

# **2011 Study of the Water Quality Of 169 Metropolitan Area Lakes**

**By**

**Brian Johnson  
Senior Environmental Scientist  
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**December 2012**

### **Hidden Lake (27-0693) Bassett Creek Watershed Management Organization**

Henry Lake is located within the City of Plymouth (Hennepin County). It has a surface area of approximately 9 acres, and a maximum depth of 8.5 m.

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and Secchi transparency, as well as the lake's perceived physical condition and recreational suitability. The resulting data are summarized in the tables and figures on the next page.

#### **2011 summer (May-September) data summary**

<i>Parameter</i>	<i>Mean</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Grade</i>
<b>TP (<math>\mu\text{g/l}</math>)</b>	30.6	16.0	47.0	B
<b>CLA (<math>\mu\text{g/l}</math>)</b>	8.5	4.4	11.0	A
<b>Secchi (m)</b>	1.8	1.4	2.0	C
<b>TKN (mg/l)</b>	1.18	0.90	1.40	
			<b>Lake Grade</b>	B

This was the first year the lake was enrolled in the CAMP, and it received a lake grade of B. Continued monitoring is recommended to increase the power for determining trends, and to build the water quality database for this lake.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

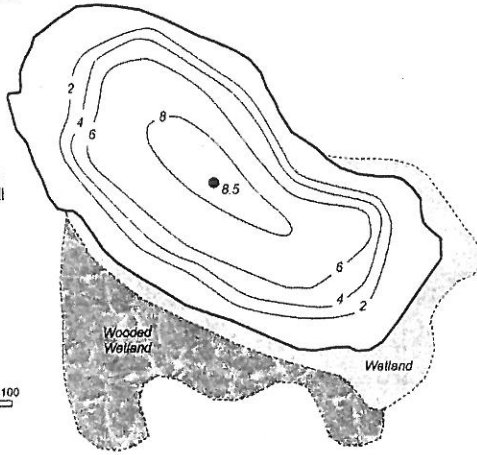
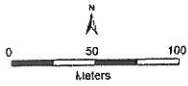
The Fisheries Section of the Minnesota Department of Natural Resources (MDNR) has conducted a fisheries survey on the lake. Information on the survey can be obtained through the MDNR Fisheries Section by calling (651) 297-4916 or by downloading the information off the Internet at <http://www.dnr.state.mn.us/lakefind/>.

If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or [brian.johnson@metc.state.mn.us](mailto:brian.johnson@metc.state.mn.us).

**Hidden Lake**  
Rogers, Hennepin Co.

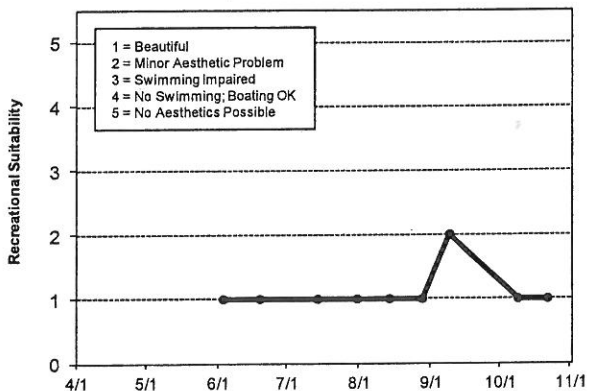
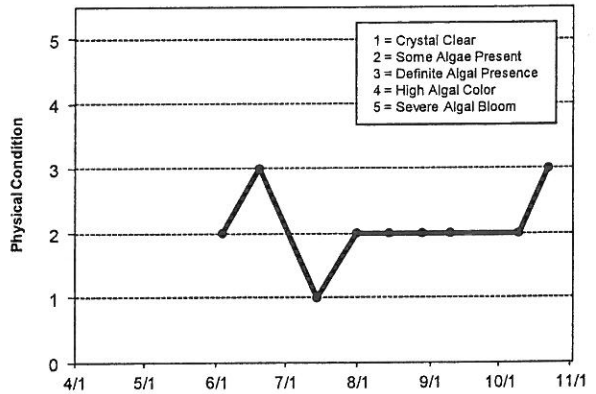
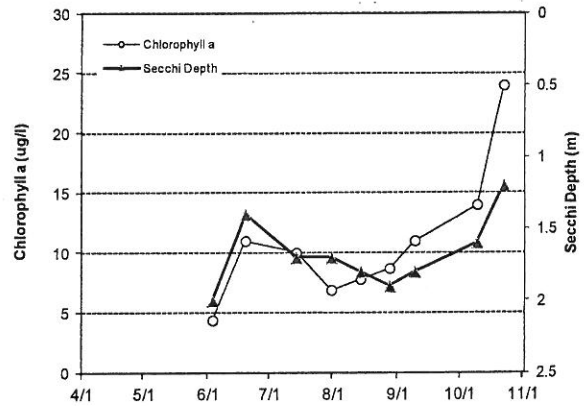
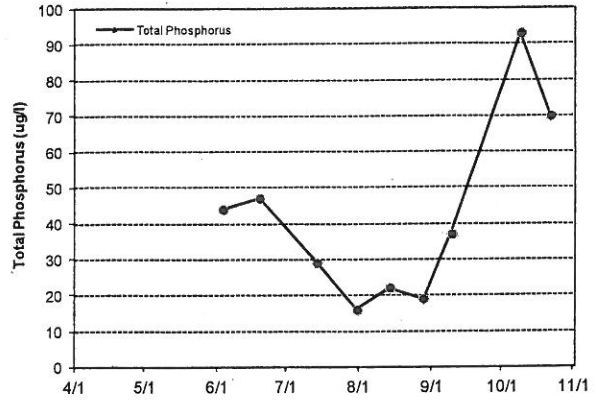
Lake ID: 270693-00  
WMO: Bassett Creek  
Volunteer: Ryan Atwell

● Sampling site  
Contours in meters



**2011 Data**

Date	Surf. Temp. (°C)	Bot. Temp. (°C)	Surf. DO (mg/l)	Bot. DO (mg/l)	CLA (µg/l)	Surf. TP (µg/l)	Bot. TP (µg/l)	Secchi (m)	PC (1-5)	RS (1-5)
6/3/2011	23.7				4.4	44		2	2	1
6/19/2011	23				11	47		1.4	3	1
7/14/2011	24.7				10	29		1.7	1	1
7/31/2011	28.9				6.9	16		1.7	2	1
8/14/2011	26				7.8	22		1.8	2	1
8/28/2011	22.5				8.7	19		1.9	2	1
9/9/2011	21.8				11	37		1.8	2	2
10/9/2011	17.5				14	93		1.6	2	1
10/22/2011	12.7				24	70		1.2	3	1



**Lake Water Quality Grades Based on Summertime Averages**

Year	2011
Total Phosphorus	B
Chlorophyll a	A
Secchi Depth	C
Lake Grade	B

Year	2010
Total Phosphorus	B
Chlorophyll a	A
Secchi Depth	C
Lake Grade	B

Year	2009
Total Phosphorus	B
Chlorophyll a	A
Secchi Depth	C
Lake Grade	B

Year	2008
Total Phosphorus	B
Chlorophyll a	A
Secchi Depth	C
Lake Grade	B

Year	2007
Total Phosphorus	B
Chlorophyll a	A
Secchi Depth	C
Lake Grade	B

Year	2006
Total Phosphorus	B
Chlorophyll a	A
Secchi Depth	C
Lake Grade	B

Year	2005
Total Phosphorus	B
Chlorophyll a	A
Secchi Depth	C
Lake Grade	B

Year	2004
Total Phosphorus	B
Chlorophyll a	A
Secchi Depth	C
Lake Grade	B

Source: Metropolitan Council and STORET data

## Medicine Lake [Site 1, southwest bay] (27-0104) Bassett Creek WMC

Medicine Lake is located mainly in the City of Plymouth (Hennepin County). It is considered a Priority Lake by the Metropolitan Council for its high regional recreation value (METC 2007). The lake has a surface area of 886 acres. The maximum depth of the lake is 14.9 m (49 ft). Approximately 45 percent of the surface area of the lake is littoral zone, which is the shallow 0 – 15 feet depth zone that is typically dominated by aquatic plants. The MN DNR has designated the lake as being infested with Eurasian water milfoil (*Myriophyllum spicatum*).

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. The resulting data are summarized in tables and figures on the following page.

### 2011 summer (May-September) data summary

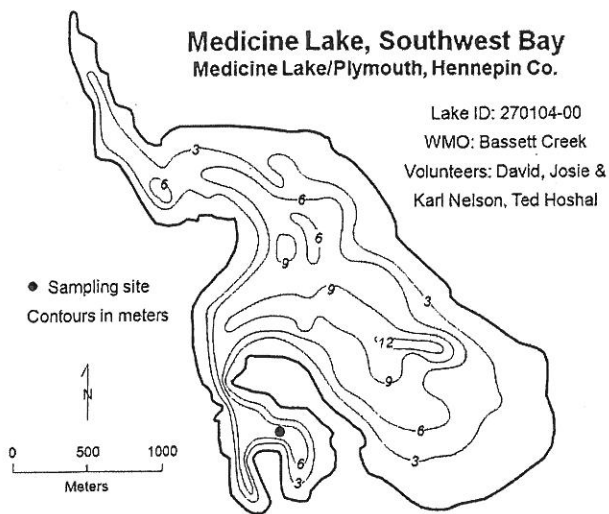
<i>Parameter</i>	<i>Mean</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Grade</i>
TP ( $\mu\text{g/l}$ )	42.0	16.0	67.0	C
CLA ( $\mu\text{g/l}$ )	22.0	2.0	61.0	C
Secchi (m)	1.8	0.7	4.1	C
TKN (mg/l)	1.09	0.67	1.80	
			<i>Lake Grade</i>	C

This lake site received a lake grade of C for 2011. This lake site has received C grades for the individual parameter grades since the early 1980s. Additional monitoring is recommended to continue to build the water quality database for this lake site.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

The Fisheries Section of the Minnesota Department of Natural Resources (MDNR) has conducted a fisheries survey on the lake. Information on the survey can be obtained through the MDNR Fisheries Section by calling (651) 259-5831 or by downloading the information off the Internet at <http://www.dnr.state.mn.us/lakefind/>.

If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or [brian.johnson@metc.state.mn.us](mailto:brian.johnson@metc.state.mn.us).



#### 2011 Data

Date	Surf. Temp. (°C)	Bot. Temp. (°C)	Surf. DO (mg/l)	Bot. DO (mg/l)	CLA (µg/l)	Surf. TP (µg/l)	Bot. TP (µg/l)	Secchi (m)	PC (1-5)	RS (1-5)
4/22/2011	6.6				13	31		1.8	2	2
5/4/2011	9				11	27		2.1	2	1
5/17/2011	14.7				8.6	35		1.5	2	1
6/5/2011	21.5				2	24		4.1	1	1
6/13/2011	20.8				3.1	16		3	3	1
6/23/2011	20.4				11	48		1.9	2	2
7/7/2011	27				11	26		2.6	3	3
7/21/2011	27.6				24	61		1.5	2	2
8/5/2011	27.5				61	53		0.7	3	2
8/15/2011	25.1				51	52		0.8	3	2
8/22/2011	23.5				47	48		0.9	3	1
9/7/2011	22.1				20	67		1.5	3	1
9/25/2011	16.7				14	47		1.5	3	1
10/7/2011	16.5				23	56		1.6	3	2
10/20/2011	12.1				27	84		1.3	2	1

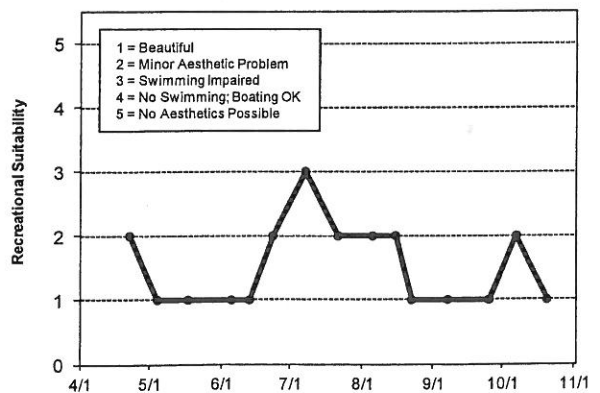
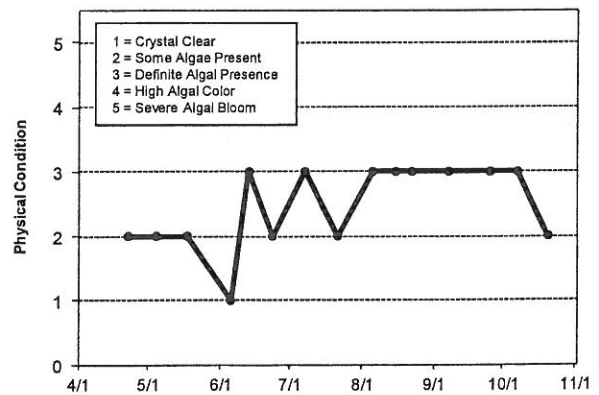
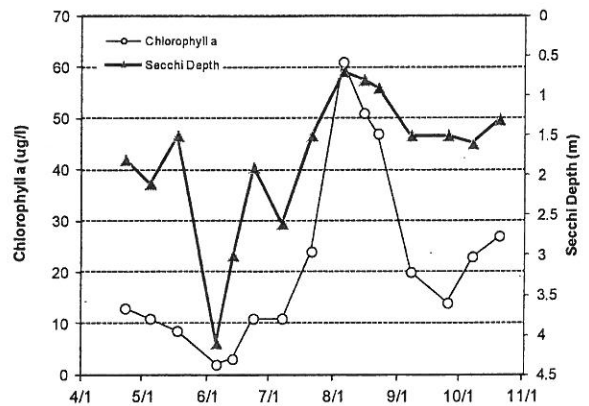
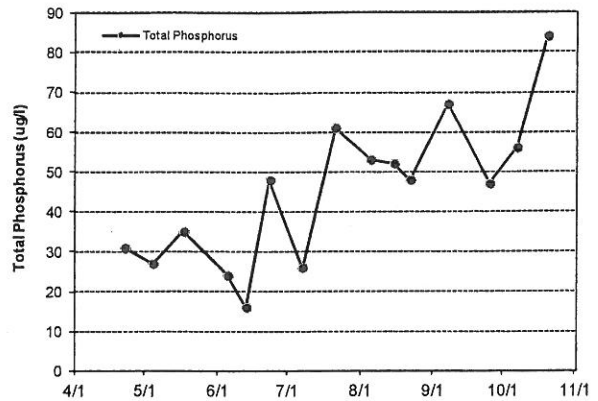
#### Lake Water Quality Grades Based on Summertime Averages

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus												
Chlorophyll a					C							
Secchi Depth					C							
Lake Grade	NA											

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus			C							C		
Chlorophyll a												
Secchi Depth			C						C			
Lake Grade												

Year	2004	2005	2006	2007	2008	2009	2010	2011
Total Phosphorus		C			C		C	C
Chlorophyll a							C	C
Secchi Depth		C		C		C	C	C
Lake Grade	C C							

Source: Metropolitan Council and STORET data.



## Medicine Lake [Site 2, main lake] (27-0104) Bassett Creek WMC

Medicine Lake is located mainly in the City of Plymouth (Hennepin County). It is considered a Priority Lake by the Metropolitan Council for its high regional recreation value (METC 2007). The lake has a surface area of 886 acres. The maximum depth of the lake is 14.9 m (49 ft). Approximately 45 percent of the surface area of the lake is littoral zone, which is the shallow 0 – 15 feet depth zone that is typically dominated by aquatic plants. The MN DNR has designated the lake as being infested with Eurasian water milfoil (*Myriophyllum spicatum*).

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. The resulting data are summarized in tables and figures on the following page.

### 2011 summer (May-September) data summary

Parameter	Mean	Minimum	Maximum	Grade
TP (µg/l)	41.4	27.0	60.0	C
CLA (µg/l)	30.1	2.8	58.0	C
Secchi (m)	1.8	0.7	3.6	C
TKN (mg/l)	1.03	0.45	1.50	
<b>Lake Grade</b>				<b>C</b>

This lake site received a lake grade of C for 2011. This lake site has received main C grades for the individual parameter grades since the early 1980s. Additional monitoring is recommended to continue to build the water quality database for this lake site.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

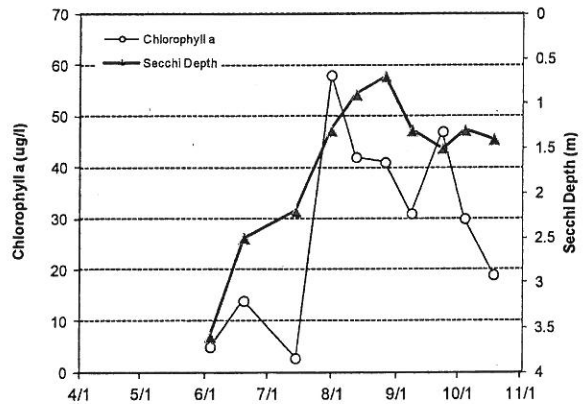
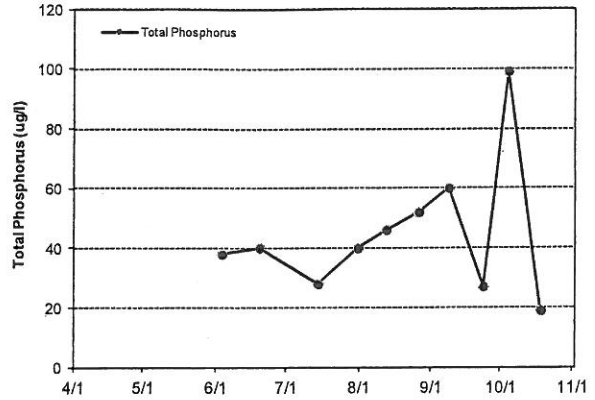
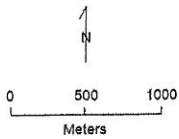
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**Medicine Lake, Main Basin**  
Medicine Lake/Plymouth, Hennepin Co.

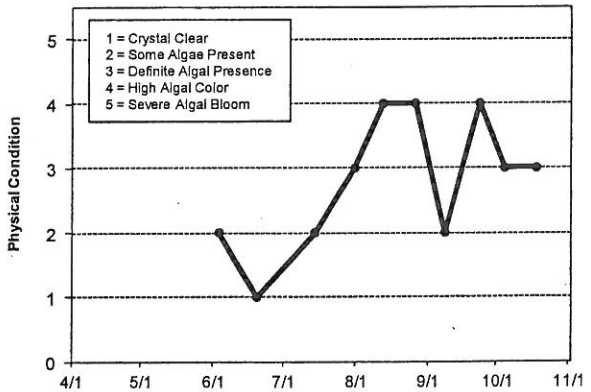
Lake ID: 270104  
WMO: Bassett Creek  
Volunteer: Ryan Atwell

● Sampling site  
Contours in meters



**2011 Data**

Date	Surf. Temp. (°C)	Bot. Temp. (°C)	Surf. DO (mg/l)	Bot. DO (mg/l)	CLA (µg/l)	Surf. TP (µg/l)	Bot. TP (µg/l)	Secchi (m)	PC (1-5)	RS (1-5)
6/3/2011	20.3				5	38		3.6	2	1
6/19/2011	21.3				14	40		2.5	1	1
7/14/2011	22.3				2.8	28		2.2	2	1
7/31/2011	27.4				58	40		1.3	3	2
8/12/2011	24.4				42	46		0.9	4	2
8/26/2011	25				41	52		0.7	4	3
9/8/2011	22				31	60		1.3	2	2
9/23/2011	16.3				47	27		1.5	4	3
10/4/2011	18				30	99		1.3	3	2
10/18/2011	11.8				19	19		1.4	3	3



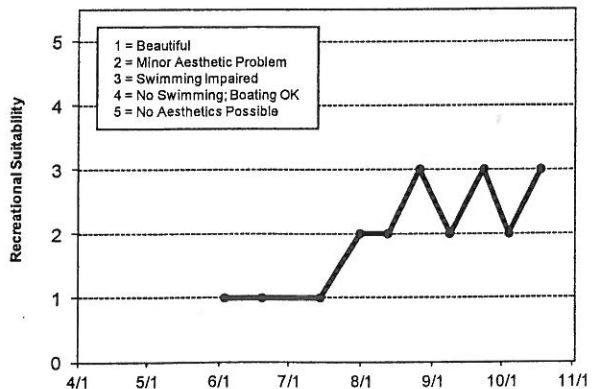
**Lake Water Quality Grades Based on Summertime Averages**

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus		C		C							C	C
Chlorophyll a		D		C							D	C
Secchi Depth		C		C							C	C
Lake Grade		C		C							C	C

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus			C	C					C			
Chlorophyll a												
Secchi Depth			C	C					C			
Lake Grade												

Year	2004	2005	2006	2007	2008	2009	2010	2011
Total Phosphorus	C		C	C	C	C	C	C
Chlorophyll a								C
Secchi Depth	C		C	C	C	C	C	C
Lake Grade								C

Source: Metropolitan Council and STORET data





## Northwood Lake (27-0627) Bassett Creek Watershed Management Organization

Northwood Lake is a 15-acre lake located within the City of New Hope (Hennepin County). The mean and maximum depths of the lake are 0.8 m (2.5 ft) and 1.5 m (4.9 ft), respectively. The entire lake is considered littoral zone, which is the shallow 0 – 15 feet depth zone that is typically dominated by aquatic plants. Since the lake is relatively shallow, it does not maintain a thermocline, which is a density gradient caused by changing water temperatures throughout the water column. The lake's 1,341-acre immediate watershed translates to a large watershed-to-lake area ratio of 89:1. The greater the ratio, the greater the potential stress on the lake from surface runoff.

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. The resulting data are summarized in tables and figures on the following page.

### 2011 summer (May-September) data summary

<i>Parameter</i>	<i>Mean</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Grade</i>
TP ( $\mu\text{g/l}$ )	157.2	80.0	245.0	F
CLA ( $\mu\text{g/l}$ )	28.7	14.0	54.0	C
Secchi (m)	0.9	0.4	1.1	D
TKN (mg/l)	0.98	0.48	1.40	
			<i>Lake Grade</i>	D

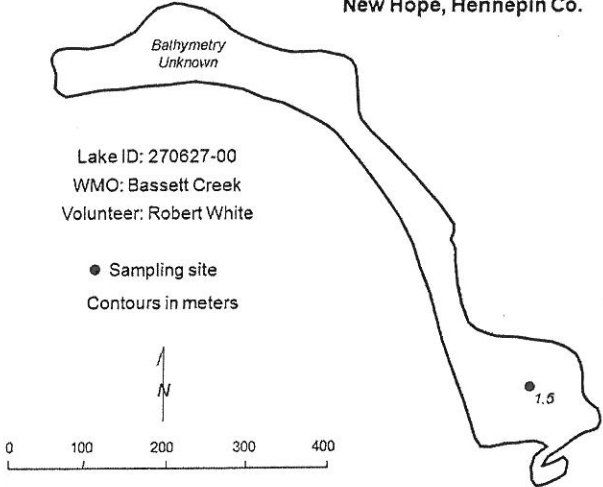
The lake received a lake grade of D in 2011 which is consistent with its historical database. Over the past 10 years, the lake grades have varied in the D and C range. Further monitoring is suggested to continue to build the water quality database for increasing power to detect potential water quality trends.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or [brian.johnson@metc.state.mn.us](mailto:brian.johnson@metc.state.mn.us).

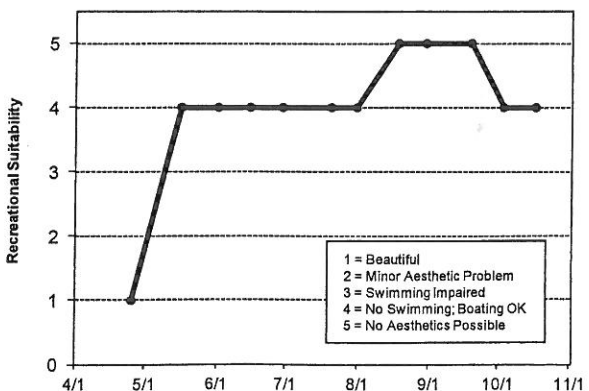
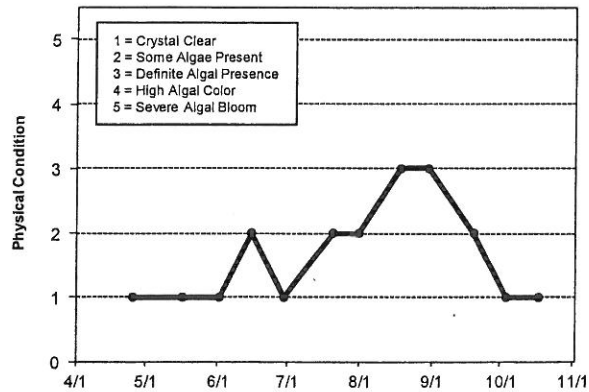
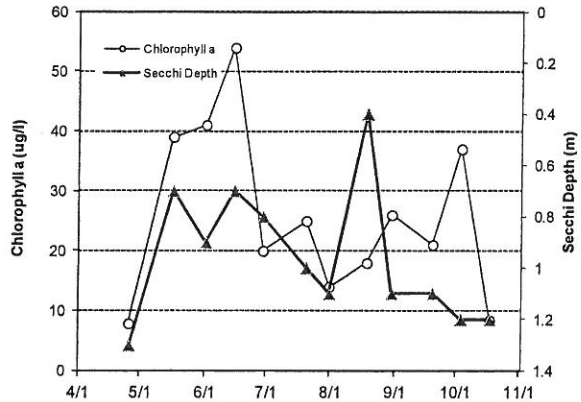
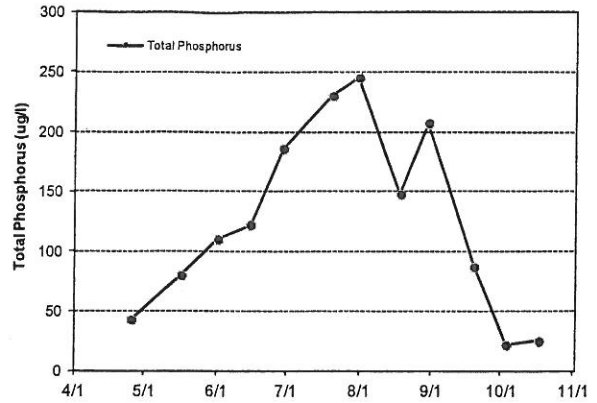


### Northwood Pond New Hope, Hennepin Co.



#### 2011 Data

Date	Surf. Temp. (°C)	Bot. Temp. (°C)	Surf. DO (mg/l)	Bot. DO (mg/l)	CLA (µg/l)	Surf. TP (µg/l)	Bot. TP (µg/l)	Secchi (m)	PC (1-5)	RS (1-5)
4/25/2011	12.9				7.9	43		1.3	1	1
5/16/2011	15.2				39	80		0.7	1	4
6/1/2011	25.2				41	110		0.9	1	4
6/15/2011	24.4				54	122		0.7	2	4
6/29/2011	26.3				20	186		0.8	1	4
7/20/2011	30.3				25	230		1	2	4
7/31/2011	31.8				14	245		1.1	2	4
8/18/2011	24.7				18	148		0.4	3	5
8/30/2011	22.6				26	207		1.1	3	5
9/19/2011	14.7				21	87		1.1	2	5
10/3/2011	17				37	22		1.2	1	4
10/17/2011	11.3				8.5	25		1.2	1	4



#### Lake Water Quality Grades Based on Summertime Averages

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus												
Chlorophyll a												
Secchi Depth												
Lake Grade												

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus									F	F	D	F
Chlorophyll a									B	C	B	C
Secchi Depth									D	D	D	D
Lake Grade									D	D	C	D

Year	2004	2005	2006	2007	2008	2009	2010	2011
Total Phosphorus	D	D	F	F	D	F	D	F
Chlorophyll a	B	B	B	C	C	B	C	C
Secchi Depth	D	D	D	D	D	D	D	D
Lake Grade	C	C	D	D	D	D	D	D

Source: Metropolitan Council and STORET data

### **Sweeney Lake [Site 1, south site) (27-0035-01) Bassett Creek WMC**

Sweeney Lake is located in the City of Golden Valley (Hennepin County). The lake has a surface area of 66 acres and mean and maximum depths of 3.6 m (12 ft) and 8.0 m (26 ft), respectively. The lake's surface area and a watershed area of 2,400 acres give a large watershed-to-lake area ratio of 36:1. The greater the ratio, the greater the potential stress on the lake from surface runoff.

The Sweeney Lake branch of Bassett Creek flows into the lake on the south end and discharges at the north end over a dam. Sweeney Lake is connected to Twin Lake during periods of high water levels by a channel. The surface elevations of the two lakes are about the same.

The lake has a hypolimnetic aeration system which generally operates year round. The aeration system keeps the lake well mixed, so it does not develop a thermocline when the system is operational. A thermocline is a density gradient caused by changing water temperatures throughout the water column.

The aeration system was turned off during the monitoring seasons of 2007 and 2008 as part of a total maximum daily load (TMDL) study. The TMDL study was initiated in response to the lake being listed as impaired in 2004 by the Minnesota Pollution Control Agency. The impaired listing is due to excessive nutrients.

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. Depth profiles for temperature and dissolved oxygen were also measured. The resulting data are summarized in tables and figures on the following page.

#### **2011 summer (May-September) data summary**

<i>Parameter</i>	<i>Mean</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Grade</i>
TP ( $\mu\text{g/l}$ )	41.9	22.0	86.0	C
CLA ( $\mu\text{g/l}$ )	17.7	7.5	33.0	B
Secchi (m)	1.2	1.0	1.4	C
TKN (mg/l)	1.08	0.92	1.30	
			<i>Lake Grade</i>	C

The south site received a lake grade of C, which is consistent with its historical database. Over the period of the monitoring database, the water quality of the lake seems represented by a lake grade of C. Further monitoring is suggested to continue to build the water quality database for increasing power to detect water quality trends.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

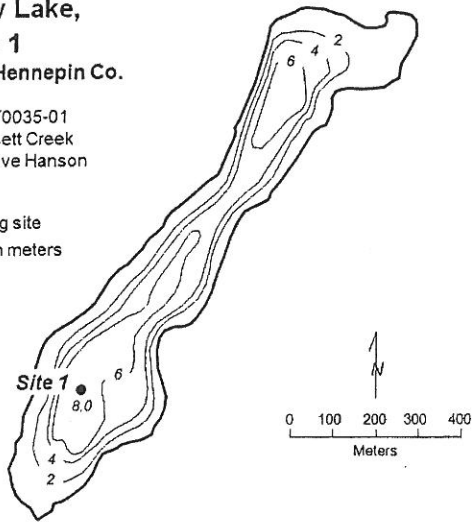
The Fisheries Section of the Minnesota Department of Natural Resources (MDNR) has conducted a fisheries survey on the lake. Information on the survey can be obtained through the MDNR Fisheries Section by calling (651) 259-5831 or by downloading the information off the Internet at <http://www.dnr.state.mn.us/lakefind/>.

If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or [brian.johnson@metc.state.mn.us](mailto:brian.johnson@metc.state.mn.us).

**Sweeney Lake,  
Site 1  
Golden Valley, Hennepin Co.**

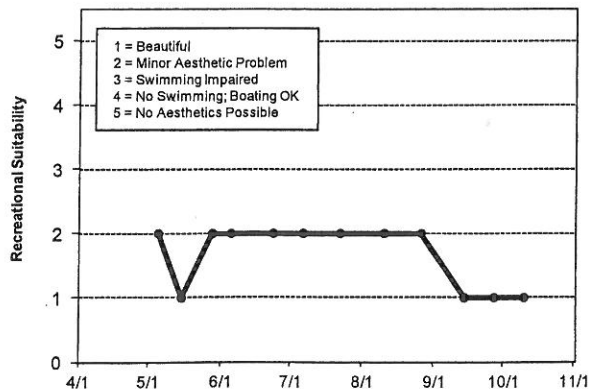
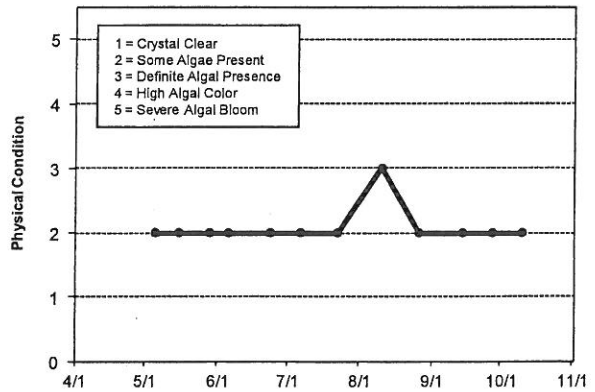
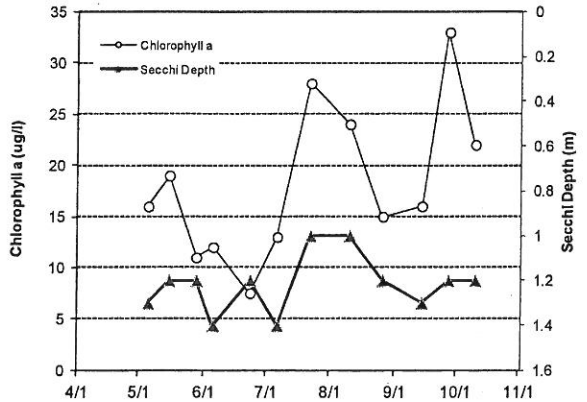
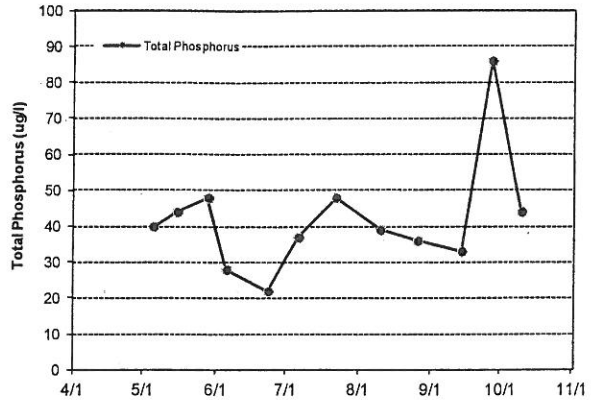
Lake ID: 270035-01  
WMO: Bassett Creek  
Volunteer: Dave Hanson

● Sampling site  
Contours in meters



**2011 Data**

Date	Surf. Temp. (-C)	Bot. Temp. (-C)	Surf. DO (mg/l)	Bot. DO (mg/l)	CLA (µg/l)	Surf. TP (µg/l)	Bot. TP (µg/l)	Secchi (m)	PC (1-5)	RS (1-5)
5/5/2011	11.1				16	40	1.3	2	2	
5/15/2011	13.4				19	44	1.2	2	1	
5/28/2011	16.4				11	48	1.2	2	2	
6/5/2011	22.1				12	28	1.4	2	2	
6/23/2011	20.9				7.5	22	1.2	2	2	
7/6/2011	26.2				13	37	1.4	2	2	
7/22/2011	28.5				28	48	1	2	2	
8/10/2011	27.3				24	39	1	3	2	
8/26/2011	25.7				15	36	1.2	2	2	
9/14/2011	22.5				16	33	1.3	2	1	
9/27/2011	17.3				33	86	1.2	2	1	
10/10/2011	18				22	44	1.2	2	1	



**Lake Water Quality Grades Based on Summertime Averages**

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Total Phosphorus													
Chlorophyll a													
Secchi Depth													
Lake Grade													

Year	1993	1994	1995	1996	1997	1998	1999	2000 Site 1	2000 Site 2	2001 Site 1	2001 Site 2	2002 Site 1	2002 Site 2
Total Phosphorus								C	C	C	C	C	NA
Chlorophyll a								C	C	B	C	B	NA
Secchi Depth								D	D	C	C	C	NA
Lake Grade								C	C	C	C	C	NA

Year	2003 Site 1	2004 Site 1	2005 Site 1	2006 Site 1	2007 Site 1	2008 Site 1	2009 Site 1	2010 Site 1	2010 Site 2	2011 Site 1	2011 Site 2
Total Phosphorus	C	C	C	D	C	C	C	C	C	C	C
Chlorophyll a	B	B	C	C	B	B	C	B	C	B	B
Secchi Depth	C	C	C	D	D	C	C	C	C	C	D
Lake Grade	C	C	C	D	C	C	C	C	C	C	NA

Source: Metropolitan Council and STORET data

## Sweeney Lake [Site 2, north site] (27-0035-01) Bassett Creek WMC

Sweeney Lake is located in the City of Golden Valley (Hennepin County). The lake has a surface area of 66 acres and mean and maximum depths of 3.6 m (12 ft) and 8.0 m (26 ft), respectively. The lake's surface area and a watershed area of 2,400 acres give a large watershed-to-lake area ratio of 36:1. The greater the ratio, the greater the potential stress on the lake from surface runoff.

The Sweeney Lake branch of Bassett Creek flows into the lake on the south end and discharges at the north end over a dam. Sweeney Lake is connected to Twin Lake during periods of high water levels by a channel. The surface elevations of the two lakes are about the same.

The lake has a hypolimnetic aeration system which generally operates year round. The aeration system keeps the lake well mixed, so it does not develop a thermocline when the system is operational. A thermocline is a density gradient caused by changing water temperatures throughout the water column.

The aeration system was turned off during the monitoring seasons of 2007 and 2008 as part of a total maximum daily load (TMDL) study. The TMDL study was initiated in response to the lake being listed as impaired in 2004 by the Minnesota Pollution Control Agency. The impaired listing is due to excessive nutrients.

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. Depth profiles for temperature and dissolved oxygen were also measured. The resulting data are summarized in tables and figures on the following page.

### 2011 summer (May-September) data summary

<i>Parameter</i>	<i>Mean</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Grade</i>
TP ( $\mu\text{g/l}$ )	43.3	25.0	52.0	
CLA ( $\mu\text{g/l}$ )	17.5	4.3	30.0	B
Secchi (m)	1.0	0.8	1.5	D
TKN (mg/l)	1.04	0.81	1.30	
			<i>Lake Grade</i>	

The north site did not receive a lake grade for 2011 because there was insufficient quantity of TP data to calculate the TP grade. At least 5 monitoring events are needed during the summer time period to calculate a parameter grade. All three parameter grades are needed to calculate a lake grade.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

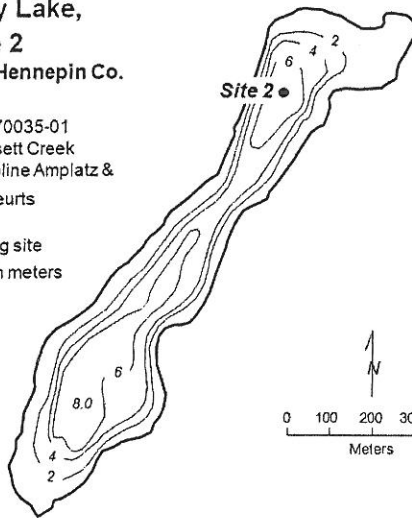
The Fisheries Section of the Minnesota Department of Natural Resources (MDNR) has conducted a fisheries survey on the lake. Information on the survey can be obtained through the MDNR Fisheries Section by calling (651) 259-5831 or by downloading the information off the Internet at <http://www.dnr.state.mn.us/lakefind/>.

If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or [brian.johnson@metc.state.mn.us](mailto:brian.johnson@metc.state.mn.us).

**Sweeney Lake,  
Site 2**  
Golden Valley, Hennepin Co.

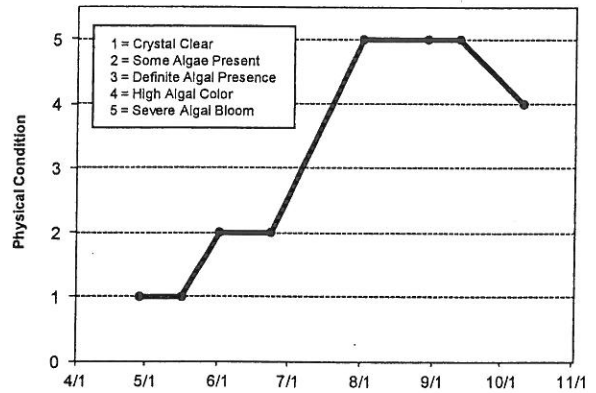
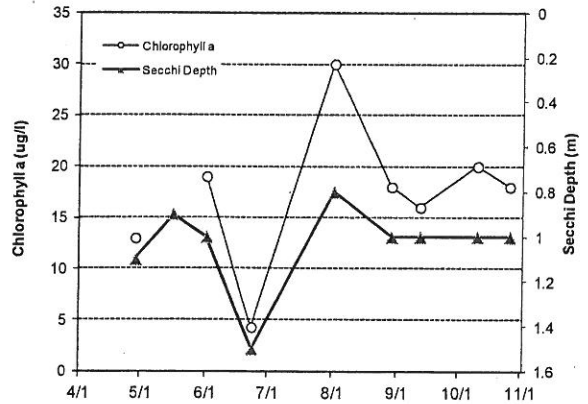
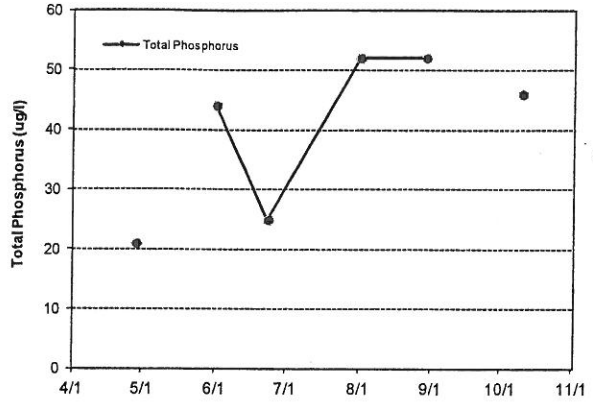
Lake ID: 270035-01  
WMO: Bassett Creek  
Volunteers: Caroline Amplatz &  
Karl Geurts

● Sampling site  
Contours in meters



**2011 Data**

Date	Surf. Temp. (°C)	Bot. Temp. (°C)	Surf. DO (mg/l)	Bot. DO (mg/l)	CLA (µg/l)	Surf. TP (µg/l)	Bot. TP (µg/l)	Secchi (m)	PC (1-5)	RS (1-5)
4/28/2011	8.8				13	21		1.1	1	2
5/16/2011	13.9							0.9	1	1
6/1/2011	21.1				19	44		1	2	2
6/23/2011	20.9				4.3	25		1.5	2	
8/1/2011	28				30	52		0.8	5	5
8/29/2011	27				18	52		1	5	5
9/12/2011	24.7				16			1	5	5
10/10/2011	18.5				20	46		1	4	5
10/26/2011	12.2				18			1		4



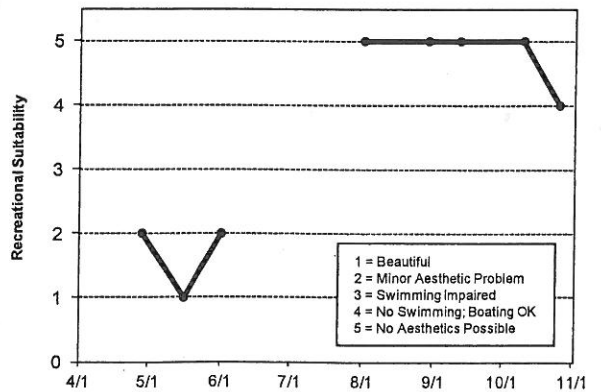
**Lake Water Quality Grades Based on Summertime Averages**

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Total Phosphorus													
Chlorophyll a													
Secchi Depth													
Lake Grade													

Year	1993	1994	1995	1996	1997	1998	1999	2000 Site 1	2000 Site 2	2001 Site 1	2001 Site 2	2002 Site 1	2002 Site 2
Total Phosphorus								C	C	C	C	C	NA
Chlorophyll a								C	C	B	C	B	NA
Secchi Depth								D	D	C	C	C	NA
Lake Grade								C	C	C	C	C	NA

Year	2003 Site 1	2004 Site 1	2005 Site 1	2006 Site 1	2007 Site 1	2008 Site 1	2009 Site 1	2010 Site 1	2010 Site 2	2011 Site 1	2011 Site 2
Total Phosphorus	C	C	C	D	C	C	C	C	C	C	C
Chlorophyll a	B	B	C	C	B	B	C	B	C	B	B
Secchi Depth	C	C	C	D	D	C	C	C	C	C	D
Lake Grade	C	C	C	D	C	C	C	C	C	C	NA

Source: Metropolitan Council and STORET data



## Twin Lake [Golden Valley] (27-0035-02) Bassett Creek WMC

Twin Lake is located in the City of Golden Valley (Hennepin County). The surface area of the lake is 19 acres. Approximately 42 percent of the surface is considered littoral zone which is the 0-15 feet depth zone of aquatic plant dominance. The lake has a maximum depth of approximately 17 m (56 ft).

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. The resulting data are summarized in tables and figures on the following page.

### 2011 summer (May-September) data summary

<i>Parameter</i>	<i>Mean</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Grade</i>
TP ( $\mu\text{g/l}$ )	12.8	9.0	19.0	
CLA ( $\mu\text{g/l}$ )	2.8	1.6	3.6	A
Secchi (m)	2.5	0.8	3.2	B
TKN (mg/l)	0.82	0.50	0.99	
			<i>Lake Grade</i>	

The lake did not receive a lake grade for 2011 because there was insufficient quantity of TP data to calculate the TP grade. At least 5 monitoring events are needed during the summer time period to calculate a parameter grade. All three parameter grades are needed to calculate a lake grade.

There were limited historical data available for this lake according to the MPCA's Environmental Data Access System: 3 days in 1977, 1 day in 1996, 2 days in 1997. Further monitoring is suggested to build a water quality database for this lake.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

The Fisheries Section of the Minnesota Department of Natural Resources (MNDNR) has conducted a fisheries survey on the lake. Information on the survey can be obtained through the MNDNR Fisheries Section by calling (651) 259-5831 or by downloading the information off the internet at <http://www.dnr.state.mn.us/lakefind/>.

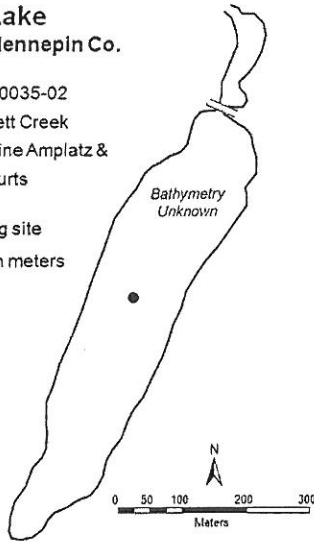
If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or [brian.johnson@metc.state.mn.us](mailto:brian.johnson@metc.state.mn.us).



**Twin Lake**  
Golden Valley, Hennepin Co.

LAKE ID: 270035-02  
WMO: Bassett Creek  
Volunteers: Caroline Amplatz & Kari Geurts

● Sampling site  
Contours in meters



**2011 Data**

Date	Surf. Temp. (°C)	Bot. Temp. (°C)	Surf. DO (mg/l)	Bot. DO (mg/l)	CLA (µg/l)	Surf. TP (µg/l)	Bot. TP (µg/l)	Secchi (m)	PC (1-5)	RS (1-5)
4/28/2011	8.3				11	37		1.8	1	3
5/16/2011	15.1							0.8	1	1
6/1/2011	21.7				1.6	19		2.1	1.	2
6/23/2011	20.9				3.2	13		3.2	2	
8/1/2011	28				3.6	9		3	1	1
8/29/2011	25.9				2.5	10		3	2	1
9/12/2011	24.7				3.3			2.8	1	1
10/10/2011					3.9	27		3.2	2	2
10/26/2011	11.5				4.3			3.5	1	1

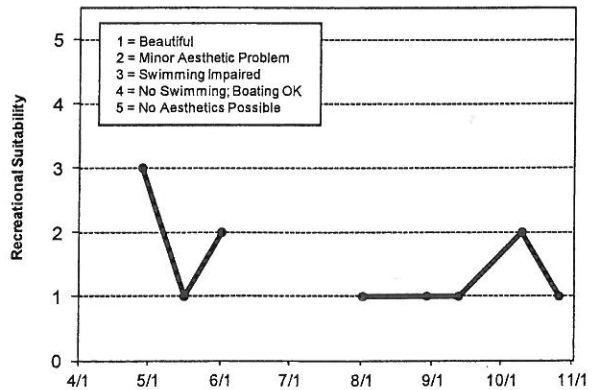
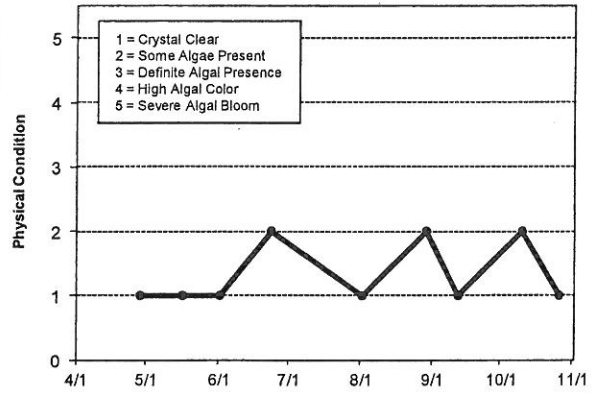
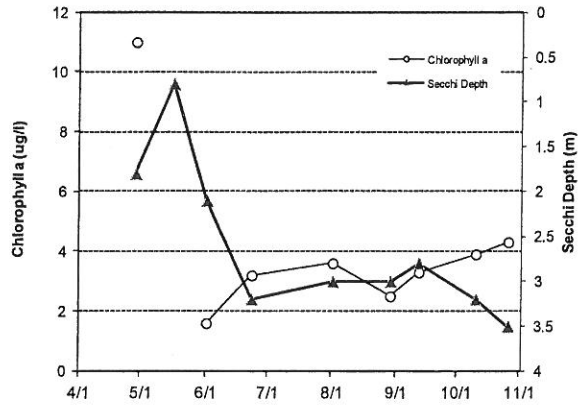
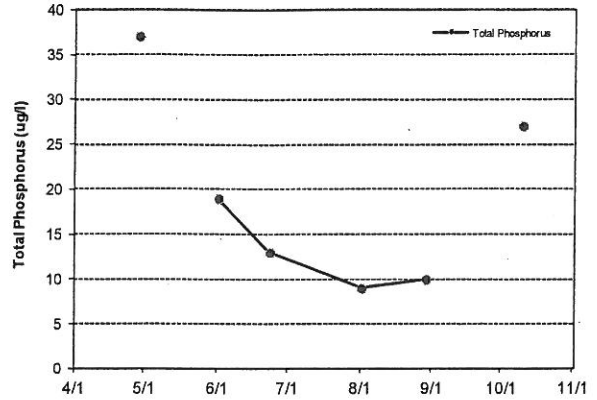
**Lake Water Quality Grades Based on Summertime Averages**

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus												
Chlorophyll a												
Secchi Depth												
Lake Grade												

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus												
Chlorophyll a												
Secchi Depth												
Lake Grade												

Year	2004	2005	2006	2007	2008	2009	2010	2011
Total Phosphorus								A
Chlorophyll a								A A
Secchi Depth								A B
Lake Grade								A NA

Source: Metropolitan Council and STORET data





### **Westwood Lake (27-0711) Bassett Creek Watershed Management Organization**

Westwood Lake is located in the City of St. Louis Park (Hennepin County). The lake has a surface area of 41 acres and a maximum depth of 2.0 m (6.6 ft). The entire area of the lake is considered littoral zone which is the 0-15 feet depth zone of aquatic plant dominance. Since the lake is relatively shallow, it does not maintain a thermocline, which is a density gradient caused by changing water temperatures throughout the water column.

On each sampling day the lake was monitored for total phosphorus (TP), chlorophyll-a (CLA), total kjeldahl nitrogen (TKN), and secchi transparency, as well as the lake's perceived physical condition and recreational suitability. The resulting data are summarized in tables and figures on the following page.

#### **2011 summer (May-September) data summary**

<i>Parameter</i>	<i>Mean</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Grade</i>
TP ( $\mu\text{g/l}$ )	33.9	25.0	48.0	C
CLA ( $\mu\text{g/l}$ )	5.2	2.4	13.0	A
Secchi (m)	1.1	0.6	1.7	D
TKN (mg/l)	1.17	0.81	2.50	
<i>Lake Grade</i>				C

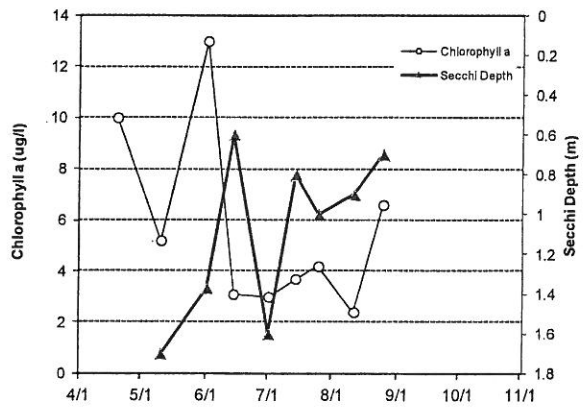
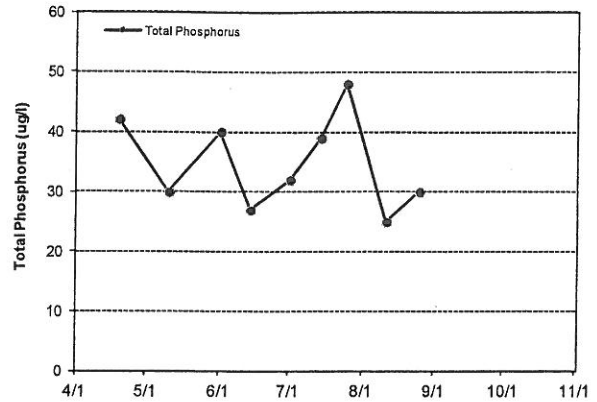
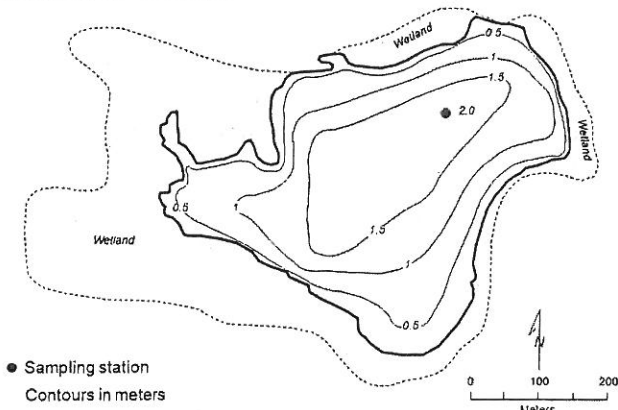
The lake received a lake grade of C in 2011, which is consistent with its historical database. The lake grades have varied mainly in the Cs and Bs.

Throughout the monitoring period, the volunteer's opinions of the lake's physical condition and recreational suitability were ranked on a 1-to-5 scale. These user perception rankings are shown on the following page.

If you notice any errors in the lake's data or physical information, or are aware of any additional or missing information, please contact Brian Johnson of the Metropolitan Council at (651) 602-8743 or [brian.johnson@metc.state.mn.us](mailto:brian.johnson@metc.state.mn.us).

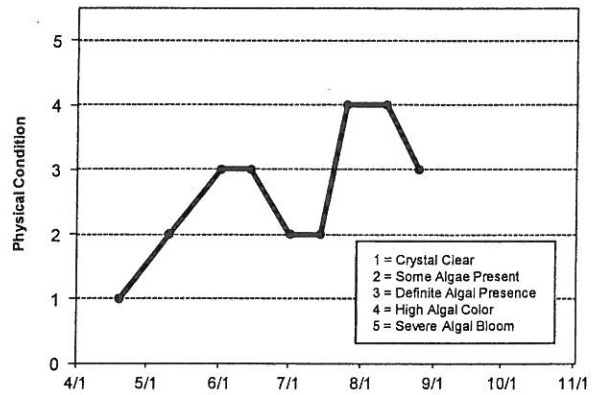
Lake ID: 270711-00  
 WMO: Bassett Creek  
 Volunteer: Westwood Nature Center

**Westwood Lake,  
 St. Louis Park, Hennepin Co.**



**2011 Data**

Date	Surf. Temp. (°C)	Bot. Temp. (°C)	Surf. DO (mg/l)	Bot. DO (mg/l)	CLA (µg/l)	Surf. TP (µg/l)	Bot. TP (µg/l)	Secchi (m)	PC (1-5)	RS (1-5)
4/19/2011	7.8				10	42		1	1	1
5/10/2011	15.4				5.2	30		1.7	2	2
6/1/2011	19.1				13	40		1.37	3	2
6/14/2011	20.5				3.1	27		0.6	3	4
7/1/2011	29.1				3	32		1.6	2	4
7/14/2011	24				3.7	39		0.8	2	4
7/25/2011	27				4.2	48		1	4	4
8/1/2011	26.2				2.4	25		0.9	4	4
8/25/2011	25.5				6.6	30		0.7	3	4



**Lake Water Quality Grades Based on Summertime Averages**

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Total Phosphorus			F									
Chlorophyll a			C									
Secchi Depth			D									
Lake Grade			D									

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Phosphorus		C							B	B	C	C
Chlorophyll a		C							B	C	B	A
Secchi Depth		C							C	C	C	C
Lake Grade		C							B	C	C	B

Year	2004	2005	2006	2007	2008	2009	2010	2011
Total Phosphorus	C	D	D	C	B	C	A	C
Chlorophyll a	A	C	B	B	A	B	A	A
Secchi Depth	C	C	C	C	D	D	C	D
Lake Grade	B	C	C	C	B	C	B	C

Source: Metropolitan Council and STORET data

