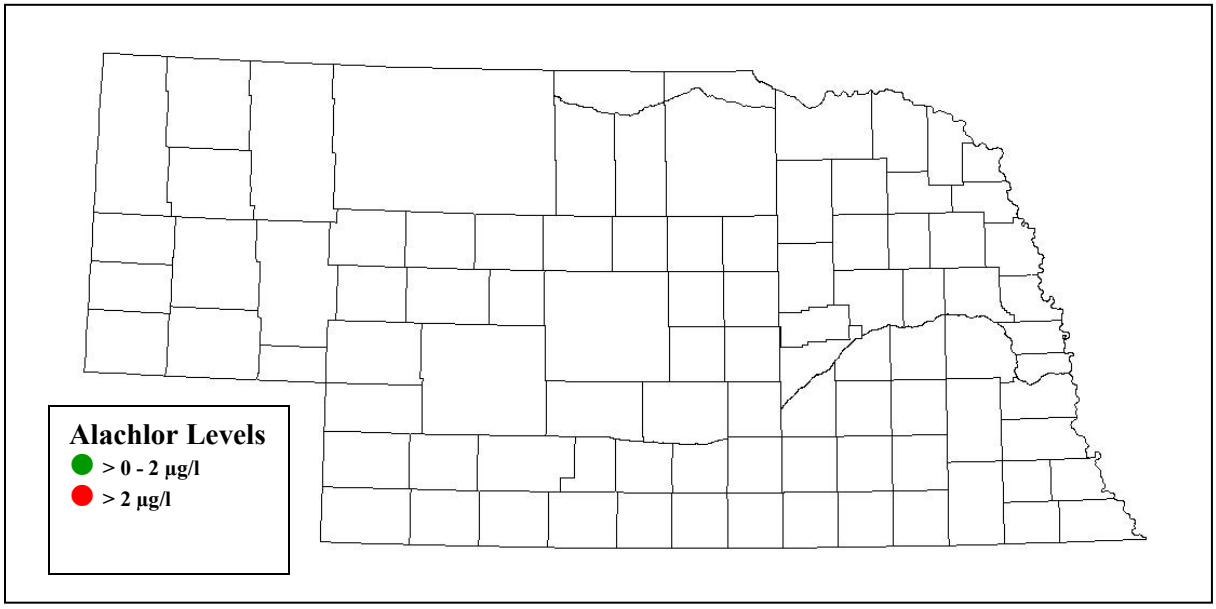


Figure 28. Alachlor concentrations of wells sampled in 2008. (Source: The Database, 2009)

The mean alachlor concentration calculated from the Database for the entire record from 1974 is 0.006 µg/L, compared to the USEPAs MCL of 6 µg/L. Fourteen of the 23 NRDs are currently using the in-house analysis described on page 22, but that data is not yet in the Database. Figures 27 and 28 reflect alachlor data generated by analysis at a laboratory.

Metolachlor

The locations of all wells sampled for metolachlor from 1974 to 2008 and then the last recorded concentration of that herbicide is presented in Figures 29 and 30. Metoloachlor is used as an herbicide to eradicate broad leaf weeds. Common commercial trademark names include (but are not limited to) Bicep and Dual.

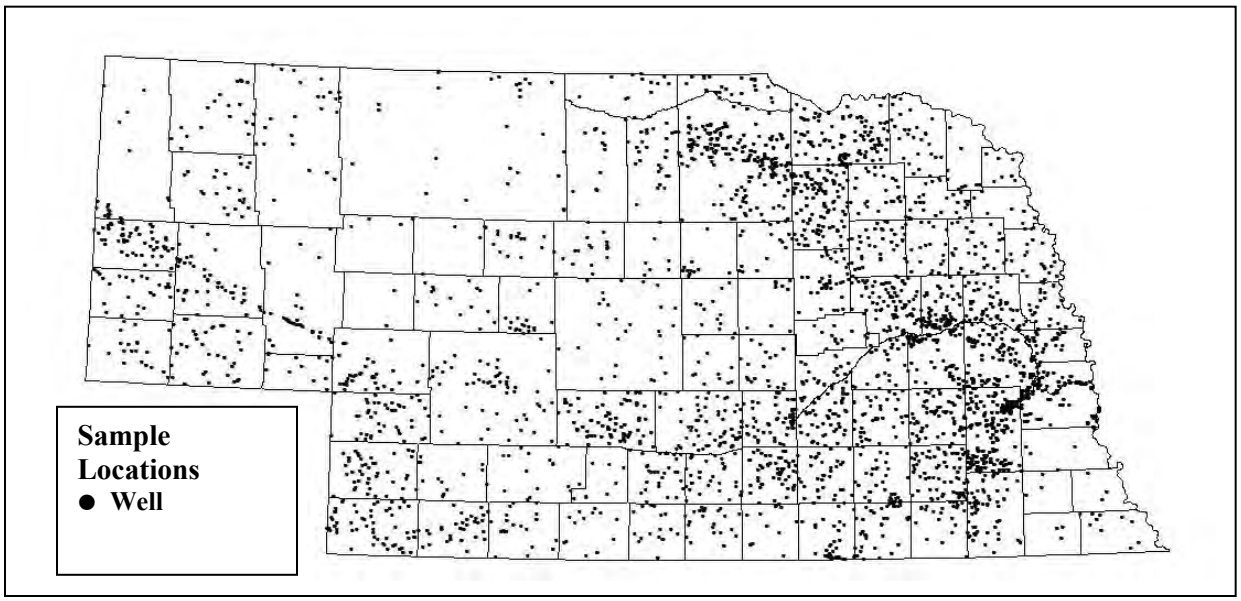


Figure 29. Location of 4,155 wells sampled for metolachlor from 1974 – 2008. (Source: The Database, 2009)

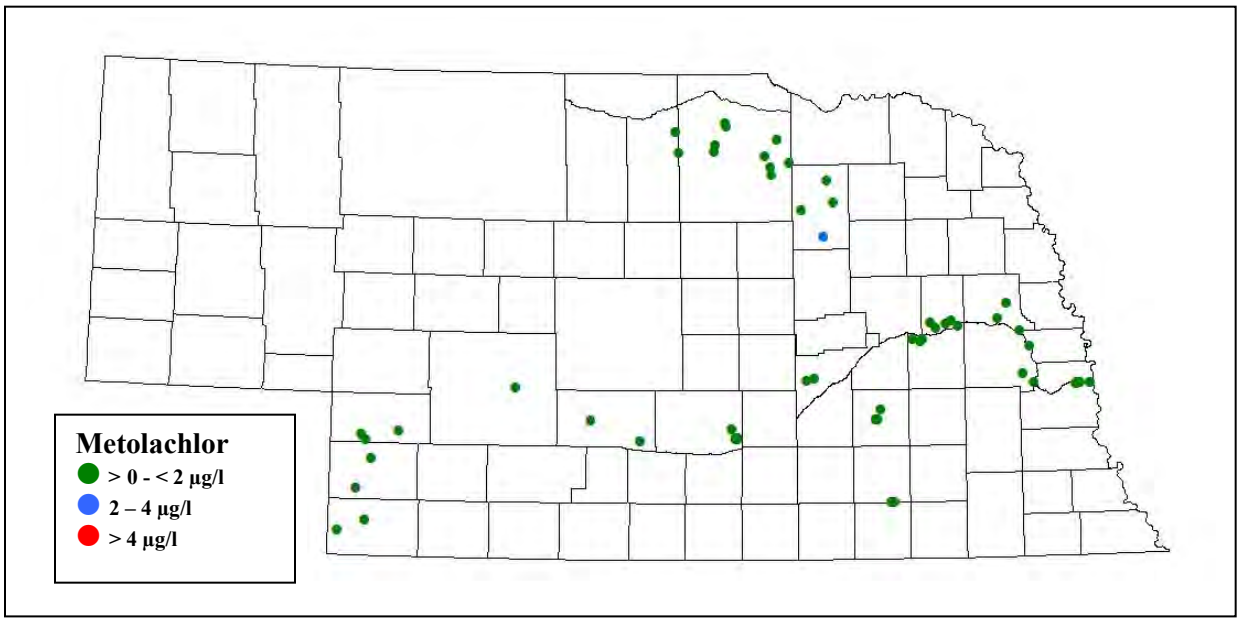


Figure 30. Last recorded concentration of metolachlor from 1974 – 2008. (Source: The Database, 2009)

The locations of all wells sampled for metolochlor in 2008 and then the concentration of that herbicide is are presented in Figures 31 and 32.

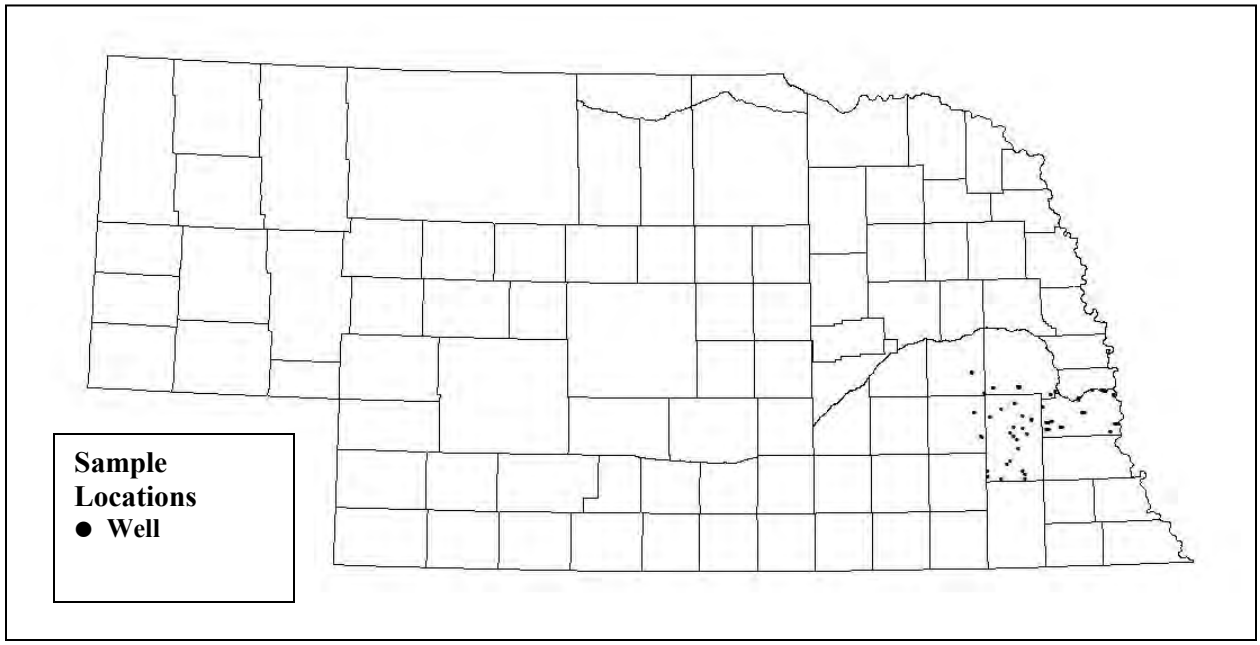


Figure 31. Location of 99 wells sampled for metolachlor in 2008. (Source: The Database, 2009)

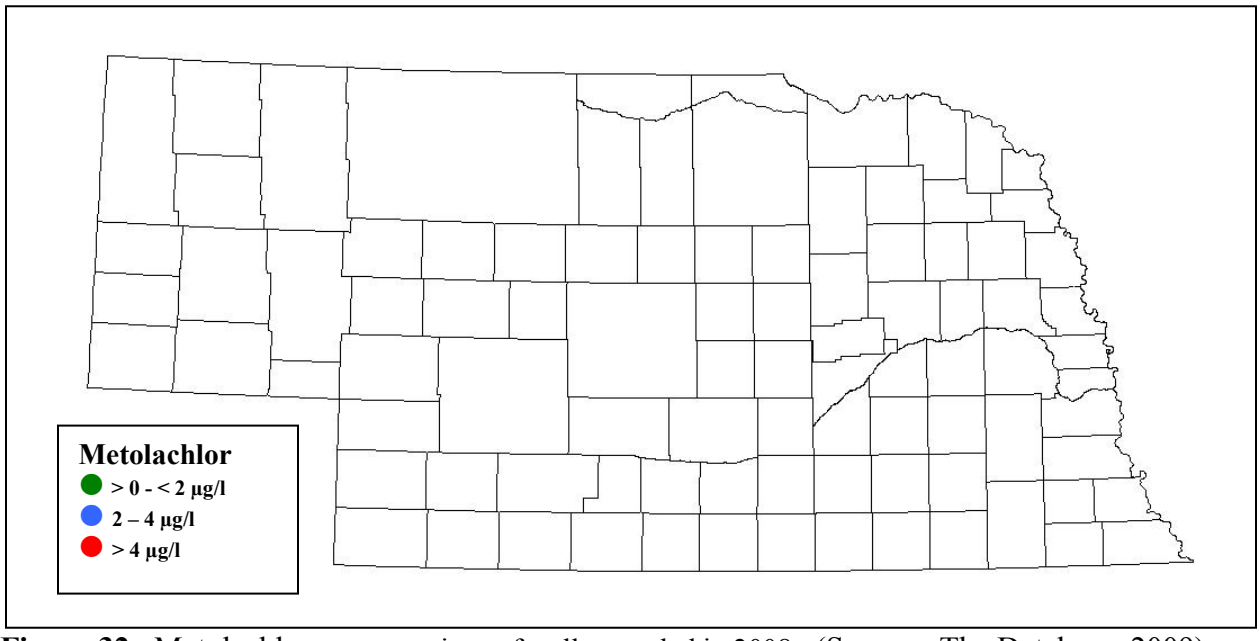


Figure 32. Metolachlor concentrations of wells sampled in 2008. (Source: The Database, 2009)

The mean metolachlor concentration calculated from the Database for the entire record from 1974 is 0.15 µg/L. There is no USEPA MCL for metolachlor. Fourteen of the 23 NRDs are currently using the in-house analysis described on page 22, but that data is not yet in the Database. Figures 31 and 32 reflect metolachlor data generated by analysis at a laboratory.

Simazine

The locations of all wells sampled for simazine from 1974 to 2008 and then the last recorded concentration of that herbicide is presented in Figures 33 and 34. Simazine is used as an herbicide to eradicate broad leaf weeds. Common commercial trademark names include (but are not limited to) Princep and Aladdin.

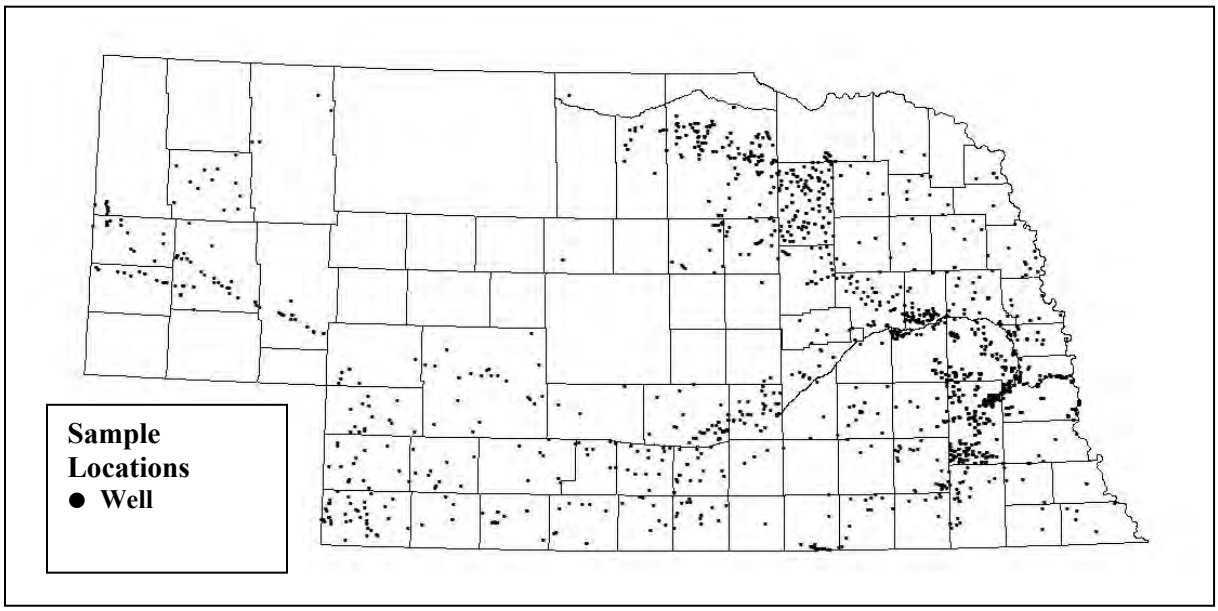


Figure 33. Location of 2,219 wells sampled for simazine from 1974 – 2008. (Source: The Database, 2009)

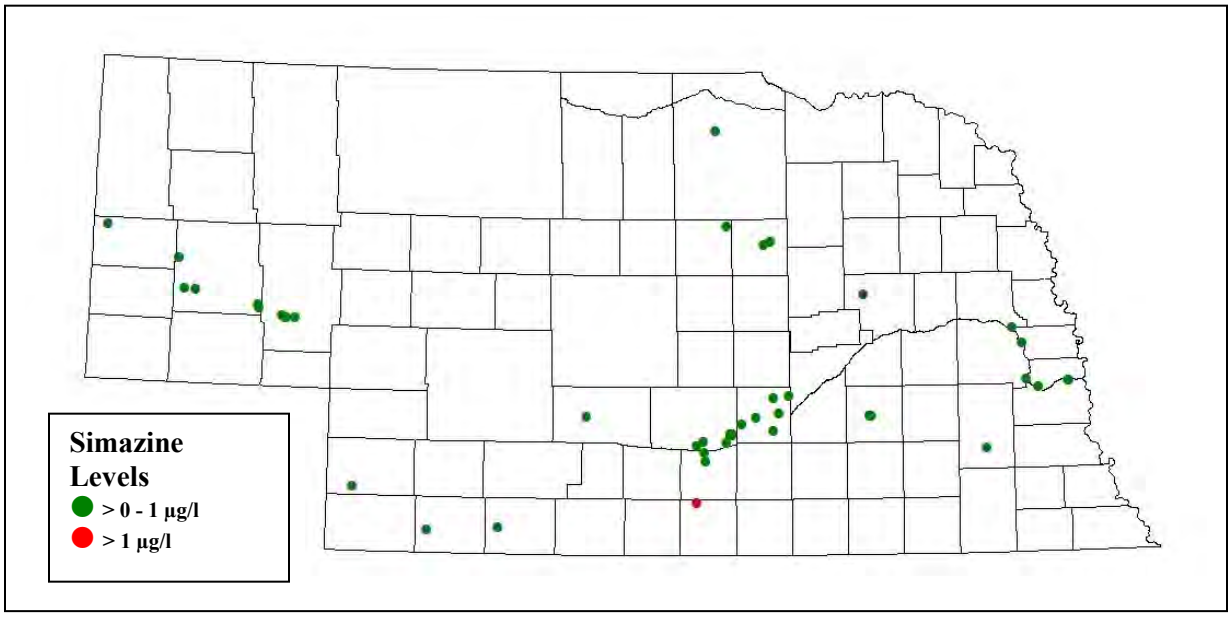


Figure 34. Last recorded concentration of simazine from 1974 – 2008. (Source: The Database, 2009)

The locations of all wells sampled for simazine in 2008 and then the concentration of that herbicide is are presented in Figures 35 and 36.

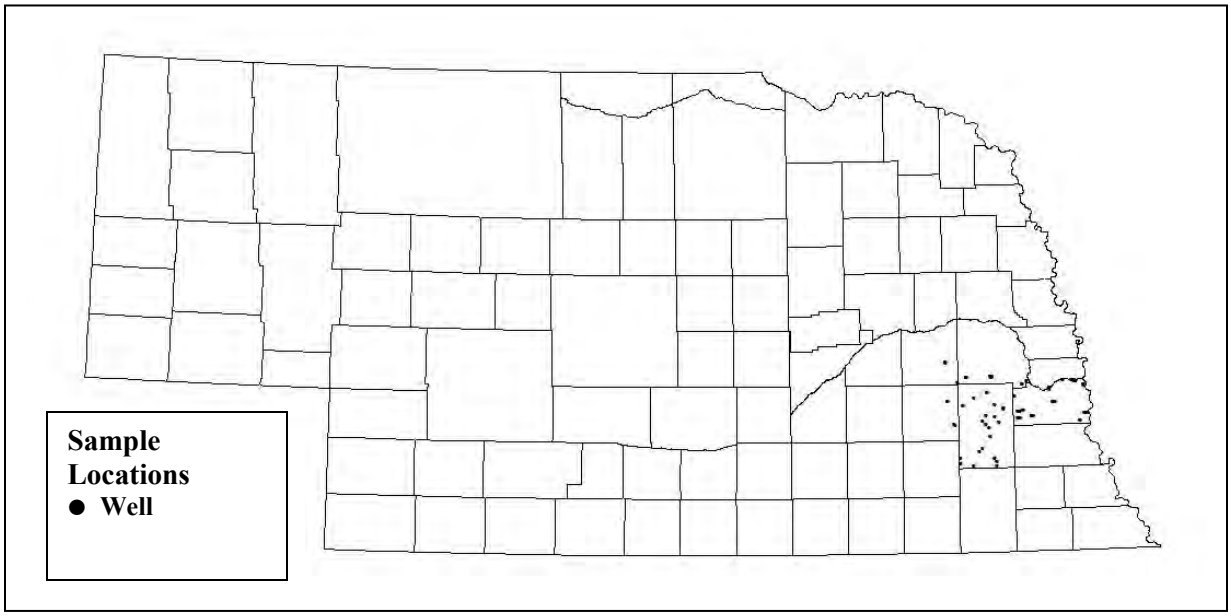


Figure 35. Location of 99 wells sampled for simazine in 2008. (Source: The Database, 2009)

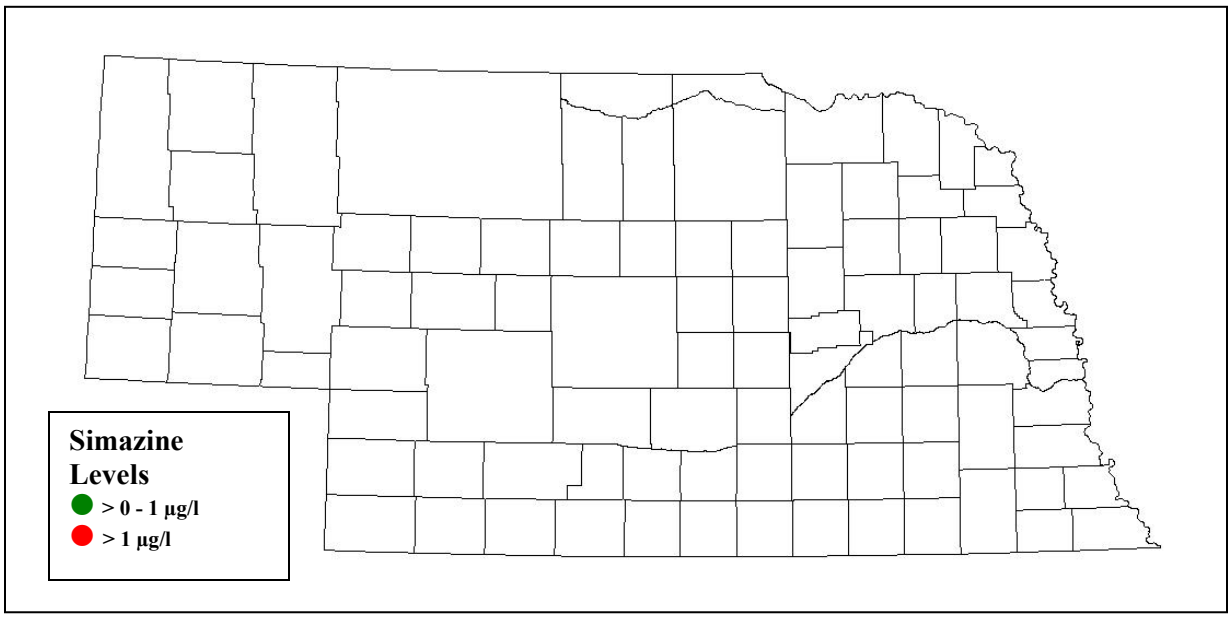


Figure 36. Simazine concentrations of wells sampled in 2008. (Source: The Database, 2009)

The mean simazine concentration calculated from the Database for the entire record from 1974 is 0.0006 µg/L, compared to the USEPAs MCL of 4 µg/L. Fourteen of the 23 NRDs are currently using the in-house analysis described on page 22, but that data is not yet in the Database. Figures 35 and 36 reflect simazine data generated by analysis at a laboratory.

Pesticides and Trends

An in-depth analysis of statewide trends for any of the pesticides has not been attempted this year because the number of detections in separate wells for these compounds was too small to permit a reliable trend analysis. Many of the detections for these compounds were in the same wells or a series of closely spaced wells. Therefore, an analysis for trends in these parameters would not be valid. In general, the greater numbers of detections of pesticides in groundwater follows the same overall pattern of higher nitrates in groundwater.

As mentioned previously in this report, 14 of the 23 NRDs continue to sample for atrazine, metolachlor, and acetochlor and analyze on a case-by-case basis using the in-house technology described on page 22. Once the ongoing sampling and analysis of pesticides are entered into the Database, an assessment of the changes in levels of these compounds over time can be completed.

CONCLUSIONS

Groundwater is a valuable resource for Nebraska. The majority of Nebraska's residents rely on groundwater for drinking water, agriculture, and industry. Most public water supplies that utilize groundwater do not require any form of treatment for drinking water before serving it to the public. There are some limited areas in Nebraska where the nitrate concentration is greater than the drinking water standard of 10 mg/L. The state's reliance on groundwater alone makes it important to continue to monitor groundwater quality and to coordinate and share monitoring techniques, to enable decision makers to make more informed management decisions.

The Quality-Assessed Agrichemical Contaminant Database for Nebraska Groundwater has been invaluable to decision makers in managing Nebraska's groundwater resource. This report authorized by Neb. Rev. Stat. § 46-1304 (LB 329, 2001) would be extremely difficult, if not impossible, to prepare were it not for the existence of the Database. More importantly, the Database has made it possible to quickly and confidently retrieve both recent and historic groundwater quality data for the entire state. These data not only are utilized to make regulatory decisions to protect groundwater quality, but can also be used by the private sector to identify alternate sources of groundwater for drinking water purposes. Most of the 23 NRDs and several state and federal agencies are conducting or analyzing groundwater monitoring, resulting in a large number of analyses spread across the entire state. It is imperative that the Database continue to be implemented and updated for the foreseeable future.

Nebraska's Natural Resources Districts are conducting extensive groundwater quality monitoring, focusing on nitrate and pesticides and have instituted many Groundwater Management Areas (GWMAs). Most of the NRDs have submitted groundwater quality monitoring data to the Database. The other NRDs are submitting data through a cooperative agreement with USGS. In addition, the NRDs have also developed a Statewide Groundwater Monitoring Network that has been sampled for four years. Not only are the NRDs data vital to the Database, but their implementation of GWMAs is essential in the protection of groundwater quality in Nebraska. NRDs with GWMAs have instituted farm operator certification, soil testing for nitrogen, irrigation water management, and other best management practices. It will be through these GWMA and related practices that Nebraskans will see a decrease in contaminants such as nitrate over the next several decades.

Concentrations and trends of contaminants. As with all previous reports, an attempt has been made to show the trends of several of the agricultural related contaminants detected in the states groundwater. Utilizing all of the data to show realistic trends has been proven to be at best, difficult. The data does indicate that overall, since 2001 the number of analyses greater than 10 mg/l has decreased. As discussed previously in this report, data from 1994 to 2008 is more representative of the "statewide" concentration of nitrogen and indicates a slight upward trend. Utilizing just the data from the NRDs' Statewide Groundwater Monitoring Network (Figures 19, 20 and Tables 7 and 8) for both the "short-term" and "long-term" analyses, there are more wells showing increases in nitrate levels than decreases. However, in both cases, the number of wells in the network show neither increase nor decrease is greater than either category. There is not enough recent data for atrazine, alachlor, metolachlor, or simazine to conduct any trend analyses. It should be noted that not all of the NRD's pesticide/herbicide data has been entered into the

Database at this time. Even with the future inclusion of these data sets, it will be only through a continued identification of a set of wells that are sampled on an on-going basis, similar to the NRDs' Statewide Groundwater Monitoring Network, and coordination of monitoring activities that will help manage and protect groundwater.

The Future. There has been a monumental amount of time and effort expended to populate the Database and the importance of its merits cannot be emphasized enough. The NRDs' Statewide Groundwater Monitoring Network has been very useful and consists of many dedicated monitoring wells. However, the NRDs' network has limitations and the resources are not available to improve the dedicated monitoring well network or maintain the necessary yearly sampling routine. A Statewide Groundwater Monitoring Network requires dedicated monitoring wells with strict well construction, and standards for sample collection and reporting. Continued attention and resources (i.e. local and state time, funding, and staff) directed toward monitoring to implement the Statewide Groundwater Monitoring Network are crucial for the successful management of Nebraska's valuable natural resource, groundwater.

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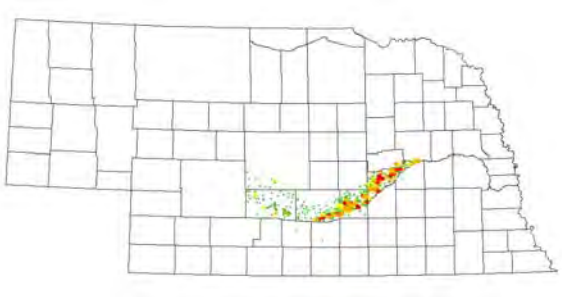
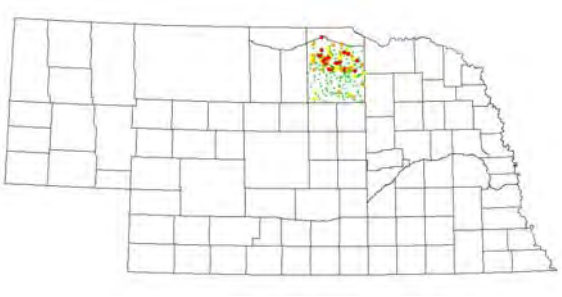
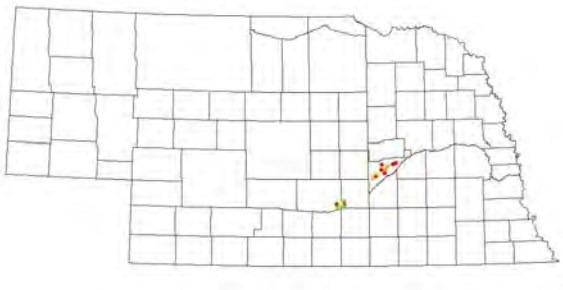


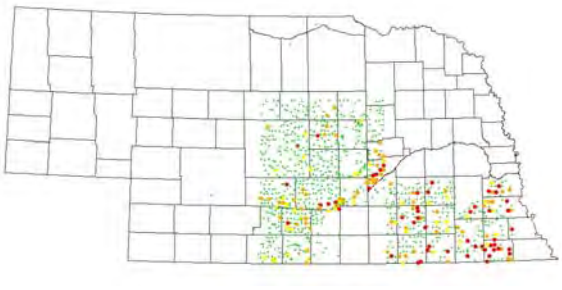
1974 - 1975 (398 wells, 398 analyses)



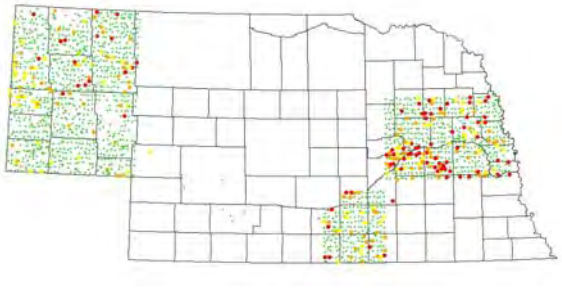
1976 (281 wells, 283 analyses)



1977 (43 wells, 45 analyses)



1978 (1074 wells, 1082 analyses)



1979 (1829 wells, 1845 analyses)

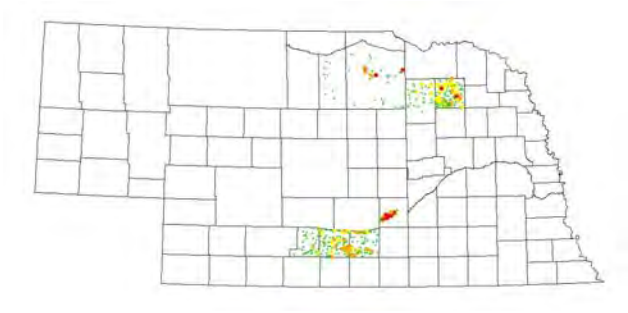
Figure A-1. Nitrate analyses for years 1974 – 1979. (Source: Quality-Assessed Agrichemical Contaminant Database for Nebraska Groundwater)

Nitrate Levels

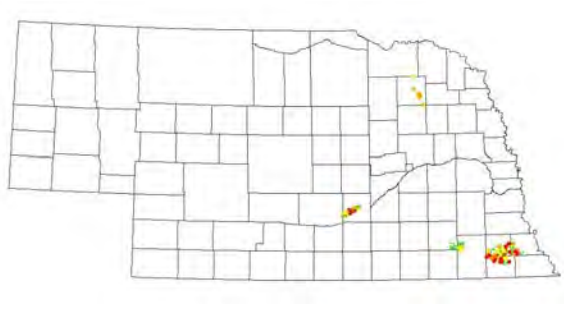
- < 7.5 mg/l
- 7.5 – 10 mg/l
- 10 – 20 mg/l
- > 20 mg/l

pty areas indicate no data reported.

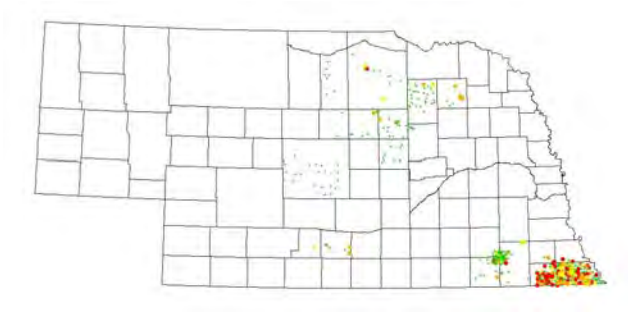
These maps were provided to give you a snapshot of the data. To see them better, view the report on NDEQ's web site (http://deq.ne.gov/) and use your Adobe Acrobat reader to enlarge individual maps.



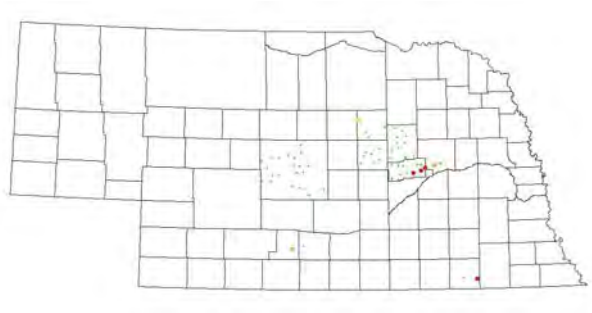
1980 (469 wells, 470 analyses)



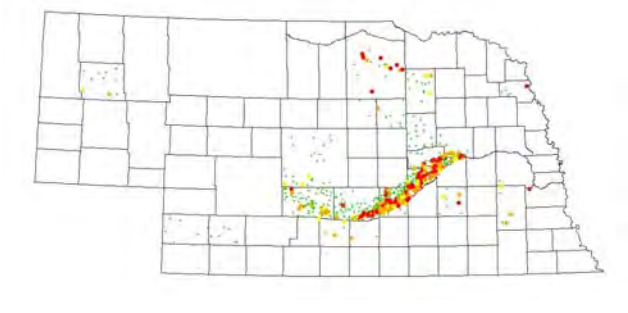
1981 (143 wells, 197 analyses)



1982 (508 wells, 519 analyses)



1983 (67 wells, 67 analyses)



1984 (696 wells, 696 analyses)

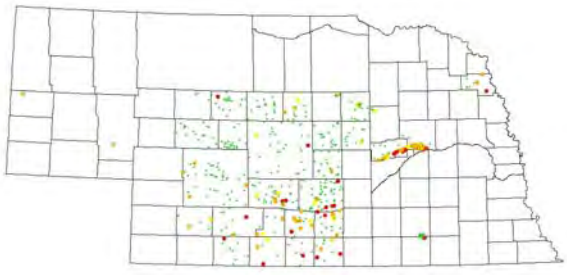
Figure A-2. Nitrate analyses for years 1980 – 1984. (Source: Quality-Assessed Agrichemical Contaminant Database for Nebraska Groundwater)

Nitrate Levels

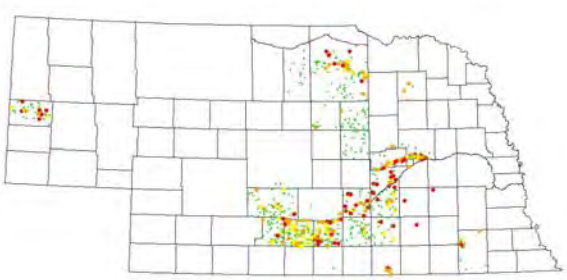
- < 7.5 mg/l
- 7.5 – 10 mg/l
- 10 – 20 mg/l
- > 20 mg/l

pty areas indicate no data reported.

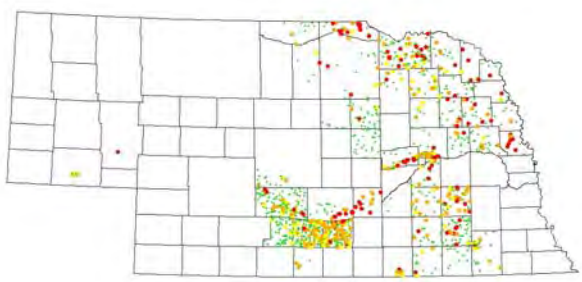
These maps were provided to give you a snapshot of the data. To see them better, view the report on NDEQ's web site (http://deq.ne.gov/) and use your Adobe Acrobat reader to enlarge individual maps.



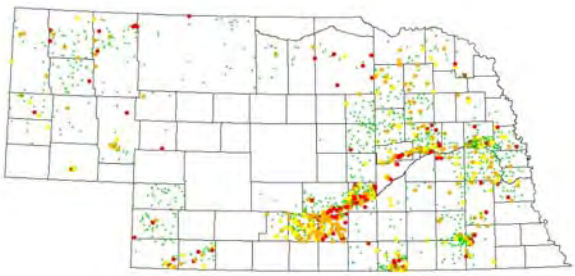
1985 (594 wells, 616 analyses)



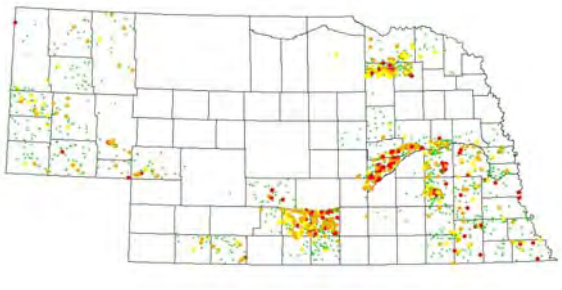
1986 (743 wells, 743 analyses)



1987 (1373 wells, 1373 analyses)



1988 (1851 wells, 1853 analyses)



1989 (1741 wells, 1747 analyses)

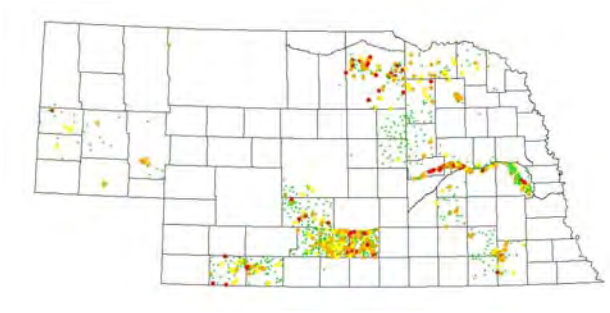
Figure A-3. Nitrate analyses for years 1985 – 1989. (Source: Quality-Assessed Agrichemical Contaminant Database for Nebraska Groundwater)

Nitrate Levels

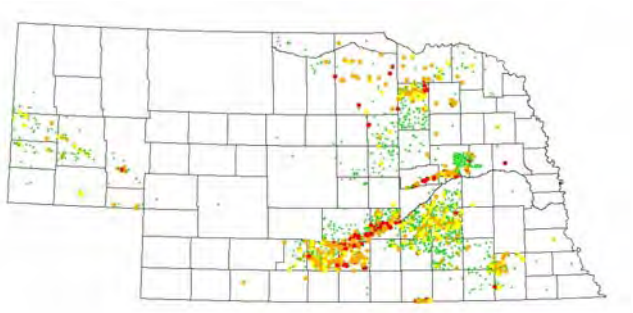
- < 7.5 mg/l
- 7.5 – 10 mg/l
- 10 – 20 mg/l
- > 20 mg/l

pty areas indicate no data reported.

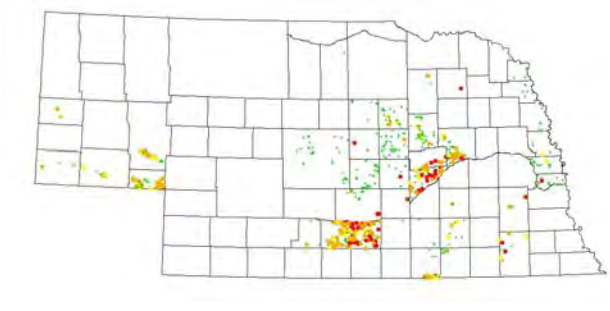
These maps were provided to give you a snapshot of the data. To see them better, view the report on NDEQ's web site (http://deq.ne.gov/) and use your Adobe Acrobat reader to enlarge individual maps.



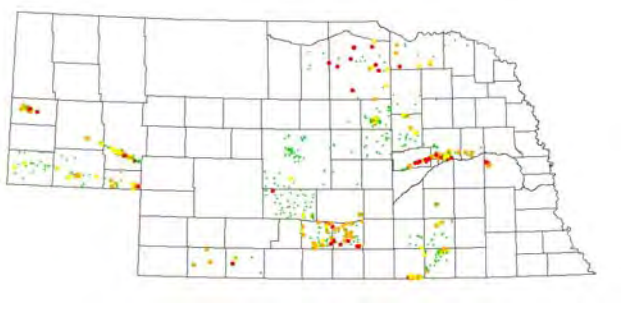
1990 (1355 wells, 1367 analyses)



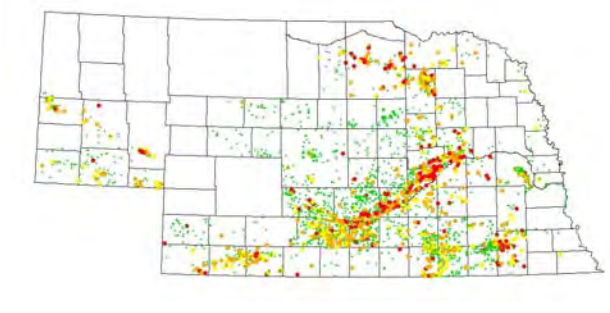
1991 (2282 wells, 2874 analyses)



1992 (1402 wells, 2490 analyses)



1993 (1790 wells, 2864 analyses)



1994 (4380 wells, 5720 analyses)

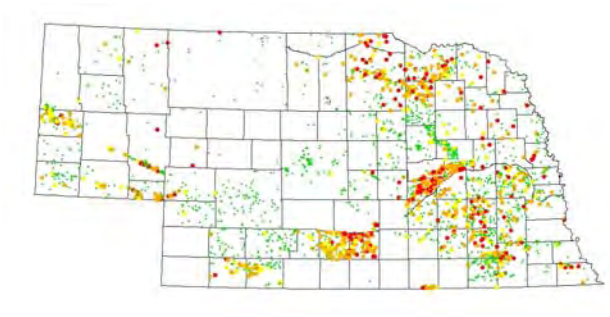
Figure A-4. Nitrate analyses for years 1990 – 1994. (Source: Quality-Assessed Agrichemical Contaminant Database for Nebraska Groundwater)

Nitrate Levels

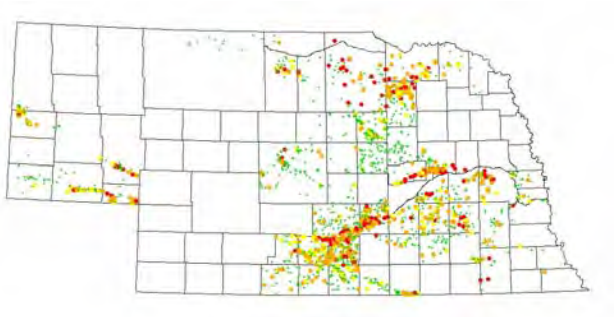
- < 7.5 mg/l
- 7.5 – 10 mg/l
- 10 – 20 mg/l
- > 20 mg/l

pty areas indicate no data reported.

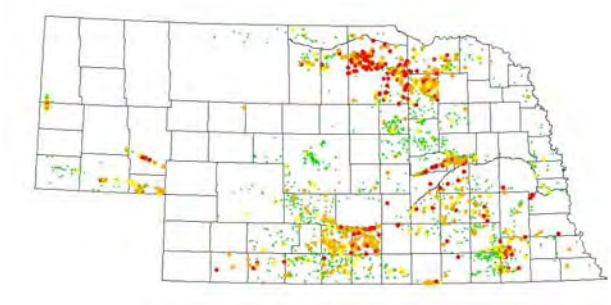
These maps were provided to give you a snapshot of the data. To see them better, view the report on NDEQ's web site (http://deq.ne.gov/) and use your Adobe Acrobat reader to enlarge individual maps.



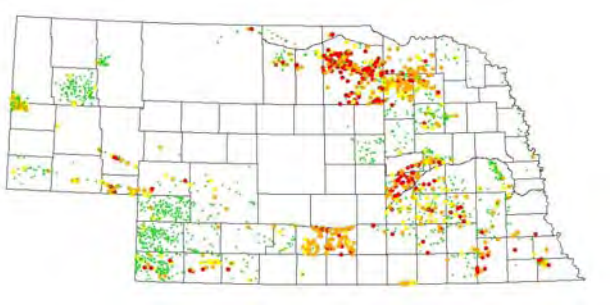
1995 (4039 wells, 4746 analyses)



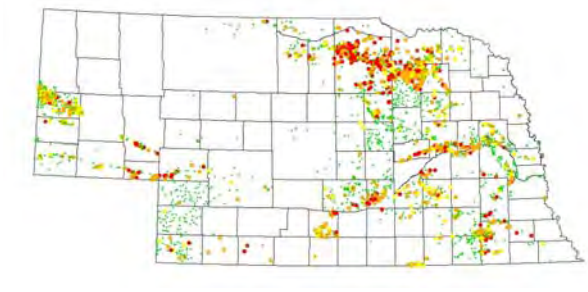
1996 (3304 wells, 4211 analyses)



1997 (3588 wells, 3613 analyses)



1998 (3139 wells, 3164 analyses)



1999 (3490 wells, 3576 analyses)

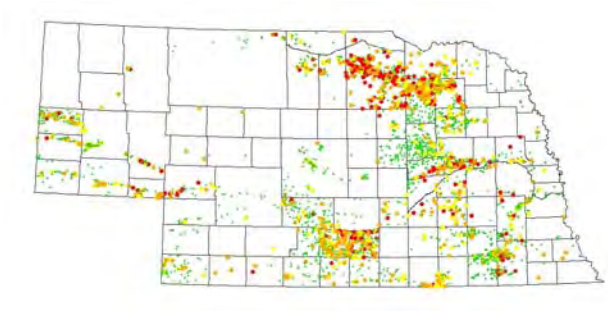
pty areas indicate no data reported.

Figure A-5. Nitrate analyses for years 1995 – 1999. (Source: Quality-Assessed Agrichemical Contaminant Database for Nebraska Groundwater)

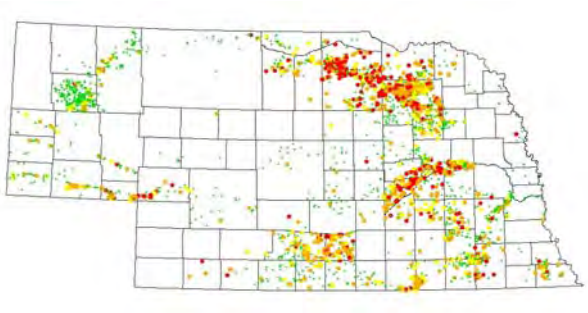
Nitrate Levels

- < 7.5 mg/l
- 7.5 – 10 mg/l
- 10 – 20 mg/l
- > 20 mg/l

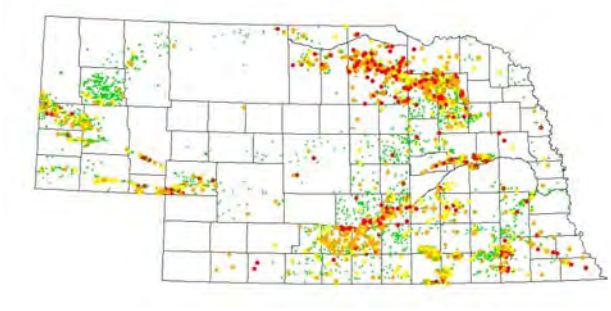
These maps were provided to give you a snapshot of the data. To see them better, view the report on NDEQ's web site (http://deq.ne.gov/) and use your Adobe Acrobat reader to enlarge individual maps.



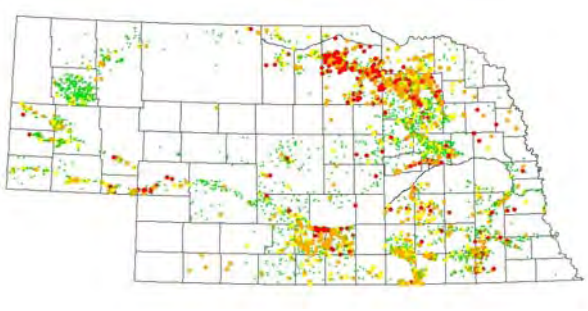
2000 (4390 wells, 4486 analyses)



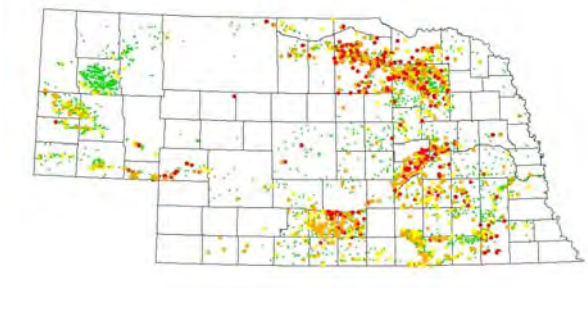
2001 (3811 wells, 3881 analyses)



2002 (5130 wells, 5208 analyses)



2003 (5022 wells, 5106 analyses)



2004 (4720 wells, 4787 analyses)

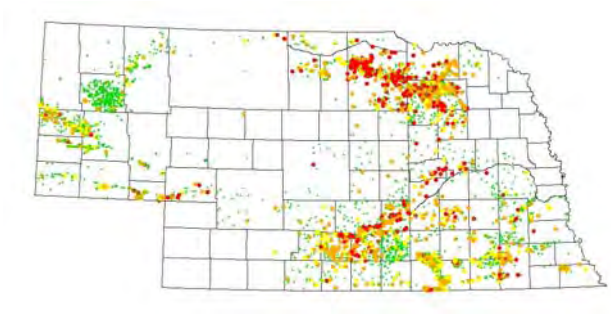
Figure A-6. Nitrate analyses for years 2000 – 2004. (Source: Quality-Assessed Agrichemical Contaminant Database for Nebraska Groundwater)

Nitrate Levels

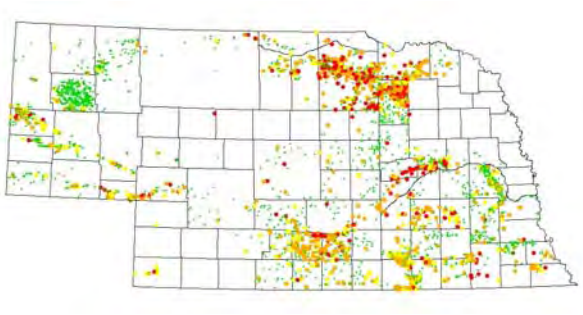
- < 7.5 mg/l
- 7.5 – 10 mg/l
- 10 – 20 mg/l
- > 20 mg/l

pty areas indicate no data reported.

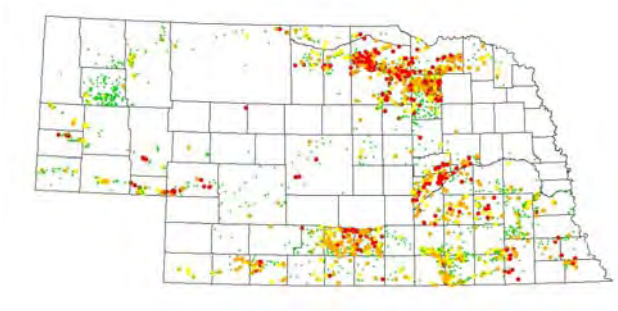
These maps were provided to give you a snapshot of the data. To see them better, view the report on NDEQ's web site (http://deq.ne.gov/) and use your Adobe Acrobat reader to enlarge individual maps.



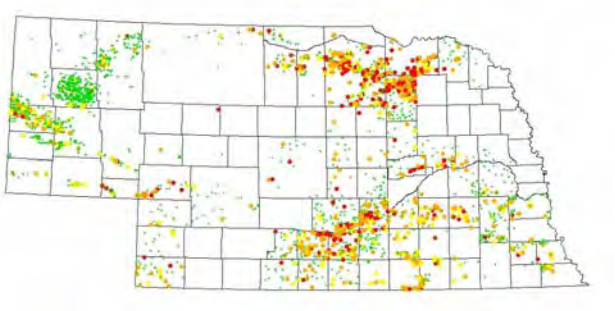
2005 (2026 wells, 5081 analyses)



2006 (4527 wells, 4573 analyses)



2007 (3258 wells, 3300 analyses)



2008 (3758 wells, 3784 analyses)

Figure A-7. Nitrate analyses for years 2005 – 2007. (Source: Quality-Assessed Agrichemical Contaminant Database for Nebraska Groundwater)

Nitrate Levels

- < 7.5 mg/l
- 7.5 – 10 mg/l
- 10 – 20 mg/l
- > 20 mg/l

Empty areas indicate no data reported. These maps were provided to give you a snapshot of the data. To see them better, view the report on NDEQ's web site (http://deq.ne.gov/) and use your Adobe Acrobat reader to enlarge individual maps.

Appendix B: External Data

On October 1, 2009, NDEQ issued a request to local, state, and federal agencies, members of the public, and academic institutions for all existing and readily available surface water quality data, for consideration in the development of the 2010 Water Quality Integrated report (IR). On October 30, 2009, the Nebraska field office of the United States Fish and Wildlife Service (FWS) submitted atrazine data from a contaminants investigation being conducting in the Rainwater Basin Wetland Management District by FWS staff. Included with the data submission were basic descriptions of the sample collection and analyzation methodologies. After reviewing the FWS submission, NDEQ concluded that a more comprehensive quality assurance document was needed if the FWS data were to be used to make assessment decisions for the 2010 IR. FWS worked with the NDEQ to provide additional quality assurance documentation; however, the additional documents did not meet the requirements of a quality assurance project plan, as defined by the Environmental Protection Agency (EPA QA/R5). Because of the lack of adequate quality assurance documentation, NDEQ was unable to use the FWS data for conducting water quality assessments in the 2010 IR. To facilitate the use of FWS data in future IRs, NDEQ has committed to working with the FWS to develop quality assurance documents that will meet NDEQ requirements.

While the following data could not be used to make water quality assessments for the 2010 IR, NDEQ commends FWS for conducting a comprehensive contaminants study on the wetlands of the rainwater basin. Included below is the 2008 atrazine data FWS submitted to the NDEQ.

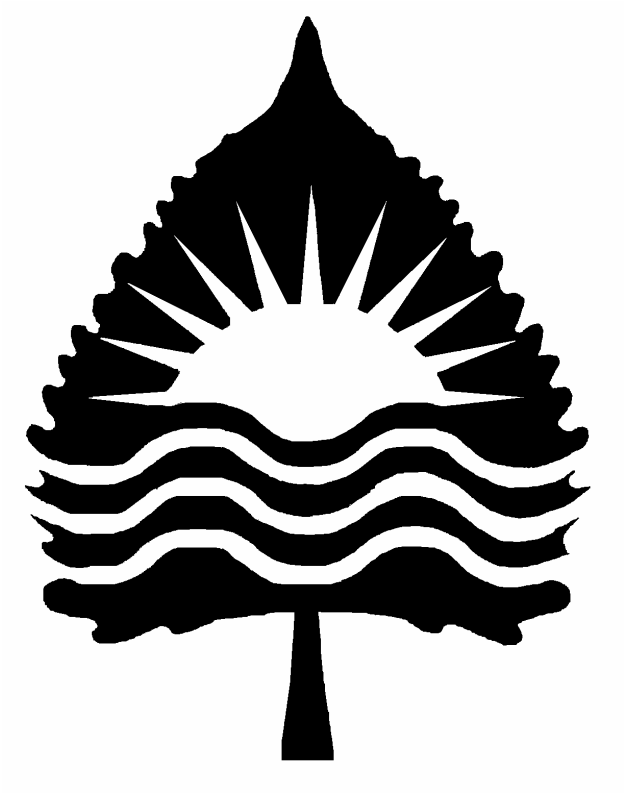
Basin	Site Name	Coordinates		Date Collected	Atrazine Conc. (ug/l)
		Latitude	Longitude		
Big Blue	County Line WPA	40.70248	-97.54384	5/6/2008	0.42
Big Blue	County Line WPA	40.70248	-97.54384	6/17/2008	0.60
Big Blue	County Line WPA	40.70248	-97.54384	7/21/2008	0.96
Big Blue	Harvard WPA	40.61142	-98.18173	4/17/2008	0.08
Big Blue	Harvard WPA	40.61142	-98.18173	5/7/2008	1.86
Big Blue	Harvard WPA	40.61142	-98.18173	5/21/2008	0.46
Big Blue	Harvard WPA	40.61142	-98.18173	5/21/2008	2.08
Big Blue	Harvard WPA	40.61142	-98.18173	6/3/2008	0.48
Big Blue	Harvard WPA	40.61142	-98.18173	6/3/2008	3.38
Big Blue	Harvard WPA	40.61142	-98.18173	6/16/2008	0.30
Big Blue	Harvard WPA	40.61142	-98.18173	7/23/2008	0.30
Big Blue	Real WPA	40.67593	-97.57619	5/6/2008	0.42
Big Blue	Real WPA	40.67593	-97.57619	6/4/2008	0.67
Big Blue	Real WPA	40.67593	-97.57619	7/7/2008	1.00
Big Blue	Sininger WPA	40.71344	-97.53119	5/19/2008	0.50
Big Blue	Sininger WPA	40.71344	-97.53119	6/17/2008	0.40
Big Blue	Sininger WPA	40.71344	-97.53119	7/7/2008	18.80
Big Blue	Sininger WPA	40.71344	-97.53119	7/21/2008	6.60
Big Blue	Sininger WPA	40.71344	-97.53119	8/6/2008	5.44
Big Blue	Sininger WPA	40.71933	-97.53538	4/15/2008	0.19
Big Blue	Sininger WPA	40.71933	-97.53538	5/19/2008	1.08
Big Blue	Sininger WPA	40.71933	-97.53538	6/4/2008	6.80
Big Blue	Sininger WPA	40.71933	-97.53538	7/21/2008	1.03
Big Blue	Sininger WPA	40.71933	-97.53538	8/6/2008	1.05
Big Blue	Wilkins WPA	40.60561	-97.69070	5/6/2008	0.65
Big Blue	Wilkins WPA	40.60561	-97.69070	5/19/2008	1.40

Basin	Site Name	Coordinates		Date Collected	Atrazine Conc. (ug/l)
		Latitude	Longitude		
Big Blue	Wilkins WPA	40.60561	-97.69070	6/17/2008	1.80
Big Blue	Wilkins WPA	40.60561	-97.69070	8/6/2008	0.44
Big Blue	Wilkins WPA	40.60914	-97.69078	5/6/2008	0.83
Big Blue	Wilkins WPA	40.60914	-97.69078	5/19/2008	2.50
Big Blue	Wilkins WPA	40.60914	-97.69078	6/17/2008	2.30
Big Blue	Wilkins WPA	40.60914	-97.69078	7/21/2008	0.37
Little Blue	Gleason WPA	40.44247	-99.02311	4/14/2008	0.32
Little Blue	Gleason WPA	40.44247	-99.02311	5/5/2008	1.44
Little Blue	Gleason WPA	40.44247	-99.02311	5/22/2008	287.00
Little Blue	Gleason WPA	40.44247	-99.02311	6/5/2008	9.80
Little Blue	Gleason WPA	40.44247	-99.02311	6/19/2008	8.90
Little Blue	Gleason WPA	40.44247	-99.02311	7/9/2008	1.00
Little Blue	Gleason WPA	40.44247	-99.02311	7/22/2008	0.90
Little Blue	Massie WPA	40.47874	-98.03319	5/22/2008	0.51
Little Blue	Massie WPA	40.47874	-98.03319	7/8/2008	2.20
Little Blue	Massie WPA	40.47874	-98.03319	8/7/2008	0.70
Little Blue	McMurtrey WPA	40.56537	-98.18415	5/7/2008	47.00
Little Blue	McMurtrey WPA	40.56537	-98.18415	5/21/2008	48.70
Little Blue	McMurtrey WPA	40.56537	-98.18415	6/3/2008	13.90
Little Blue	McMurtrey WPA	40.56537	-98.18415	7/8/2008	0.90
Little Blue	McMurtrey WPA	40.56537	-98.18415	7/23/2008	1.70
Little Blue	McMurtrey WPA	40.56642	-98.18236	7/23/2008	0.58
Little Blue	McMurtrey WPA	40.56811	-98.17175	5/7/2008	0.51
Little Blue	Moger WPA	40.48142	-97.99089	5/7/2008	1.07
Little Blue	Moger WPA	40.48142	-97.99089	5/21/2008	2.01
Little Blue	Moger WPA	40.48142	-97.99089	6/3/2008	3.67
Little Blue	Moger WPA	40.48142	-97.99089	6/16/2008	4.30
Little Blue	Moger WPA	40.48142	-97.99089	7/23/2008	1.80
Little Blue	Moger WPA	40.48857	-97.99057	5/21/2008	0.85
Little Blue	Moger WPA	40.48857	-97.99057	6/3/2008	0.71
Middle Platte	Cottonwood WPA	40.55169	-99.58741	4/18/2008	0.45
Middle Platte	Cottonwood WPA	40.55169	-99.58741	5/20/2008	21.60
Middle Platte	Cottonwood WPA	40.55169	-99.58741	6/2/2008	11.10
Middle Platte	Cottonwood WPA	40.55169	-99.58741	6/18/2008	0.90
Middle Platte	Cottonwood WPA Inlet	40.55086	-99.58334	5/20/2008	25.00
Middle Platte	Linder WPA	40.54472	-99.53980	4/18/2008	0.65
Middle Platte	Linder WPA	40.54472	-99.53980	5/8/2008	1.86
Middle Platte	Linder WPA	40.54472	-99.53980	5/20/2008	149.00
Middle Platte	Linder WPA	40.54472	-99.53980	6/2/2008	29.50
Middle Platte	Linder WPA	40.54472	-99.53980	6/18/2008	24.80
Middle Platte	Linder WPA	40.54472	-99.53980	7/22/2008	1.30
Middle Platte	Linder WPA	40.54472	-99.53980	8/5/2008	1.00
Republican	Atlanta WPA	40.37987	-99.48290	4/18/2008	0.26

Basin	Site Name	Coordinates		Date Collected	Atrazine Conc. (ug/l)
		Latitude	Longitude		
Republican	Atlanta WPA	40.37987	-99.48290	5/8/2008	0.52
Republican	Atlanta WPA	40.37987	-99.48290	5/20/2008	0.69
Republican	Atlanta WPA	40.37987	-99.48290	6/2/2008	3.23
Republican	Atlanta WPA	40.37987	-99.48290	7/10/2008	2.50
Republican	Jones WPA	40.39253	-99.43468	4/18/2008	0.91
Republican	Jones WPA	40.39253	-99.43468	6/2/2008	5.80
Republican	Jones WPA	40.39253	-99.43468	6/18/2008	5.90
Republican	Jones WPA	40.39253	-99.43468	7/22/2008	3.17
Republican	Killdeer WPA	40.38820	-99.10568	4/14/2008	1.10
Republican	Killdeer WPA	40.38820	-99.10568	5/5/2008	0.77
Republican	Killdeer WPA	40.38820	-99.10568	5/22/2008	26.30
Republican	Killdeer WPA	40.38820	-99.10568	6/5/2008	12.40
Republican	Killdeer WPA	40.38820	-99.10568	6/19/2008	11.10
Republican	Killdeer WPA	40.38820	-99.10568	7/22/2008	1.30
Republican	Prarie Dog WPA	40.40108	-99.13241	4/14/2008	0.21
Republican	Prarie Dog WPA	40.40108	-99.13241	5/5/2008	1.51
Republican	Prarie Dog WPA	40.40108	-99.13241	5/22/2008	1.68
Republican	Prarie Dog WPA	40.40108	-99.13241	6/5/2008	0.60
Republican	Prarie Dog WPA	40.40108	-99.13241	6/19/2008	0.90
Republican	Prarie Dog WPA	40.40108	-99.13241	7/9/2008	4.20

Title 117 – Nebraska Surface Water Quality Standards defines Nebraska's acute atrazine criteria to be 330 ug/l and the chronic atrazine criteria to be 12ug/l for the protection of the aquatic life beneficial use. Greater than 10% of the samples from a waterbody must exceed either criterion for the waterbody to be considered impaired for the 303(d) list.

Appendix C: Documentation for Elkhorn River Basin 4c Listings



Nebraska Surface Water Quality Integrated Report Category Change for Waters in the Elkhorn River Basin Impaired by Selenium

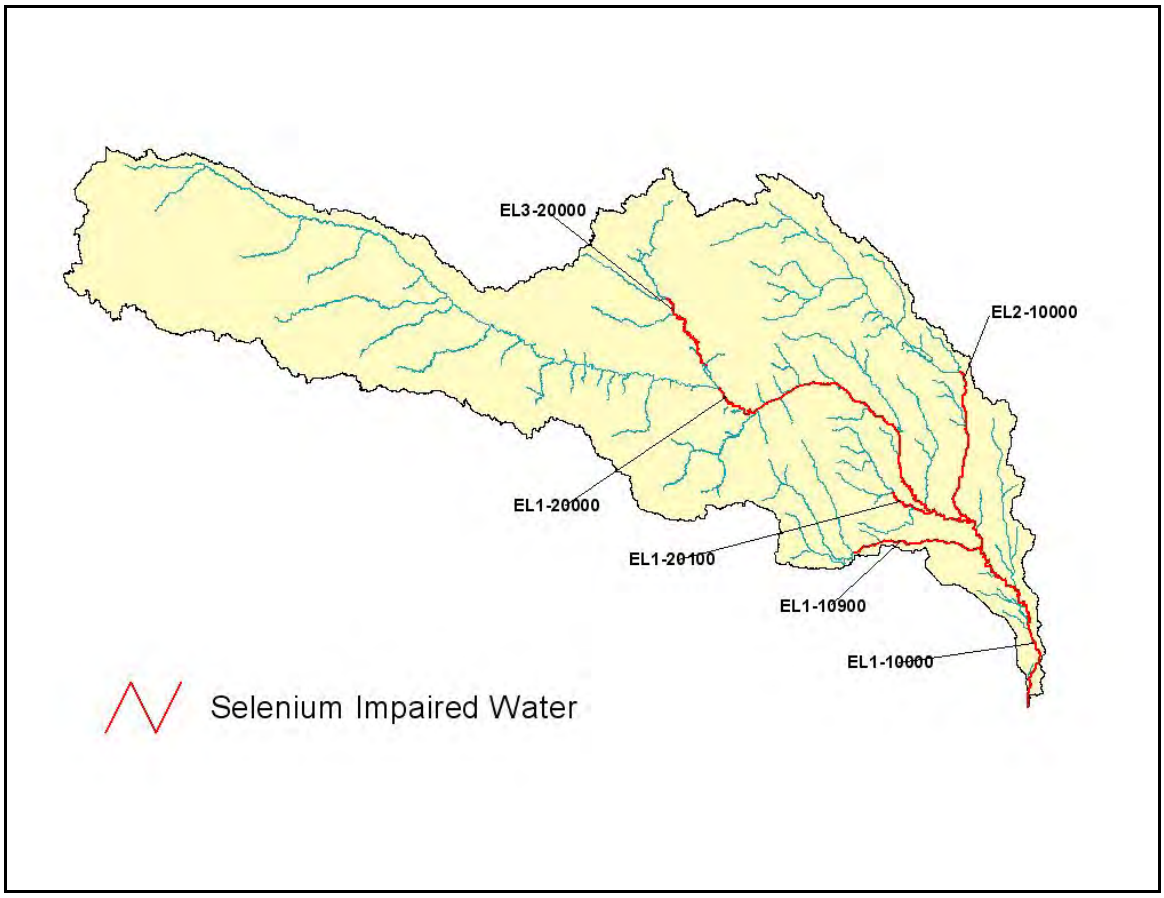
Water Quality Planning Unit
Water Quality Division
Nebraska Department of Environmental Quality

March 2009

Introduction

The 2008 Nebraska Water Quality Integrated Report (IR) identified five waterbodies in the Elkhorn River Basin as impaired by excessive selenium (Figure 1). Initially, and in accordance with EPA guidance, the waterbodies were included in category 5 – waters needing a TMDL. Further investigation has indicated the excess selenium is not the result of anthropogenic pollutants rather a function of the geology of the area. The purpose of this document is to provide the information necessary to document the natural condition of the Elkhorn Basin and the justification to include the selenium impairments as Category 4C candidates in future IRs.

Figure 1 Selenium Impaired Segments in the Elkhorn River Basin



EPA Guidance and Title 117

The *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Section 303(d), 305(b) and 314 of the Clean Water Act* provides information on the placement of waters into category 4C. Specifically:

"Segments should be placed in Category 4c when the state demonstrates that the failure to meet an applicable water quality standard is not caused by a pollutant, but instead is caused by other types of pollution. Segments placed in Category 4c do not require the development of a TMDL. Pollution, as defined by the CWA is "the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water" (section 502(19)). In some cases, the pollution is caused by the presence of a pollutant and a TMDL is required. In other cases, pollution does not result from a pollutant and a TMDL is not required. States should schedule these segments for monitoring to confirm that there continues to be no pollutant associated with the failure to meet the water quality standard and to support water quality management actions necessary to address the cause(s) of the impairment. Examples of circumstances where an impaired segment may be placed in Category 4c include segments impaired solely due to lack of adequate flow or to stream channelization.

EPA encourages the state to collect or assemble additional data and/or information to verify the initial placement of the segment, and to re-categorize the segment based on the assessment of the additional data and/or information where appropriate."

As well, Title 117 Nebraska Surface Water Quality Standards (Title 117) does include a definition of natural background. The definitions states: "natural background shall mean quantifiable measurements of water quality existing in the absence of water pollution."

Water pollution in turn is defined as: "the manmade or man-induced alteration of the chemical, physical, biological, and radiological integrity of water."

Assessment and Reporting Methodologies

Historic water quality data and assessments have presented situations where the data indicates criteria are not being met however the parameter exceedance is not the result of a pollution source. Because of these, the "*Methodologies for Waterbody Assessments and Development of the 2008 Integrated Report for Nebraska*", as well as the 2004-06 versions included a category for placement and identification of these types of waterbodies. Consistent with the EPA guidance, Category 4C is the identified category and is defined to be:

"Waterbody is impaired but the impairment is not caused by a pollutant. This category also includes waters where natural causes/sources have been determined to be the cause of the impairment. In general, natural causes/sources shall refer to those pollutants that originate from landscape geology and climactic conditions. It should be noted, this definition is not inclusive."

Title 117 and the assessment methodologies do not contain specific implementation language for the use or identification of natural background. It is the Department's intent to address situations independently as the circumstances will differ given the diverse nature of Nebraska's geology, land use, water policies and climate.

Current and Historic Water Quality Data

As indicated, the 2008 Integrated Report included six waterbodies as impaired by excessive selenium. A summary of the assessments can be found in Table 1 and boxplots of the data can be found in Figure 2. The assessments and subsequent impairment status was based on the comparison to the aquatic life beneficial use and the chronic criteria of 5 µg/l.

Water quality data used in the assessment was obtained through the Nebraska Ambient Stream Monitoring Network. Within the Elkhorn Basin there are ten waterbodies included in the network. As shown above six of the ten are considered impaired. The remaining four are not and monitoring and analysis have not detected selenium in any samples (n=75). Figure 3 provides a comparison of the data from impaired versus non-impaired segments. The data has been separated into above and below (Title 117) EL3-10000 which is also the boundaries of sub-basins EL1, EL3 and EL4

Table 1 Water Quality Data Assessments of Selenium Impaired Elkhorn River Basin Segments

Waterbody Title 117 ID	Waterbody Name	Data Period of Record	Number of Observations	Number >5 µg/l	Minimum needed for Impaired Assessment	Maximum Value (µg/l)
EL1-10000	Elkhorn River	2001-06	24	24	5	11.57
EL1-10900	Maple Creek	2002-06	17	17	4	19.35
EL1-20000	Elkhorn River	2002-06	16	9	4	7.02
EL1-20100	Pebble Creek	2001-06	23	22	5	19.06
EL2-10000	Logan Creek	2002-06	18	18	4	27.39
EL3-20000	N. Fork Elkhorn River	2002-06	17	17	4	11.71

From the surface water quality data and analysis the 4C justification will only be applied to specified waterbodies in the Elkhorn sub-basins EL1, EL2 and EL3. The area is shown in Figure 3.

Historic data and information was retrieved from the United States Geological Survey (USGS) for comparison to the current information. Three sites/sources of information were located in the USGS data base; two are similar to the NDEQ ambient stream locations and one is upstream of a NDEQ ambient site. The sites are as follows:

- Elkhorn River @ Waterloo (EL1-10000)
- Elkhorn River @ West Point (EL1-20000)
- Logan Creek @ Pender (EL2-20000)

Figure 1 Boxplots of the Elkhorn River Basin Selenium Impaired Waters

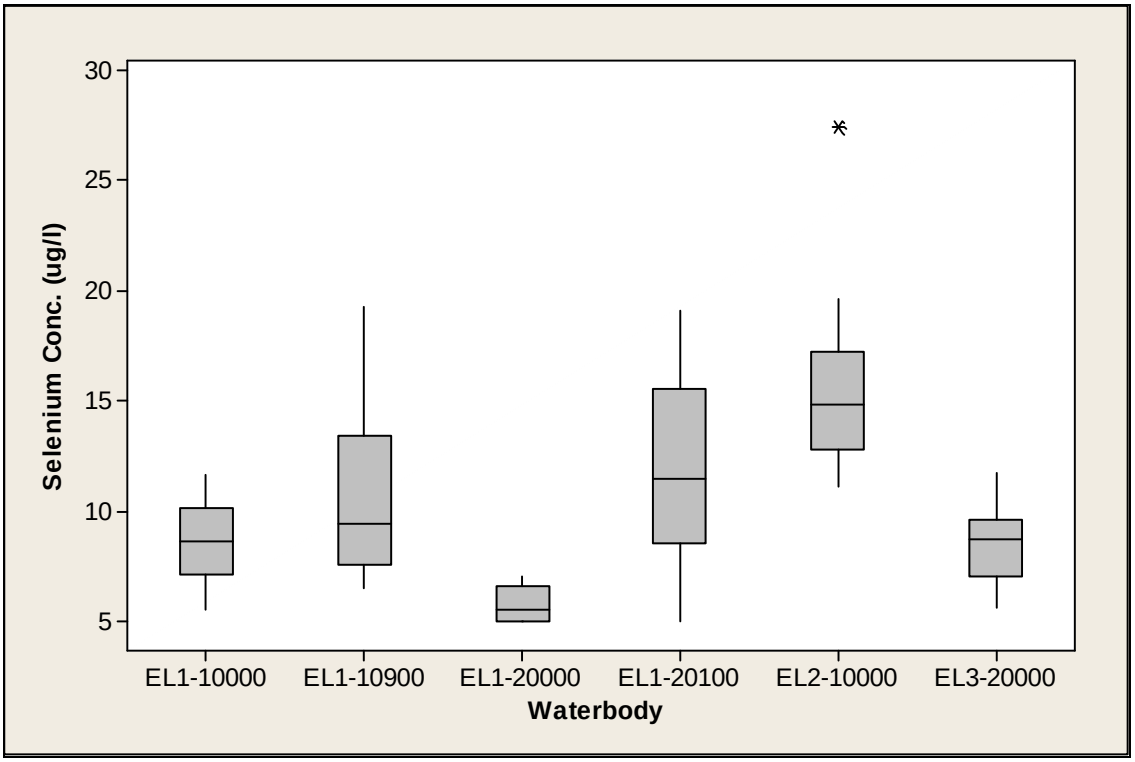
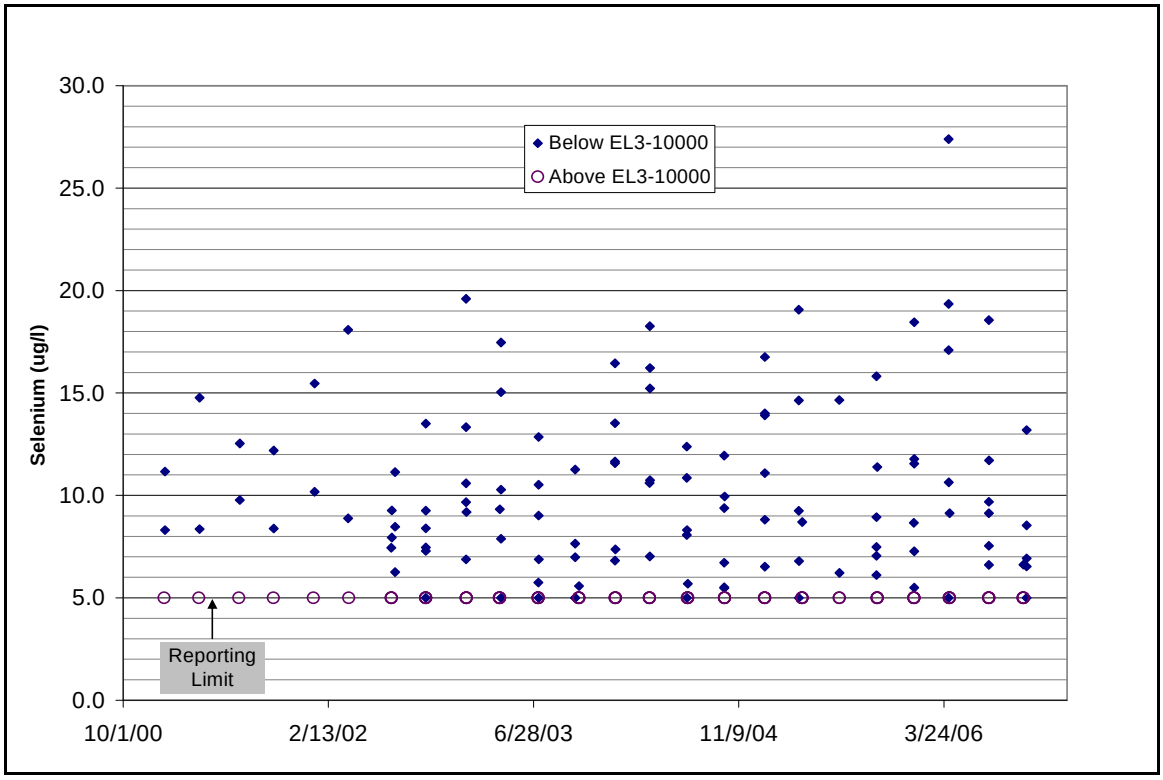


Figure 2 Elkhorn River Basin Selenium Concentrations



Although the data and information is collected from two similar sites, a direct comparison is not appropriate based on several factors including:

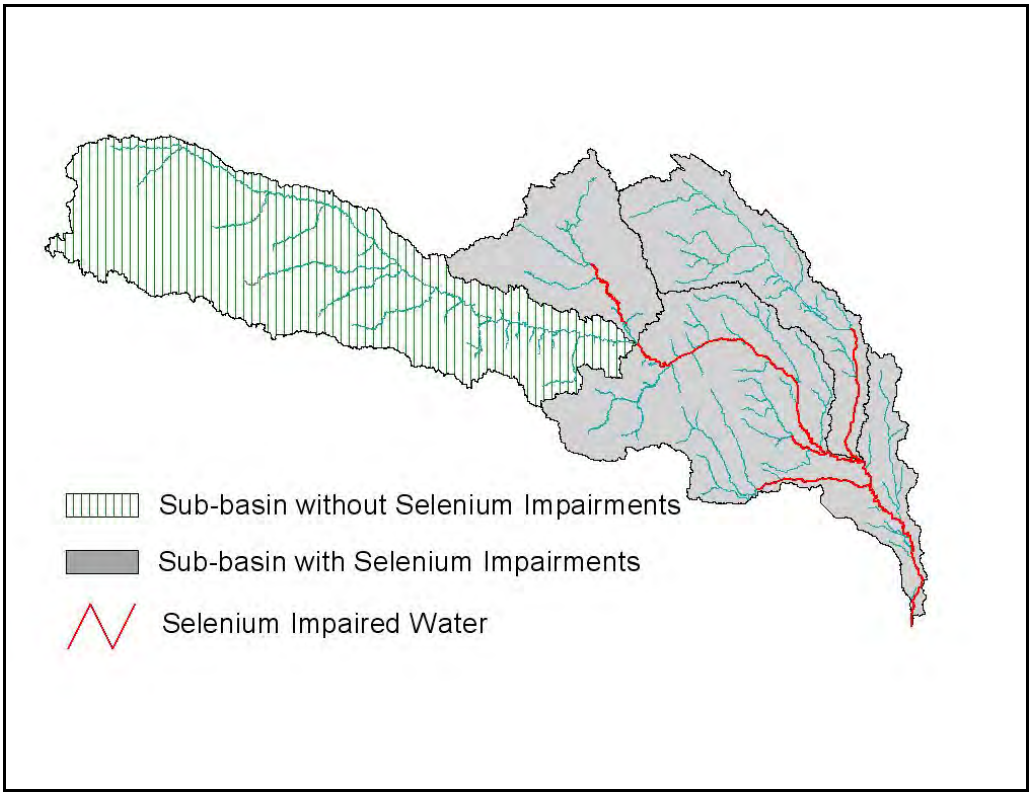
- sample type (width and depth integrated vs. centroid grab)
- stream flow conditions
- Analytical techniques and differing reporting and/or method detection limits

While a direct comparison will not be conducted, the data can be used to illustrate the long-term selenium conditions in the Elkhorn River Basin. The period of record for the historic data from the three sites is 1973-89, contains 81 observations and is shown in Figure 4.

Geologic Considerations

Selenium in surface and ground water can be ascribed to both natural and human sources. Natural sources include soils, plant decay, and aquifer materials, while human sources include waste products from uranium, bentonite, or coal mining, oil refinery wastewater, and irrigation wastewater (Engberg and Spalding, 1978; Stanton and Qi, 2007). The Elkhorn River basin in Nebraska exhibits several features associated with natural sources of selenium, and little in the way of human-induced sources.

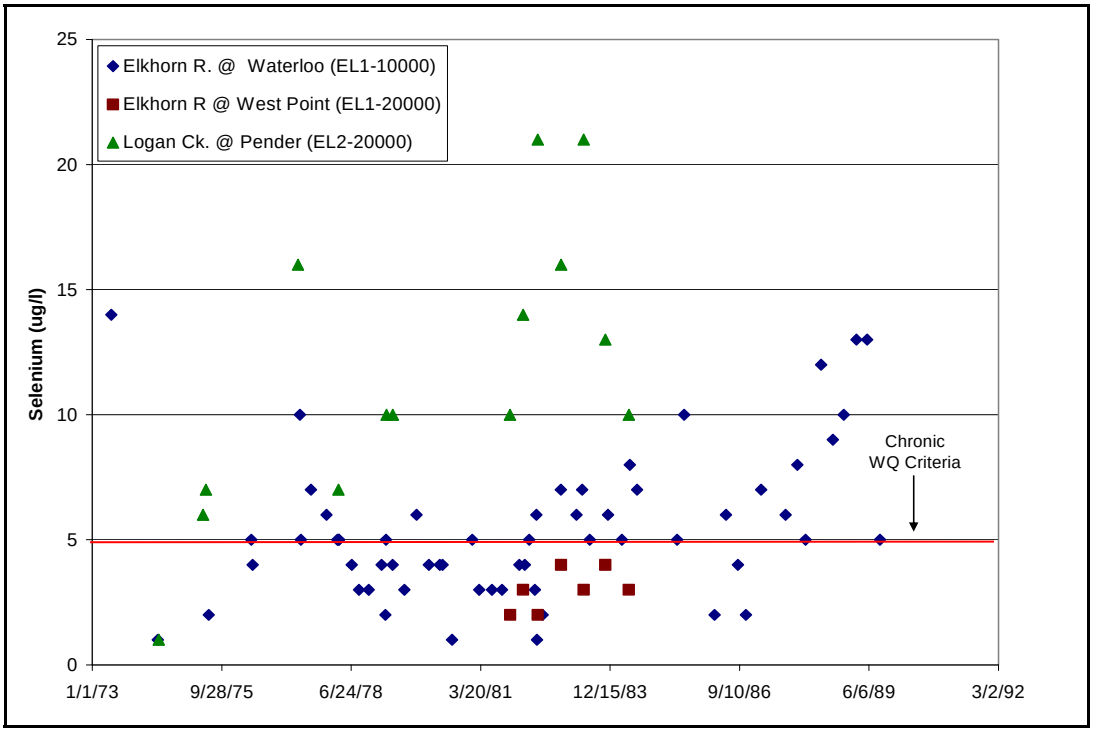
Figure 3 Elkhorn River Basin 4C Sub-basins



Most selenium near the Earth's surface is the result of volcanic activity (Engberg and Spalding, 1978). Volcanic activity in the Late Cretaceous and Tertiary Periods contributed considerable amounts of selenium to marine sediments accumulating in the Cretaceous, and to terrestrial sediments generated during the Tertiary (Engberg and Spalding, 1978). Seleniferous volcanic ash deposited along with these sediments was then incorporated into the resulting bedrock. The bedrock units of the Elkhorn River basin in Nebraska include several Upper Cretaceous marine units associated with elevated selenium, especially the Pierre Shale, Niobrara Formation, Carlile Shale, Greenhorn-Graneros Formation, and Dakota Group (Burchett *et al.*, 1986; Engberg and Spalding, 1978; Seiler *et al.*, 1999; see Figure 5).

In most cases, naturally-occurring levels of selenium rarely exceed 1 µg/ℓ (Hem, 1989). In the upper portion of the Elkhorn River Basin in Nebraska, existing surface water quality sample results are generally at this level or below as described above. However, sample results from further downstream in the basin tend to increase, in some cases reaching levels of a few tens of µg/ℓ (Figure 2). This is to be expected as near-surface bedrock in the upper portion of the basin consists mostly of the Tertiary Ogallala Group, a variable unit of sand, sandstone, gravel, and conglomerate with localized volcanic ash deposits (Stanton and Qi, 2007). Such localized deposits would be expected to supply only limited amounts of selenium to runoff and/or baseflow. Also, in this portion of the basin (roughly above Pierce and western Madison Counties), the Ogallala is frequently covered by varying thicknesses of eolian dune sand, which is also not a source for selenium in runoff or baseflow. However, in the lower portion of the basin, the Ogallala thins out and disappears, and eolian dune sand is generally not present. Existing ground water quality data from the U.S. Geological Survey indicates that ground water samples from the upper portion of the Elkhorn River Basin, where wells are completed primarily in the Ogallala, exhibit levels of dissolved selenium generally below 2 µg/ℓ (USGS ground water data for Nebraska available online at: http://groundwaterwatch.usgs.gov/StateMaps.asp?sc=31).

Figure 4 1973-89 Selenium Data from Three Elkhorn River Basin Sites



The nearsurface bedrock in the lower portion of the basin consists of upper Cretaceous units known to exhibit considerable selenium content (Engberg and Spalding, 1978). In addition, the surficial deposits in the lower portion of the basin consist largely of glacial till which often contains rock debris from the underlying Cretaceous bedrock units (Engberg and Spalding, 1979). It is illustrative to note that the highest levels of selenium in ground water from the Elkhorn basin in the USGS' online database range from about 55 to 129 µg/ℓ; these are shallow wells completed in a local aquifer composed of glacial till (USGS ground water data available at http://groundwaterwatch.usgs.gov/StateMaps.asp?sc=31) and shown in Figure 6. Thus, both the bedrock units (which can supply some baseflow to streams) and the surficial sediments (over which runoff flows and from which plants take up nutrients) are likely to exhibit elevated selenium concentrations as compared to the upper portion of the basin. As a result, it appears that the major input of selenium in the lower portion of the Elkhorn River Basin is derived from naturally occurring bedrock, soil, and plant sources.

Industrial Sources

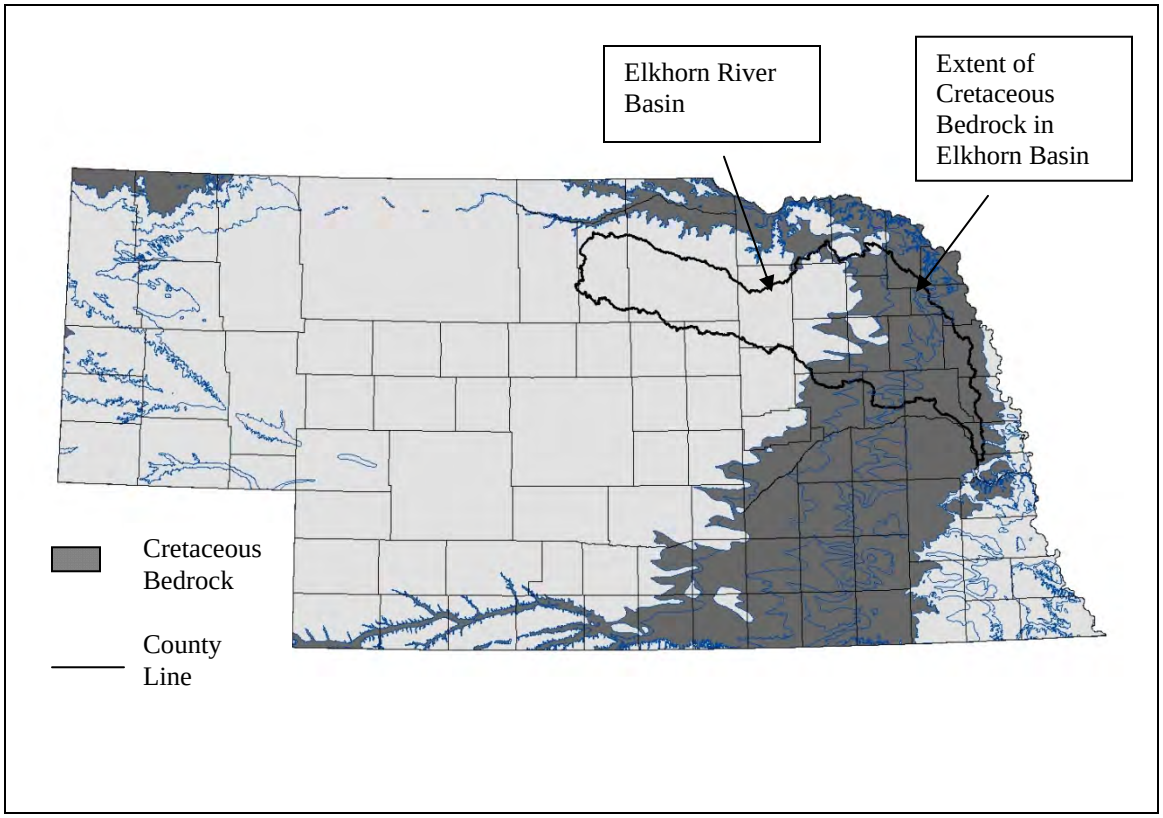
As stated above, industrial selenium sources include waste products from uranium, bentonite, coal mining, or oil refinery wastewater. Nebraska does have deposits of bentonite present at a few locations however, these deposits are not located in the lower Elkhorn River basin. Also, there has been no major mining of bentonite deposits in Nebraska (Burchett 1990).

Irrigation Water

Irrigation with groundwater is important to crop production in the Elkhorn River Basin. According to the Nebraska Department of Natural Resources, there are approximately 5,800 irrigation wells in the Lower Elkhorn Natural Resource District (LENRD) (NDNR 2008). The area of concern identified mostly lies in the LENRD.

While groundwater use is widespread in the LENRD, Nebraska state statute §46-663.02 requires each person to who uses groundwater to take action to control or prevent runoff. The same statute requires the NRDs to adopt rules and regulations to necessary to control or prohibit surface runoff of water derived from groundwater irrigation including the ability to issue cease and desist orders.

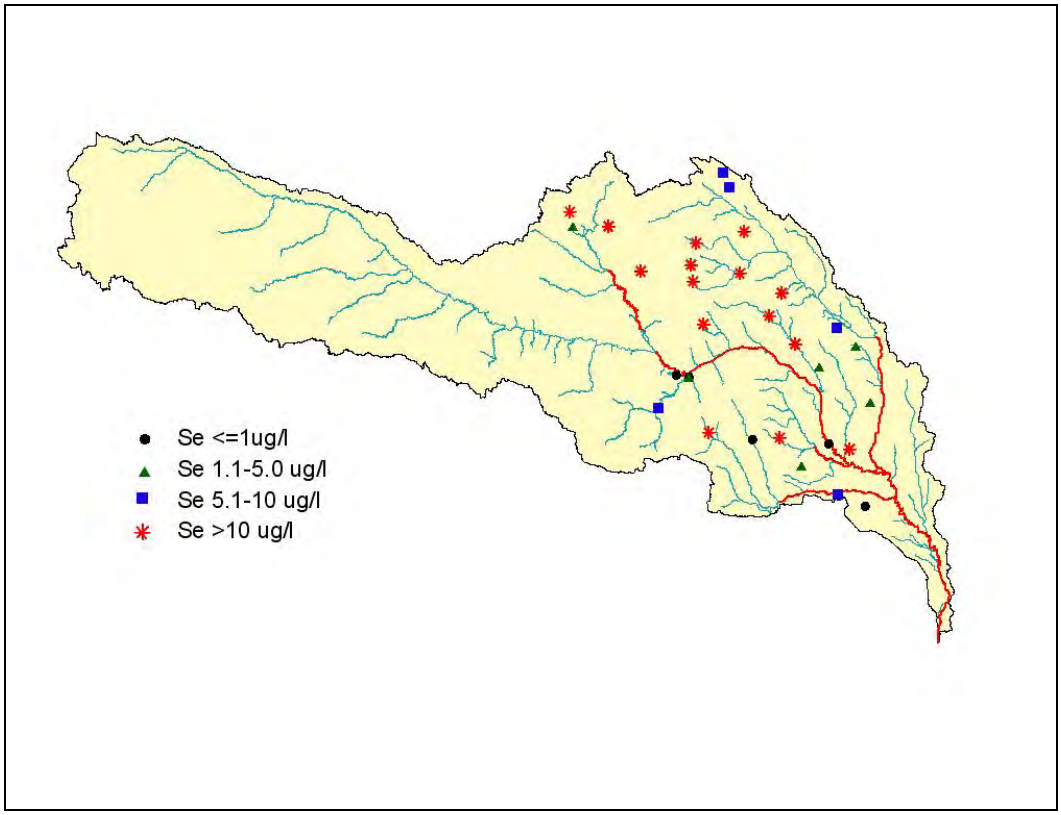
Figure 5 Simplified geologic bedrock map showing extent of Cretaceous bedrock units in Nebraska and Elkhorn River Basin. Modified from Conservation & Survey Division, University of Nebraska-Lincoln, 1996. (NOTE: irregular blue lines indicate boundaries between various bedrock units; specific units not differentiated for purposes of this figure.)



The LENRD has adopted the rules and regulation necessary to control and prohibit surface runoff of groundwater derived irrigation water. Specifically; the LENRD's Administrative Policy No. 10. defines improper irrigation runoff to be the occurrence of irrigation runoff water that…causes or contributes to the deterioration of water quality by depositing sediment and/or associated chemicals ins surface waters within the area. The policy includes procedures for issuing cease and desist orders.

While irrigation return flow and runoff of irrigation water is regulated, a concern could exist over the build-up of selenium in the soils as a result of irrigation practices. Specifically, as water is lost through evaporation or evapotranspiration the selenium will remain in the soil. In response to these concerns in the semiarid and arid western states, the USGS developed methods to predict where selenium contamination is likely. The methods are documented in the publication entitled *"Methods to Identify Areas Susceptible to Irrigation Induced Selenium Contamination in the Western United States"*.

Figure 6 Groundwater Selenium Concentrations in the Lower Elkhorn Basin



Two methods were devised to identify areas susceptible with the first using a decision tree and the second based one based on a map that combines geologic and climatic data (Seiler , 1999). Use of the decision tree considers an evaporation index (annual free water surface evaporation/annual precipitation) where areas ≥2.5 are considered likely candidates. The Elkhorn Basin evaporation index in less than 2.5 and thus selenium contamination is considered to be unlikely.

Conclusion

While selenium can be a function of anthropogenic activities, geologic circumstances appear to be the overwhelming source in surface water of the lower Elkhorn basin and are supported by:

- Selenium is not detected in surface water above EL3-10000;
- Historic surface water quality data is consistent with the current data;
- Cretaceous bedrock underlies the area where the impairments occur;
- Groundwater data from the area of concern frequently exceeds the 5 µg/l surface water quality criteria;

The evidence above demonstrates that selenium a concentration in surface water is naturally occurring, not a pollutant and a candidate for Nebraska Water Quality Report – Category 4C designation.

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Appendix D: Ecological Justification for Excluding Specific Bio-Indicator Results When Determining Attainment Status of the Aquatic Life Beneficial Use for Nebraska's 2010 Water Quality Integrated Report.

Waterbody ID	Waterbody Name	Sampling Date	Impairment*	Justification†	2010 IR Category
EL4-20300	Clearwater Creek	8/09/2005	ICI	Extreme flow events	2
EL4-30000	Elkhorn River	8/16/2005	ICI	Extreme flow events	5
EL4-40000	Elkhorn River	8/11/2005	ICI	Extreme flow events	5
LO2-20200	Goose Creek	8/14/2008	ICI	Unique system	3
LO2-40000	North Loup River	8/14/2008	ICI	Unique system	4a,c
MP2-20300	Spring Creek	7/14/2006	IBI	Low flow	5
NI2-11420	Spring Creek	7/24/2008	ICI	Extreme flow events	2
NI2-11780	Middle Branch Eagle Creek	7/24/2008	ICI	Extreme flow events	2
NI3-22300	Gordon Creek	8/13/2008	ICI	Unique system	3
NI3-22510	Boardman Creek	8/14/2008	ICI	Unique system	3
NI4-10110	Dry Creek	7/15/2008	ICI	Unique system	3
NI4-10600	Rush Creek	7/16/2008	ICI	Low flow	2
RE3-10100	Medicine Creek	8/31/2007	ICI	Low flow	5
SP2-10000	Lodgepole Creek	7/19/2006	IBI	Low flow	4b
SP2-20000	Lodgepole Creek	7/20/2006	ICI	Low flow	2
WH1-10000	White River	7/08/2008	IBI	Low flow	2

* The bio-indicator metric that scored the waterbody as impaired. **ICI**-(Invertebrate Community Index) Uses macroinvertebrate community data as a bio-indicator of ecosystem health. **IBI**-(Index of Biotic Integrity) Uses fish community data as a bio-indicator of ecosystem health.

† The ecological explanation for the poor bio-metric score. Each waterbody is discussed in more detail in the following sections.

EL4-20300: Clearwater Creek – ICI score = Poor
Field data sheets and hydrologic data indicate that the poor Invertebrate Community Index (ICI) score was due to a lack of in-stream habitat and not pollution. The field data sheets, completed at the time of sample collection, documented the following habitat limitations: 1. Shifting sand substrate 2. Little in-stream vegetation or woody debris 3. Wetted channel width of 6.2 meters while the bank-full width was 7.4 meters. The field data sheets also document that the stream was experiencing little anthropogenic disturbance and showed no obvious signs of pollution. For example, all water quality parameters, measured at the time of sample collection, met Nebraska water quality standards, numerous fish species were captured including several pollution sensitive species (IBI score=good), and the ecological integrity of the site was sufficient to score it as a possible reference site. Lastly, hydrologic data shows that in June 2005, the streams in the upper Elkhorn watershed experienced extreme high flows that would have resulted in bank and riverbed scour, major sediment redistribution, and a resetting of the aquatic plant and invertebrate communities (Allan and Castillo 2007, Poff et al. 1997, and Resh et al. 1988). For the reasons listed above, the ICI score was not considered when determining the attainment status of the aquatic life use in this stream. The stream was placed in category 2 based on the IBI score (See Attachment B: Elkhorn Basin).

EL4-30000: Elkhorn River – ICI score = Poor
Field data sheets and hydrologic data indicate that the poor ICI score was due to a lack of in-stream habitat and not pollution. The field data sheets, completed at the time of sample collection, documented the following habitat limitations: 1. Shifting sand substrate 2. Little in-stream vegetation or woody debris 3. Wetted channel width of 20 meters while the bank-full width was 40.5 meters. The field data sheets also document that the stream was experiencing little anthropogenic disturbance and showed no obvious signs of pollution For example, all water quality parameters, measured at the time of sample collection, met Nebraska water quality standards, numerous fish species were captured including several pollution sensitive species (IBI score=good), and the ecological integrity of the site was sufficient to score it as a possible reference site. Lastly, hydrologic data shows that in June 2005, the streams in the upper Elkhorn watershed experienced extreme high flows that would have resulted in bank and riverbed scour, major sediment redistribution and a resetting of the aquatic plant and invertebrate communities (Allan and Castillo 2007, Poff et al. 1997, and Resh et al. 1988). For the reasons listed above, the ICI score was not considered when determining the attainment status of the aquatic life use in this stream. This waterbody will remain in category 5 due to a fish consumption advisory (See Attachment B: Elkhorn Basin).

EL4-40000: Elkhorn River – ICI score = Poor
Field data sheets and hydrologic data indicate that the poor ICI score was due to a lack of in-stream habitat and not pollution. The field data sheets, completed at the time of sample collection, documented the following habitat limitations: 1. Shifting sand substrate 2. Little in-stream vegetation or woody debris 3. Wetted channel width of 3.8 meters while the bank-full width was 15 meters. The field data sheets also document that the stream was experiencing little anthropogenic disturbance and showed no obvious signs of pollution. For example, all water quality parameters, measured at the time of sample collection, met Nebraska water quality standards, numerous fish species were captured including several pollution sensitive species (IBI score=good), and the ecological integrity of the site was sufficient to score it as a possible reference site. Lastly, hydrologic data shows that in June 2005, the streams in the upper Elkhorn watershed experienced extreme high flows that would have resulted in bank and riverbed scour, major sediment redistribution and a resetting of the aquatic plant and invertebrate communities (Allan and Castillo 2007, Poff et al. 1997, and Resh et al. 1988). For the reasons listed above, the ICI score was not considered when determining the attainment status of the aquatic life use in this stream. This waterbody will remain in category 5 with the pollutant of concern being high pH (See Attachment B: Elkhorn Basin).

LO2-20200: Goose Creek – ICI score = Poor
Field data sheets and watershed land use data indicate that the poor ICI score was not due to pollution. Field data sheets document that the substrate in this creek was 100% shifting sand and that very little in-stream or near shore invertebrate habitat was present. Conversely, the field data sheets documented that the stream was experiencing little anthropogenic disturbance and showed no obvious signs of pollution. For example, numerous fish species were captured, including several pollution sensitive species (IBI score=excellent), all water quality parameters, measured at the time of sample collection, met Nebraska water quality standards, and the ecological integrity of the site was sufficient to score it as a possible reference site. Furthermore, examination of the land use finds that there is no row-crop agriculture, no industry, and no town or village within this 150,000 acre watershed. This watershed is located in the Nebraska Sandhills, one of the least disturbed regions in the Great Plains. The ICI score is a reflection of the unique ecological conditions within the Sandhills and not the water quality of this stream (McCarraher 1960, 1964, and 1977). NDEQ is currently refining its biological assessment criteria to better address the unique ecological conditions in the Sandhills, until the refinement is complete this stream will be placed in category 3. (See Attachment C: Loup Basin).

LO2-40000: North Loup River – ICI Score = Poor
Field data sheets and watershed land use data indicate that the poor ICI score was not due to pollution. Field data sheets document that the substrate in this river was 100% shifting sand and that very little in-stream or near shore invertebrate habitat was present. Conversely, the field data sheets documented that the river was experiencing little anthropogenic disturbance and showed no obvious signs of pollution. For example, numerous fish species were captured, including several pollution sensitive species (IBI score=excellent), all water quality parameters, measured at the time of sample collection, met Nebraska water quality standards, and the ecological integrity of the site was sufficient to score it as a possible reference site. Furthermore, examination of the land use finds that there is no row-crop agriculture, no industry, and no town or village within this 400,000 acre watershed. This watershed is located in the Nebraska Sandhills, one of the least disturbed regions in the Great Plains. The ICI score is a reflection of the unique ecological conditions within the Sandhills and not the water quality of this stream (McCarraher 1960, 1964, and 1977). For the reasons listed above, the ICI score was not considered when determining the attainment status of the aquatic life use in this stream. This stream will be placed in category 4a,c for E. coli and temperature impairments (See Attachment C: Loup Basin).

MP2-20300: Spring Creek – IBI Score = Poor
Review of the field data sheets, hydrologic, and climatologic data indicate that the poor IBI score was due to low water levels and not pollution. Field data sheets document that at its deepest this stream was 1.0ft deep, and filled only a portion of the stream channel (wetted width 2.0m, channel width 3.3m). Hydrologic data shows that this stream often goes dry and was dry for several months in early 2006. Climatologic data shows that the Spring Creek watershed was in a severe drought during the summer of 2006 and had received between 6 to 9 inches less precipitation than the historic average. Lastly, other biological observations document that this stream did support robust invertebrate community (ICI score=good) and numerous frogs and crayfish were observed during fish collection. For the reasons listed above, the IBI score was not considered when determining the attainment status of the aquatic life use in this stream. This stream will remain in category 5 with the pollutant of concern being E. coli (See Attachment D: Middle Platte Basin).

NI2-11420: Spring Creek – ICI Score = Poor
Review of the field data sheets, climatologic, and hydrologic data indicate that the poor ICI score was due to low water levels and a lack of in-stream habitat and not due to pollution. Field data sheets document that there was little in-stream invertebrate habitat and the stream filled only a portion of the stream channel (wetted width 2.1m, bank full width 6.6m). The field data sheets also document that the stream was experiencing little anthropogenic disturbance and showed no obvious signs of pollution. For example, all water quality parameters, measured at the time of sample collection, met Nebraska water quality standards, pollution sensitive fish species were captured (IBI score=good), and the ecological integrity of the site was sufficient to score it as a possible reference site. Lastly, precipitation data from three weather stations surrounding the Spring Creek watershed showed that greater than normal precipitation fell in May and June 2008, followed by an abnormally dry July 2008. This precipitation pattern resulted in exceptionally high flows in the nearby Niobrara River, followed by a period of low flow, and a similar flow regime would have occurred in Spring Creek. The observed flow regime would have resulted in bank and riverbed scour, major sediment redistribution, and a resetting of the aquatic plant and invertebrate communities (Allan and Castillo 2007, Poff et al. 1997, and Resh et al. 1988). For

the reasons listed above, the ICI score was not considered when determining the attainment status of the aquatic life use in this stream. The stream was placed in category 2 based on the IBI score (See Attachment E: Niobrara Basin).

NI2-11780: Middle Branch Eagle Creek – ICI Score = Poor

Review of the field data sheets and hydrologic data indicate that the poor ICI score was due to low water levels and a lack of in-stream habitat and not due to pollution. Field data sheets document that there was little in-stream invertebrate habitat and the stream filled only a portion of the stream channel (wetted width 3.4m, bank full width 6.9m). The field data sheets also document that the stream was experiencing little anthropogenic disturbance and showed no obvious signs of pollution. For example, all water quality parameters, measured at the time of sample collection, met Nebraska water quality standards, pollution sensitive fish species were captured (IBI score=good), and the ecological integrity of the site was sufficient to score it as a possible reference site. Lastly, precipitation data from three weather stations near the Eagle Creek watershed showed that greater than normal precipitation fell in May and June 2008, followed by an abnormally dry July 2008. This precipitation pattern resulted in exceptionally high flows in the nearby Niobrara River, followed by a period of low flow, and a similar flow regime would have occurred in Eagle Creek. The observed flow regime would have resulted in bank and riverbed scour, major sediment redistribution, and a resetting of the aquatic plant and invertebrate communities (Allan and Castillo, 2007, Poff, et al., 1997, Resh et al., 1988). For the reasons listed above, the ICI score was not considered when determining the attainment status of the aquatic life use in this stream. The stream was placed in category 2 based on the IBI score (See Attachment E: Niobrara Basin).

NI3-22300: Gordon Creek – ICI Score = Poor

Field data sheets and watershed land use data indicate that the poor ICI score was due to a lack of in-stream habitat and not pollution. Field data sheets document that the substrate in this creek is 100% shifting sand and that very little in-stream or near shore invertebrate habitat was present. The field data sheets also documented that the stream was experiencing little anthropogenic disturbance and showed no obvious signs of pollution. For example, nine fish species were captured, including six pollution sensitive species (IBI score=excellent), all measured water quality parameters met Nebraska water quality standards, and the ecological integrity of the site was sufficient to score it as a possible reference site. Furthermore, examination of the land use finds that there is no row-crop agriculture, no industry, and no town or village within this 55,000 acre watershed. This watershed is located in the Nebraska Sandhills, one of the least disturbed regions in the Great Plains. The ICI score is a reflection of the unique ecological conditions within the Sandhills and not the water quality of this stream (McCarraher 1960, 1964, 1977). NDEQ is currently refining its biological assessment criteria to better address the unique ecological conditions in the Sandhills, until the refinement is complete this stream will be placed in category 3. (See Attachment E: Niobrara Basin).

NI3-22510: Boardman Creek – ICI Score = Poor

Field data sheets and watershed land use data indicate that the poor ICI score was due to a lack of in-stream habitat and not pollution. Field data sheets document that the substrate in this creek is 100% shifting sand and that very little in-stream or near shore invertebrate habitat was present. The field data sheets also documented that the stream was experiencing little anthropogenic disturbance and showed no obvious signs of pollution. For example, the most common fish species captured was a pollution sensitive species (IBI score=good), all measured water quality parameters met Nebraska water quality standards, and the ecological integrity of the site was sufficient to score it as a possible reference site. Furthermore, examination of the land use finds that there is no row-crop agriculture, no industry, and no town or village within this 40,000 acre watershed. This watershed is located in the Nebraska Sandhills,

one of the least disturbed regions in the Great Plains, and the ICI score is a reflection of the unique ecological conditions within the Sandhills and not the water quality of this stream (McCarraher 1960, 1964, 1977). NDEQ is currently refining its biological assessment criteria to better address the unique ecological conditions in the Sandhills, until the refinement is complete this stream will be placed in category 3. (See Attachment E: Niobrara Basin).

NI4-10110: Dry Creek – ICI Score = Poor
Field data sheets and watershed land use data indicate that the poor ICI score was due to a lack of in-stream habitat and not pollution. Field data sheets document that the substrate in this creek is 100% shifting sand and the stream was experiencing low flows (wetted width 1.8m, bank full width 3.1m). The field data sheets also documented that the stream was experiencing little anthropogenic disturbance and showed no obvious signs of pollution. For example, all measured water quality parameters met Nebraska water quality standards, the fish community score was good (IBI=good), and the ecological integrity of the site was sufficient to score it as a possible reference site. Furthermore, examination of the land use finds that there is no row-crop agriculture, no industry, and only one village (Merriman) within this 30,000 acre watershed. This watershed is located in the Nebraska Sandhills, one of the least disturbed regions in the Great Plains. The ICI score is a reflection of the unique ecological conditions within the Sandhills and not the water quality of this stream (McCarraher 1960, 1964, 1977). NDEQ is currently refining its biological assessment criteria to better address the unique ecological conditions in the Sandhills, until the refinement is complete this stream will be placed in category 3. (See Attachment E: Niobrara Basin).

NI4-10600: Rush Creek – ICI Score = Poor
Review of the field data sheets and climatologic data indicate that the poor ICI score was due to low water levels and not pollution. Field data sheets document that at its deepest this stream was 0.45ft deep, and filled only a portion of the stream channel (wetted width 1.0m, channel width 2.0m), and had very little in-stream invertebrate habitat. Climatologic data shows that the Rush Creek watershed was abnormally dry during the summer of 2008 and had received up to 4 inches less precipitation than the historic average. The field data sheets also documented that the stream was experiencing little anthropogenic disturbance and showed no obvious signs of pollution. For example, numerous fish species were captured, including sensitive species (IBI score=excellent), all measured water quality parameters met Nebraska water quality standards, and the ecological integrity of the site was sufficient to score it as a possible reference site. For the reasons listed above, the ICI score was not considered when determining the attainment status of the aquatic life use in this stream. The stream was placed in category 2 based on the IBI score (See Attachment E: Niobrara Basin).

RE3-10100 Medicine Creek – ICI Score = Poor
Field data sheets and hydrologic data indicate that the poor ICI score was due to a lack of in-stream habitat and not pollution. Field data sheets document that at its deepest this stream was 0.5ft deep, filled only a portion of the stream channel (wetted width 4.6m, channel width 19.0m), and had very little in-stream invertebrate habitat. This sampling site is located approximately two miles downstream of the 34,700 acre-feet Medicine Creek Reservoir and flow within this stream is dictated by the discharge from the reservoir. Hydrologic data from Medicine Creek documents a large discharge from the reservoir in early June 2007, followed by very low flow conditions during the time of sample collection (discharge June 3, 2007 was 777 cfs, discharge August 31, 2007 was 0.33 cfs). Lastly, the stream showed no obvious signs of pollution, all water quality parameters measured at the time of sample collection, met Nebraska water quality standards and 16 fish species were identified during the collection (IBI score=excellent). For the reasons listed above, the ICI score was not considered when determining the

attainment status of the aquatic life use in this stream. This stream was placed in category 5 because of low dissolved oxygen values that resulted from a lack of water releases from the upstream dam (See Attachment F: Republican Basin).

SP2-10000: Lodgepole Creek – IBI Score = Poor
Review of the field data sheets, hydrologic, and climatologic data indicate that the poor IBI score was due to low water levels and not pollution. Field data sheets document that at its deepest this stream was 0.6 ft deep and filled only a portion of the stream channel (wetted width 3.4m, channel width 7.1m). Hydrologic data shows that this stream often goes dry and was dry for several months in 2006. Climatologic data shows that the Lodgepole Creek watershed was in an extreme drought during the summer of 2006 and had received between 3 to 6 inches less precipitation than historic average. Lastly, other biological, habitat, and water quality data document that this stream was capable of supporting aquatic life (ICI score=good). For the reasons listed above, the IBI score was not considered when determining the attainment status of the aquatic life use in this stream. The stream was placed in category 4b based on NPDES permit issues (See Attachment G: South Platte Basin).

SP2-20000: Lodgepole Creek – ICI Score = Poor
Review of the field data sheets, hydrologic, and climatologic data indicate that the poor ICI score was due to low water levels and lack of invertebrate habitat, not pollution. Field data sheets document that at its deepest this stream was 0.6 ft deep, and filled only a portion of the stream channel (wetted width 3.9m, channel width 9.5m). Hydrologic data shows that this stream often goes dry and was dry for several months in 2006. Climatologic data shows that the Lodgepole Creek watershed was in an extreme drought during the summer of 2006 and had received between 3 to 6 inches less precipitation then historic average. Other biological and water quality data collected document that this stream was capable of supporting aquatic life; all water quality data met Nebraska's water quality standards and numerous pollution sensitive fish species were collected (IBI score=good). Additionally, a second biological collection conducted in this stream segment on the same day where more woody habitat was available, documented healthy fish and invertebrate communities (IBI score=excellent, ICI score=good). For the reasons listed above, the ICI score was not considered when determining the attainment status of the aquatic life use in this stream. The stream was placed in category 2 based on the IBI score (See Attachment G: South Platte Basin).

WH1-10000: White River – IBI Score = Poor
Review of the field data sheets, hydrologic, and climatologic data indicate that the poor IBI score was due to low water levels and a lack of in stream habitat not pollution. The field data sheets completed at the time of sample collection documented the following habitat limitations: Little in-stream vegetation or woody debris, a wetted channel width of 2.3m, while the bankfull width was 5.3m, and a maximum depth of 1.0 feet. The field data sheets also document that the stream was experiencing little anthropogenic disturbance and showed no obvious signs of pollution. For example, all measured water quality parameters met Nebraska water quality standards, numerous invertebrate taxa, including pollution sensitive taxa, were captured (ICI score=excellent), and the ecological integrity of the site was sufficient to score it as a possible reference site. This stream segment is also part of NDEQ's ambient stream monitoring program and monthly water quality samples have been collected from this segment since January, 2001. Analysis of the ambient monitoring water quality data shows this stream to be meeting the Nebraska water quality standards for all parameters collected. For the reasons listed above, the IBI score was not considered when determining the attainment status of the aquatic life use in this stream. The stream was placed in category 2 based on the ICI score and ambient water quality monitoring data (See Attachment H: White River Basin).

Field data sheets are available for review: contact Chris Pracheil at (402) 471-4249 or chris.pracheil@nebraska.gov to arrange a viewing.

Literature and Data Cited:

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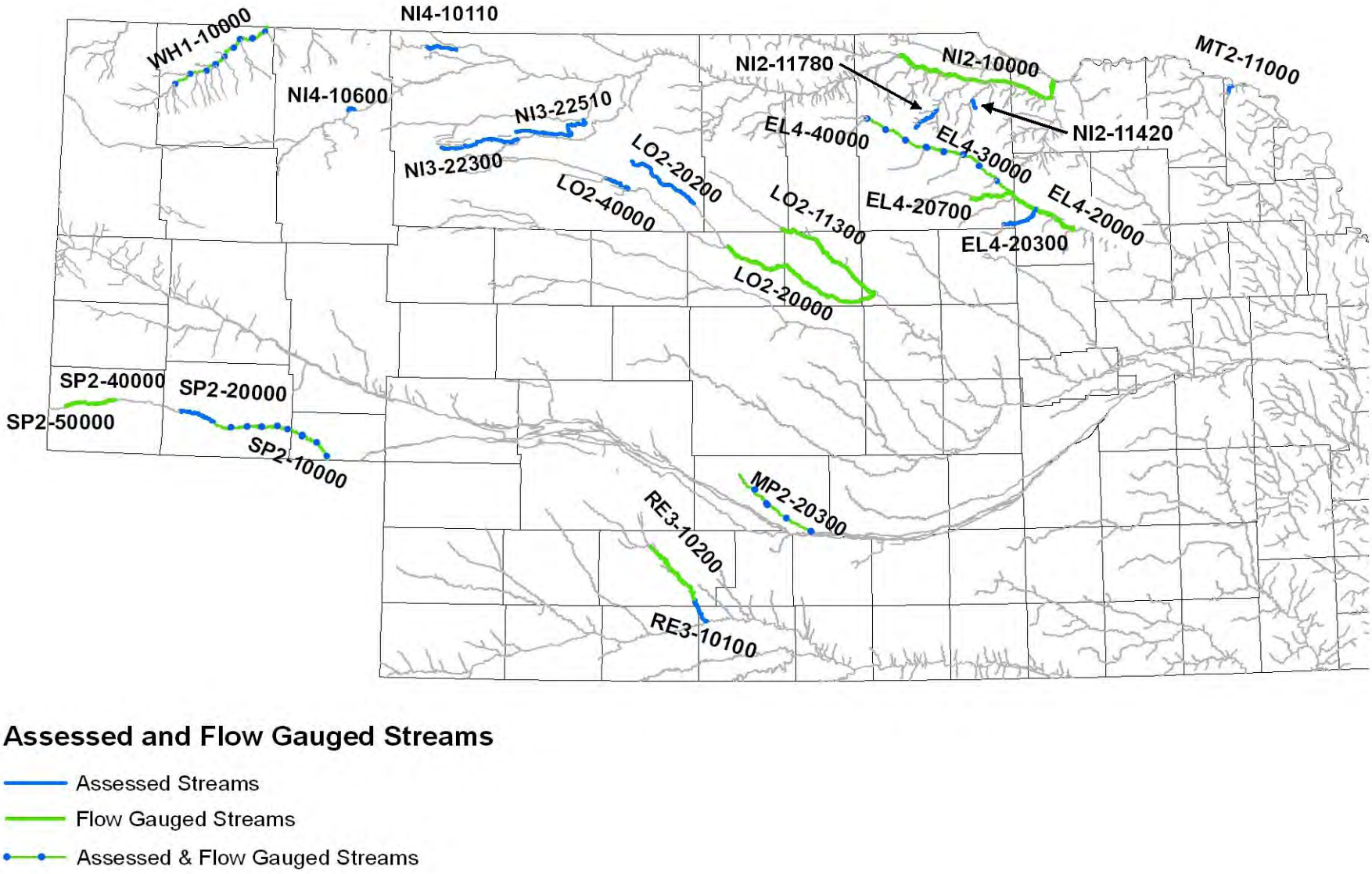
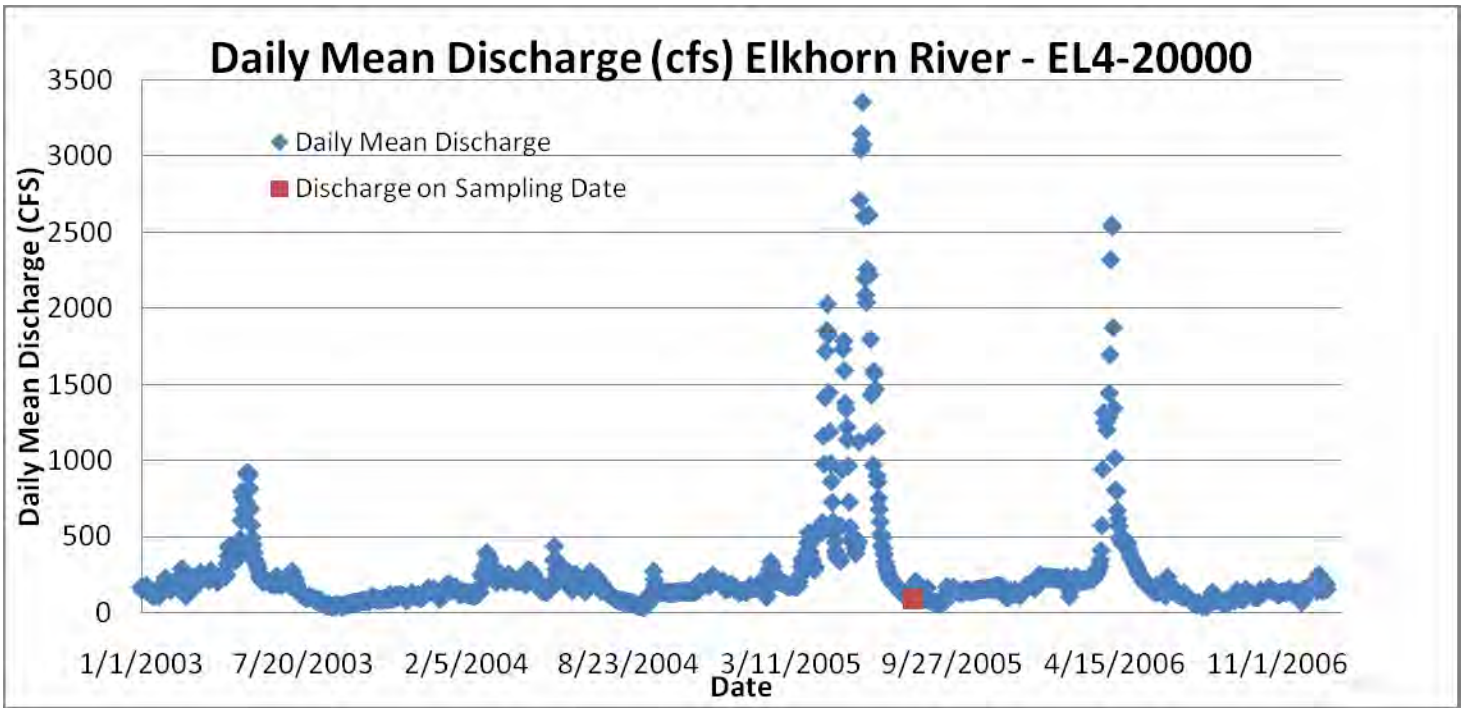
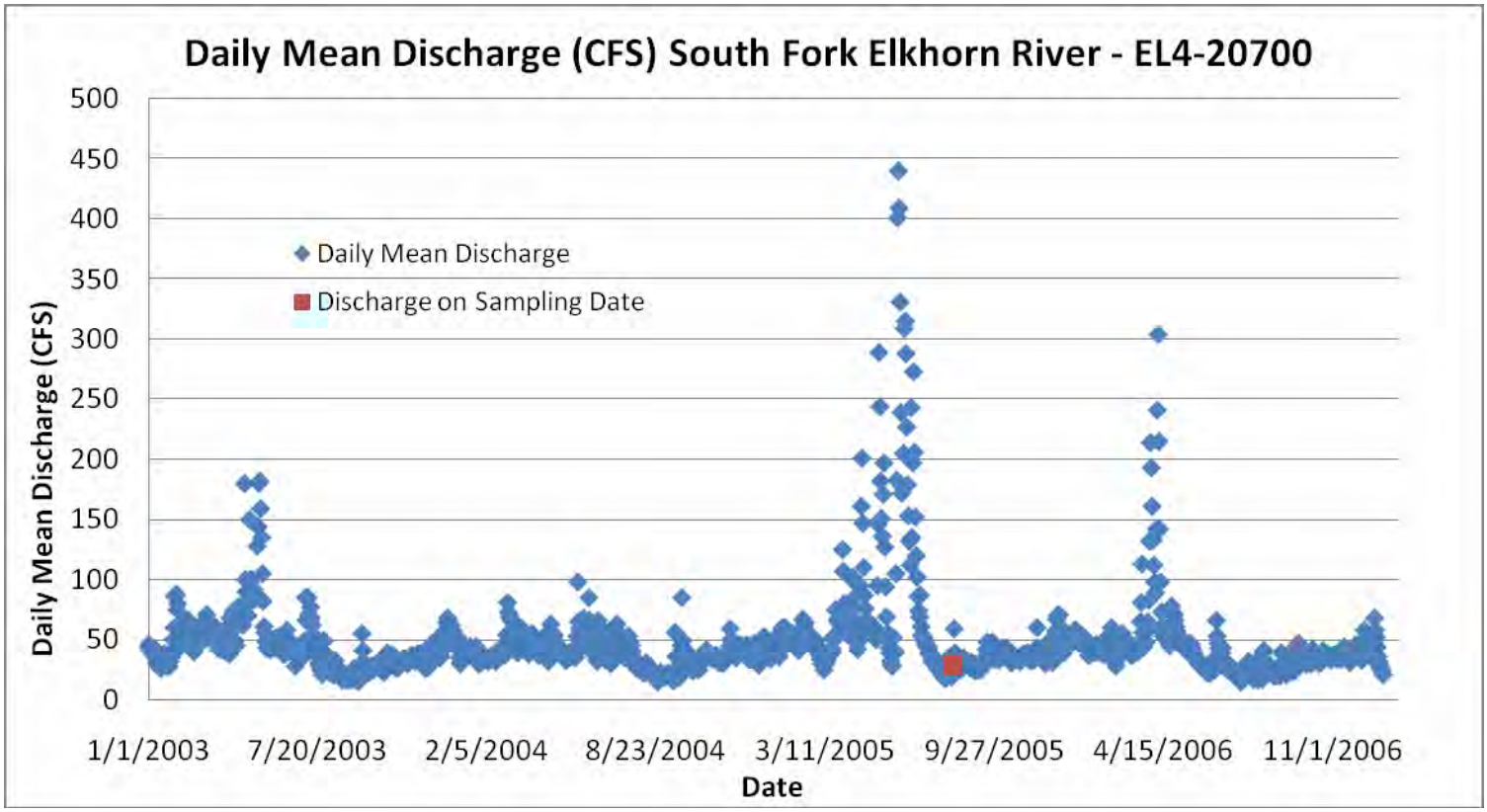
Attachment A: Map of Assessed and Flow Gauged Sites

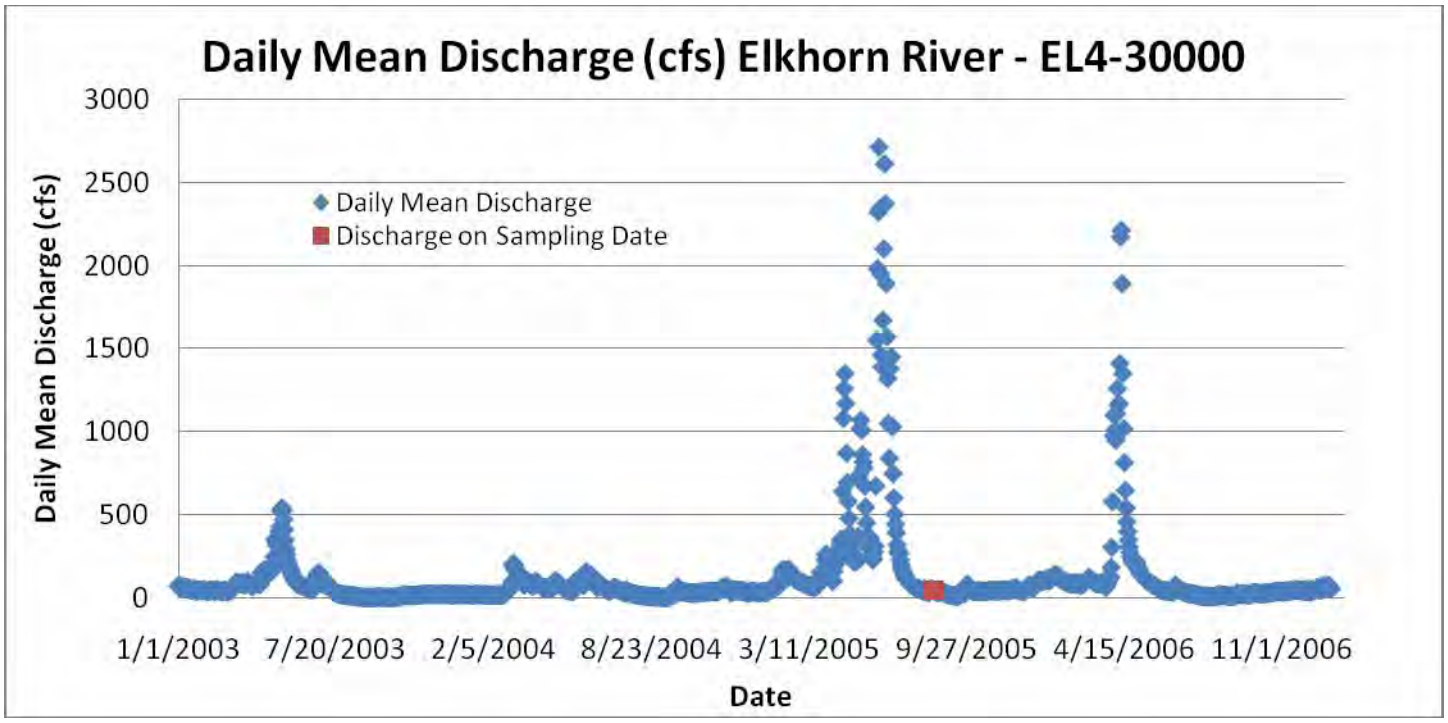


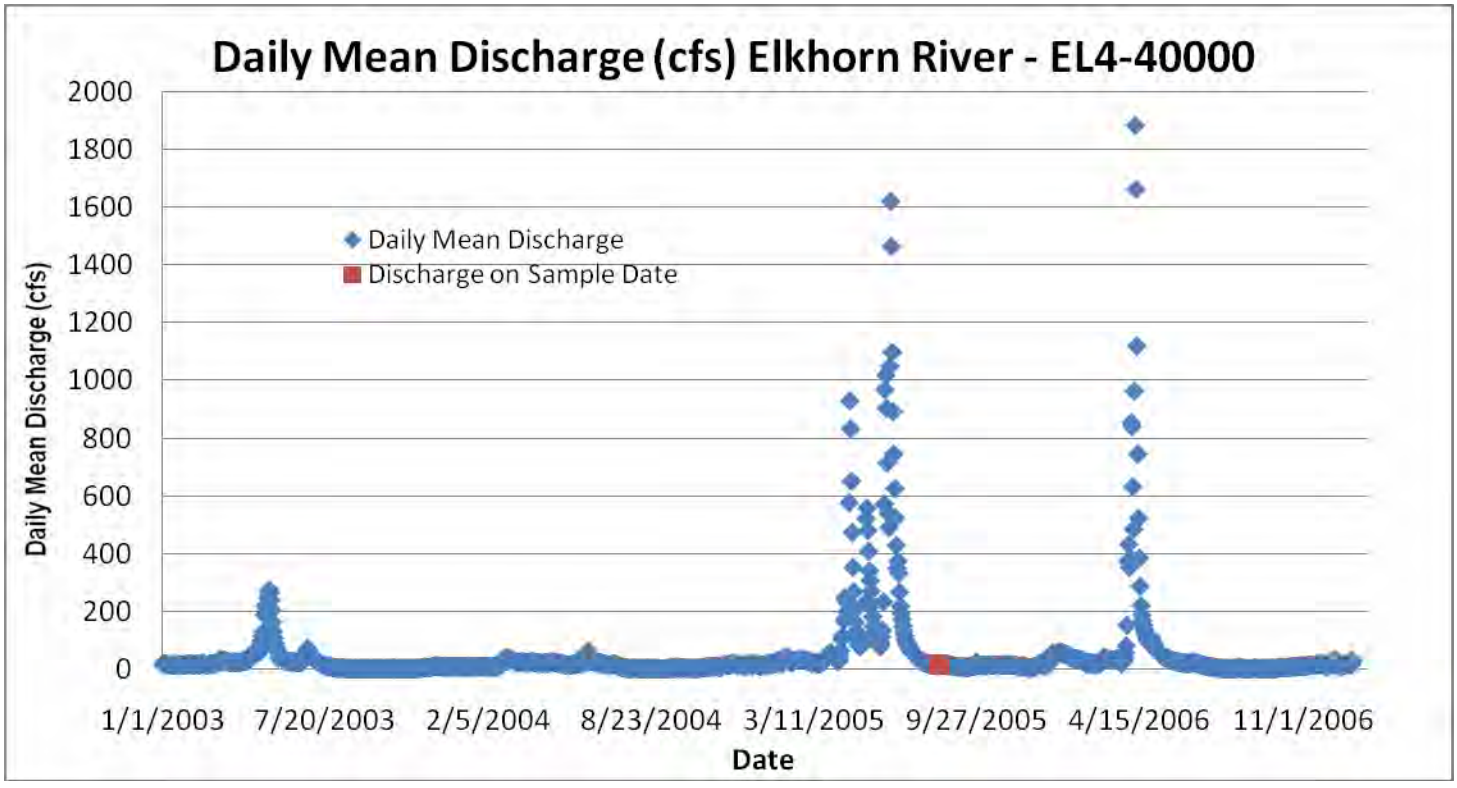
Attachment B: Elkhorn Basin (EL4-20300 Clearwater Creek, EL4-30000 Elkhorn River, EL4-40000 Elkhorn River)





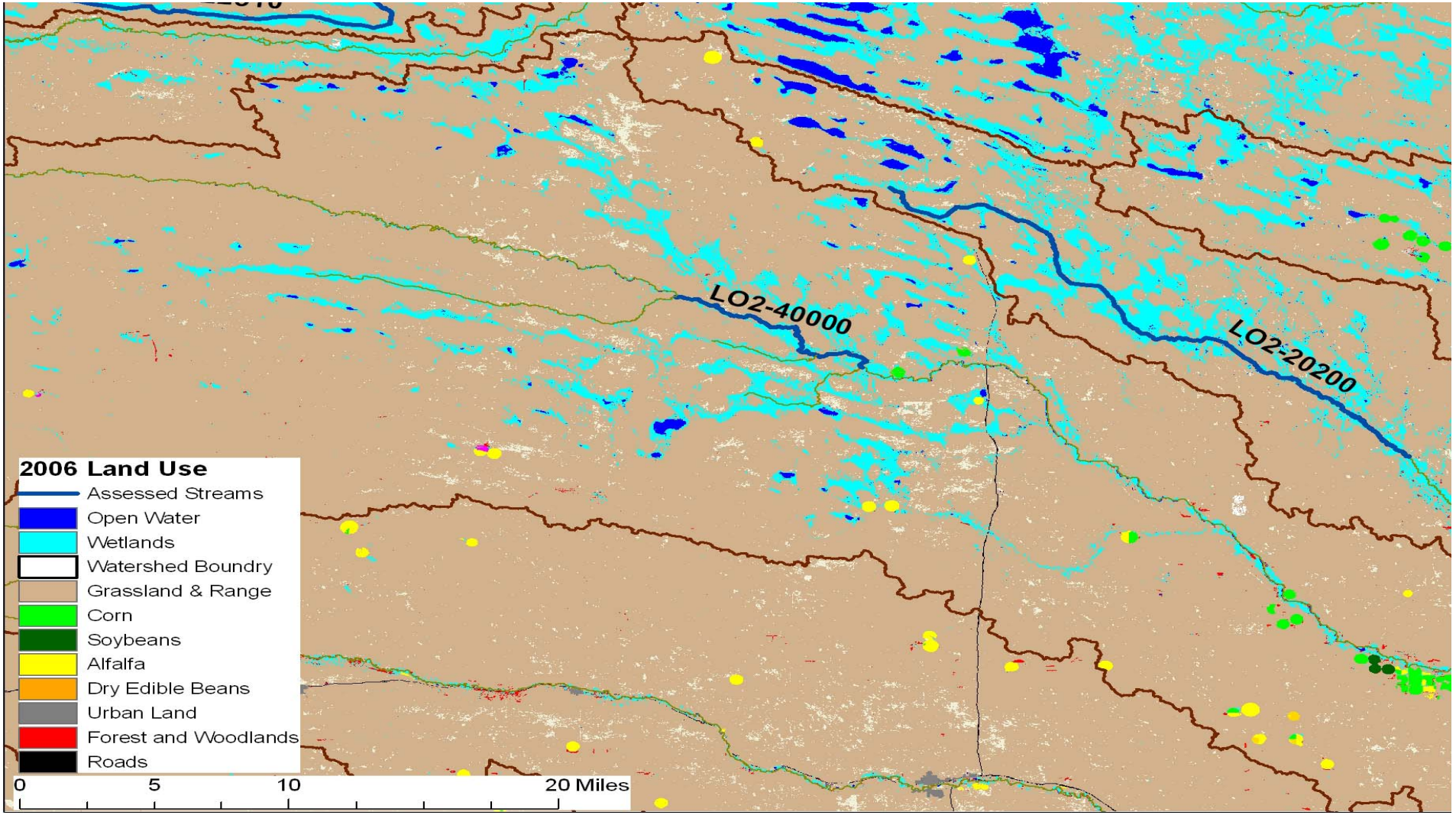
Attachment B: Elkhorn Basin (EL4-20300 Clearwater Creek, EL4-30000 Elkhorn River, EL4-40000 Elkhorn River)





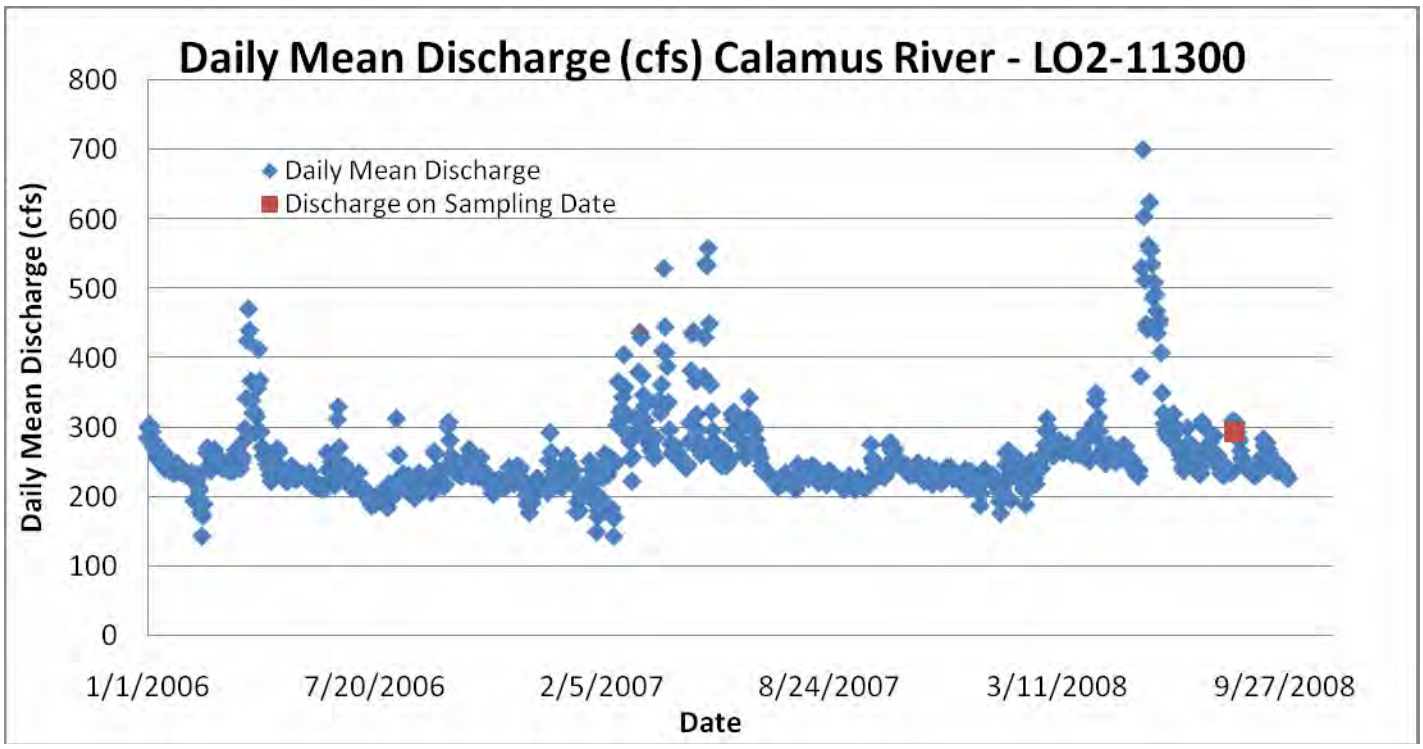
Discharge Data courtesy the USGS and NDNR

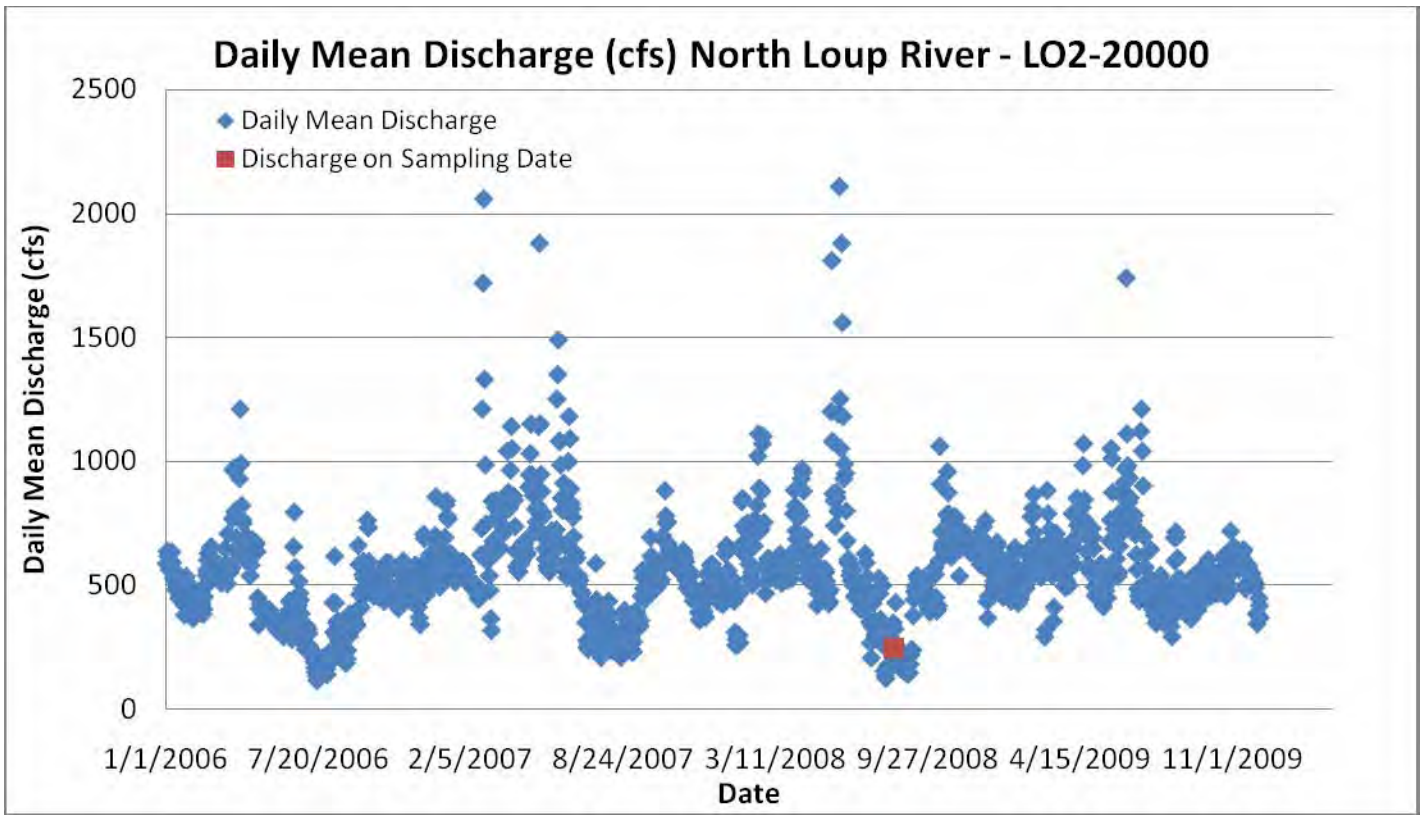
Attachment C: Loup Basin (LO2-20200 Goose Creek & LO2-40000 North Loup River)



Land use data courtesy Center for Advanced Land Management Information Technologies

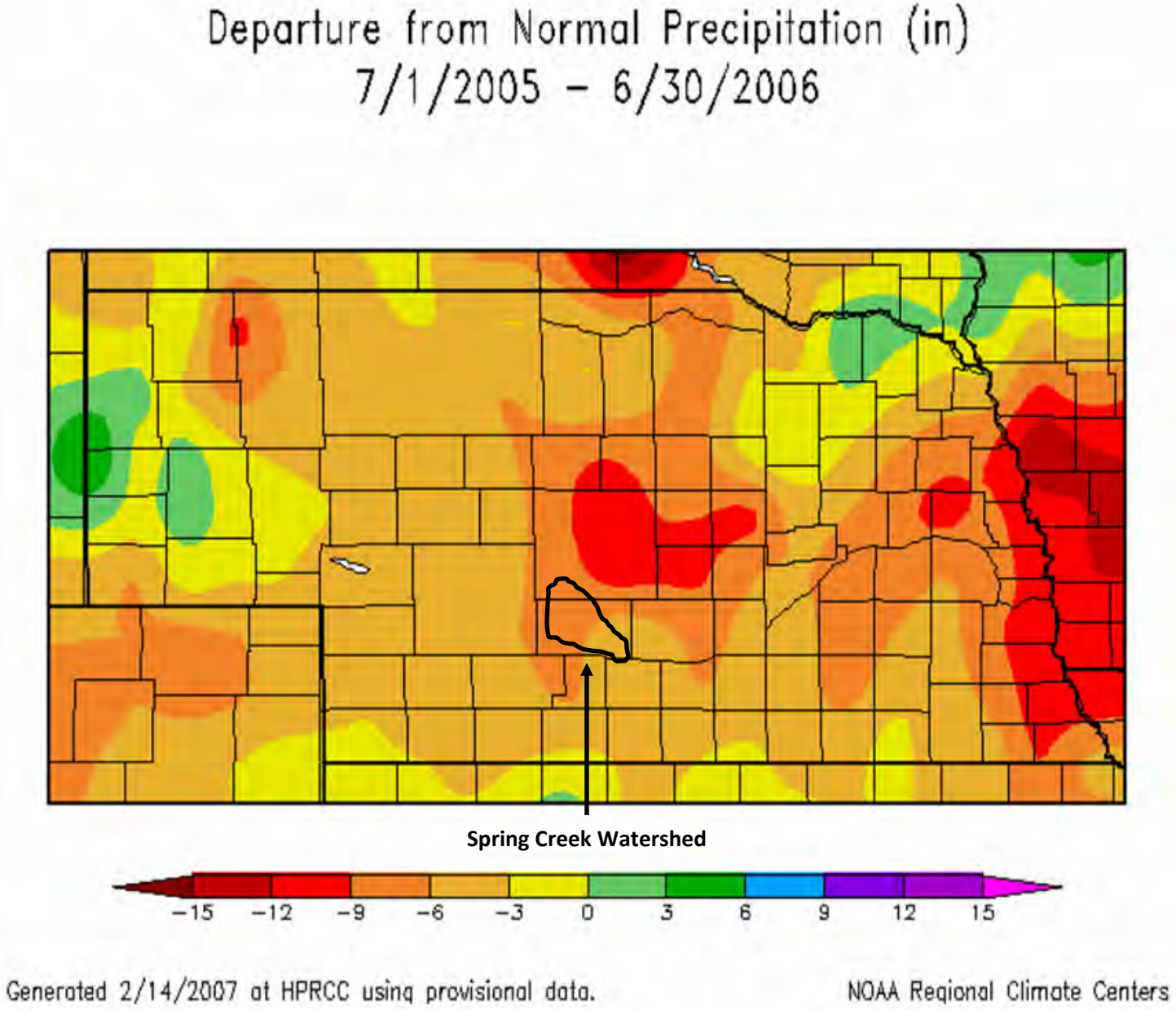
Attachment C: Loup Basin (LO2-20200 Goose Creek & LO2-40000 North Loup River)





Discharge data courtesy the USGS and NDNR

Attachment D: Middle Platte Basin (MP2-20300 Spring Creek)



Attachment D: Middle Platte Basin (MP2-20300 Spring Creek)

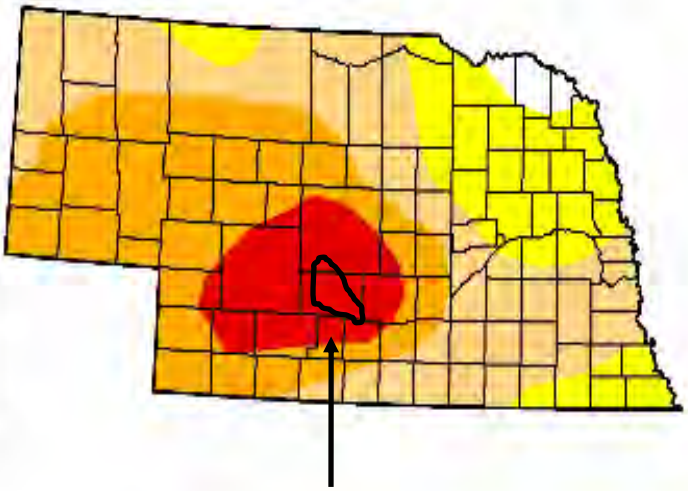
U.S. Drought Monitor

Nebraska

July 4, 2006
Valid 8 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	1.8	98.2	79.0	44.1	11.4	0.0
Last Week (06/27/2006 map)	1.9	98.1	69.6	44.2	16.9	0.0
3 Months Ago (04/11/2006 map)	33.4	66.6	44.2	0.0	0.0	0.0
Start of Calendar Year (01/03/2006 map)	13.0	87.0	34.5	0.2	0.0	0.0
Start of Water Year (10/04/2005 map)	27.5	72.5	40.5	0.0	0.0	0.0
One Year Ago (07/05/2005 map)	46.7	53.3	22.5	1.1	0.0	0.0



Spring Creek Watershed

Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

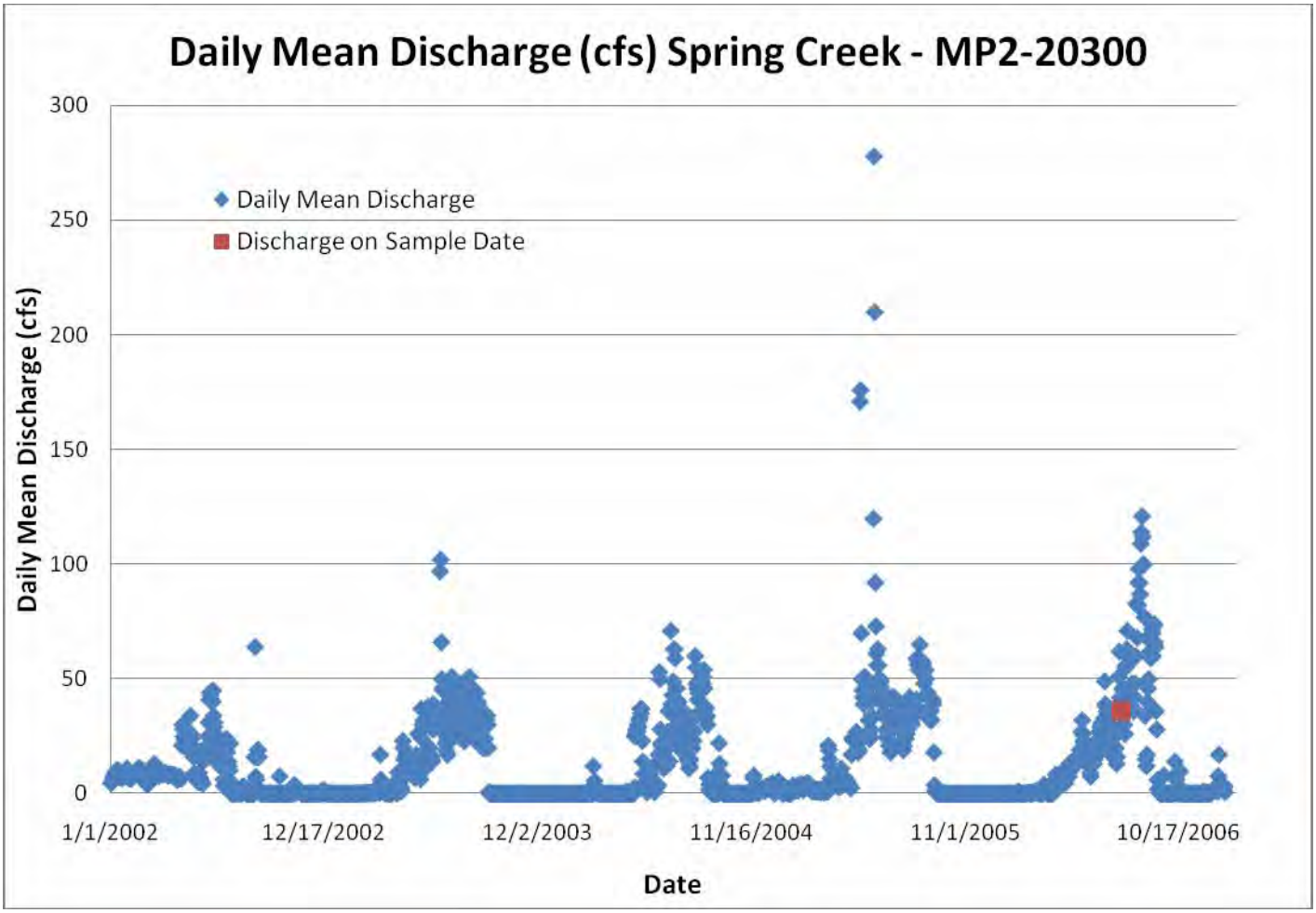
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

http://drought.unl.edu/dm

Released Thursday, July 6, 2006

Author: Douglas Le Comte and Tom Heddinghaus, NOAA/CPC

Attachment D: Middle Platte Basin (MP2-20300 Spring Creek)



Discharge data courtesy USGS and NDNR

SPENCER 5 SE, NE

Monthly Total Precipitation (inches)

(258040)

File last updated on Dec 22,
*** Note *** Provisional Data *** After Year/Month 200908

a = 1 day missing, b = 2 days missing, c = 3 days, ..etc..,
z = 26 or more days missing, A = Accumulations present

Long-term means based on columns; thus, the monthly row may not sum (or average) to the long-term annual value.

MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS: 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

YEAR (S)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
2007	0.27	1.51	1.47	2.90	5.04	2.21	0.29	4.98	1.11	3.73	0.01	0.75b	24.27
2008	0.20a	0.44	0.62	1.56	3.57	4.77	2.11	3.03	2.20	4.36	0.45	0.21b	23.52
2009	0.14	0.39	0.58	0.00z	0.00z	0.00z	0.00z	4.31	0.00z	0.00z	0.00z	0.00z	5.42
Period of Record Statistics													
MEAN	0.37	0.54	1.28	2.57	3.34	3.48	2.81	2.63	2.35	1.58	0.82	0.43	22.24
S.D.	0.36	0.46	1.16	1.70	1.74	1.93	1.97	1.58	1.57	1.36	0.71	0.46	5.43
SKEW	1.95	1.19	2.08	1.40	0.83	0.70	1.58	1.17	0.78	0.80	1.07	1.88	0.35
MAX	1.92	2.12	6.31	8.19	9.72	8.38	10.10	8.59	6.45	4.92	3.20	2.09	35.42
MIN	0.00	0.00	0.00	0.15	0.48	0.28	0.29	0.30	0.00	0.00	0.00	0.00	12.72
NO YRS	69	69	67	66	65	66	67	67	68	66	67	67	58

May 1-June 30, 2008 precipitation = 10.64” Mean May 1 – June 30 precipitation = 7.08”

Sample collection occurred 7-24-2008.

Precipitation data courtesy High Plains Regional Climate Center

Attachment E: Niobrara Basin (NI2-11420 Spring Creek & NI2-11780 Middle Branch Eagle Creek)

O'NEILL, NE

Monthly Total Precipitation (inches)

(256290)

File last updated on Dec 22,
*** Note *** Provisional Data *** After Year/Month 200908

a = 1 day missing, b = 2 days missing, c = 3 days, ..etc..,
z = 26 or more days missing, A = Accumulations present

Long-term means based on columns; thus, the monthly row may not sum (or average) to the long-term annual value.

MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS: 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

YEAR (S)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
2005	0.28	0.60	2.69	5.34	5.35	7.41a	0.75	1.73	4.48	0.57	1.93	0.24	31.37
2006	0.50	0.16	1.31	2.79	0.22	2.89	0.71	4.63	3.67	0.94	0.28	2.58	20.68
2007	0.43	1.39	2.74	4.95	5.19	3.62	0.81	5.74	1.30	4.70a	0.16	2.05a	33.08
2008	0.28b	0.42	0.51	2.28	9.00	1.64	2.75	1.75	2.64	4.71	1.49a	0.76	28.23
2009	0.31	0.60	1.41	1.03a	2.70	3.25	1.90	5.64	1.23	4.41b	0.00	0.40u	22.48
Period of Record Statistics													
MEAN	0.47	0.61	1.42	2.50	3.34	3.74	2.86	2.57	2.20	1.49	0.90	0.58	23.24
S.D.	0.37	0.48	1.26	1.62	1.79	1.90	1.84	1.50	1.56	1.26	0.79	0.59	4.89
SKEW	1.43	1.21	3.49	1.10	0.59	1.09	1.01	1.04	1.50	1.01	0.97	1.91	0.12
MAX	1.95	2.17	9.92	8.22	9.00	10.95	9.17	7.74	8.14	4.75	3.21	2.95	33.08
MIN	0.00	0.00	0.03	0.02	0.03	0.75	0.05	0.29	0.40	0.00	0.00	0.00	14.00
NO YRS	102	101	102	102	100	101	98	100	103	99	102	99	77

May 1-June 30, 2008 precipitation = 10.64" Mean May 1 – June 30 precipitation = 7.08"
Sample collection occurred 7-24-2008.

Precipitation data courtesy High Plains Regional Climate Center

Attachment E: Niobrara Basin (NI2-11420 Spring Creek & NI2-11780 Middle Branch Eagle Creek)

LYNCH, NE

Monthly Total Precipitation (inches)

(255040)

File last updated on Dec 22,
*** Note *** Provisional Data *** After Year/Month 200908

a = 1 day missing, b = 2 days missing, c = 3 days, ..etc..,
z = 26 or more days missing, A = Accumulations present

Long-term means based on columns; thus, the monthly row may not sum (or average) to the long-term annual value.

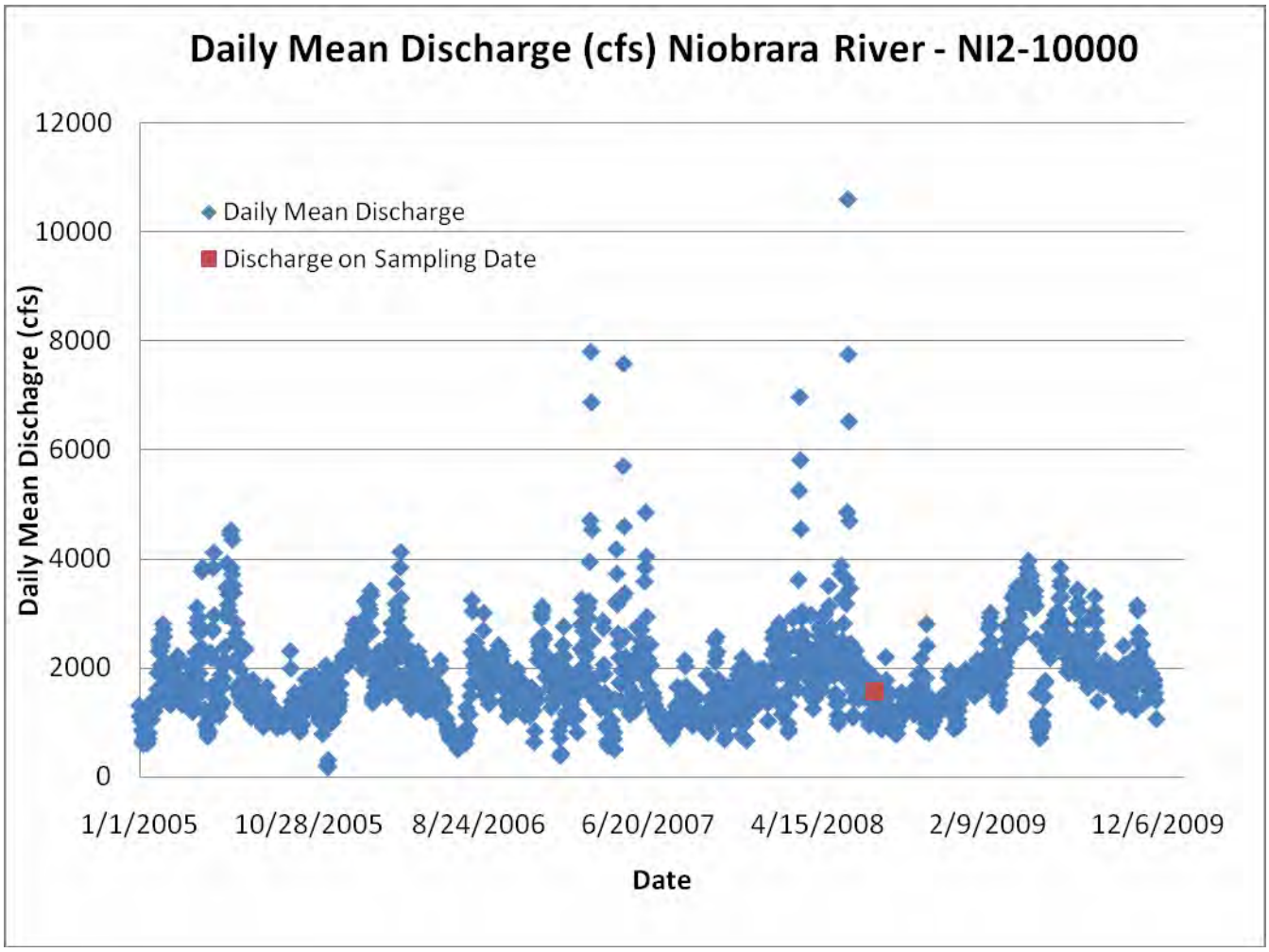
MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS : 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

YEAR (S)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
2005	0.51a	0.64	2.38	5.18	4.05	7.52	2.14	0.68	3.30	0.60	1.48	0.44c	28.92
2006	0.00a	0.23	1.60b	3.64x	1.19	2.92	0.43	2.69	5.59	0.36a	0.55	2.83a	18.39
2007	0.55p	1.72a	1.69a	4.07	4.64	3.58	0.28	5.29	1.64	5.74	0.04	1.40a	30.09
2008	0.00z	0.76	0.88	2.29	4.51	3.42	1.61	4.82	2.61	5.27	0.45	0.60	27.22
2009	0.12	0.67	0.00z	2.79	2.12	4.03a	3.23	4.77	1.55z	3.16z	0.00z	0.00z	17.73
Period of Record Statistics													
MEAN	0.48	0.72	1.48	2.67	3.37	3.62	2.96	2.81	2.33	1.61	0.84	0.58	23.49
S.D.	0.40	0.58	1.17	1.76	1.71	2.16	1.98	1.70	1.43	1.38	0.70	0.57	5.42
SKEW	1.29	1.48	2.06	1.26	0.52	1.07	1.18	1.09	0.82	1.16	0.90	1.87	0.05
MAX	1.85	3.18	7.58	8.68	8.95	10.64	10.10	9.25	6.65	5.74	2.77	2.83	36.62
MIN	0.00	0.00	0.09	0.00	0.05	0.55	0.12	0.00	0.12	0.00	0.00	0.00	12.63
NO YRS	98	99	97	100	98	101	103	103	100	102	100	101	81

May 1-June 30, 2008 precipitation = 7.93” Mean May 1 – June 30 precipitation = 6.99”
Sample collection occurred 7-24-2008.

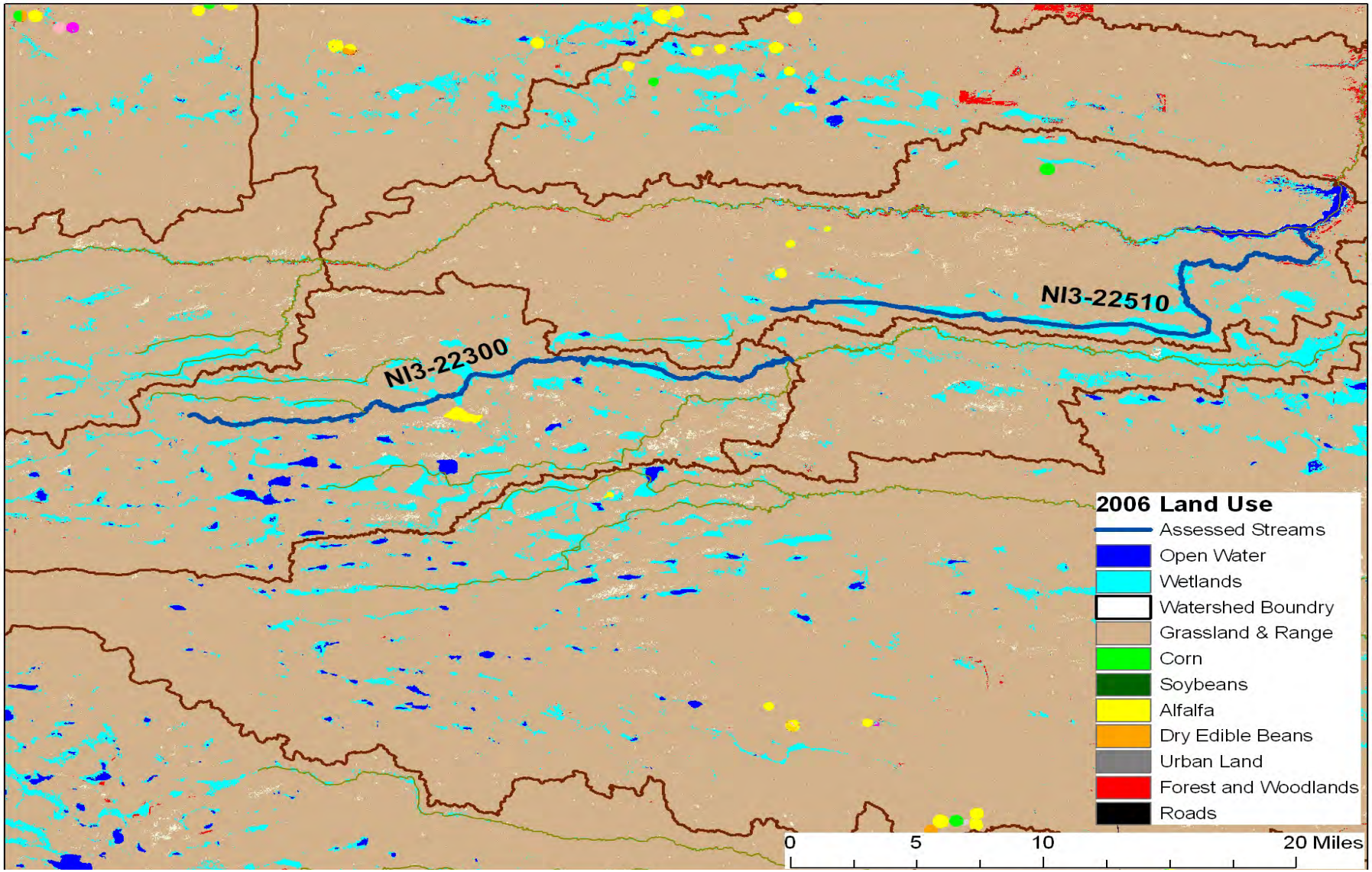
Precipitation data courtesy High Plains Regional Climate Center

Attachment E: Niobrara Basin (NI2-11420 Spring Creek & NI2-11780 Middle Branch Eagle Creek)



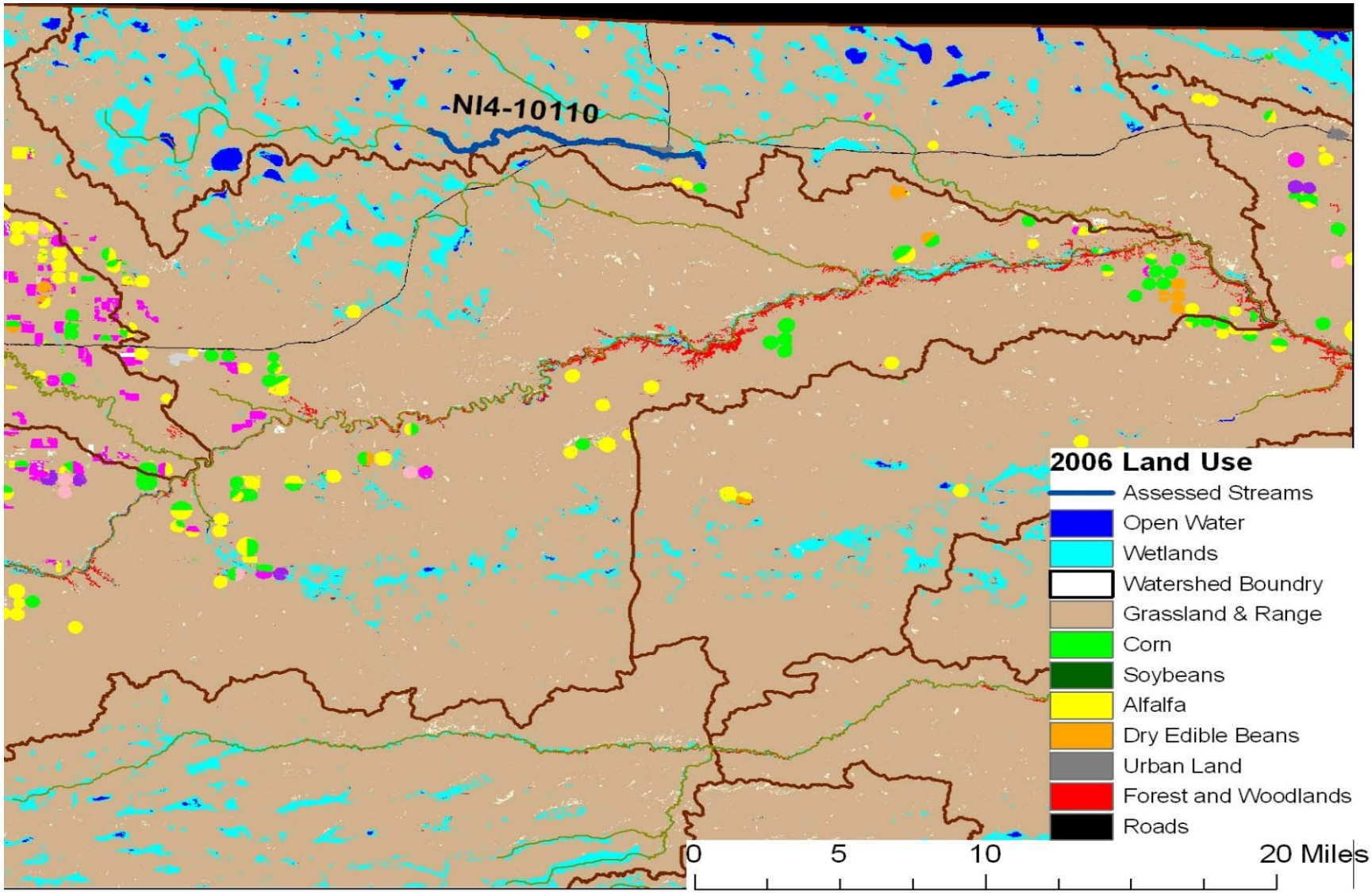
Discharge data courtesy USGS and NDNR

Attachment E: Niobrara Basin (NI3-22300 Gordon Creek & NI3-22510 Boardman Creek)



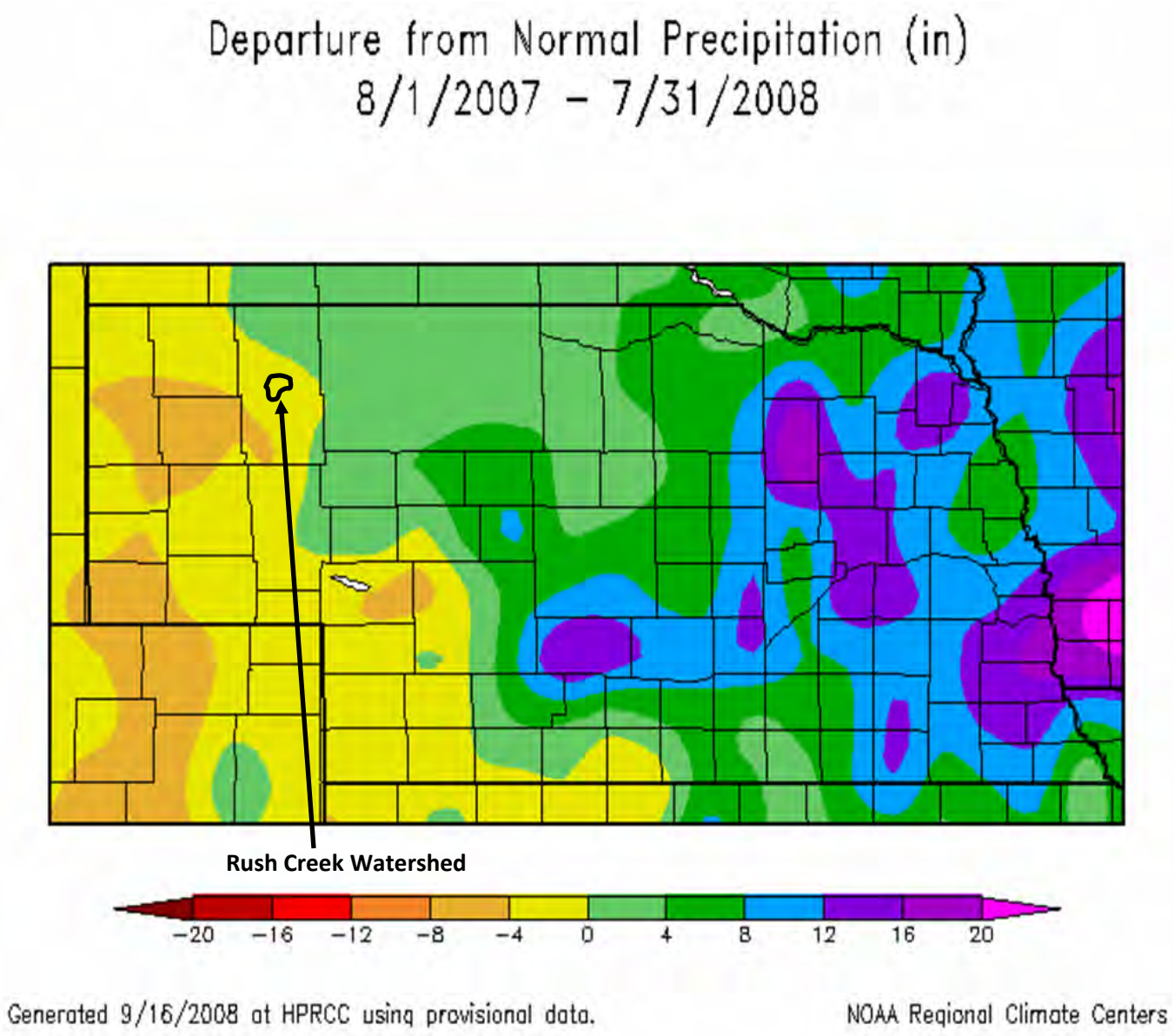
Land use data courtesy Center for Advanced Land Management Information Technologies

Attachment E: Niobrara Basin (NI4-10110 Dry Creek)



Land use data courtesy Center for Advanced Land Management Information Technologies

Attachment E: Niobrara Basin (NI4-10600 Rush Creek)



Attachment E: Niobrara Basin (NI4-10600 Rush Creek)

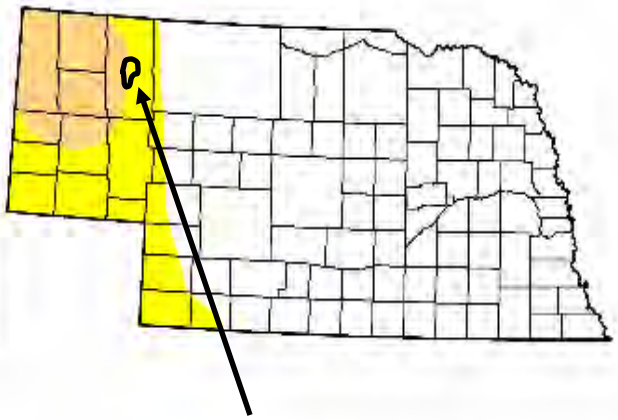
U.S. Drought Monitor

Nebraska

July 15, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	76.8	23.2	8.8	0.0	0.0	0.0
Last Week (07/08/2008 map)	77.0	23.0	8.8	0.0	0.0	0.0
3 Months Ago (04/22/2008 map)	66.7	33.3	19.1	7.8	1.7	0.0
Start of Calendar Year (01/01/2008 map)	66.7	33.3	15.9	7.8	1.7	0.0
Start of Water Year (10/02/2007 map)	70.9	29.1	13.6	7.0	1.7	0.0
One Year Ago (07/17/2007 map)	52.9	47.1	20.8	9.0	0.4	0.0



Intensity:

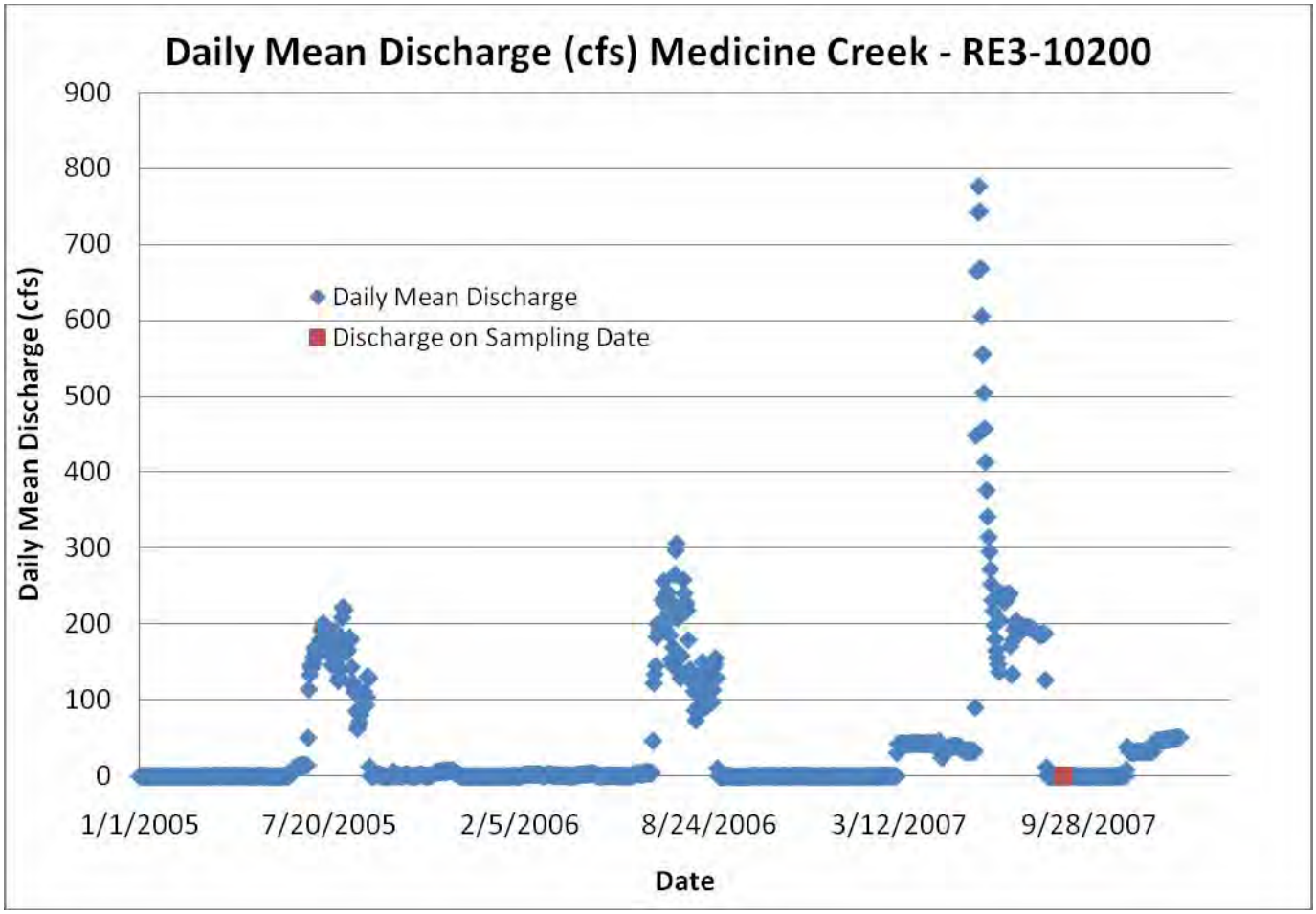
- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

http://drought.unl.edu/dm

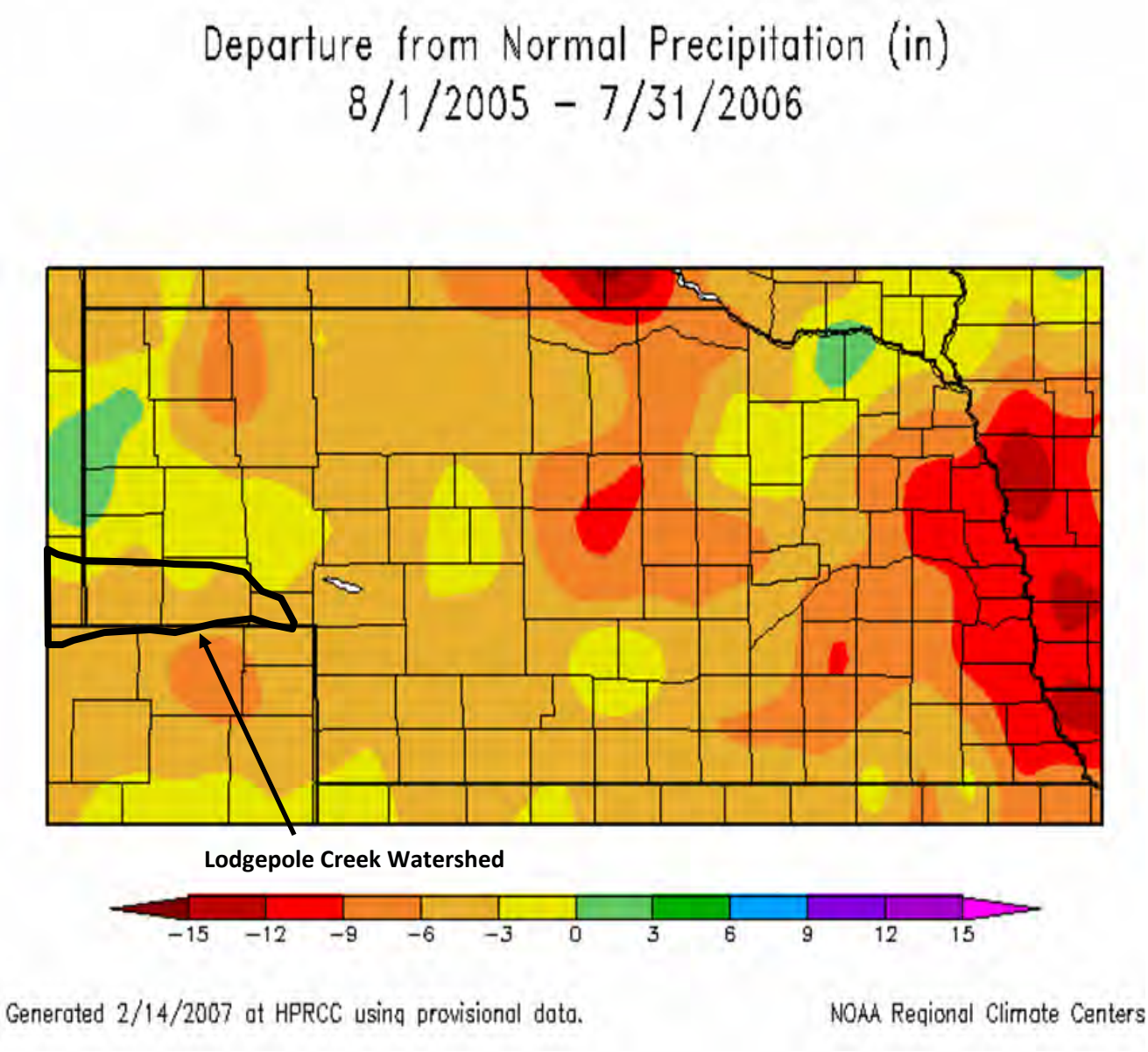
Released Thursday, July 17, 2008
Author: Brad Rippey, U.S. Department of Agriculture

Attachment F: Republican Basin (RE3-10100 Medicine Creek)



Discharge data courtesy USGS and NDNR

Attachment G: South Platte Basin (SP2-10000 Lodgepole Creek & SP2-20000 Lodgepole Creek)



Attachment G: South Platte Basin (SP2-10000 Lodgepole Creek & SP2-20000 Lodgepole Creek)

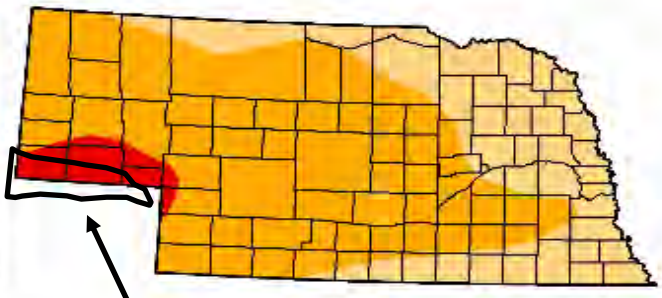
U.S. Drought Monitor

Nebraska

July 18, 2006
Valid 8 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.0	100.0	100.0	68.3	4.6	0.0
Last Week (07/11/2006 map)	0.0	100.0	78.4	38.1	0.0	0.0
3 Months Ago (04/25/2006 map)	33.1	66.9	43.4	0.0	0.0	0.0
Start of Calendar Year (01/03/2006 map)	13.0	87.0	34.5	0.2	0.0	0.0
Start of Water Year (10/04/2005 map)	27.5	72.5	40.5	0.0	0.0	0.0
One Year Ago (07/19/2005 map)	16.9	83.1	41.6	1.1	0.0	0.0



Lodgepole Creek Watershed

Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

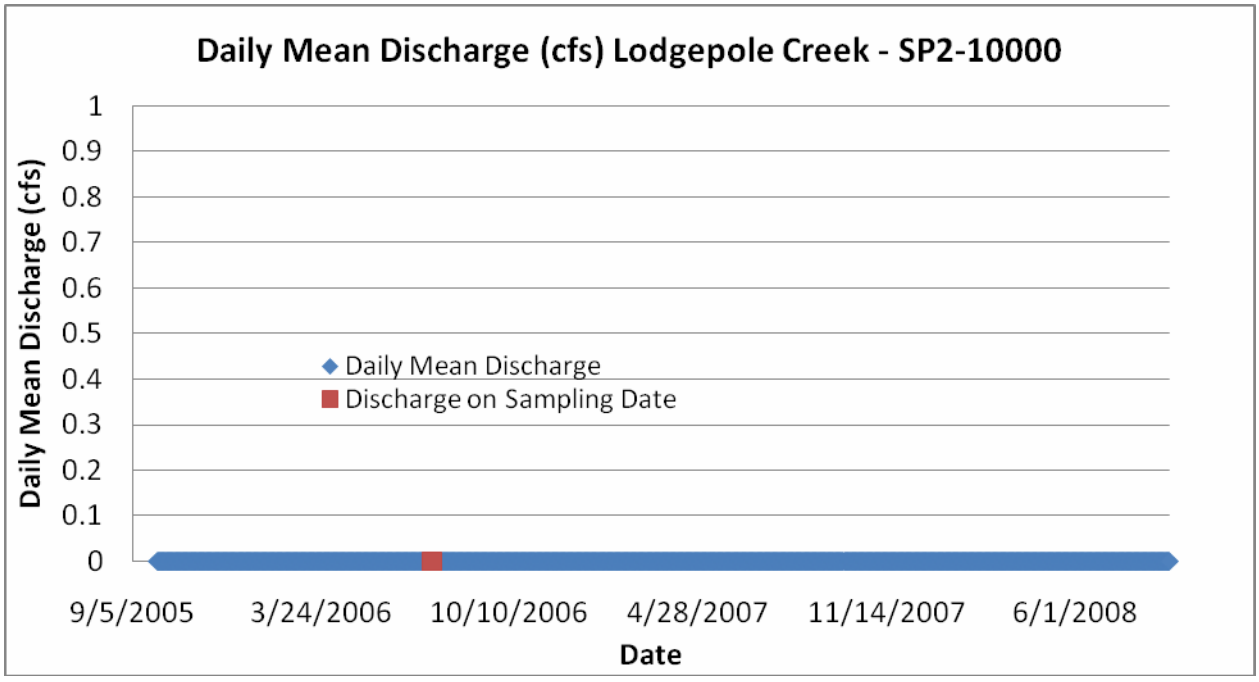
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

http://drought.unl.edu/dm

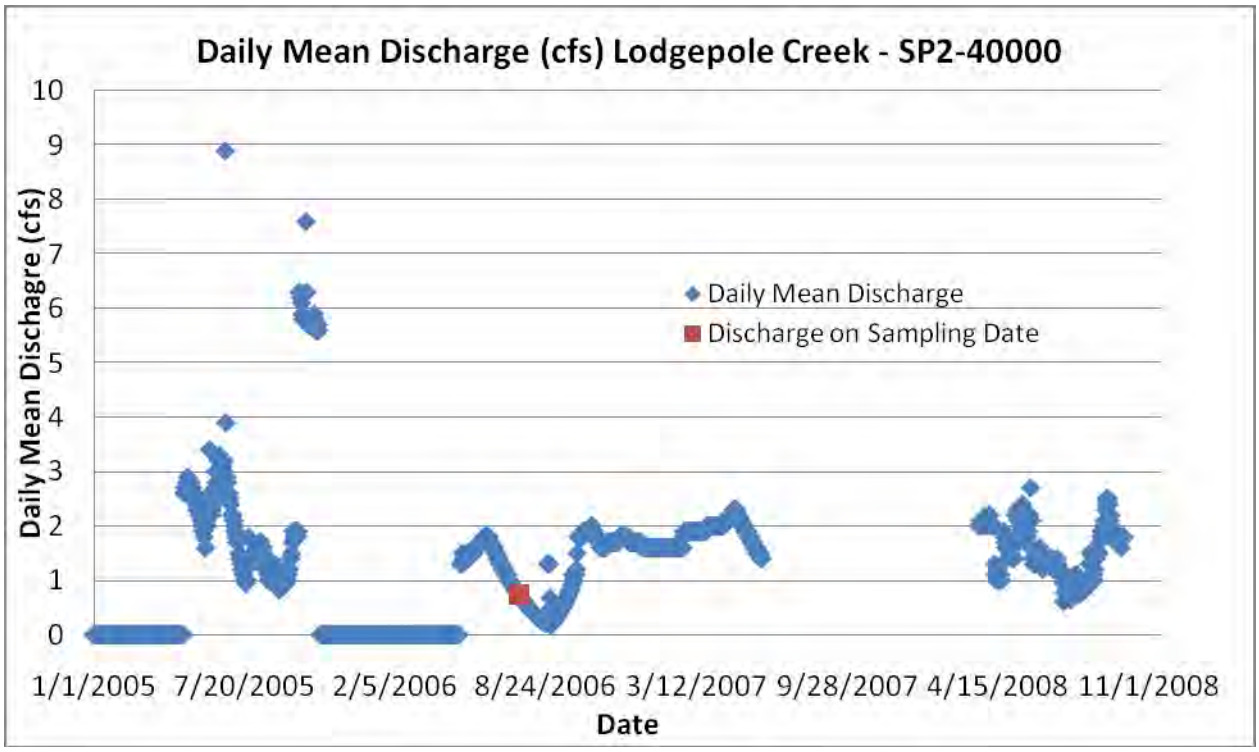
USDA

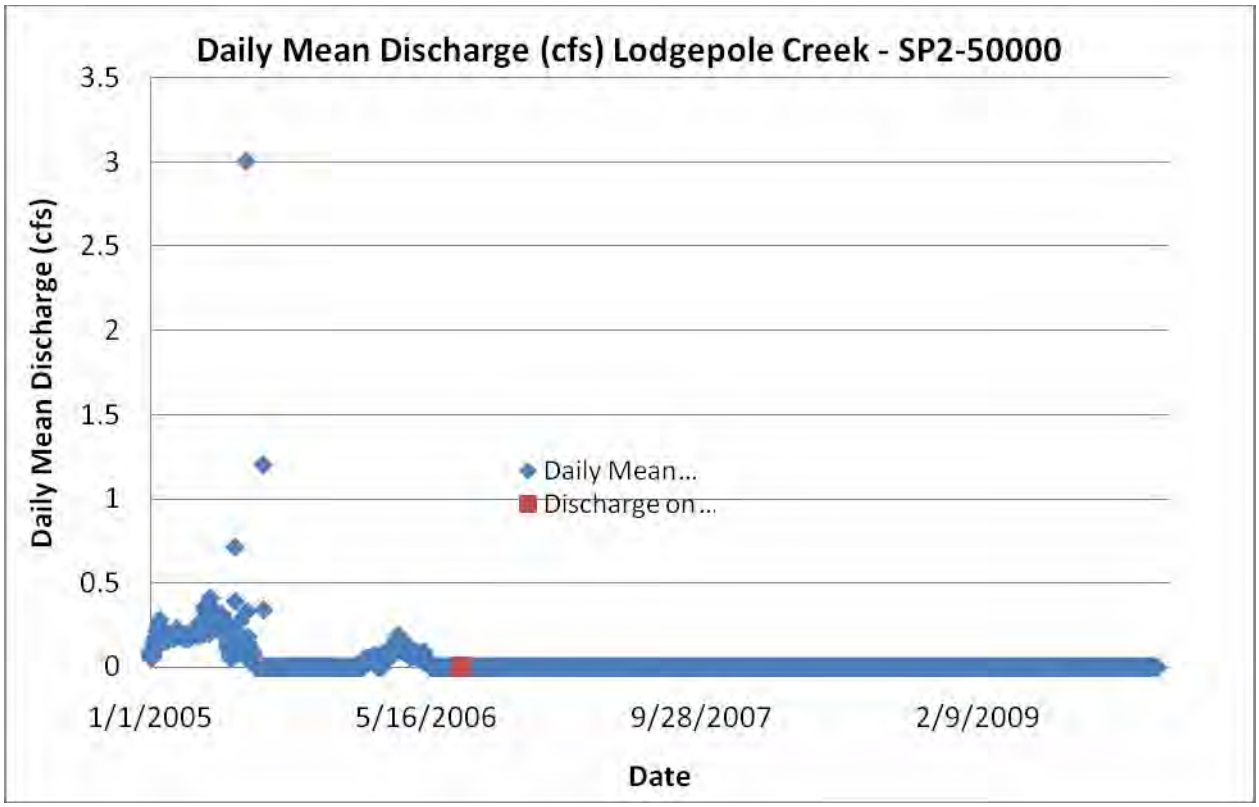
Released Thursday, July 20, 2006

Author: Richard Heim/Liz Love-Brotak, NOAA/NESDIS/NCDC



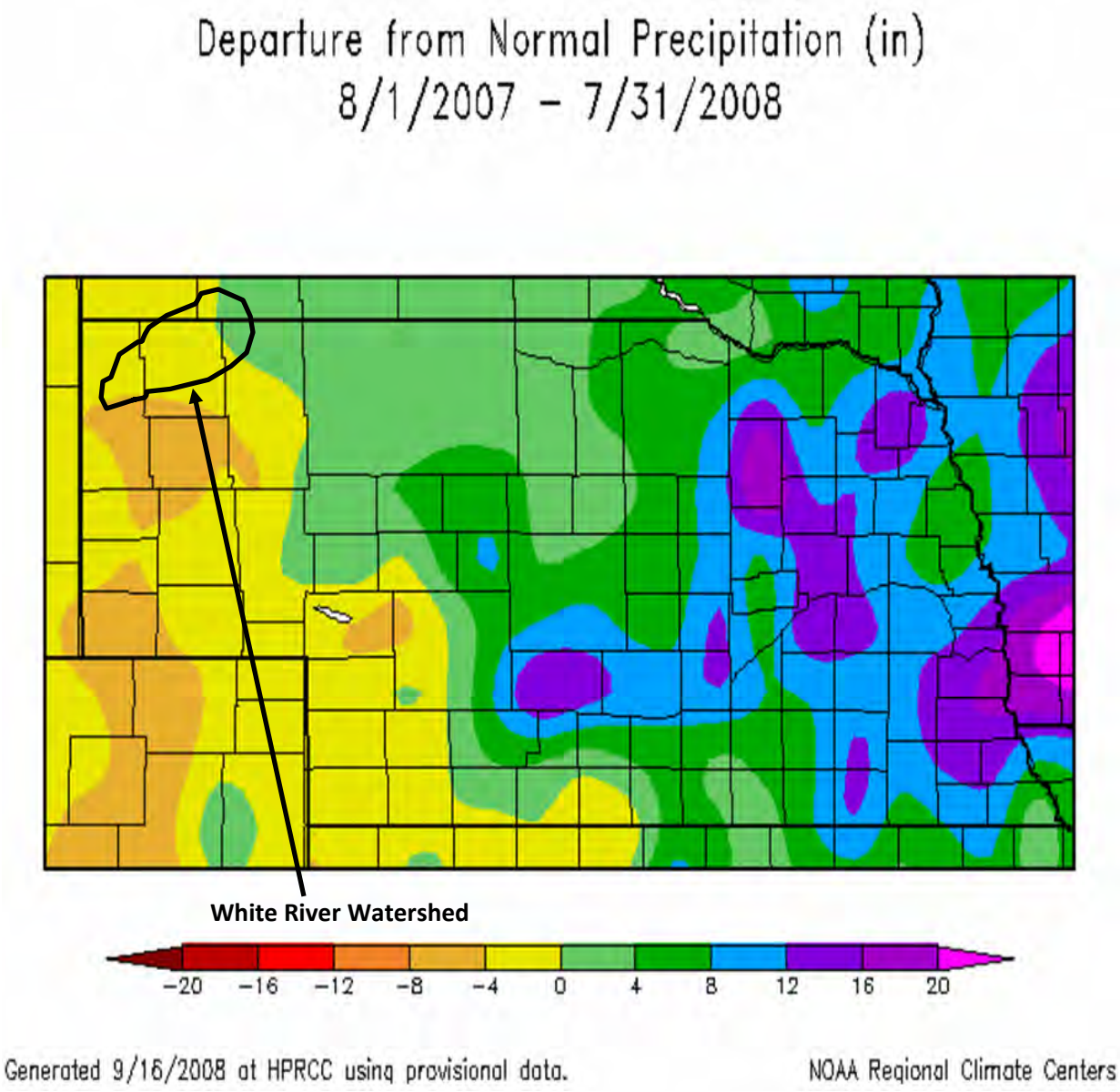
Attachment G: South Platte Basin (SP2-10000 Lodgepole Creek & SP2-20000 Lodgepole Creek)





Discharge data courtesy USGS and NDNR

Attachment H: White Basin (WH1-10000 White River)



Attachment H: White Basin (WH1-10000 White River)

U.S. Drought Monitor

Nebraska

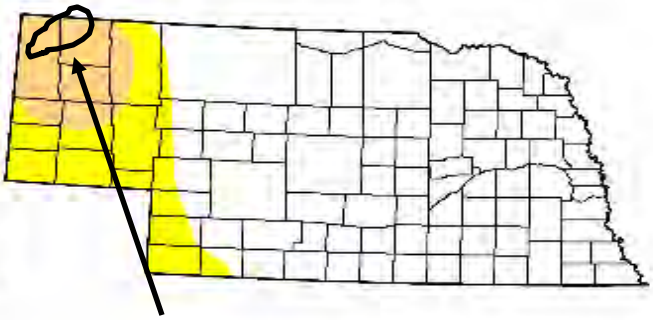
July 8, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	77.0	23.0	8.8	0.0	0.0	0.0
Last Week (07/01/2008 map)	77.0	23.0	9.9	0.0	0.0	0.0
3 Months Ago (04/15/2008 map)	66.7	33.3	19.1	7.8	1.7	0.0
Start of Calendar Year (01/01/2008 map)	66.7	33.3	15.9	7.8	1.7	0.0
Start of Water Year (10/02/2007 map)	70.9	29.1	13.6	7.0	1.7	0.0
One Year Ago (07/10/2007 map)	61.8	38.2	16.1	8.1	0.0	0.0

Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional



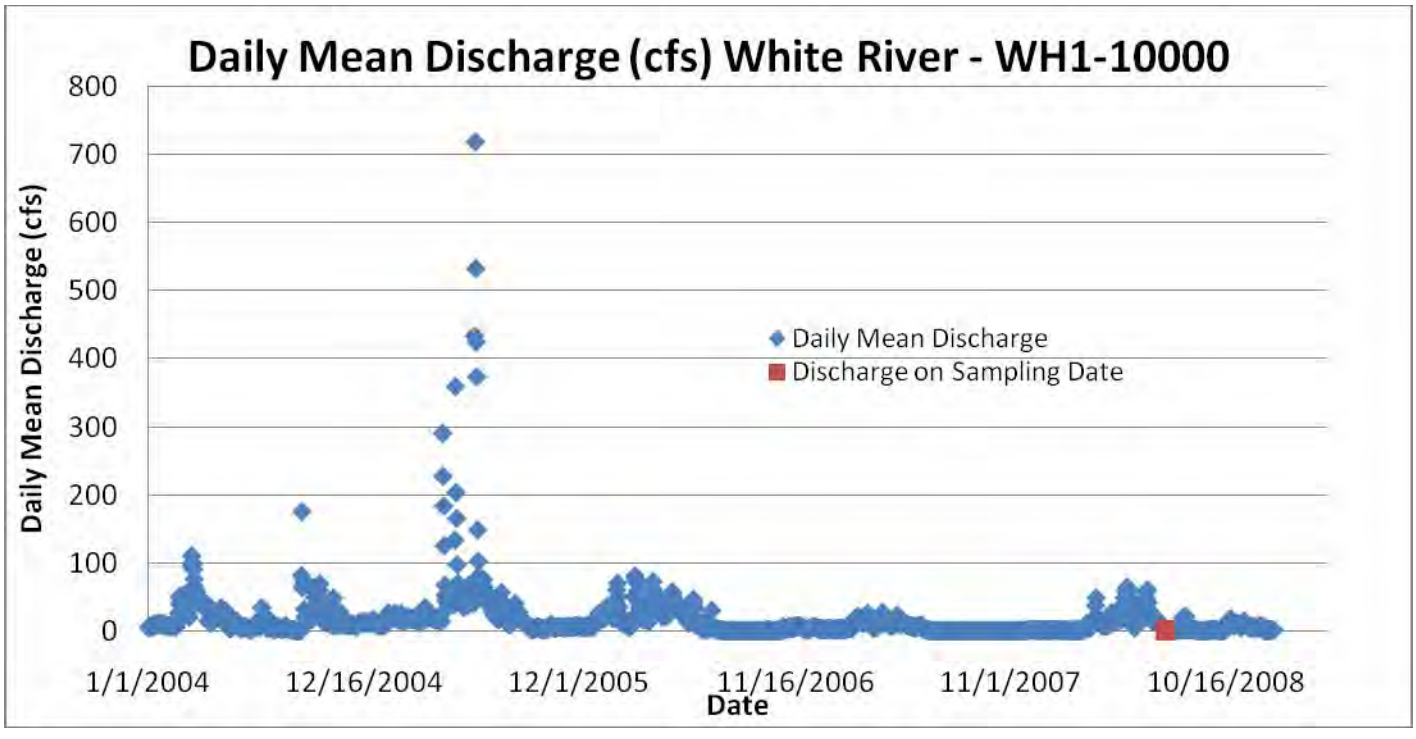
White River Watershed

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

http://drought.unl.edu/dm

USDA

Released Thursday, July 10, 2008
Author: Rich Tinker, CPC/NOAA



Discharge data courtesy USGS and NDNR

Appendix E: Category 4b Justification
(This form was given to NDEQ from EPA Region 7, on 3-22-2010)

Some segments on the Section 303(d) list have negligible non-point source loading. A single point source can be identified as the sole source of the impairment and an enforceable permit has been issued with water quality based effluent limits (WQBELs) stringent enough to ensure that the impairment will no longer exist at a time certain date. A TMDL could be written but it would be arguably identical to the results of the permit action. As a convenience, a state could submit a request for EPA to review the permit action to concur on whether the action would preclude the need for a TMDL. If so then EPA would expect the listed segment would no longer appear on the next Section 303(d) list barring new information to the contrary.

40 CFR 130.7(b)(1) states: *"Each State shall identify those water quality-limited segments still requiring TMDLs within its boundaries for which:*

(i) Technology-based effluent limitations . . . ;

(ii) More stringent effluent limitations . . . ; and

(iii) Other pollution control requirements . . . are not stringent enough to implement any water quality standards (WQS) applicable to such waters"

If a state can make a scientifically defensible argument that the permit action will meet the above CFR citation, then EPA would concur that a TMDL is no longer necessary for the water body in question. This argument must conclude: (1) the facility is the sole source of the pollutant(s) in the impaired waterbody, (2) a defensible WLA has been calculated for the pollutant(s) that clearly provides that instream water quality standards will be achieved, and (3) an enforceable permit has been finalized that includes a date certain compliance schedule to meet the WQBELs.

EPA will continue their normal review process of permits and will also examine the permit provided in lieu of a TMDL. EPA will agree or disagree that the WLA that was the basis of the permit controls, will result in attainment of applicable WQS. The agreement by EPA regarding a permit provided in lieu of a TMDL does not bind any future EPA actions regarding 303(d) listing or NPDES permits related to this segment and facility.

Checklist for submitting a request for EPA to consider that a permit action will correct a water quality impairment.

We are providing this checklist as means to facilitate communications between EPA and the state.

Name of the water body as it first appeared on a Section 303(d) list: LP1-10400 Zwieble Creek
Name of the pollutant(s) as it appeared on the Section 303(d) list _____pH_____
Subsequent changes (additions and changes) to the listing _____None_____

Facility name from attached NPDES permit Platte South Potable Water Treatment Plant
NPDES ID NE0000906

WLAs established in QUAL2 run (or other calculation) to meet WQS and translated permit limits:

Pollutant	WLAs	
	Existing Permit	New Permit
pH	Monitoring	Cease discharge to this watebody

Were contributions from non point sources included in these calculations? ☐ Yes X No

If so, was any reduction required beyond the current conditions? ☐ Yes X No

Were any other modeling assumptions required that are not included as limits in the permit (e.g., limits on nutrients)? ☐ Yes X No

Date of Draft/Final* Permit: Draft June 01, 2009, Final October 01, 2009

Compliance Date for meeting WQS from the Final Permit: October 01, 2012

Point of Contact: Donna Garden NDEQ NPDES supervisor

Attach the following information

A copy of the Draft/Final* NPDES permit (Attachment A)

A copy of the Statement of Basis, fact sheet, and water quality review sheet (Attachment B)

Copies of model output and spreadsheets that demonstrate the permit limits will result in meeting WQS. (NA no longer discharging to this waterbody)

*EPA will not concur on a permit in lieu of TMDL until the final permit has been issued.

Appendix E: Category 4b Justification

Attachment A: NPDES Permit Number NE0000906

NDEQ's authorization to discharge under the national pollutant discharge elimination system for the M.U.D. Platte South Potable Water Treatment Plant

Nebraska Department of Environmental Quality

Wastewater Section
Suite 400, The Atrium, 1200 'N' Street
PO Box 98922
Lincoln, NE 68509-8922
Tel. 402/471-4220
Fax 402/471-2909

Authorization to Discharge Under the National Pollutant Discharge Elimination System (NPDES)

This NPDES permit is issued in compliance with the provisions of the Federal Water Pollution Control Act (33 U.S.C. Secs. 1251 *et. seq*. as amended to date), the Nebraska Environmental Protection Act (Neb. Rev. Stat. Secs. 81-1501 *et. seq.* as amended to date), and the Rules and Regulations promulgated pursuant to these Acts. The facility and outfall(s) identified in this permit are authorized to discharge wastewater and are subject to the limitations, requirements, prohibitions and conditions set forth herein. This permit regulates and controls the release of pollutants in the discharge(s) authorized herein. This permit does not relieve permittees of other duties and responsibilities under the Nebraska Environmental Protection Act, as amended, or established by regulations promulgated pursuant thereto.

NPDES Permit No.:	**NE0000906**
IIS File Number	**PCS 61252-P**
Facility Name:	**Platte South Potable Water Treatment Plant**
Permittee	**Metropolitan Utilities District (M.U.D.)**
Facility Location:	**4001 LaPlatte Road, Bellevue, Nebraska 68102**
Latitude/Longitude	**41° 04´ 22´´ North / 95° 58´ 21´´ West**
Legal Description	**NW ¼, NW ¼, Section 32, Township 13 N, Range 13 E, Sarpy County. NE**
Receiving Water (002)	**Missouri River (MT1-10000 of the Missouri Tributaries River Basin)**
Receiving Water (001)	**Zweibel Creek (LP1-10400 of the Lower Platte River Basin)**
Effective Date:	**October 1, 2009**
Expiration Date:	**September 30, 2014**

Pursuant to a Delegation Memorandum dated January 12, 1999 and signed by the Director, the undersigned hereby executes this document on behalf of the Director.

Signed this _____ day of _____, _____

_____
Patrick Rice, Assistant Director

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Part I. Outfall 002 Discharge to the Missouri River

The discharge of wastewater through Outfall 002 at the M.U.D. Platte South PWTP to the Missouri River, is authorized and shall be monitored and limited as specified in the tables below. Monitoring shall be conducted by sampling after all treatment processes and prior to discharge into the receiving waters, unless an alternative or more specific monitoring point is specified by the NDEQ.

A. Requirements for Outfall 002

Table 1: Discharge Limits and Monitoring Requirements for Outfall 002

Parameters	Storet #	Units	Discharge Limits		Monitoring Frequency	Sample Type
			30 Day Average	Maximum		
Flow	50050	MGD	Report	Report	Daily	Calculated or Metered
Total Residual Chlorine	50060	mg/L	Report	Report	Monthly	Grab
Total Suspended Solids	00530	mg/L	Report	Report	Weekly	Composite
Parameters [(a)]	**Storet #**	**Units**	**Discharge Limits**		**Monitoring Frequency**	**Sample Type**
			Daily Minimum	**Daily Maximum**		
pH	00400	Standard Units	6.5	Report	Weekly	Metered or Grab

Footnotes:
(a) See Part C for requirements for a pH mixing zone study

B. Requirements for Metals and Toxicity for Outfall 002

Table 2: Requirements for Outfall 002 for Metals, Toxicity, and Pesticides Monitoring

Parameters	Storet #	Units	Discharge Limits		Monitoring Frequency	Sample Type
			Monthly Average	Daily Maximum		
Dissolved Copper[(a)]	01040	mg/L	Report	Report	Annually	Composite
Dissolved Iron [(a)]	01046	mg/L	Report	Report	Annually	Composite
Dissolved Manganese [(a)]	01056	mg/L	Report	Report	Annually	Composite
Dissolved Nickel [(a)]	01065	mg/L	Report	Report	Annually	Composite
Dissolved Selenium [(a)]	01145	mg/L	Report	Rep[ort	Annually	Composite
Dissolved Zinc [(a)]	01090	mg/L	Report	Report	Annually	Composite
Acute Toxicity *ceriodaphnia sp*	61425	TUa	Report	Report	Once/permit	Composite
Acute Toxicity *Pimephales promelas*	61427	TUa	Report	Report	Once/permit	Composite
Dieldrin	39380	mg/L	Report	Report	Once/permit	Composite
Polychlorinated Biphenyls	39516	mg/L	Report	Report	Once/permit	Composite

Footnotes

(a) The analytical procedure used for the determination of metal concentration must be sufficiently sensitive to provide accurate results to at least 0.010 mg/L.

C. Compliance Schedule for a pH Mixing Zone Study

Upon issuance of this permit, the Metropolitan Utilities District (M.U.D.) shall implement the compliance schedule set forth below for conducting a pH instream mixing zone study in the Missouri River of the wastewater discharged through Outfall 002 at the Platte South PWTP. The objective of the study shall be to determine if the discharge from Outfall 002 at the Platte South PWTP attains the water quality standards for pH (range 6.5 to 9.0) at the end of the acute mixing zone. This schedule may be modified in accordance with Title 119 and written notice from the NDEQ.

1. Six Months

No later than 6 months after the effective date of this permit, the M.U.D. shall submit to the NDEQ for review and approval, a pH mixing zone study plan for Outfall 002 at the Platte South PWTP that is based on the following conditions set forth below.

a. To proceed with the study, the receiving stream flow rate shall be less than or equal to the annual 25th percentile flow, is not an increasing trend and is stable for a long enough period of time to reasonably allow the permittee to notify the professional personnel who will conduct the study and for these personnel to mobilize to the site and conduct the study, with this period of time not to exceed 14 consecutive days.
b. Weather conditions do not pose a hazard to the health and/or safety of workers conducting the study.
c. Ice cover, if any, on the receiving stream is minimal and will not affect stream mixing or study results.
d. The discharge quality meets the NPDES permit limits for discharge at the design discharge flow rate.
e. The mixing zone shall not exceed 125 feet.

2. Two years

No later than two years after the effective date of this permit, the M.U.D. shall execute and complete the pH mixing zone study as described above and submit the results and conclusions of the study to the NDEQ for evaluation.

Part II. Outfall 001 Discharge to the Platte River via Zweibel Creek

The discharge of waste streams through Outfall 001 at the M.U.D. Platte South PWTP to the Platte River via Zweibel Creek is authorized up to three years from the effective date of this permit. Discharge of wastewater through Outfall 001 at the M.U.D. Platte South PWTP shall not be authorized on or after three years from the effective date of this permit. A compliance schedule is set forth in Part II (B) to redirect the wastewater discharged from Outfall 001 to Outfall 002 that discharges to the Missouri River

The discharge shall be monitored and limited as specified in the tables below. Monitoring shall be conducted by sampling after all treatment processes and prior to discharge into the receiving waters, unless an alternative or more specific monitoring point is specified by the NDEQ.

A. Requirements for Outfall 001

Table 3: Discharge Limits and Monitoring Requirements for Outfall 001

Parameters	Storet #	Units	Discharge Limits		Monitoring Frequency	Sample Type
			30 Day Average	Maximum		
Flow	50050	MGD	Report	Report	Daily	Calculated or Metered
Total Residual Chlorine	50060	mg/L	Report	Report	Monthly	Grab
Total Suspended Solids	00530	mg/L	Report	Report	Monthly	Composite
Parameters	**Storet #**	**Units**	**Discharge Limits**		**Monitoring Frequency**	**Sample Type**
			Daily Minimum	**Daily Maximum**		
pH	00400	Standard Units	6.5	Report	Monthly	Metered or Grab
Footnotes:						

B. Compliance Schedule for Elimination of Discharge through Outfall 001

Upon issuance of this permit, the M.U.D. shall implement the compliance schedule set forth below for redirecting the discharge of wastewater at the Platte South PWTP from Outfall 001 (discharge to Platte River via Zweibel Creek) to Outfall 002 (discharge to the Missouri River). This schedule may be modified in accordance with Title 119 and written notice from the NDEQ.

The monitoring requirements and limits in Part II (A) of this permit, discharge to the Platte River via Zweibel Creek through Outfall 001 shall apply until the wastewater can be redirected to the Missouri River through Outfall 002 not to exceed three years after the issuance of this permit. During the three year compliance interval, the M.U.D. shall limit the occurrence and volume of wastewater discharged through Outfall 001 as much as practicably possible during the months of April through July.

After the wastewater is redirected to the Missouri River, the monitoring and limitations in Part II of this permit for discharge through Outfall 001 shall not be applicable and discharge through Outfall 001 to the Platte River via Zweibel Creek shall no longer be authorized. The M.U.D. shall send a report to NDEQ every 6 months outlining progress in achieving this compliance schedule.

1. First Year
On or before one year after the issuance of this permit, the M.U.D. shall submit plans and specifications to the Department for modification of the wastewater distribution system at the Platte South PWTP so that all the wastewater at the Platte South PWTP is directed to the Missouri River via Outfall 002.

2. Second Year
On or before two years after the issuance of this permit, the M.U.D. shall start construction of the modification of the wastewater distribution system at the Platte South Plant as described above.

3. Third Year
On or before three years after the issuance of this permit, the M.U.D. shall discharge all the wastewater from the Platte South PWTP to the Missouri River via Outfall 002 at which time discharge of wastewater through Outfall 001 to the Platte River via Zweibel Creek shall no longer be authorized.

Part III. Evaluation of Water Quality Impacts from the Discharge of Solids and Evaluation of Solids Reduction Technologies at the Platte South PWTP.

The Metropolitan Utilities District (M.U.D.) shall evaluate the water quality impacts of effluent solids and evaluate selected technologies for the removal of solids discharged from the Platte South WTP according to the requirements and conditions set forth below. This schedule may be modified in accordance with Title 119 and written notice from the NDEQ. The M.U.D. shall send a progress report to NDEQ every 6 months that provides specific information on the implementation of the schedule set forth below.

A. One year

No latter than one year after the effective date of this permit, the M.U.D. shall summit to the NDEQ for review and approval, a proposed study plan for an evaluation of selected technologies and associated costs for solids reduction and evaluation of current water quality impacts from the discharge of solids to the Missouri River through Outfall 002 at the Platte South PWTP. The proposed study plans shall, at a minimum, address the following objectives and incorporate strategies to fulfill these study goals.

1. Review of the Existing Conditions in the Missouri River to include;

- River flow and sediment load in the Missouri River.
- Existing water quality in the Missouri River.
- Biological communities in the Missouri River.

2. Site Specific Field Studies to include;

- Water Column measurements to determine the extent of the discharge plume and the amount of residuals mixing achieved in the mixing zone.
- Suspended solids and sediment evaluation upstream and downstream of the Platte South PWTP.
- Benthic macroinvertibrates evaluation upstream and downstream of the Platte South PWTP.

3.Evaluation of Selected Technologies to Reduce Solids to include;

- Evaluation criteria
- Types of technology available to achieve solids removal.
- Relationship between costs and the degree of solids removal.
- The total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application.
- Non-water quality environmental impacts of solids removal.

B. Three Years

No latter than three years after the effective date of the permit, the M.U.D. shall complete the study as described above and submit a final report to the NDEQ that includes observations, data, and conclusions from the study.

Part IV. Other Requirements and Conditions

A. Narrative Limits, Discharges authorized under this permit:

1. Shall not be toxic to aquatic life in surface waters of the State outside the mixing zones allowed in NDEQ Title 117, *Nebraska Surface Water Quality Standard*;
2. Shall not contain pollutants at concentrations or levels that produce objectionable films, colors, turbidity, deposits, or noxious odors in the receiving stream or waterway; and
3. Shall not contain pollutants at concentrations or levels that cause the occurrence of undesirable or nuisance aquatic life in the receiving stream.

B. Additional Monitoring

1. The Department may require increases in the monitoring frequencies set forth in this permit to address new discharge, evidence of water quality impacts in the receiving stream or waterway, or other similar concerns.
2. The Department may require monitoring for additional parameters not specified in this permit to address new information concerning a discharge, evidence of potential non-compliance, suspect water quality in a discharge, evidence of water quality impacts in the receiving stream or waterway, or other similar concerns.

C. Method Detection Limit Reporting Requirements

The minimum detection limit (MDL) is defined as the level at which the analytical system gives acceptable calibration points. If the analytical results are below the MDL then the reported value on the DMR shall be a numerical value less than the MDL (e.g. <0.005).

D. Disposal of Sludge and Solids

Sludge and solids produced at the Platte South PWTP shall be disposed of according to all Federal and State regulations that includes, but is not limited to, 40 CFR 257 - *Criteria for Classification of Solid Waste Disposal Facilities and Practices.*

E. Permit Attachments

The attachments to this permit (e.g., forms and guidance) may be modified without a formal modification of the permit.

F. Permit Modification and Reopening

This permit may be reopened and modified after public notice and opportunity for a public hearing for reasons specified in NDEQ Title 119 - *Rules and Regulations Pertaining to the Issuance of Permits under the National Pollutant Discharge Elimination System,* Chapter 24.

Appendix E: Category 4b Justification

Attachment B: Fact Sheet for NPDES Permit Number NE0000906

NDEQ's fact sheet on the M.U.D. Platte South Potable Water Treatment Plant

Nebraska Department of Environmental Quality
Wastewater Section

1200 'N' Street, Suite 400, The Atrium
PO Box 98922
Lincoln, NE 68509-8922
Tel. 402/471-4220
Fax 402/471-2909

Fact Sheet
M.U.D. Platte South Potable Water Treatment Plant
Sarpy County, Nebraska
NPDES NE0000906/ PCS 61252-P

June 1, 2009

Table of Contents

A. Proposed Action - Tentative Determination

On the basis of a preliminary staff review, the Nebraska Department of Environmental Quality has made a tentative determination to reissue with changes the NPDES Permit to the Metropolitan Utilities District Platte South Potable Water Treatment Plant (PWTP) in Sarpy County, Nebraska (NPDES Permit Number NE0000906).

B. Applicant and Facility Information

Applicant:	Metropolitan Utilities District (M.U.D.)
Address	1723 Harney Street, Omaha, Nebraska 68102
Location of Facility:	4001 LaPlatte Road, Bellevue, Nebraska
Legal Description:	NW ¼, NW ¼, Section 32, Township 13 N, Range 13 E, Sarpy County. Nebraska
Other Information:	The M.U.D. Platte South Potable Water Treatment Plant (PWTP) is a treatment system for a public drinking water supply owned and operated by the Metropolitan Utilities District. (SIC Number 4941).

C. Basin, Segment, and Use Designations

The MUD Platte South discharges wastewater to the Missouri River in the Missouri Tributaries River Basin from Outfall 002 and to the Platte River via Zwiebel Creek in the Lower Platte River Basin from Outfall 001. Segment, basin, and use designations for the Missouri River are set forth in NDEQ Title 117 - *Nebraska Surface Water Quality Standards.*

1. Receiving Stream for the Platte South PWTP - Outfall 002

Outfall 002 - Missouri River

Basin / Segment: MT1-10000 of the Missouri River Tributaries Basin.

Water Quality Usage Designations for the Missouri River

Aquatic Life**;** Warmwater A

Agricultural Water Supply**;** Class A

Public Drinking Water Supply

Industrial Water Supply

Recreation

Aesthetics

Key Species**;**

Endangered Species
Pallid Sturgeon
Sturgeon Chub

Threatened Species
Lake Sturgeon

Recreational Species
Paddlefish
Blue Catfish
Channel Catfish
Flathead Catfish

2. Receiving Stream for the Platte South PWTP - Outfall 001

Outfall 001 – Zwiebel Creek

Basin / Segment: LP1-10400 of the Lower Platte River Basin.

Water Quality Usage Designations for the Missouri River

Aquatic Life**;** Warmwater B

Agricultural Water Supply**;** Class A

Aesthetics

Key Species: *Channel catfish*

D. Description of Discharge and Potential Pollutants

1. Description of Discharge

The M.U.D. Platte South Potable Water Treatment Plant (PWTP) supplies drinking water for the M.U.D. water system that serves more than 193,000 customers and a population of over 500,000 in the Omaha metropolitan area. The M.U.D. Platte South PWTP was put on line in 1968 and pumps ground water from 40 wells. The design drinking water production flow is 43 MGD in the summer months and 31.8 MGD in the winter months with a maximum design capacity of 60 MGD.

The M.U.D. Platte South PWTP uses split softening to precipitate the particulate matter that is removed in the lime softening basins and by filtration. The treatment process includes the addition of ferric sulfate to the well water prior to entering 6 softening/blending basins that aid in the flocculation of particulate matter. After filtration, chlorine and aqueous ammonia are added to form chloramines for disinfection and hydrofluorosilic acid is added for fluoridation prior to entering the storage reservoirs.

Filter backwash flows are based on a seasonally adjusted 1.5 to 1.2 filter backwash cycles per day with a 120 hour filter run time. Each backwash cycle uses 212,000 gallons of finished water. Currently, filter backwash water is discharged through Outfall 001 to the Platte River via Zwiebel Creek and drainage ditch. The average flow rate through Outfall 001 is 0.33 MGD. Finished drinking water containing microbial or chemical contamination is discharged through Outfall 001 or Outfall 002 to protect the quality of the drinking water discharged to the transmission supply system.

Suspended solids from softening/blending process are discharged to the Missouri River through Outfall 002. The average flow rate through Outfall 002 is 0.32 MGD. A compliance schedule is included in the permit that requires all wastewater from the Platte South PWTP be discharged through Outfall 002 to the Missouri River within three years.

2. Potential Pollutants

Potential pollutants from the water treatment process include pH, suspended solids, total residual chlorine, and lime solids.

3. Antidegradation Review

An antidegradation review was performed for purposes of developing the permit pursuant to 40 CFR 131.12. The results of the evaluation indicate that the Missouri River, the receiving water body of the discharge addressed by the permit, likely has habitat for aquatic life. The designated uses of the Missouri River were considered during permit development. The limitations in the draft permit are protective of the Clean Water Act § 101(a)(2) fishable/swimmable goals and will ensure the existing quality of water in the receiving stream is not lowered.

E. Summary of Proposed Permit Requirements

The highlights of the proposed draft permit requirements are summarized below. See the attached draft permit for specific information on the permit conditions.

1. A compliance schedule to prohibit discharge through Outfall 001 to the Platte River via Zwiebel is included in the permit.
2. Monitoring is added to the permit for chlorine, metals, pesticides, and toxicity at Outfall 002.
3. A compliance schedule for performing a pH mixing zone study is added to the permit.
4. A requirement that the Metropolitan Utilities District evaluate technologies for removal of solids at the Platte South PWTP is added to the permit.

F. Limits and Other Requirements Proposed in the Draft Permit and Their Basis

1. Overview of Permit Requirements

When developing effluent limits for a NPDES permit, the NDEQ considers limits based on both the technology available to treat the pollutants (technology based effluent limits) and limits that are protective of the designated uses of the receiving water (water quality based effluent limits). The intent of technology based effluent limitations are to require a minimum level of treatment based on currently available treatment technology. Water quality based effluent limits are developed by the State of Nebraska to protect the beneficial uses of the receiving waters, such as the Missouri River. The water quality based effluent limits involve a site-specific evaluation of the effluent discharge and its effect on the receiving water. Permit limits are developed by incorporating technology based limits and water quality based limits.

a. Technology Treatment Standards

No categorical effluent guidelines have been promulgated by EPA for water treatment plants.

b. Water Quality Based Effluent Limits

Water quality monitoring and limitations are included in the permit to protect the receiving stream from the discharge of toxic substances in toxic amounts. In NDEQ Title 117, *Nebraska Surface Water Quality Standards*, the water quality criteria for ammonia, total residual chlorine, and metals are determined as acute and chronic in-stream criteria. The NDEQ develops seasonal (spring, summer, winter) wasteload allocations (WLA) to protect these criteria. If there is a reasonable potential to cause an instream excursion of the water quality criteria for a parameter, then limitations are included in the NPDES permit. The permit limitations are established from the WLA according to the procedures given in the *Technical Support Document for Water Quality-based Toxics Control* (TSD).

2. Outfall 001- Discharge to the Platte River via Zwiebel Creek

Currently, filter backwash wastewater at the Platte South PWTP is discharged through Outfall 001 to Zwiebel Creek which flows to the Platte River. The flow rate of the discharge averages 0.33 MGD. The M.U.D. is developing measures that would eliminate discharge through Outfall 001 so that all the waste streams from the Platte South PWTP would be directed to the Missouri River through Outfall 002.

A three year compliance schedule is included in the permit to redirect the effluent discharged through Outfall 001 to Outfall 002 that discharges to the Missouri River. Pollutants of concern are present in the wastewater discharged through Outfall 001 that would require construction of a treatment system to achieve water quality standards. Chlorine is a constituent of the discharge from the Platte South PWTP that is regulated in NDEQ Title 117 at 0.019 mg/L for acute criterion and 0.011 mg/L for chronic criterion. The residual chlorine in the discharge would require dechlorination to achieve the level of chlorine concentration required to meet the water quality standards in Zwiebel Creek. Also, the suspended solids discharge from cleaning of the filters show concentration in the range of 11,000 mg/L that would likely not comply with the aesthetic standards in Title 117 for Zwiebel Creek. Aesthetic requirements prohibit discharge of pollutants that cause high turbidity, colors, or deposits in the receiving stream.

A compliance schedule to give a permittee sufficient time to achieve water quality standards may be included in a permit in accordance with the requirements set forth in NDEQ Title 119, *Rules and Regulations Pertaining to the Issuance of Permits Under the National Pollutant Discharge Elimination System*. A three year compliance schedule is included in Part II(B) of the permit to give the M.U.D. sufficient time to complete modifications at the Platte South PWTP that will direct discharge of all wastewater at the Plant to the Missouri River via Outfall 002. Upon completion of the compliance schedule, discharge of wastewater from Outfall 001 will not be authorized.

Monitoring for flow, total suspended solids, total residual chlorine, and pH are included in the permit and are applicable until completion of the compliance schedule.

3. Outfall 002 – Discharge to the Missouri River

Outfall 002 is the discharge of wastestreams at the Platte South PWTP to the Missouri River via a five-mile long pipeline. Lime softening wastewater is directed through Outfall 002 except when the pipeline requires cleaning or repair. Currently, filter backwash is directed through Outfall 001. A compliance schedule is included in the Part II(C) of the permit that requires that all wastewater at the Platte South PWTP be discharged through Outfall 002 within 3 years.

a. Basis for the pH Discharge Limits

The hydrogen ion concentration of the effluent discharge is expressed as pH. Noncompliance with the current upper pH limit of 9.0 has been reported for wastewater discharged from Outfall 002. A compliance schedule is included in Part I (C) of the permit to give the M.U.D. sufficient time to design and conduct an instream pH mixing zone study that will determine if the discharge from outfall 002 to the Missouri River meets pH water quality limits at the end of the acute mixing zone. A pH range of 6.5 to Report is included in the permit during the mixing zone study schedule. Upon completion of the study, the NDEQ will evaluate the data to determine measures for pH compliance.

b. Basis for TSS Discharge Limits

Suspended solids are a pollutant of concern for wastewater discharged from Outfall 002 so monitoring is continued in the permit. A study of solids discharged form the Platte South PWTP is included in Part II of the permit to assess the water quality impacts of these solids to the designated beneficial uses of the Missouri River and to evaluate the costs and benefits of selected technologies to reduce the amount of solids discharged.

c. Basis for Total Residual Chlorine (TRC)

Monitoring for TRC is included in the permit because chlorine is used in the drinking water treatment process and will therefore be present in the lime softening wastewater and filter backwash water that is discharged to the receiving stream. Acute criterion for chlorine at 0.019 mg/L and chronic criterion at 0.011 mg/L is set forth in NDEQ Title 117 to protect the beneficial uses of the receiving stream. A reasonable potential calculation will be performed on the TRC data to determine if the waste streams at the Platte South PWTP Outfall 002 discharge will exceed the chlorine criteria at the end of the mixing zone in the Missouri River.

d. Basis of Whole Effluent Toxicity (WET) Monitoring

Whole effluent toxicity monitoring is included in the permit because toxicity to aquatic life shall not be allowed at any time outside of either an acute or chronic mixing zone. According to NDEQ Title 117, chronic toxicity to aquatic life shall not be allowed at any time outside of a chronic mixing zone plus acute toxicity to aquatic life shall not be allowed at any time outside of an acute mixing zone. According to Title 117, the pollutant levels or concentrations of wastewaters which contain unknown or complex mixtures of potentially additive or synergistic toxic pollutants shall not exceed 0.3 acute toxic units (TUa) or 1.0 chronic toxic units (TUc). Monitoring for acute WET is included once in the term of the permit to determine if the wastewater from Outfall 002 exceeds the toxicity criteria at the end of the mixing zone in the Missouri River.

e. Basis for Dissolved Metals Monitoring

Dissolved metals are known toxic pollutants that can have detrimental effects on aquatic life and can be concentrated in the waste streams by the lime softening process employed at water treatment plants. Metal monitoring, for copper, iron, manganese, nickel, selenium, and zinc is included in the permit to provide data on the concentration of these pollutants in the effluent. The requirement that the analytical procedure used for the determination of metals limits must be sufficiently sensitive to provide accurate results to 0.010 mg/L is included in the permit so that a determination can be made of the potential of the effluent metals concentration to exceed the metals criteria.

f. Dieldrin and Polychlorinated Biphenyls (PCBs)

The Missouri River, segment MT1-10000, the receiving water for the Platte South PWTP is listed on the NDEQ 2008 Integrated Report 303(d) list of impaired waters for dieldrin and PCBs. Both dieldrin and PCBs are classified as persistent organic pollutants that although banned for many years, are still ubiquitous in the environment. Once in the term of the permit monitoring for dieldrin and PCBs is included in the permit to determine if there is any contribution from the Platte South PWTP to the impairment of Missouri River for these compounds.

g. Compliance Schedule for a pH Mixing Zone Study

The M.U.D. operates the Platte South Water Treatment Plant to produce potable water by treatment that consists of lime softening, filtration, and disinfection. As a result of this treatment, the pH of the drinking water is increased. The pH of the wastewater discharged from Outfall 002 is often above 9.0 because the finished potable water is often above 9.0. The current permit issued to the Platte South PWTP requires that the pH be maintained between the range of 6.0 to 9.0 standard units which has resulted in continued non-compliance with the pH parameter numeric limits. The pH range of 6.5 to 9.0 SU is based on the general criteria for aquatic life in NDEQ Title 117 *Nebraska Surface Water Quality Standards*.

A compliance schedule to give a permittee sufficient time to achieve water quality standards may be included in a permit in accordance with the requirements set forth in NDEQ Title 119, *Rules and Regulations Pertaining to the Issuance of Permits Under the National Pollutant Discharge Elimination System*. A two year compliance schedule is included in the permit to give the M.U.D. sufficient time to design and conduct an instream pH mixing zone study that will determine if the discharge from Outfall 002 to the Missouri River at the Platte South PWTP meets pH water quality limits at the end of the acute mixing zone. The study plan must be approved by the NDEQ before collection of data proceeds.

Upon completion of the study, the M.U.D. shall submit the results and conclusions from the study to the NDEQ for evaluation. Based on the study results, the NDEQ will consider, but is not limited to, the following actions.

- Make no changes to the pH range of 6.5 to Report currently in the reissued permit.
- Reopen and modify the permit to change the upper pH limit to a value to be determined from the study.
- Reopen and modify the permit to include the upper water quality pH limit of 9.0 in the permit at the end of pipe. This may result in a compliance schedule to install a treatment system to adjust the pH before discharge through Outfall 002 to the Missouri River at the Platte South PWTP.

4. Evaluation of Technologies for Solids Removal (Part III of the Permit)

The Platte South PWTP employs both lime softening and coagulation to remove hardness and enhance the quality of drinking water supplied to customers of M.U.D. The solid residuals generated by the treatment process are discharged to the Missouri River through outfall 002 at the Platte South PWTP and the sand filter backwash is currently discharged through outfall 001. The residuals consist primarily of calcium carbonate, magnesium hydroxide, plus sediments from the river water and other coagulant solids.

A study of the residuals discharged form the Platte South PWTP is included in the permit to assess the water quality impacts of the solids to the designated beneficial uses of the Missouri River and to evaluate the costs and benefits of selected technologies to reduce the amount of solids discharged.

A compliance schedule to give a permittee sufficient time to achieve water quality standards may be included in a permit in accordance with the requirements set forth in NDEQ Title 119, *Rules and Regulations Pertaining to the Issuance of Permits Under the National Pollutant Discharge Elimination System*. A three year compliance schedule is included in the permit to give the M.U.D. sufficient time to assess the water quality impacts and to evaluate the costs and benefits of selected technologies to reduce solids at the Platte South PWTP. The study plan must be approved by the NDEQ before collection of data proceeds.

5. Other Conditions and Requirements

a. Narrative Limits

The narrative limits on toxicity, noxious odors, objectionable materials, and undesirable aquatic life is in accordance with the water quality criteria set forth in NDEQ Title 117.

b. Additional Monitoring

The conditions under which the Department may require increases in monitoring frequencies and monitoring for additional parameters is in accordance with NDEQ Title 119.

c. Method Detection Limit Reporting Requirements

The requirement to report the method detection limits on the Discharge Monitoring Report (DMR) instead of zero when an analyte is not detected is according to NDEQ permitting procedures.

d. Disposal of Sludge and Solids.

The requirement that solids and sludge be disposed of according to 40 CFR 257 and other Federal and State regulations is according to NDEQ permitting procedures.

e. Revision of Permit Attachments

The option to revise permit attachments is according to NDEQ permitting procedures. These attachments can be modified without public hearing since the attachments are not a component of the NPDES Permit terms and conditions.

f. Reopener Clause

Conditions under which the permit may be reopened and modified are according to NDEQ Title 119 Chapter 24 - *Rules and Regulations Pertaining to the Issuance of Permits under the National Pollutant Discharge Elimination System.*

G. Supporting Documentation

The following documents and regulations were used in the preparation of the draft permit:

1. NDEQ Title 117, *Nebraska Surface Water Quality Standards*, July 31, 2006.
2. NDEQ Title 118, *Ground Water Quality Standards and Use Classifications*, March 27, 2006.
3. NDEQ Title 119, *Rules and Regulations Pertaining to the Issuance of Permits under the National Pollutant Discharge Elimination System*, May 16, 2005.
4. NDEQ Title 197, *Rules and Regulations for the Certification of Wastewater Treatment Facility Operators in Nebraska*, January 24, 1993.
5. Technical Support Document for Water Quality-based Toxic Control (EPA 505/2-90-001 PB91-127415, March, 1991.
6. 40 CFR, Part 122, 124, and 125, NPDES Regulations.
7. 40 CFR, Part 257, Solid Wastes Regulations.
8. NDEQ 2008 *Water Quality Integrated Report*, submitted March, 2008.
9. Permit application forms 1 and 2C for the Platte South PWTP received from the Metropolitan Utilities District by the NDEQ on June 5, 2006.
10. NDEQ files for the Platte South PWTP, NPDES NE0000906, IIS 61252.

H. Information Requests

Inquiries concerning the draft permit, its basis or the public comment process may be directed to:

Sharon Brunke Tel. 402/471-8830 or 402/471-4220 Fax: 402/471-2909

A TDD operator is available at 711

Copies of the application and other supporting material used in the development of the permit are available for review and copying at the Department's office between 8:00 a.m. and 5:00 p.m. on weekdays.

Office Location: The Atrium, 1200 N Street, Suite 400; Lincoln, NE

Mail Address: NPDES Permits Unit, Nebraska Department of Environmental Quality,
PO Box 98922; Lincoln, Nebraska 68509-8922

I. Submission of Formal Comments or Requests for Hearing

The date on which the public comment period ends is specified in the public notice. During the public notice period, the public may submit formal comments or objections, and/or petition the Department to hold a public hearing concerning the issuance of the draft permit. All such requests need to: be submitted in written form, state the nature of the issues to be raised, and present arguments and factual grounds to support them. The Department shall consider all written comments, objections and/or hearing petitions, received during public comment period**,** in making a final decision regarding permit issuance.

Formal comments, objections and/or hearing requests need to be submitted to:

Sharon Brunke; NPDES Permits Unit

Mailing Address: Nebraska Department of Environmental Quality
P.O. Box 98922
Lincoln, Nebraska 68509-8922

Location Address: Nebraska Department of Environmental Quality
The Atrium, 1200 N Street, Suite 400
Lincoln, Nebraska

Appendix F: Project Information for Category 4r Designated Waters

West Point City Lake – EL1-L0060

- Lake drained in 2001
- Sediment excavation in 2002
- Shoreline stabilization in 2003
- Lake re-filled in 2004

Horseshoe Bend Lake – EL4-L0025

- Lake drained in 2001
- Sediment excavation in 2002
- Shoreline stabilization in 2002
- Lake re-filled in 2003

Ansley City Lake – LO4-L0030

- Lake drained in 2001
- Sediment excavation 2002
- Lake re-filled in 2003

South Park Lake, Schuyler – LP1-L0370

- Lake drained in 2005
- Supplemental water source installed in 2005
- Shoreline stabilization in 2006
- Sediment excavation 2006
- Lake remained drained for work in 2009

Holmes Lake – LP2-L0040

- Reservoir drained in 2003
- Sediment excavation in 2004
- Jetty and breakwater construction in 2004
- Shoreline stabilization in 2004
- Wetland development in 2004
- Reservoir re-filled in 2005

Yankee Hill Reservoir – LP2-L0090

- Reservoir drained in 2004
- Sediment excavation in 2005
- Jetty and breakwater construction in 2005
- Shoreline stabilization in 2005
- Wetland development in 2005
- Reservoir re-filled in 2006

Wildwood Reservoir – LP2-L0120

- Reservoir drained in 2002
- Sediment excavation in 2003
- Jetty and breakwater construction in 2003
- Shoreline stabilization in 2003
- Reservoir re-filled in 2004

Glenn Cunningham Reservoir – MT1-L0120

- Reservoir drained in 2006
- Sediment removal in 2007 & 2008
- Shoreline stabilization in 2008 – 2009
- Reservoir currently re-filling
- Upstream wetland development initiated in 2010

Lake Ogallala – NP1-L0030

- Lake drained in 2009
- Sediment excavation in 2009
- Lake re-filled in 2010

Hansen Memorial Reserve Lake – RE3-L0030

- Lake drained in 2006
- Sediment excavation in 2007
- Shoreline stabilization in 2007
- Wetland development in 2007
- Aeration installed in 2007
- Lake re-filled in 2008

Appendix G: NDEQ's Response to Comments on the Draft – 2010 Nebraska Water Quality Integrated Report

In compliance with 40 CFR 130.7(a), NDEQ issued a 30 day public notice on February 04, 2010, in seven newspapers throughout Nebraska*, as well as, on the NDEQ website, announcing the availability of the 2010 Draft Water Quality Integrated Report for public review and comment. Comments were received from EPA Region 7 (EPA) and the Nebraska field office of the United States Fish and Wildlife Service (FWS). Following EPA's *Guidance for 2006 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act,* this appendix is NDEQ's response to comments received on the draft 2010 Nebraska Water Quality Integrated Report.

Comments from EPA and FWS are listed in italics below, with NDEQ's response following.

EPA Comment #1: *In order to perform a thorough review of the final 2010 IR submission, EPA must receive all data and information used to develop the draft 2010 IR. This includes:*

a. *Any comments NDEQ receives on the Draft 2010 IR and responses to those comments. For guidance on how to properly address comments received from outside sources, please consult the 2006 IR guidance, pages 25-26.*

b. *For category 4B listings, a rationale which supports the conclusion that there are "other pollution control requirements" sufficiently stringent to achieve applicable water quality standards within a reasonable amount of time. For guidance on what constitutes a proper 4B listing, please refer to the following documents:*
   i. *2006 IR guidance, Pages 54-56.*
   ii. *2008 IR guidance, pages 7-8, attachment 1 pages 3-4, and attachment 2 pages 1-4.*

c. *For category 4C listings, a demonstration that the failure to meet an applicable water quality standard is not caused by a pollutant. This would include waters were natural causes, such as landscape geology or inadequate flow, have been determined to be the cause of the impairment. For guidance on what constitutes a proper 4c listing, please refer to the following documents:*
   i. *2006 IR guidance, Pages 56-57.*
   ii. *2008 IR guidance, pages 10-11.*
   iii. *Tudor Davies memo.*

d. *For category 4R listings, information concerning the method and time frame in which a reservoir has been newly created or renovated. Date(s)of the reservoir renovation or creation and date(s) the fill or re-fill process occurred should accompany the submittal.*

NDEQ Response: NDEQ appreciates the explicit list of requirements and suggested references EPA has provided to ensure a timely review of Nebraska's 2010 IR.

Action: 7 appendices have been included with the final 2010 IR submission to satisfy EPA requirements.

This appendix, Appendix G, was assembled to satisfy the required "state response to public comments" as outlined in EPA's 2006 IR guidance and as discussed in section 4.5 of the document *Methodologies for Waterbody Assessments and Development of the 2010 Integrated Report for Nebraska.*

Appendix E provides the supporting documentation to justify the placing of specific waterbodies into category 4B.

Appendix C provides the supporting documentation to justify the placing of specific waterbodies into category 4C.

Appendix F provides the information EPA requested for the placing of waterbodies into category 4R.

EPA Comment #2: *According to 40 CFR 130.7(b)(5)(iii), data and information should be solicited from a wide variety of organizations and individuals. Appendix B of the draft 2010 IR contains data submitted by the United States Fish &Wildlife Service (USFWS). In addition to the data submitted by USFWS, appendix B includes a brief synopsis, by NDEQ, stating why the data could not be used to make water quality attainment decisions for the 2010 IR. In its review of the NDEQ decision to not use the USFWS data to make water quality attainment decisions, EPA concluded that NDEQ appropriately followed the 2006 IR guidance pertaining to data assembly and data quality considerations. This guidance can be found on pages 30-33 of the 2006 IR guidance. In the future, EPA recommends that NDEQ actively work with data generating organizations, not only during the period immediately preceding IR development and submittal, but on a more continual basis. NDEQ should also encourage data generating organizations to develop sufficient Quality Assurance Project Plans (QAPP) to support the use of that data by NDEQ for assessment of state waters. This will help ensure the data is collected and processed in accordance with the states Quality Assurance/Quality Control (QA/QC) standards.*

NDEQ Response: As stated in Appendix B of this document, NDEQ is committed to working with the FWS to develop quality assurance documents that meet NDEQ and EPA requirements for use in making water quality attainment decisions. NDEQ agrees that working with data generating organization to develop adequate quality assurance documents, well in advance of the assembly of the IR, will simplify the incorporation of their data into future IRs.

Action: No action will be taken as result of this comment

FWS Comment #1: *Delisting Narratives and Tables* *The narratives under the 2010 IR sections titled "Delisting/Changes from 2008 IR" frequently do not match the "Comments/Action" column of the preceeding tables and vice versa. For example, the narrative explains that Clatonia Lake (segment BB1-L0090) was delisted for nutrients but this action is not identified in the summary table. Segment BB4-20000 of the Big Blue River was delisted in the table but not mentioned in the "Delisting/Changes from 2008 IR" narrative. Nutrient delistings in the 2010 IR were mentioned for 17 waterbodies in the narrative but the tables identify 25 waterbodies as delisted for nutrients, some of which were not mentioned in the narrative. These errors make evaluating delisting actions more difficult and waterbodies delisted in the table may be overlooked. We recommend that the tables and narrative are matched and that a new draft 2010 IR be made available for public comment.*

NDEQ Response: EPA deferred taking action on 37 lakes and reservoirs that were listed for nutrient impairments in the 2006 IR and delisted in the 2008 IR, until the 2010 IR. Additionally, NDEQ nutrient assessment criteria changed from the 2006 IR to the 2008 IR and again from the 2008 IR to the 2010 IR. This combination of deferred actions and new criteria created the opportunity for a waterbody's impaired status to change in unconventional ways. For example, a lake could be delisted from its 2006 impaired status while not changing its 2008 impaired status. Following the format used in previous IRs meant that some of these unusual delisting were left out of the narratives, because the listing status didn't change from the 2008 IR to the 2010 IR, or left off of the tables because no new action was taken. NDEQ agrees with the FWS that these delisting actions were difficult to follow and has changed the format of the 2010 Integrated Report to make sure that all delisting actions for all parameters are listed in both the narrative and in the tables.

Action: NDEQ has modified the 2010 IR so that all delisting actions for all parameters are listed in both the narrative and the table for of each major watershed.

FWS Comment #2: *U.S. Fish and Wildlife Service Data The 2010 IR indicates that the Service was the only agency to submit data to NDEQ for the 2010 IR. However, we were notified by NDEQ in an email dated February 04, 2010, that data collected by the Sevice would not be used for the 303(d) assessment. NDEQ based this decision on the premise that "quality assurance documentation must meet requirements of EPA requirements of Quality Assurance Project Plans (EPA QA/R-5) and must be reviewed and approved by NDEQ's QA manager prior to collection or use." The 2008 and 2010 IR Methodology reports suggests that agencies and entities collecting water quality data work closely with the Department to develop quality assurance/quality control (QA/QC) programs but there is no mention of a required approval of QA/QC programs by NDEQ. Although we understand why NDEQ desires to help develop adequate QA/QC by suggesting preapproval of QA/QC procedures, the Service, like U.S. Geological Survey and EPA, already had a QA/QC program designed to EPA requirements in place before samples were collected for the submitted data. Furthermore, the Service provided multiple QA/QC documents to EPA and NDEQ including: 1) the study proposal, 2) a description of study specific methodology, 3) EPA certified standard operating procedures for the analysis of atrazine, 4) the Service's National Quality Assurance and Control Program guidance and 5) personnel certification for sample collection training and QA/QC training. We believe that sufficient QA/QC has been documented for the submitted data. We are willing to do what is necessary to obtain a preapproval status in regards to QA/QC; however, in the interim we recommend that NDEQ and EPA allow for the data we submitted to be fully utilized for 303(d) assessment purposes. We base this recommendation on the following:*

1. The data meets sufficient QA/QC and is technically and scientifically sound.

2. There is no mention of a NDEQ QA/QC preapproval requirement in the 2010 or 2008 IR Methodology Reports.

3. The data that the Service submitted are for impairments of water quality on Service owned and managed Waterfowl Production Area only and the Service would be a helpful partner in Total Maximum Daily Load (TMDL) implementation and ultimate delisting.

NDEQ Response: The exclusion of FWS atrazine data for making water quality attainment decisions in the 2010 IR has been accepted as reasonable by EPA region 7 (see EPA Comment #2 above). EPA reviewed NDEQ's *Methodologies for Waterbody Assessments and Development of the 2010 Integrated Report for Nebraska* (2010 IR methods), EPA's *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Section 303(d), 305(b), and 314 of the Clean Water Act* (EPA guidance), as well as the various documents FWS submitted to NDEQ, and concluded that NDEQ's actions were appropriate. Briefly, the atrazine data submitted to NDEQ from FWS were collected without adequate quality assurance documentation and these data cannot be used for making attainment decisions. NDEQ recommends that FWS review sections 2.3 *Data Submittal*, 2.4 *Data Quality Objectives*, and 2.5 *Data Quality Considerations* of the 2010 IR methods, and sections IV(C) *Data Assembly* and IV(D) *How should the methodology describe data and information expectations* of the EPA guidance to understand NDEQ's decision to exclude FWS data from use in making attainment decisions.

Action: No action will be taken as a result of this comment.

FWS Comment #3: *Parameters of Concern In the "Parameters of Concern" column of the 2010 draft report, pollutants such as dieldrin and PCBs listed in the 2008 report have been replaced with "Cancer Risk & Hazard Index compounds." This terminology is non-descriptive as there are a variety of pollutants that could be categorized as cancer risk or hazard index compounds. Cancer Risk and Hazard Index (noncancer risk) are terms used to denote adverse effects to human health and not the adverse effects to the environment. However, many of the waterbodies for which the parameters are defined as "Caner Risk & Hazard Index compounds" are listed for aquatic life impairments. We recommended that the "Parameters of Concern" column in the 2010 report includes the chemical compound name(s) for which the impairment exists in place of being categorized as "Cancer Risk & Hazard Index Compounds."*

NDEQ Response: Fish consumption advisories are issued in Nebraska when fish tissue, from commonly consumed fish, are found to have concentrations of potentially harmful contaminants above a predetermined threshold. Fish tissue samples warrant the issuance of a fish consumption advisory by violating a mercury concentration threshold, a hazardous compounds threshold (Hazard Index), or a carcinogenic compounds threshold (Cancer Risk). In the case of a mercury violation, the only parameter of concern in the fish tissue is mercury. However, in the case of a hazard index or cancer risk violation, a suite of parameters are cumulatively considered and rarely is one compound responsible for the listing. The decision to change the "Parameter of Concern" column in the 2010 IR was too more accurately reflect the multiple parameter nature of the Hazard Index and Cancer Risk fish consumption advisories. The compounds that are cumulatively considered for the hazard index or cancer risk advisories are listed at the bottom of each table in the IR.

The reason these waterbodies are listed for aquatic life impairments is defined in EPA's 2004 303(d), 305(b) guidance *" EPA considers a fish consumption advisory…and the supporting data to be existing and readily available data and information that demonstrates non-attainment of (CWA) Section 101(a) "fishable" use"…"* (pages 11-12).

Action: No action will be taken as a result of this comment.

FWS Comment #4: *Nutrients The 2010 IR delisted more than 25 surface waters identified as impaired by nutrients in the 2008 IR. Two surface waters, Lake Ogallala and Glenn Cunningham Lake, were delisted based on recent renovations and we commend NDEQ and their partners for their work. However, many of the waterbodies were delisted based on either insufficient data or new assessment procedures and we are concerned that such nutrient delistings may not be justified. Waterbodies in the Sandhills Region of Nebraska were delisted based on an assessment by NDEQ and EPA that there are no anthropogenic causes to the impairments. The 2010 IR or 2010 IR methodology do not provide a rationale explaining how this determination was made including whether or not historical data was available for comparison. Many waterbodies were also delisted for nutrients based on NDEQ's determination that "EPA indicated that the nutrient values NDEQ used for water quality assessments in 2006 were not acceptable." The service agrees with this determination made by EPA and also expressed concerns with the numeric nutrient criteria proposed during the 2005 triennial review of water quality standards as they were much less protective than EPA's nutrient criteria recommendations. However, nutrients criteria deemed not stringent enough should not result in NDEQ delisting waterbodies for which those criteria were applied. The numeric nutrient criteria developed as part of the Nutrient Assessment Methods in the 2010 IR Methodology has not been developed in consultation with the Service. We recommend that waterbodies identified by numeric criteria used for the 2006 Integrated Report remain listed as impaired by nutrients until a more acceptable numeric criteria are developed through consultation between EPA and the Service.*

NDEQ Response: The nutrient assessment targets for the 2010 IR were designed to resolve the outstanding nutrient impairments from the 2006 and 2008 IRs that EPA deferred ruling upon. These nutrient targets were agreed upon by the NDEQ and the EPA, the two agencies charged with implementing the Clean Water Act in the State of Nebraska, and will only be used for the 2010 IR. A more comprehensive nutrient assessment criteria is currently under development for use with future IRs, and the FWS will be given opportunity to review and comment on the new criteria.
Action: No action will be taken as a result of this comment.

FWS Comment #5: *Big Blue River Basin Atrazine Impairment Delisting The 2010 IR delisted the Big Blue River (BB4-20000) and Recharge Lake (BB3-L0080) for atrazine. These delistings were in the summary table but not mentioned in the section titled "Delistings / Changes from the 2008 IR." The Service has commented during the 2002, 2005, and 2008 water quality standard triennial reviews that Nebraska's chronic aquatic life water quality standard for atrazine of 12 micrograms per liter (µg/l) is not adequately protective of aquatic life. We recommend that an atrazine chronic aquatic life water quality standard of 1 µg/L be utilized to determine whether or not surface water supports the aquatic life beneficial use.*

NDEQ Response: While these waterbodies are no longer impaired by atrazine, they remain impaired by other pollutants; this is why they were not originally included in the "Delistings" narrative. NDEQ agrees that these delistings should be included in the narrative and appropriate action will be taken.

Nebraska's chronic atrazine standard was developed in accordance with EPA guidance and garnered the approval of the EPA, the agency charged with determining if water quality standards are protective of the aquatic life beneficial use. Additionally, no change to Nebraska's Water Quality Standards can result from comments submitted on the draft 2010 IR.

Action: The atrazine delistings have been placed in the section titled "Delisting / Changes from the 2008 IR."

FWS Comment #6: *Elkhorn River Basin Selenium Impairment Delistings Elkhorn River segments (EL1-20000 and EL3-20000) were delisted for selenium based on "natural occurrence." The information provided to EPA to justify this delisting should be included as an appendix to the 2010 IR. Anthropogenic sources of selenium that may be important contributors in the Elkhorn River Basin include manure and fertilizer runoff from agricultural lands including Concentrated Animal Feeding Operations (CAFOs) and point source discharges from industry and wastewater treatment plant facilities. For example, a dairy products facility near the town of West Point, Nebraska, was fined $150,000 for unlawful discharges of effluent wastewater into the Elkhorn River upstream of segment EL1-20000. Although the Service is not aware of any data that indicates the dairy facility may have contributed to selenium impairments downstream, selenium is used as a feed supplement to induce growth in dairy cows and butter is a rich source of dietary selenium.*

NDEQ Response: The justification for the delisting selenium impairments in the Elkhorn River Basin is included in the 2010 IR as Appendix C.

Action: No action will be taken as a result of this comment.

FWS Comment #7: *Zwiebel Creek (LP1-10400) Zwiebel Creek is correctly listed as impaired by pH; however the parameters causing the impairments should not be listed as "unknown". The cause for this impairment is a point-source discharge by the Metropolitan Utilities District (MUD) Platte South Potable Water Treatment Plant (Facitily). The Service and Nebraska Game and Parks Commission (NGPC) expressed concerns about Facility noncompliance with its National Pollutant Discharge and Elimination System (NPDES) permit to NDEQ and EPA in 2007 and 2008, respectively. However, the Facility received a new NPDES permit in 2009 that is less stringent (i.e., has no high pH limitations) than its previous NPDES permit that was issued in 1988. Furthermore, the new permit allows for continued discharges into Zwiebel Creek for the next three years. These changes to the NPDES permit are not expected to result in improved water quality before the 2012 Integrated Report. Therefore, we recommend that the listing category for Zwiebel Creek be changed from 4b to 5.*

NDEQ Response: The parameter of concern was mistakenly changed to unknown in the draft 2010 IR, it will be changed back to pH. The justification for placing LP1-10400 into category 4b is included in the 2010 IR under Appendix E. The newly issued NPDES permit was approved by EPA and forbids MUD from discharging into LP1-10400 after October 1, 2012. NDEQ believes this permit meets the EPA's requirement for a 4b listing as described in the 2006 IR guidance section V(G)(2) *Which*

segements should states include in Category 4b and the 2008 IR guidance attachment 2 *Recommended structure for Category 4b demonostration.*

Action: The "Parameter of Concern" will be changed to pH.

FWS COMMENTS ON 2010 IR METHODOLOGY

FWS Comment #1: *Section 3.2 Aquatic Life According to the current 2010 IR Methodology, water quality impairments for aquatic life are determined to occur in a waterbody if greater than 10 percent of samples exceed an acute or chronic water quality criterion. According to EPA guidance (EPA, 2006) use of a 10 percent rule is recommended for conventional pollutants including total suspended solids, pH, biological oxygen demand, fecal coliform bacteria, and oil and grease. However, a 10 percent rule is not recommended for toxins (EPA, 2006). The 2010 IR Methodology applies a 10 percent rule for chronic criteria exceedances for toxins and for acute criteria exceedances for toxins not listed as "priority pollutants." A waterbody is considered impaired in accordance with the 2010 IR Methodology if the acute criterion of a priority pollutant is exceeded more than once every three years on average. The list of priority pollutants in Appendix B of the 2010 IR Methodology does not include many toxins for which acute and chronic criteria are provided in Nebraska Title 117, including pesticides like atrazine, that can adversely affect aquatic life at low concentrations (Saglio and Trijasse, 1998; Tillitt et al., 2006). We recommend that Appendix B be expanded to include all toxins identified in the aquatic life Toxic Substances section 3.01C of Title 117 (NDEQ, 2009). We also recommend that NDEQ consider a waterbody impaired if either the acute or chronic criterion for a Toxic Substance is exceeded more than once every three years on average.*

NDEQ Response: EPA's *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Section 303(d), 305(b), and 314 of the Clean Water Act* (EPA guidance) states "For toxic ("priority" pollutants) and protection of freshwater aquatic life, EPA guidance recommends use of a once in three year maximum allowable excursion recurrence frequency. Appendix B in NDEQ's 2010 IR methods is the list of EPA's "Toxic Priority Pollutants" found in *National Recommended Water Quality Criteria*, USEPA, Office of Water, Office of Science and Technology published in 2006. Additionally, NDEQ's 2010 IR methodology was reviewed by EPA region 7 and was accepted for use in constructing the 2010 Integrated Report.

Action: No action will be taken as a result of this comment.

FWS Comment #2: *Appendix C Nutrient Assessment Methods The 2010 nutrient translators and assessment methodologies provided in Appendix C of the 2010 IR Methodology Report are less protective than Ecoregion criteria recommendations developed by EPA (USEPA, 2000 and 2001 a and b). For example, the nutrients assessment threshold for total phosphorus in lakes and reservoirs in Nebraska's western region is 50 µg/L in the 2010 IR Methodology compared to 37.5 µg/L for EPA's corn belt region*

criterion (EPA, 2000). Furthermore, there is no explanation for how nutrient assessment thresholds in Figure 1 of Appendix C were derived. We recommend that NDEQ develop numeric nutrient criteria based on biological data and/or reference sites that are based on representative healthy waterbodies and that waterbodies listed for excessive nutrients are not delisted until acceptable numeric criteria and developed through consultation between EPA and the Service.

NDEQ Response: The nutrient assessment targets for the 2010 IR were designed to resolve the outstanding nutrient impairments from the 2006 and 2008 IRs that EPA deferred ruling upon. These nutrient targets were agreed upon by the NDEQ and the EPA, the two agencies charged with implementing the Clean Water Act in the State of Nebraska, and will only be used for the 2010 IR. A more comprehensive nutrient assessment criteria is currently under development for use with future IRs, and the FWS will be given opportunity to review and comment on the new criteria.

Action: No action will be taken as a result of this comment.

*Public notice of the 2010 Draft Integrated Report is published on February 4, 2010, in the following newspapers: Grand Island Independent, Lincoln Journal Star, McCook Gazette, Norfolk Daily News, North Platte Telegraph, Omaha World-Herald, and Scottsbluff Star-Herald.