



Baxter/Brainerd
7804 Industrial Park Road
PO Box 2720
Baxter, MN 56425-2720

218.829.5117 
218.829.2517 

Brainerd@wsn.us.com 

WidsethSmithNolting.com

20-YEAR MAINTENANCE PLAN UPDATE (2016 – 2036)

FOR

SANITARY SEWER LIFT STATIONS

Council Acceptance Date: February 16, 2016

CITY OF

BAXTER, MINNESOTA

WSN No. 0102B0315.003

Introduction

The City of Baxter operates and maintains 23 sanitary sewer lift stations as part the City's overall sanitary sewer collection system. In 2008 the City Council approved and adopted a 20-Year Sanitary Sewer Lift Station Maintenance Plan. Lift station components wear out or become aged and are difficult to replace due to the continual changes and advancements in electronics and controls. The maintenance plan provides the City with a tool to plan, budget, and prioritize future improvements.

Implementation of the plan began in 2011. A summary of the projects completed or under contract include the following:

- Lift Station No. 3 – 2011
- Lift Station No. 1 – 2011
- Lift Station No. 4 – 2012
- Lift Station No. 5 – 2012
- Lift Station No. 6 – 2013
- Lift Station No. 9 – 2014
- Lift Station No. 7 – 2015
- Lift Station No. 8 – 2016

The attached information represents an update to the original maintenance plan. Unit prices have been updated to reflect actual costs associated with improvements from the four previous lift station reconstruction projects and the Lift Station 20-Year Maintenance Budget has been updated to reflect anticipated costs from 2016 through 2036.

Unit Costs

Reconstruction costs at each lift station location will vary depending on field conditions and arrangement of components. Improvements and unit costs A through K on the attached Cost Summary Worksheet were identified as work that will likely need to be addressed at lift stations over the next 20 years. Costs for each lift station can be customized by selecting appropriate improvements from the provided unit cost list.

Original unit prices were set based on lift station maintenance history and information provided by Quality Flow. Unit costs have since been updated to reflect historic costs from the previous four lift station reconstruction projects.

Maintenance Budget

The Maintenance Budget estimates maintenance and replacement costs over the next twenty year period from 2016 to 2036. Yearly costs vary depending on planned lift station replacement and maintenance items. Estimated costs for the next five year period are as follows:

- 2016 \$163,000
- 2017 \$187,000
- 2018 \$146,000
- 2019 \$151,000
- 2020 \$133,000

The average yearly maintenance cost over the next twenty year period is estimated at \$133,024. The maximum and minimum estimated yearly costs are \$187,000 and \$60,500 respectively.

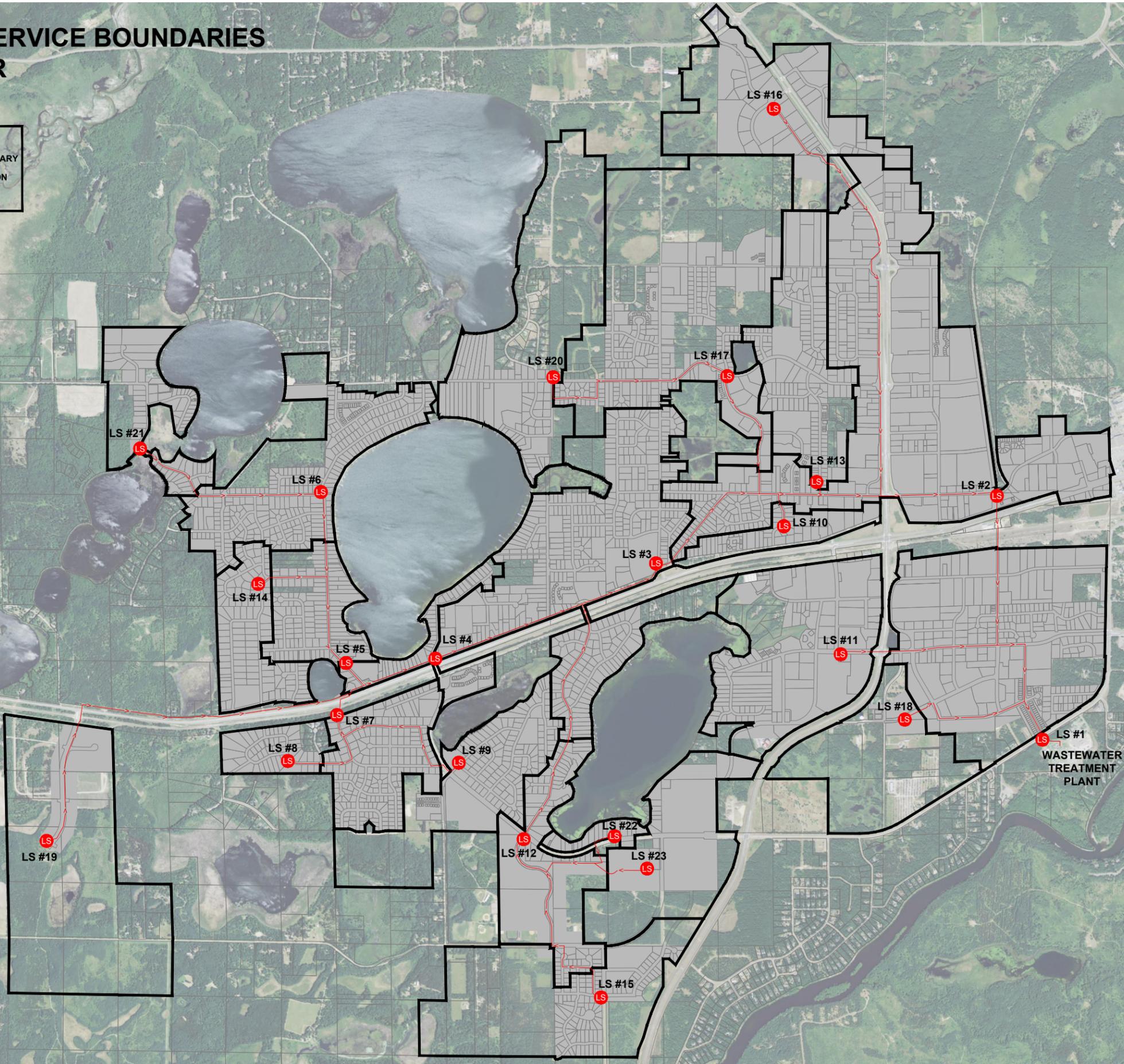
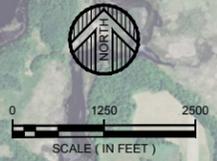
Attachments:

1. Lift Station Location Map
2. Lift Station Cost Summary Worksheet
3. Lift Station 20-Year Maintenance Budget

LIFT STATION SERVICE BOUNDARIES CITY OF BAXTER

LEGEND

-  LIFT STATION SERVICE BOUNDARY
-  WASTEWATER FLOW DIRECTION
-  CURRENT SERVICE AREA



WIDSETH SMITH NOLTING
Engineering | Architecture | Surveying | Environmental



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THAT I AM A FULLY LICENSED ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE	REV	DESCRIPTION

DATE: JAN 2016
SCALE: AS SHOWN
DRAWN BY: A.L.W.
CHECKED BY: A.L.W.
JOB NUMBER: 0102B0315.004

LIFT STATION MAINTENANCE PLAN
CITY OF BAXTER
BAXTER, MINNESOTA
LIFT STATION SERVICE BOUNDARY

SHEET NO. **####**

LIFT STATION COST SUMMARY WORKSHEET (2016 COSTS)

<u>Item</u>	<u>Description</u>	
A	Base Lift Station Upgrade Stainless Steel 36" x 48" control panel with LC 150 controller with pressure transducer and floats 5HP KSB 80-200 pumps with Type F impeller Pump rail and base elbow replacement By-pass pumping, mobilization, clean-up Wet well water blast, vacuum, spot repairs Precast cover replacement with aluminum hatch Discharge piping, cleaning and coatings TOTAL - Item A	\$110,000.00
B	Construct new upstream manhole. Includes dewatering, temporary by-pass and restoration.	\$20,000.00
C	Replace check valves (2) in valve vault	\$5,000.00
D	Replace isolation valves (2) in valve vault	\$4,000.00
E	Replace valve vault cover and aluminum hatch	\$5,000.00
F	Complete valve vault replacement with by-pass piping system	\$30,000.00
G	Replacement of low flow pumps (2 pumps) (LS 2)	\$13,000.00
H	Replacement of high flow pumps (2 pumps) (LS 1 and LS 2)	\$24,000.00
I	Duplex pump replacement (2 pumps)	\$13,000.00
J	Duplex pump replacement (2 pumps) (LS 1)	\$32,000.00
K	Control Panel Replacement	\$32,500.00

LIFT STATION 20-YEAR MAINTENANCE BUDGET
 BAXTER, MINNESOTA
 WSN 0102B0315.000
 01/18/16

Lift Station Number	Location	Original Construction Date	Pump #1 Install / Rebuild	Pump #2 Install / Rebuild	Control Panel Latest Refit	2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		
						Codes	Cost	Codes	Cost	Codes	Cost	Codes																
1	CSAH #48 near treatment plant	1980	2011	2011	2011											J	\$ 32,000											
2	Excelsior Road & Cypress Drive	1980	2007	2007	2001			H	\$ 24,000	G	\$ 13,000																	
	Lift Station 1 & 2 General Maintenance						\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000	
3	Inglewood Drive & Fairview Road	1989	2011	2011	2011											I	\$ 13,000											
4	Fairview Road and Maplewood Drive	1989	2012	2012	2012													I	\$ 13,000									
5	Memorywood Drive north of City Hall	1989	2012	2012	2012													I	\$ 13,000									
6	Memorywood Drive and Cedar Scenic Road	1989	2009	2009	2013							I	\$ 13,000															
7	West end of Cedardale Lane	1991	2015	2015	2015																			I	\$ 13,000			
8	Brentwood Drive and Briarwood Lane	1991	1991	1991	1991	A,F	\$ 140,000																		I	\$ 13,000		
9	Mountain Ash Drive near Treatment Plant #2	1992	2014	2014	2014																			I	\$ 13,000			
10	Flintwood Drive	1998	1998	1998	1998			A,F	\$ 140,000																			
11	Glory Road and Elder Drive	1998	1999	1999	1999					A	\$ 110,000																	
12	Knollwood Drive and CSAH #48	2001	2007	2007	2001							A,E	\$ 115,000															
13	Forest Drive	2001	2001	2001	2001									A	\$ 110,000													
14	Meredith Drive	2003	2003	2003	2003											A	\$ 110,000											
15	Jasperwood Drive and Marble Road	2003	2003	2003	2003													A	\$ 110,000									
16	Edgewood Drive and Lake Forest Road	2004	2004	2004	2004															A	\$ 110,000							
17	Grand Oaks Drive and Clearwater Road	2004	2004	2004	2004																	A	\$ 110,000					
18	Hastings Road	2005	2005	2005	2005																		A	\$ 110,000				
19	Potlatch	2006	2006	2006	2006																				A	\$ 110,000		
20	Clearwater Road and Kimberlee Drive	2006	2006	2006	2006																							
21	Cedar Scenic Road west of Olivewood Drive	2007	2007	2007	2007																							
22	CSAH #48 between Knollwood Drive and Ironwood Drive	2008	2008	2008	2008																							
23	Mapleton Road and Crow Wing Power Substation	2015	2015	2015	2015																			I	\$ 13,000			
	Lift Station 3-22 General Maintenance						\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000	

Annual Cost \$ 163,000 \$ 187,000 \$ 146,000 \$ 151,000 \$ 133,000 \$ 178,000 \$ 159,000 \$ 133,000 \$ 146,000 \$ 159,000 \$ 146,000

Lift Station Number	2027		2028		2029		2030		2031		2032		2033		2034		2035		2036		20 YEAR TOTAL
	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	COST
1									J,K	\$ 64,500											\$ 96,500
2	G,H,K	\$ 69,500																			\$ 106,500
		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000	\$ 42,000
3									I,K	\$ 45,500											\$ 58,500
4											I,K	\$ 45,500									\$ 58,500
5											I,K	\$ 45,500									\$ 58,500
6					I	\$ 13,000							K	\$ 32,500							\$ 58,500
7																I,K	\$ 45,500				\$ 58,500
8																		I,K	\$ 45,500		\$ 198,500
9															I,K	\$ 45,500					\$ 58,500
10	I	\$ 13,000																			\$ 153,000
11			I	\$ 13,000																	\$ 123,000
12					I	\$ 13,000															\$ 128,000
13							I	\$ 13,000													\$ 123,000
14									I	\$ 13,000											\$ 123,000
15											I	\$ 13,000									\$ 123,000
16													I	\$ 13,000							\$ 123,000
17															I	\$ 13,000					\$ 123,000
18																	I	\$ 13,000			\$ 123,000
19																			I	\$ 13,000	\$ 123,000
20			A	\$ 110,000																	\$ 110,000
21					A	\$ 110,000															\$ 110,000
22							A	\$ 110,000													\$ 110,000
23																	I	\$ 13,000			\$ 26,000
		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000					\$ 378,000

\$ 105,500	\$ 146,000	\$ 159,000	\$ 146,000	\$ 146,000	\$ 127,000	\$ 68,500	\$ 60,500	\$ 73,500	\$ 60,500	\$ 2,793,500
------------	------------	------------	------------	------------	------------	-----------	-----------	-----------	-----------	--------------

AVERAGE YEARLY COST: \$ 133,024
MAXIMUM YEARLY COST: \$ 187,000
MINIMUM YEARLY COST: \$ 60,500

Introduction

The City of Baxter operates and maintains 23 sanitary sewer lift stations as part the City's overall sanitary sewer collection system. In 2008 the City Council approved and adopted a 20-Year Sanitary Sewer Lift Station Maintenance Plan. Lift station components wear out or become aged and are difficult to replace due to the continual changes and advancements in electronics and controls. The maintenance plan provides the City with a tool to plan, budget, and prioritize future improvements.

Implementation of the plan began in 2011. A summary of the projects completed or under contract include the following:

- Lift Station No. 3 – 2011
- Lift Station No. 1 – 2011
- Lift Station No. 4 – 2012
- Lift Station No. 5 – 2012
- Lift Station No. 6 – 2013
- Lift Station No. 9 – 2014
- Lift Station No. 7 – 2015
- Lift Station No. 8 – 2016

The attached information represents an update to the original maintenance plan. Unit prices have been updated to reflect actual costs associated with improvements from the four previous lift station reconstruction projects and the Lift Station 20-Year Maintenance Budget has been updated to reflect anticipated costs from 2016 through 2036.

Unit Costs

Reconstruction costs at each lift station location will vary depending on field conditions and arrangement of components. Improvements and unit costs A through K on the attached Cost Summary Worksheet were identified as work that will likely need to be addressed at lift stations over the next 20 years. Costs for each lift station can be customized by selecting appropriate improvements from the provided unit cost list.

Original unit prices were set based on lift station maintenance history and information provided by Quality Flow. Unit costs have since been updated to reflect historic costs from the previous four lift station reconstruction projects.

Maintenance Budget

The Maintenance Budget estimates maintenance and replacement costs over the next twenty year period from 2016 to 2036. Yearly costs vary depending on planned lift station replacement and maintenance items. Estimated costs for the next five year period are as follows:

- 2016 \$163,000
- 2017 \$187,000
- 2018 \$146,000
- 2019 \$151,000
- 2020 \$133,000

The average yearly maintenance cost over the next twenty year period is estimated at \$133,024. The maximum and minimum estimated yearly costs are \$187,000 and \$60,500 respectively.

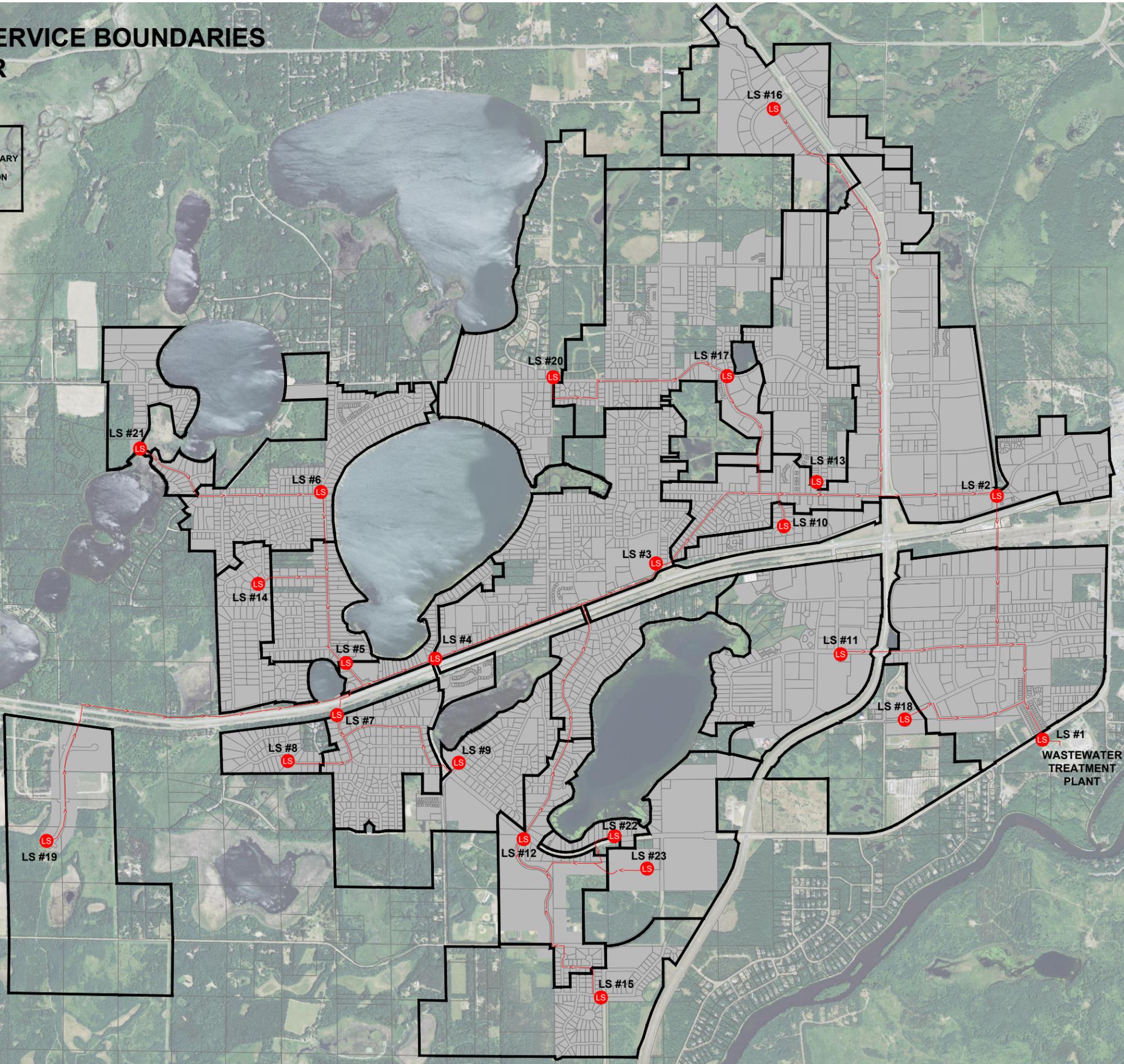
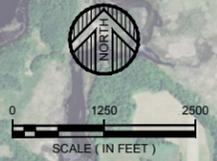
Attachments:

1. Lift Station Location Map
2. Lift Station Cost Summary Worksheet
3. Lift Station 20-Year Maintenance Budget

LIFT STATION SERVICE BOUNDARIES CITY OF BAXTER

LEGEND

-  LIFT STATION SERVICE BOUNDARY
-  WASTEWATER FLOW DIRECTION
-  CURRENT SERVICE AREA



WIDSETH SMITH NOLTING
Engineering | Architecture | Surveying | Environmental



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THAT I AM A FULLY LICENSED ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE	REV	DESCRIPTION	BY

DATE: JAN 2016
SCALE: AS SHOWN
DRAWN BY: A.L.W.
CHECKED BY: A.L.W.
JOB NUMBER: 0102B0315.004

LIFT STATION MAINTENANCE PLAN
CITY OF BAXTER
BAXTER, MINNESOTA
LIFT STATION SERVICE BOUNDARY

SHEET NO. **####**

LIFT STATION COST SUMMARY WORKSHEET (2016 COSTS)

<u>Item</u>	<u>Description</u>	
A	Base Lift Station Upgrade Stainless Steel 36" x 48" control panel with LC 150 controller with pressure transducer and floats 5HP KSB 80-200 pumps with Type F impeller Pump rail and base elbow replacement By-pass pumping, mobilization, clean-up Wet well water blast, vacuum, spot repairs Precast cover replacement with aluminum hatch Discharge piping, cleaning and coatings TOTAL - Item A	\$110,000.00
B	Construct new upstream manhole. Includes dewatering, temporary by-pass and restoration.	\$20,000.00
C	Replace check valves (2) in valve vault	\$5,000.00
D	Replace isolation valves (2) in valve vault	\$4,000.00
E	Replace valve vault cover and aluminum hatch	\$5,000.00
F	Complete valve vault replacement with by-pass piping system	\$30,000.00
G	Replacement of low flow pumps (2 pumps) (LS 2)	\$13,000.00
H	Replacement of high flow pumps (2 pumps) (LS 1 and LS 2)	\$24,000.00
I	Duplex pump replacement (2 pumps)	\$13,000.00
J	Duplex pump replacement (2 pumps) (LS 1)	\$32,000.00
K	Control Panel Replacement	\$32,500.00

LIFT STATION 20-YEAR MAINTENANCE BUDGET
 BAXTER, MINNESOTA
 WSN 0102B0315.000
 01/18/16

Lift Station Number	Location	Original Construction Date	Pump #1 Install / Rebuild	Pump #2 Install / Rebuild	Control Panel Latest Refit	2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		
						Codes	Cost	Codes	Cost	Codes	Cost	Codes																
1	CSAH #48 near treatment plant	1980	2011	2011	2011											J	\$ 32,000											
2	Excelsior Road & Cypress Drive	1980	2007	2007	2001			H	\$ 24,000	G	\$ 13,000																	
	Lift Station 1 & 2 General Maintenance						\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000	
3	Inglewood Drive & Fairview Road	1989	2011	2011	2011											I	\$ 13,000											
4	Fairview Road and Maplewood Drive	1989	2012	2012	2012													I	\$ 13,000									
5	Memorywood Drive north of City Hall	1989	2012	2012	2012													I	\$ 13,000									
6	Memorywood Drive and Cedar Scenic Road	1989	2009	2009	2013							I	\$ 13,000															
7	West end of Cedardale Lane	1991	2015	2015	2015																			I	\$ 13,000			
8	Brentwood Drive and Briarwood Lane	1991	1991	1991	1991	A,F	\$ 140,000																		I	\$ 13,000		
9	Mountain Ash Drive near Treatment Plant #2	1992	2014	2014	2014																			I	\$ 13,000			
10	Flintwood Drive	1998	1998	1998	1998			A,F	\$ 140,000																			
11	Glory Road and Elder Drive	1998	1999	1999	1999					A	\$ 110,000																	
12	Knollwood Drive and CSAH #48	2001	2007	2007	2001							A,E	\$ 115,000															
13	Forest Drive	2001	2001	2001	2001									A	\$ 110,000													
14	Meredith Drive	2003	2003	2003	2003											A	\$ 110,000											
15	Jasperwood Drive and Marble Road	2003	2003	2003	2003													A	\$ 110,000									
16	Edgewood Drive and Lake Forest Road	2004	2004	2004	2004															A	\$ 110,000							
17	Grand Oaks Drive and Clearwater Road	2004	2004	2004	2004																	A	\$ 110,000					
18	Hastings Road	2005	2005	2005	2005																		A	\$ 110,000				
19	Potlatch	2006	2006	2006	2006																				A	\$ 110,000		
20	Clearwater Road and Kimberlee Drive	2006	2006	2006	2006																							
21	Cedar Scenic Road west of Olivewood Drive	2007	2007	2007	2007																							
22	CSAH #48 between Knollwood Drive and Ironwood Drive	2008	2008	2008	2008																							
23	Mapleton Road and Crow Wing Power Substation	2015	2015	2015	2015																			I	\$ 13,000			
	Lift Station 3-22 General Maintenance						\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000	

Annual Cost \$ 163,000 \$ 187,000 \$ 146,000 \$ 151,000 \$ 133,000 \$ 178,000 \$ 159,000 \$ 133,000 \$ 146,000 \$ 159,000 \$ 146,000

Lift Station Number	2027		2028		2029		2030		2031		2032		2033		2034		2035		2036		20 YEAR TOTAL
	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	Codes	Cost	COST
1									J,K	\$ 64,500											\$ 96,500
2	G,H,K	\$ 69,500																			\$ 106,500
		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000		\$ 2,000	\$ 42,000
3									I,K	\$ 45,500											\$ 58,500
4											I,K	\$ 45,500									\$ 58,500
5											I,K	\$ 45,500									\$ 58,500
6					I	\$ 13,000							K	\$ 32,500							\$ 58,500
7																I,K	\$ 45,500				\$ 58,500
8																		I,K	\$ 45,500		\$ 198,500
9															I,K	\$ 45,500					\$ 58,500
10	I	\$ 13,000																			\$ 153,000
11			I	\$ 13,000																	\$ 123,000
12					I	\$ 13,000															\$ 128,000
13							I	\$ 13,000													\$ 123,000
14									I	\$ 13,000											\$ 123,000
15											I	\$ 13,000									\$ 123,000
16													I	\$ 13,000							\$ 123,000
17															I	\$ 13,000					\$ 123,000
18																	I	\$ 13,000			\$ 123,000
19																			I	\$ 13,000	\$ 123,000
20			A	\$ 110,000																	\$ 110,000
21					A	\$ 110,000															\$ 110,000
22							A	\$ 110,000													\$ 110,000
23																	I	\$ 13,000			\$ 26,000
		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000		\$ 21,000					\$ 378,000

\$ 105,500	\$ 146,000	\$ 159,000	\$ 146,000	\$ 146,000	\$ 127,000	\$ 68,500	\$ 60,500	\$ 73,500	\$ 60,500	\$ 2,793,500
------------	------------	------------	------------	------------	------------	-----------	-----------	-----------	-----------	--------------

AVERAGE YEARLY COST: \$ 133,024
MAXIMUM YEARLY COST: \$ 187,000
MINIMUM YEARLY COST: \$ 60,500