



Minnesota Department of Natural Resources  
 Fisheries Management  
**LAKE SURVEY REPORT**



**DRAFT VERSION - PRELIMINARY DATA (AS OF 06/20/2016)**

Lake Name: Little Spirit

Survey Type: Standard Survey

DOW Number: 32-0024-00

Survey ID Date: 06/13/2016

**Lake Identification**

Alternate Lake Name: N/A  
 Primary Lake Class ID: 42

DNR Sounding Map Number: C2523  
 Alternate Lake Class ID: N/A

**Lake Location**

Primary County: Jackson

Nearest Town: Jackson

**Legal Descriptions**

Lake Center: Township - 101N Range - 36W Section - 35  
 PLS Section Lake Center: 10103635

**All Legal Descriptions:**

Jackson County: Township - 101N Range - 36W Sections - 26, 34, 35

**Area Office**

Area Name: Windom  
 Region Name: Southern

ORG Code: F418  
 Region Number: 4

**Lake Access**

(Information based on Re-Survey dated 07/26/1993)

Station ID	Ownership	Public Use	Type	Location / Comments
AC - 1	Bordering State	Open to Public use	Concrete	N/A
AC - 2	Bordering State	Open to Public use	Gravel	STATE OF IOWA PUBLIC ACCESS ON SOUTH SIDE OF THE LAKE.

**Lake Characteristics**

Lake Area (planimetered acres): 572.00	GIS Shoreline Length (miles): 10.08
GIS Lake Area (acres): 418.47	Maximum Fetch (miles): 1.50
DOW Lake Area (acres): 452.00	Fetch Orientation (degrees): 22
Littoral Area (acres): 419.38	USGS Quad Map Number: X09c
Area in MN (acres): 418.47	USGS Quad 24K GIS Index: 4717
Maximum Depth (feet): 8.0	
Mean Depth (feet): N/A	

**Watershed Characteristics**

**Major Watershed**

Name: Little Sioux River  
 Watershed Number: 84  
 Watershed size (acres): 205,753

**Minor Watershed**

Name: unknown DNR Minor Wshd  
 Watershed Number: 28  
 Watershed size (acres): 23,506

## Surveys and Investigations

Initial Survey: 07/29/1985.  
 Re-Survey: 07/23/2001, 07/26/1993, 07/30/1990.  
 Population Assessment: 06/11/2012, 06/16/2008, 07/26/2004, 07/28/1997.  
 Special Assessment: 10/10/2004, 06/17/2002, 05/11/1995.  
 Dissolved Oxygen Check: 02/10/2016, 02/25/2015, 01/02/2014, 02/07/2013, 01/04/2013, 02/17/2012, 01/26/2012, 12/28/2010, 01/04/2010.  
 Natural Reproduction Check: 09/24/2014, 10/09/2013.  
 External Management Survey: 07/16/2014.  
 Standard Survey: 06/13/2016.  
 Targeted Survey: 10/13/2015.

## Current Water Level

Station ID	Date	Level	Reading (feet)	Reading Type
BM - 1	06/17/2016	High	-4.60	Above or below Benchmark

## Benchmark and Gauge Descriptions / Locations

Station ID	Location Description
BM - 1	top or cement road box culvert

## Water Level History - Readings

Station ID	Date	Level	Reading (feet)	Reading Type
BM - 1	06/17/2016	High	-4.60	Above or below Benchmark
	06/14/2012	Normal	-5.30	Above or below Benchmark
	06/17/2008	High	-4.90	Above or below Benchmark

## Water Level History - Station Summary

Station ID	Minimum Level		Maximum Level		Range (feet)	Average Level (feet)	Reading Type (and number of readings)
	Feet	Date	Feet	Date			
BM - 1	-5.30	06/14/2012	-4.60	06/17/2016	0.70	-4.93	Above or below Benchmark (3)

## Dissolved Oxygen and Temperature Profile of Lake Water

Station ID	Sampling Date	Bottom Depth (Feet)	Sample Depth (Feet)	Water Temperature (°F)	Dissolved Oxygen (ppm)
WQ - 1	06/17/2016	10.2	Surface	77.0	10.5
			2.0	77.0	10.7
			4.0	77.0	10.7
			6.0	77.0	10.7
			8.0	77.0	10.7
			10.0	77.0	10.7

## Field Measurements of Water Quality

Station ID	Sampling Date	Sample Depth (Feet)	Secchi Depth (Feet)	Field pH	Alkalinity (ppm)	Water Color	Color Cause
WQ - 1	06/17/2016	Surface	2.5	8.60	260	Green	Algae

**Net Catch Summary by Numbers for GN**

**Standard gill net sets**

**Number of Sets:** 3  
**First Set Date:** 06/14/2016  
**Last Lift Date:** 06/17/2016  
**Target Species:** N/A

Abbr	Species	Total Fish	Number Per Set	Quartiles for Lake Class 42*		
				25%	50%	75%
BIB	Bigmouth Buffalo	3	1.00	N/A	6.00	N/A
BLB	Black Bullhead	40	13.33	9.63	39.75	91.42
BLC	Black Crappie	4	1.33	1.50	5.50	14.69
CAP	Common Carp	17	5.67	0.33	1.25	4.20
FRD	Freshwater Drum	1	0.33	2.63	5.00	5.50
NOP	Northern Pike	3	1.00	1.54	4.29	7.00
SNG	Shortnose Gar	34	11.33	N/A	N/A	N/A
WAE	Walleye	33	11.00	1.00	2.50	7.33
WHB	White Bass	3	1.00	N/A	0.25	N/A
WTS	White Sucker	2	0.67	0.50	2.00	7.44
YEB	Yellow Bullhead	1	0.33	0.63	3.00	6.75
YEP	Yellow Perch	35	11.67	3.00	8.00	26.50
Total Fish/Set:			58.67	* Quartiles for Number Per Set		

**Net Catch Summary by Weight for GN**

**Standard gill net sets**

Abbr	Species	Total Weight (Pounds)	Pounds Per Set	Mean Weight	Quartiles for Lake Class 42*		
					25%	50%	75%
BIB	Bigmouth Buffalo	13.28	4.43	4.43	N/A	N/A	N/A
BLB	Black Bullhead	37.55	12.52	0.94	0.18	0.28	0.49
BLC	Black Crappie	0.87	0.29	0.22	0.12	0.18	0.29
CAP	Common Carp	68.66	22.89	4.04	0.78	2.00	5.00
FRD	Freshwater Drum	0.79	0.26	0.79	0.43	1.05	2.64
NOP	Northern Pike	10.13	3.38	3.38	1.49	2.17	3.40
SNG	Shortnose Gar	96.36	32.12	2.83	N/A	N/A	N/A
WAE	Walleye	60.21	20.07	1.82	0.95	1.58	2.80
WHB	White Bass	1.21	0.40	0.40	N/A	-0.51	N/A
WTS	White Sucker	1.88	0.63	0.94	0.99	1.78	2.24
YEB	Yellow Bullhead	1.38	0.46	1.38	0.40	0.48	0.63
YEP	Yellow Perch	7.87	2.62	0.22	0.14	0.20	0.28
Total Pounds Fish/Set:			100.07	* Quartiles for Mean Weight			

**Net Catch Summary by Numbers for TN**

Standard 3/4-in mesh, double frame trap net sets

Number of Sets: 12  
 First Set Date: 06/14/2016  
 Last Lift Date: 06/17/2016  
 Target Species: N/A

Abbr	Species	Total Fish	Number Per Set	Quartiles for Lake Class 42*		
				25%	50%	75%
BIB	Bigmouth Buffalo	4	0.33	N/A	0.30	N/A
BLB	Black Bullhead	68	5.67	2.20	17.30	60.46
BLC	Black Crappie	8	0.67	2.36	5.60	15.10
BLG	Bluegill	4	0.33	1.88	10.80	29.50
CAP	Common Carp	52	4.33	1.00	2.06	3.56
FRD	Freshwater Drum	3	0.25	0.11	1.33	7.00
GSF	Green Sunfish	2	0.17	0.20	0.40	2.00
NOP	Northern Pike	1	0.08	N/A	N/A	N/A
SIP	Northern Pike (Silver Phase	2	0.17	N/A	N/A	N/A
PMK	Pumpkinseed	1	0.08	0.80	2.74	8.38
SNG	Shortnose Gar	8	0.67	N/A	N/A	N/A
WAE	Walleye	1	0.08	0.40	0.86	1.94
YEB	Yellow Bullhead	2	0.17	0.83	2.43	6.15
YEP	Yellow Perch	8	0.67	0.48	1.29	3.45
Total Fish/Set:			13.67	* Quartiles for Number Per Set		

**Net Catch Summary by Weight for TN**

Standard 3/4-in mesh, double frame trap net sets

Abbr	Species	Total Weight (Pounds)	Pounds Per Set	Mean Weight	Quartiles for Lake Class 42*		
					25%	50%	75%
BIB	Bigmouth Buffalo	28.89	2.41	7.22	N/A	3.83	N/A
BLB	Black Bullhead	71.85	5.99	1.06	0.19	0.30	0.50
BLC	Black Crappie	1.77	0.15	0.22	0.17	0.25	0.36
BLG	Bluegill	0.59	0.05	0.15	0.15	0.20	0.30
CAP	Common Carp	357.44	29.79	6.87	2.10	3.55	5.29
FRD	Freshwater Drum	10.46	0.87	3.49	0.25	1.09	1.25
GSF	Green Sunfish	0.07	0.01	0.03	0.09	0.10	0.19
NOP	Northern Pike	4.85	0.40	4.85	N/A	N/A	N/A
SIP	Northern Pike (Silver	8.49	0.71	4.24	N/A	N/A	N/A
PMK	Phase)	0.15	0.01	0.15	0.09	0.14	0.20
SNG	Pumpkinseed	22.08	1.84	2.76	N/A	N/A	N/A
WAE	Shortnose Gar	6.73	0.56	6.73	0.59	1.53	2.56
YEB	Walleye	2.49	0.21	1.24	0.43	0.56	0.69
YEP	Yellow Bullhead	1.81	0.15	0.23	0.10	0.17	0.27
	Yellow Perch						
Total Pounds Fish/Set:			43.14	* Quartiles for Mean Weight			

**Length Frequency Distribution for GN**

**Standard gill net sets**

(Field work conducted between 06/14/2016 and 06/17/2016)

	<u>BIB</u>	<u>BLB</u>	<u>BLC</u>	<u>CAP</u>	<u>FRD</u>	<u>NOP</u>	<u>SNG</u>	<u>WAE</u>	<u>WHB</u>	<u>WTS</u>	<u>YEB</u>	<u>YEP</u>
< 3.00	-	-	-	-	-	-	-	-	-	-	-	-
3.00 - 3.49	-	-	-	-	-	-	-	-	-	-	-	-
3.50 - 3.99	-	-	-	-	-	-	-	-	-	-	-	-
4.00 - 4.49	-	-	1	-	-	-	-	-	-	-	-	-
4.50 - 4.99	-	-	-	-	-	-	-	-	-	-	-	-
5.00 - 5.49	-	-	-	-	-	-	-	-	-	-	-	3
5.50 - 5.99	-	-	-	-	-	-	-	-	-	-	-	10
6.00 - 6.49	-	-	-	-	-	-	-	-	-	-	-	8
6.50 - 6.99	-	-	-	-	-	-	-	-	-	-	-	-
7.00 - 7.49	-	-	-	-	-	-	-	-	-	-	-	-
7.50 - 7.99	-	1	3	-	-	-	-	-	-	-	-	-
8.00 - 8.49	-	-	-	-	-	-	-	1	1	-	-	4
8.50 - 8.99	-	-	-	-	-	-	-	-	1	-	-	4
9.00 - 9.49	-	-	-	-	-	-	-	-	-	-	-	3
9.50 - 9.99	-	1	-	-	-	-	-	-	-	-	-	1
10.00 - 10.49	-	-	-	-	-	-	-	-	-	-	-	2
10.50 - 10.99	-	4	-	-	-	-	-	-	-	-	-	-
11.00 - 11.49	-	5	-	-	-	-	-	-	-	-	-	-
11.50 - 11.99	-	14	-	-	-	-	-	-	-	1	-	-
12.00 - 12.99	-	13	-	-	1	-	-	-	1	-	-	-
13.00 - 13.99	1	1	-	-	-	-	-	3	-	1	1	-
14.00 - 14.99	-	1	-	-	-	-	-	4	-	-	-	-
15.00 - 15.99	-	-	-	7	-	-	-	5	-	-	-	-
16.00 - 16.99	-	-	-	6	-	-	-	6	-	-	-	-
17.00 - 17.99	-	-	-	-	-	-	-	11	-	-	-	-
18.00 - 18.99	-	-	-	-	-	-	-	1	-	-	-	-
19.00 - 19.99	-	-	-	-	-	-	-	-	-	-	-	-
20.00 - 20.99	-	-	-	-	-	1	1	-	-	-	-	-
21.00 - 21.99	2	-	-	-	-	-	1	-	-	-	-	-
22.00 - 22.99	-	-	-	-	-	-	1	-	-	-	-	-
23.00 - 23.99	-	-	-	1	-	-	3	-	-	-	-	-
24.00 - 24.99	-	-	-	-	-	-	8	1	-	-	-	-
25.00 - 25.99	-	-	-	1	-	1	3	1	-	-	-	-
26.00 - 26.99	-	-	-	1	-	1	5	-	-	-	-	-
27.00 - 27.99	-	-	-	1	-	-	4	-	-	-	-	-
28.00 - 28.99	-	-	-	-	-	-	7	-	-	-	-	-
29.00 - 29.99	-	-	-	-	-	-	1	-	-	-	-	-
30.00 - 30.99	-	-	-	-	-	-	-	-	-	-	-	-
31.00 - 31.99	-	-	-	-	-	-	-	-	-	-	-	-
32.00 - 32.99	-	-	-	-	-	-	-	-	-	-	-	-
33.00 - 33.99	-	-	-	-	-	-	-	-	-	-	-	-
34.00 - 34.99	-	-	-	-	-	-	-	-	-	-	-	-
35.00 - 35.99	-	-	-	-	-	-	-	-	-	-	-	-
= > 36.00	-	-	-	-	-	-	-	-	-	-	-	-
	<u>BIB</u>	<u>BLB</u>	<u>BLC</u>	<u>CAP</u>	<u>FRD</u>	<u>NOP</u>	<u>SNG</u>	<u>WAE</u>	<u>WHB</u>	<u>WTS</u>	<u>YEB</u>	<u>YEP</u>
Total	3	40	4	17	1	3	34	33	3	2	1	35
Min. Length	13.31	7.52	4.29	15.24	12.01	20.67	20.71	8.15	8.35	11.65	13.07	5.35
Max. Length	21.10	14.02	7.87	27.60	12.01	26.46	29.45	25.71	12.99	13.07	13.07	10.24
Mean Length	17.20	11.68	6.93	18.24	12.01	24.04	25.84	16.51	10.05	12.36	13.07	7.02
# Measured	2	40	4	17	1	3	34	33	3	2	1	30
No Lengths for	1	0	0	0	0	0	0	0	0	0	0	5

**Note:** Unless all fish were measured in the catch, totals shown for some length-frequency distributions may differ from the total number of fish in the catch, due to rounding of fractions used in the estimation of length frequency from a subsample of measured fish

**Length Frequency Distribution for TN**

**Standard 3/4-in mesh, double frame trap net sets**

(Field work conducted between 06/14/2016 and 06/17/2016)

	<u>BIB</u>	<u>BLB</u>	<u>BLC</u>	<u>BLG</u>	<u>CAP</u>	<u>FRD</u>	<u>GSF</u>	<u>NOP</u>	<u>PMK</u>	<u>SIP</u>	<u>SNG</u>	<u>WAE</u>	<u>YEB</u>	<u>YEP</u>
< 3.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00 - 3.49	-	-	1	-	-	-	-	-	-	-	-	-	-	-
3.50 - 3.99	-	-	-	2	-	-	2	-	-	-	-	-	-	-
4.00 - 4.49	-	-	1	-	-	-	-	-	-	-	-	-	-	-
4.50 - 4.99	-	-	-	1	-	-	-	-	-	-	-	-	-	-
5.00 - 5.49	-	-	-	-	-	-	-	-	1	-	-	-	-	2
5.50 - 5.99	-	-	-	-	-	-	-	-	-	-	-	-	-	2
6.00 - 6.49	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.50 - 6.99	-	-	-	-	-	-	-	-	-	-	-	-	-	1
7.00 - 7.49	-	-	3	-	-	-	-	-	-	-	-	-	-	-
7.50 - 7.99	-	-	1	1	-	-	-	-	-	-	-	-	-	-
8.00 - 8.49	-	-	1	-	-	-	-	-	-	-	-	-	-	-
8.50 - 8.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.00 - 9.49	-	-	-	-	-	-	-	-	-	-	-	-	-	1
9.50 - 9.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.00 - 10.49	-	-	-	-	-	-	-	-	-	-	-	-	-	2
10.50 - 10.99	-	1	-	-	-	-	-	-	-	-	-	-	-	-
11.00 - 11.49	-	8	-	-	-	-	-	-	-	-	-	-	-	-
11.50 - 11.99	-	22	-	-	-	-	-	-	-	-	-	-	1	-
12.00 - 12.99	-	31	-	-	-	-	-	-	-	-	-	-	1	-
13.00 - 13.99	-	5	-	-	-	-	-	-	-	-	-	-	-	-
14.00 - 14.99	-	1	-	-	3	-	-	-	-	-	-	-	-	-
15.00 - 15.99	-	-	-	-	1	-	-	-	-	-	-	-	-	-
16.00 - 16.99	-	-	-	-	5	1	-	-	-	-	-	-	-	-
17.00 - 17.99	-	-	-	-	5	-	-	-	-	-	-	-	-	-
18.00 - 18.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.00 - 19.99	1	-	-	-	-	1	-	-	-	-	-	-	-	-
20.00 - 20.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21.00 - 21.99	1	-	-	-	1	1	-	-	-	1	-	-	-	-
22.00 - 22.99	1	-	-	-	3	-	-	-	-	-	-	-	-	-
23.00 - 23.99	-	-	-	-	3	-	-	-	-	-	3	-	-	-
24.00 - 24.99	1	-	-	-	6	-	-	-	-	-	-	-	-	-
25.00 - 25.99	-	-	-	-	12	-	-	-	-	-	2	-	-	-
26.00 - 26.99	-	-	-	-	5	-	-	-	-	-	2	1	-	-
27.00 - 27.99	-	-	-	-	6	-	-	-	-	-	-	-	-	-
28.00 - 28.99	-	-	-	-	1	-	-	1	-	-	-	-	-	-
29.00 - 29.99	-	-	-	-	-	-	-	-	-	1	-	-	-	-
30.00 - 30.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31.00 - 31.99	-	-	-	-	-	-	-	-	-	-	1	-	-	-
32.00 - 32.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33.00 - 33.99	-	-	-	-	1	-	-	-	-	-	-	-	-	-
34.00 - 34.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35.00 - 35.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-
= > 36.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	<u>BIB</u>	<u>BLB</u>	<u>BLC</u>	<u>BLG</u>	<u>CAP</u>	<u>FRD</u>	<u>GSF</u>	<u>NOP</u>	<u>PMK</u>	<u>SIP</u>	<u>SNG</u>	<u>WAE</u>	<u>YEB</u>	<u>YEP</u>
Total	4	68	7	4	52	3	2	1	1	2	8	1	2	8
Min. Length	19.57	10.91	3.39	3.54	14.25	16.81	3.58	28.74	5.35	21.69	23.03	26.06	11.93	5.28
Max. Length	24.65	14.17	8.39	7.72	33.78	21.50	3.78	28.74	5.35	29.25	31.10	26.06	12.44	10.12
Mean Length	22.08	12.13	6.52	4.91	23.12	19.19	3.68	28.74	5.35	25.47	25.50	26.06	12.19	7.29
# Measured	4	68	7	4	52	3	2	1	1	2	8	1	2	8
No Lengths for	0	0	1	0	0	0	0	0	0	0	0	0	0	0

**Note:** Unless all fish were measured in the catch, totals shown for some length-frequency distributions may differ from the total number of fish in the catch, due to rounding of fractions used in the estimation of length frequency from a subsample of measured fish

**Approval Dates And Notices**

Date Approved By Windom Area Fisheries Supervisor: \_\_\_\_\_

Date Approved By Southern Region Fisheries Manager: \_\_\_\_\_

**This DRAFT VERSION of the Lake Survey Report contains preliminary data (as of 06/20/2016), and is therefore subject to change at any time.**



Minnesota Department of Natural Resources

By accepting the data in this report, the user agrees the data will be used for personal benefit and not for profit. Any other uses or publication of the data needs the consent of the Department. The Minnesota Department of Natural Resources assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on the data.

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## REPORT OVERVIEW - FOR OFFICE USE ONLY

*(This page is not part of the Lake Survey Report and should be discarded )*

**Lake Name: Little Spirit**

**Survey Type: Standard Survey**

**DOW Number: 32-0024-00**

**Survey ID Date: 06/13/2016**

**Survey Status:** Field Work Complete

The following 20 (of 32) report components are not included in this Lake Survey Report:

1. Water Level History<sup>1</sup>
2. Lake Inlets
3. Additional Inlet Information
4. Lake Outlets
5. Additional Outlet Information
6. Water Control Structure (Dam)
7. Surrounding Watershed Characteristics, Shoreline Characteristics, and Riparian Landscape Observations<sup>2</sup>
8. Resorts And Campgrounds
9. Fish Spawning Conditions
10. Erosion And Pollution
11. Fish Diseases And Parasites
12. Aquatic Vegetation And Shoalwater Substrates
13. Laboratory Analysis Of Water Chemistry
14. Length At Capture With Last Incremental Length\*
15. Back-Calculated Lengths
16. Age Class Frequency Distributions
17. Status Of Fishery And Field Notes
18. Other Species (added to revision 03/24/2009)
19. Water Quality (Winter Observations) (added to revision 01/21/2010)
20. Survey Attachments (added to revision 20150622)

<sup>1</sup> Water Level History report: This data has not yet been migrated into the Fisheries LSM database. On 01/08/2009, two additional Water Level History report components (Readings and Station Summary) were added.

<sup>2</sup> Effective 03/25/2014, the Surrounding Watershed Characteristics, Shoreline Characteristics, and Riparian Landscape Observations report component was modified to be included in the Lake Survey report if it did not include any Watershed and Shoreline characteristics and only consisted of Riparian Landscape Observations.

\* Length At Capture With Last Incremental Length report: The following criteria must be met for a report to be generated:

1. The fish species must have an assigned body scale constant.
2. Fish must have an "official" age assigned.
3. Fish must have a digitized measurement marked for back calculation use.

**Note: The data source for Length and Age Class Frequency Distribution tables is updated twice daily - once at noon and once overnight. Any changes to the data made before noon on 06/20/2016 may not be reflected in the Distribution tables until after 12:30 pm on 06/20/2016.**

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