



Nebraska Department  
of Environmental Quality

## Nebraska Surface Water Council

### How Water Quality Data is used for Planning

Laura Johnson

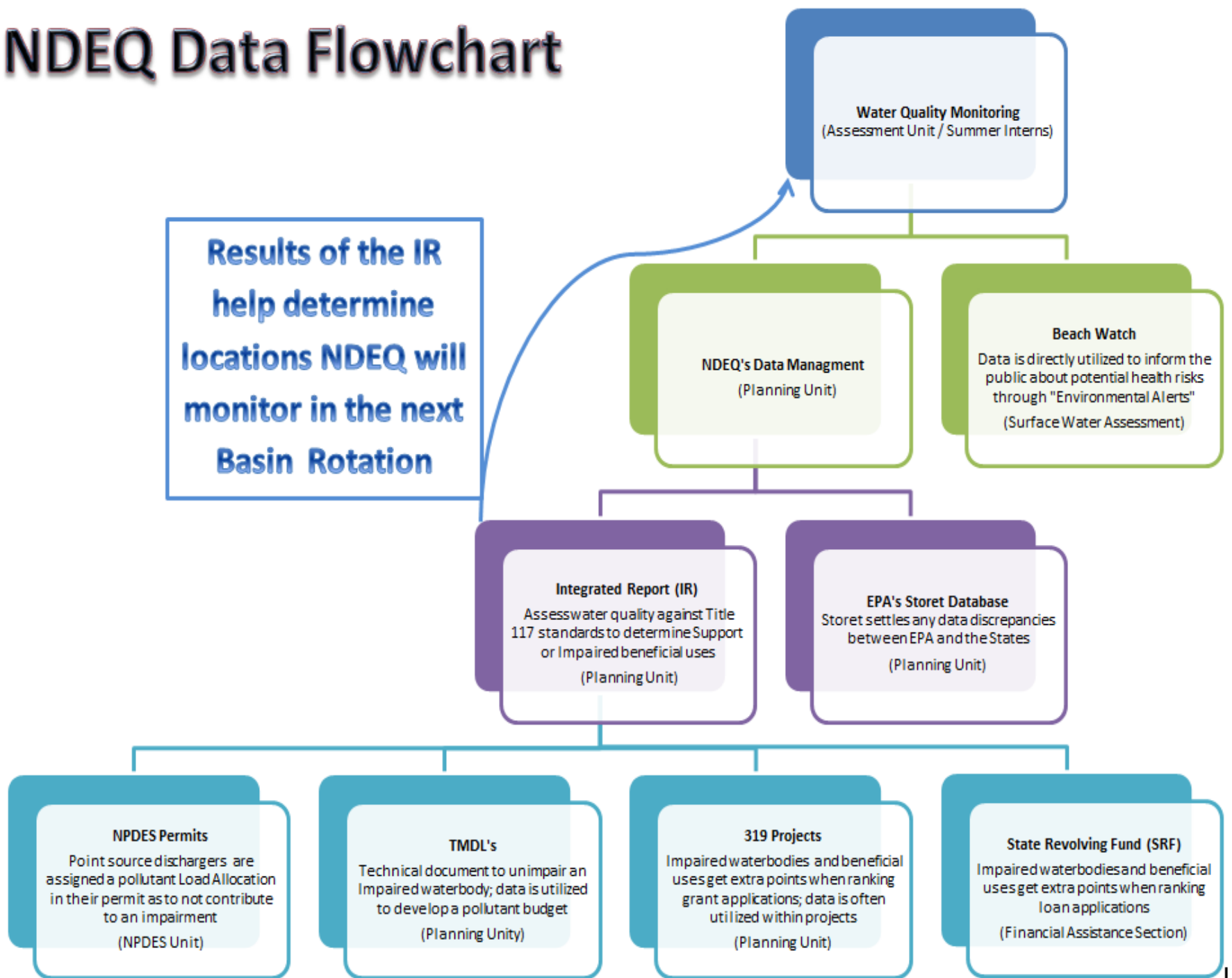
NDEQ Water Quality Division - Planning

April 26, 2018

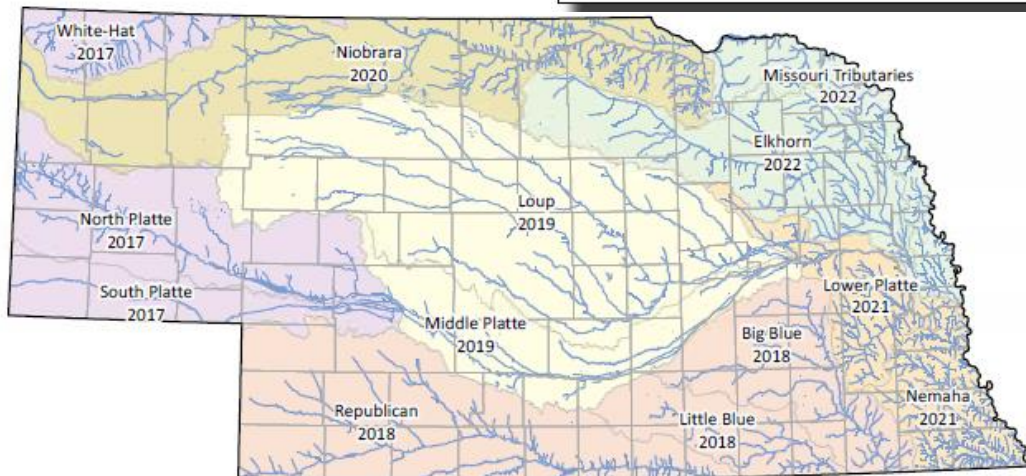
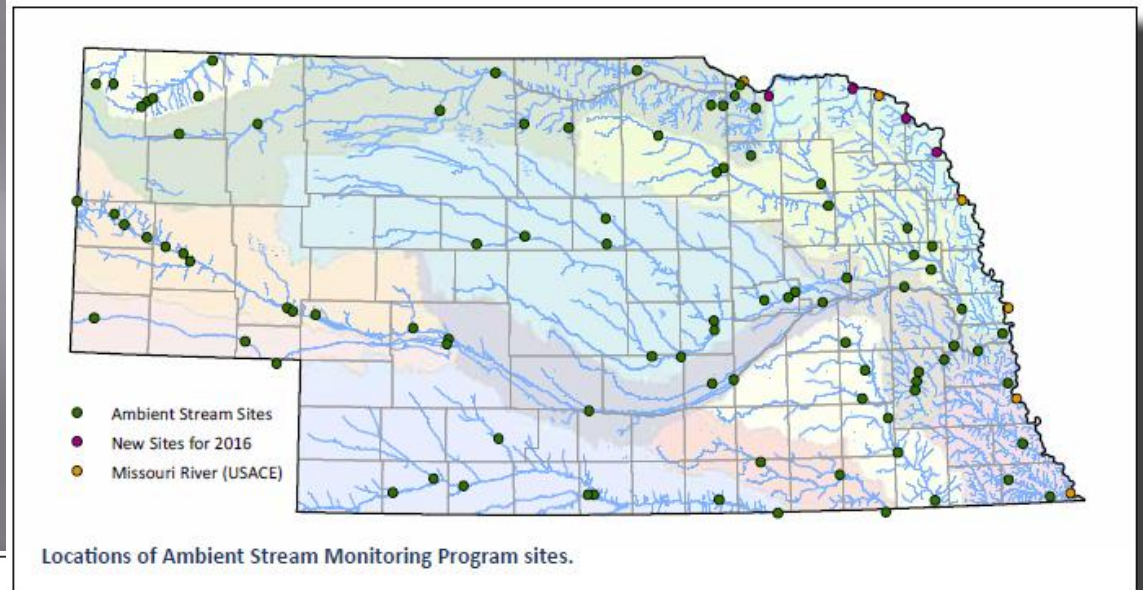
# Why monitor water quality?

- ▣ **Clean Water Act Section 305 (b) directs states to report every two years the status and trends of water quality.**

# NDEQ Data Flowchart



# Surface Water Quality Monitoring



NDEQ six-year basin rotation monitoring schedule



Preparing algae samples for microcystin analysis.

# Water Quality Assessments

T117

- Title 117: Nebraska Surface Water Quality Standards
  - Assigns designated uses and standards to waters

Methods

- Methodologies for Waterbody Assessments
  - Defines what data can be used and how to assess it

Monitoring

- Surface Water Monitoring (**Many Partners**)
  - Monitors for designated uses according to methods

IR

- Water Quality Integrated Report
  - Describes the status and trends of water quality

# Title 117: Nebraska Surface Water Quality Standards

**RIVER BASIN:** Little Blue

**Subbasin:** LB1

STREAM SEGMENT	SEGMENT NUMBER	USE CLASSIFICATION									COMMENTS	
		STATE RESOURCE WATER	RECREATION	AQUATIC LIFE		WATER SUPPLY			AESTHETICS	KEY SPECIES		
				COLDWATER	WARMWATER	PUBLIC DRINKING WATER	AGRICULTURAL	INDUSTRIAL				
Little Blue River - Big Sandy Creek to Nebraska-Kansas border (Sec 31-1N-4E)	10000		●		A		●	A		●	i,j	
Coon Creek	10100				A			A		●	10,i	Sensitive Species
Rock Creek	10200		●		A			A		●	10	Sensitive Species
Smith Creek	10300				B			A		●		
Rose Creek - Buckley Creek to Little Blue River	10400				A			A		●	i,j	
Dry Branch	10410				A			A		●	10	Sensitive Species

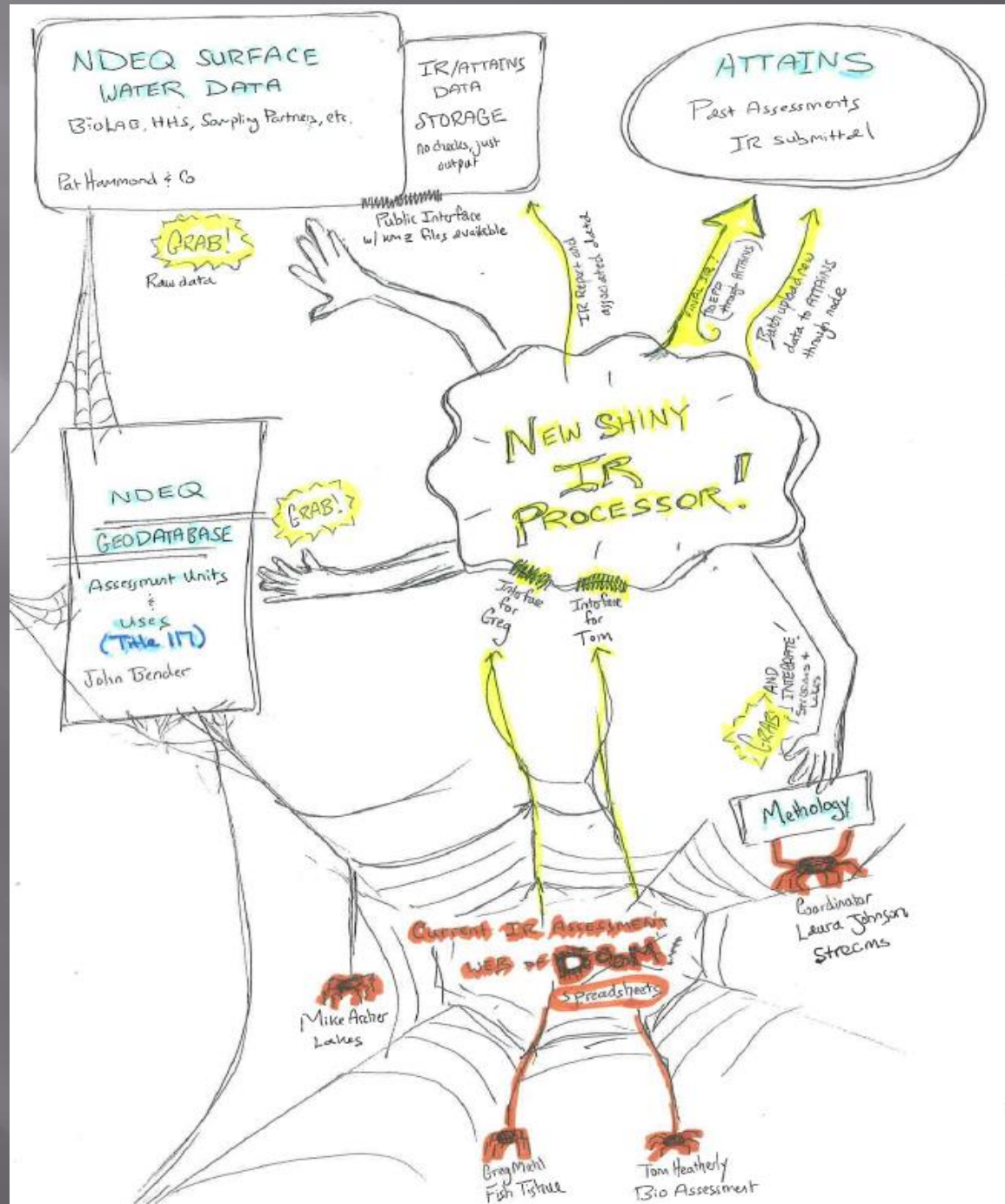
# Methodologies for Waterbody Assessments

	A	B	C	N	O	P	Q	R	S	T	U	V	W	X
	Segment	STATION #	DATE	Conductivity	Rmk-Con	Q	Rmk-Q	Atrazine	Rmk-At	Assessment Atrazine	Seasonal Atrazine	Metolachlor	Rmk-Me	E. coli
1		N		174		171					40	110		21
2		Acute Criteria		2000		0.1					330	760		
3		Exceed Acute		0		0					0	0		
4		Chronic Criteria									12	76		126
5		Exceed Chronic									8	0		97
6		Impaired Value		24							7	16		
7		Impaired?		No							Yes	No		No
8		Max									49.77	31.46		
9		Hardness												
10		Drinking Water Assessment												
11		N								110				
12		Criteria								3				
13		# Exceed Criteria								24				
14		Impaired Value								16				
15		Impaired?								Yes				
16														
85	LB1-10000	SLB1LBLUE000	5/12/16	318		918.00		31.99		31.99	31.99	13.02		
86	LB1-10000	SLB1LBLUE000	6/7/16	541		375.00		2.35		2.35	2.35	1.93		
87	LB1-10000	SLB1LBLUE000	7/7/16	445		100.00		2.40		2.40		1.15		
88	LB1-10000	SLB1LBLUE000	8/3/16	515		115.00		0.10	U	0.05		0.43		
89	LB1-10000	SLB1LBLUE000	9/5/16	312		275.00		0.63		0.63		1.16		
90	LB1-10000	SLB1LBLUE000	10/17/16	566		111.00								
91	LB1-10000	SLB1LBLUE000	11/8/16	593		98.00								
92	LB1-10000	SLB1LBLUE000	12/8/16	618		112.00								

**Table 4: Assessment of the Aquatic Life Beneficial Use Using Chemical Water Quality Data.**

Method	Supported	Impaired
Binomial Distribution	≤10% of samples exceed acute or chronic water quality criteria	>10% of samples exceed acute or chronic water quality criteria


# NDEQ's Internal Water Quality Data Software of the future...







# IR Processor Software

Official Nebraska Government Website

**NEBRASKA** TEST system!! onment.  Department of Environmental Quality

Staff Web Services | Sampling Results | Monitoring Network | Sampling Schedule | Parameters | Monitoring Stations | **Waterbodies** | SBMP Habitat

Search Results  x

**NE1-12800 WEEPING WATER CREEK**   REVISION DATE 2003-08-27 REVISED BY CONVRT

NEBRASKA BASIN:  SURFACE WATER ID:  WATERBODY TYPE:  WATERBODY NAME:

STREAM SEGMENT:

AQUATIC LIFE: COLDWATER CLASS  WARMWATER CLASS  WATER SUPPLY: PUBLIC DRINKING WATER SUPPLY  AGRICULTURAL WATER SUPPLY CLASS  INDUSTRIAL WATER SUPPLY  OTHER USES: STATE RESOURCE WATER  PRIMARY CONTACT  AESTHETICS


HUC:  USGS BASIN:  USGS Sub-BASIN:

Sampling History for NE1-12800

Year	Project	Subproject	Station ID	Station Name
2017	Ambient Stream	Trend Site	SNE1WPNGW135	Weeping Water Creek Southeast of Union
2016	Ambient Stream	Trend Site	SNE1WPNGW135	Weeping Water Creek Southeast of Union
2015	Ambient Stream	Trend Site	SNE1WPNGW135	Weeping Water Creek Southeast of Union
2015	Basin Rotation	Shared Ambient/BRMP Stream	SNE1WPNGW135	Weeping Water Creek Southeast of Union
2014	Ambient Stream	Trend Site	SNE1WPNGW135	Weeping Water Creek Southeast of Union
2013	Ambient Stream	Trend Site	SNE1WPNGW135	Weeping Water Creek Southeast of Union
2012	Ambient Stream	Trend Site	SNE1WPNGW135	Weeping Water Creek Southeast of Union
2011	Ambient Stream	Trend Site	SNE1WPNGW135	Weeping Water Creek Southeast of Union
2010	Ambient Stream	Trend Site	SNE1WPNGW135	Weeping Water Creek Southeast of Union
1995	Stream Biological	Ambient Biological Program	NE1189	WEEPING WATER CREEK AT UNION
1994	Stream Biological	Ambient Biological Program	NE1189	WEEPING WATER CREEK AT UNION
1986	Stream Biological	CWA Section 205(j)	NE1189	WEEPING WATER CREEK AT UNION

Close

Official Nebraska Government Website

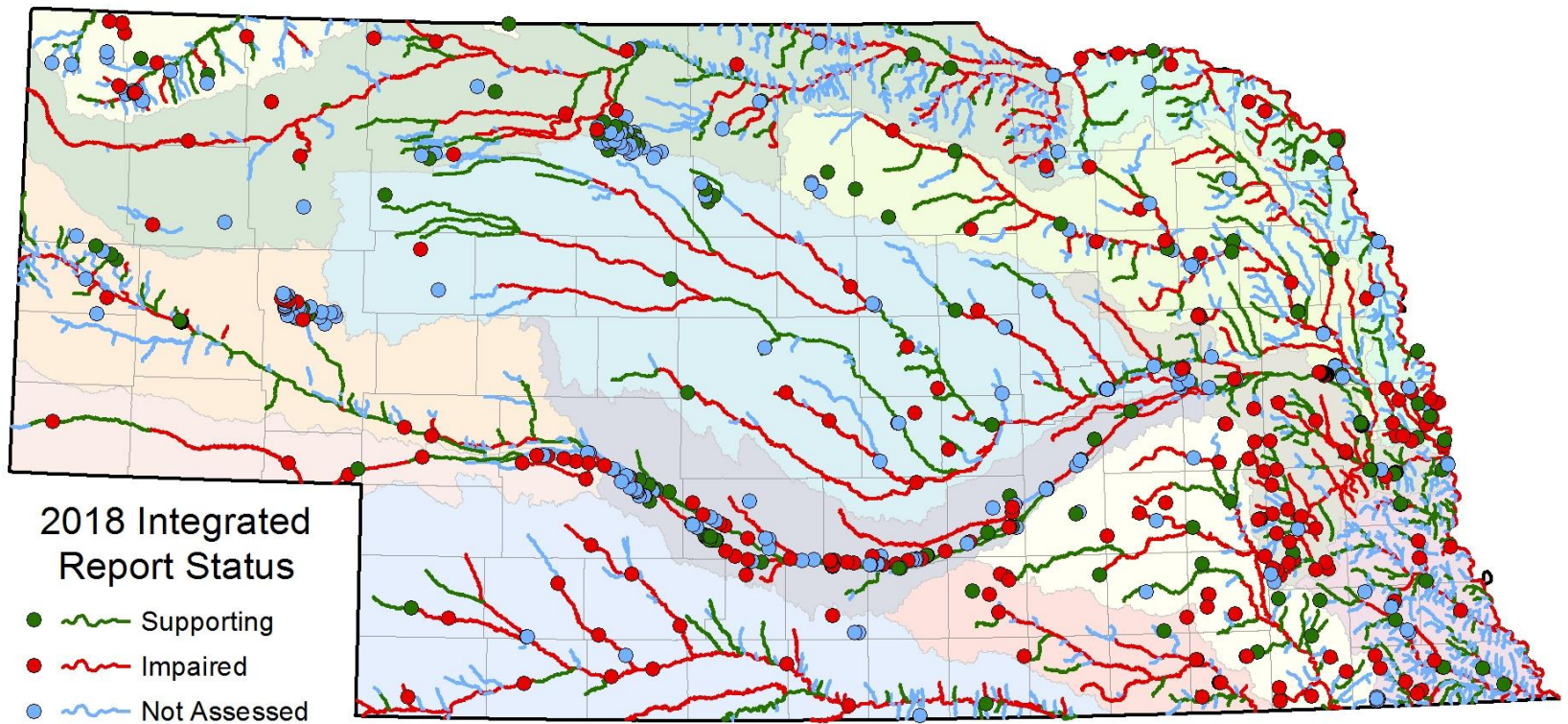
**NEBRASKA** TEST system!! onment.  Department of Environmental Quality

Staff Web Services | Sampling Results | Monitoring Network | Sampling Schedule | Parameters | **Monitoring Stations** | Waterbodies | SBMP Habitat

Search Results  x

Station ID	Station Name	Agency	Station Type	Longitude	Latitude
NE1189	WEEPING WATER CREEK AT UNION	NDEQ	Biological	-95.898718	40.798715
SNE1WPNGW135	Weeping Water Creek Southeast of Union	NDEQ	Stream	-95.9113	40.7938
06806500	WEEPING WATER CREEK AT UNION	USGS	Stream	-95.911389	40.794166
301143	WEEPING WATER CREEK AT UNION	NDEQ	Stream	-95.892162	40.769687

# Surface Water Quality Integrated Report



<http://deq.ne.gov/publica.nsf/pages/wat251>

# IR Results (Little Blue Basin)

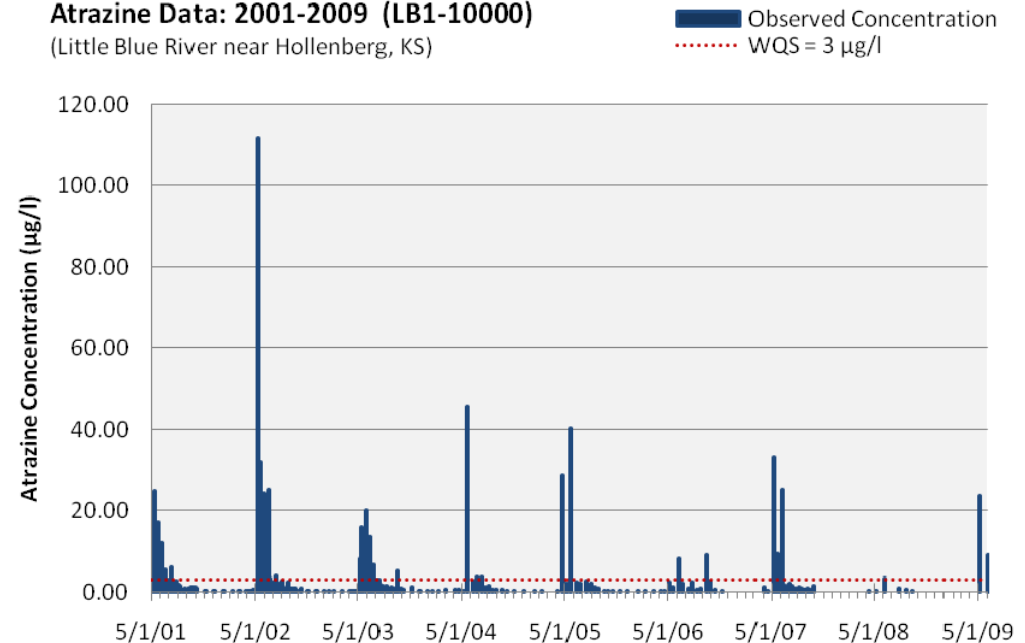
Waterbody ID	Waterbody Name	Recreation	Aquatic Life	Public Drinking Water Supply	Agriculture Water Supply	Industrial Water Supply	Aesthetics	Overall Assessment	2018 IR	Impairments (Causes)	Comments/Actions
LB2-L0040	Bruning Dam Lake	NA	S		S		S	S	2		
LB2-L0050	Liberty Cove Lake	S	I		S		S	I	5	Aquatic Life - Fish Consumption Advisory (Hazard Index Compounds*, Mercury), Chlorophyll $\alpha$ , pH (Total Nitrogen, Total Phosphorus)	Fish Consumption Assessment completed
LB2-L0070	Crystal Lake (SRA)	S	I		S		S	I	5	Aquatic Life - Chlorophyll $\alpha$ , pH, Dissolved Oxygen (Total Nitrogen, Total Phosphorus)	
LB2-L0080	Prairie Lake (32-Mile H)	NA	I		S		S	I	5	Aquatic Life - pH (Unknown)	TN and TP are Not Assessed, Fish Consumption Assessment completed
LB2-L0090	Roseland (32-Mile D)	NA	S		S		S	S	2		
<b>Streams</b>											
LB1-10000	Little Blue River	S	I	I	S		S	I	4a	Aquatic Life (May-June Atrazine), Public Drinking Water Supply (Atrazine)	Atrazine & E. coli TMDLs approved 2/13, Aquatic Community Assessment completed, Fish Consumption Assessment completed
LB1-10100	Coon Creek		S		NA		S	S	2		Aquatic Community Assessment completed
LB1-10200	Rock Creek	I	S		S		S	I	4a	Recreation ( <i>E. coli</i> )	E. coli TMDL approved 2/13, Aquatic Community Assessment completed

# Total Maximum Daily Load (TMDL)

- CWA Section 303(d) requires states to identify and establish a priority ranking for all waters not supporting its designated uses.
- A TMDL determines the pollutant load reduction needed in order to support the impaired use yet is only enforceable for point sources.
- 5-act is an informational only TMDL for non-point sources of pollution being addressed in Watershed Management Plans.

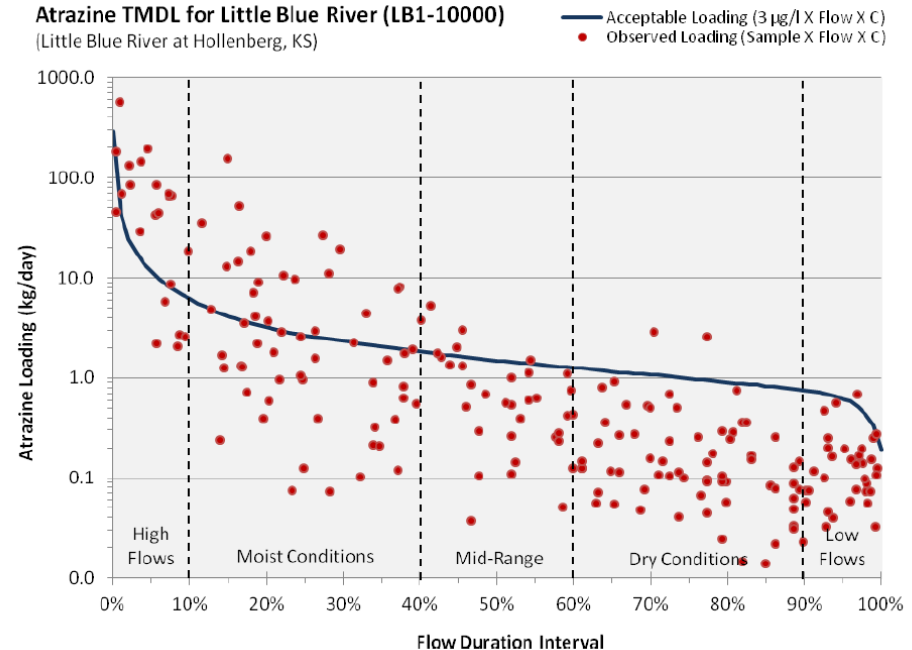
**Atrazine Data: 2001-2009 (LB1-10000)**

(Little Blue River near Hollenberg, KS)



**Atrazine TMDL for Little Blue River (LB1-10000)**

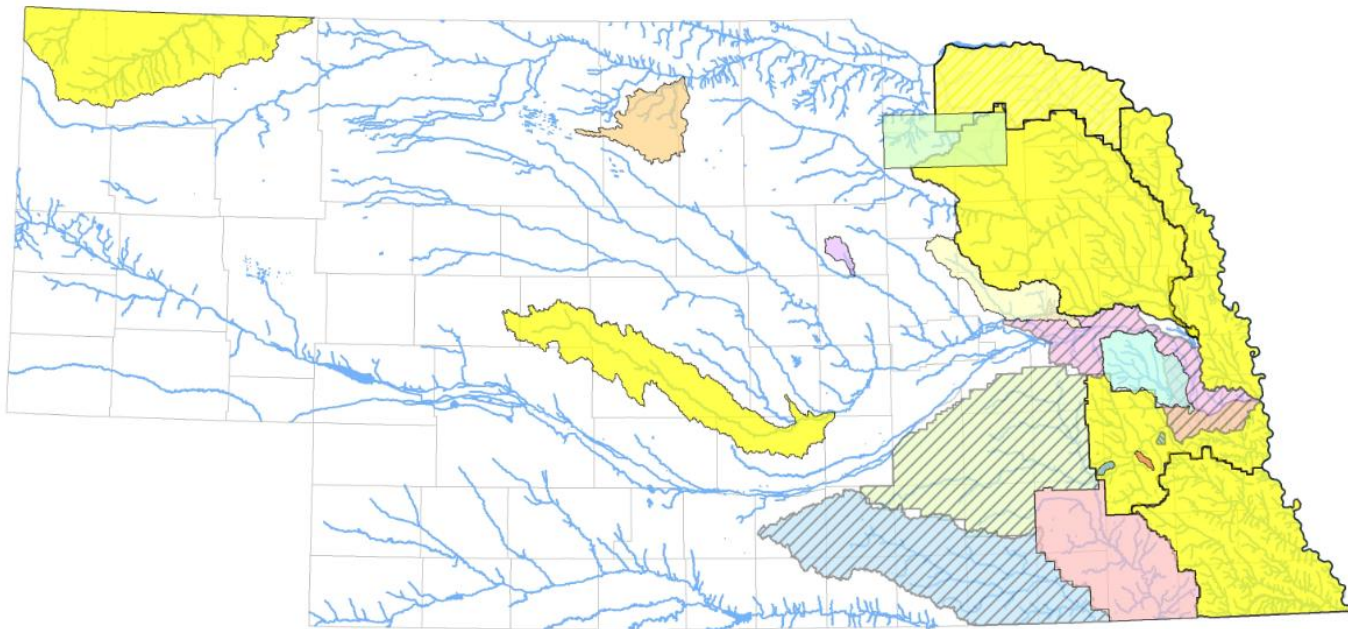
(Little Blue River at Hollenberg, KS)



# NDEQ Funded Watershed Management Plans

## 5-alt Nonpoint Source Management Plans **NEBRASKA** December 2017

DEPT. OF ENVIRONMENTAL QUALITY



### Active Plans

- |                                    |                  |
|------------------------------------|------------------|
| Antelope Creek                     | Long Pine Creek  |
| Bazile Groundwater Management Area | LBBNRD           |
| Clear Creek/Pibel Lake             | Shell Creek      |
| Conestoga Lake                     | South Loup River |
|                                    | Wahoo Creek      |

### Planning in Progress

- |               |                       |
|---------------|-----------------------|
| L&CNRD        | Nemaha River Basin    |
| Waverly DWPMP | PMRNRD                |
| LBNRD         | UBBNRD                |
| LENRD         | White River/Hat Creek |
| LPRCA         |                       |
| LPSNRD        |                       |



# Questions?

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The confluence of the Niobrara and Missouri Rivers in Knox County