



LAKES REGION SANITARY DISTRICT

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Lakes Region Sanitary District

Annual Sanitary Sewer System Maintenance Report

Work performed from 5/1/2012 to 4/30/2013

BOARD OF TRUSTEES

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Kurt S. Stimpson
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DISTRICT MANAGER

Mohammed M. Haque, P.E.

FINANCIAL MANAGER

Gary L. Bogolin

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ATTORNEY

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Smith & LaLuzerne, Ltd.

ENGINEER

Marcia A. McCutchan, P.E.
RHMG Engineers, Inc.

The District

FPA encompasses 17 square miles covering Volo to Ingleside and Fox Lake to Lake Villa

- 2060 Manholes
- 3 Maintenance Operators
- 20 Lift Stations
- 75 Miles of gravity Sanitary Sewer
 - 6" – 24,373ft
 - 8" – 278,754ft
 - 10" – 37,474ft
 - 12" – 22,166ft
 - 15" – 8,185ft
 - 18" – 2,248ft
 - 21" – 12,316ft
 - 24" – 6,424ft
 - 30" – 4,747ft
 - 36" – 64ft
 - Total: 395,721ft
- Force Main
 - Sizes Range from Single 2" up to Twin 16"
 - 9.7 Miles 51,380ft

Sanitary Sewer

Force Main cleaning via "Pigging" done by LRSD Staff

- The two Lift Stations (LS18 Big Hollow and LS19 Volo) equipped with Pigging capability were cleaned in December. LS18 Big Hollow is cleaned yearly. LS19 Volo is cleaned every eight weeks or as needed. Total force main cleaned 66,851ft.

Air Release Valves maintenance is done by LRSD Staff

- All 26 valves are flushed and cleaned semiannually
- 5 of the Valve-Matic valves were replaced with ARI in basin 18 (Volo LS)

Sewer Main Preventative Maintenance

- LRSD adds odor control to Lift Station 19 (Volo) to eliminate H₂S from deteriorating the RCP sewer main downstream of discharge.
- The District exercises all valves along force mains to insure valves are working properly as needed.
- Regular checks of known "problem" areas in manholes and sewer mains are made so LRSD can take appropriate actions to resolve any issues.
- LRSD changes the carbon air filters at the lift stations and along Volo Force main.

Testing Wastewater

- LRSD takes daily samples of the Volo force main discharge for “in house” testing to determine the levels of the H2S and Nitrate in the wastewater.
- Testing of the discharge wastewater is part of the determining factors the District uses to adjust the daily rate of odor control chemical.

Oda Log

- The District owns and operates 4 Odalog monitoring devices.
- Odalogs are strategically placed in the sanitary sewer to monitor H2S levels to help maintain safe levels of gases and prolong the life of the sanitary sewer.
- Each of the 4 devices are calibrated monthly at the District office by the LRSD staff.
- Every six months the OdaLogs are sent to the manufacturer to be factory calibrated and replace sensors.

Repairs in Gravity Main found during Televising

Repairs		
Pipe Section	Type of Repair	Date of Repair
47-208 to 47-235	Spot Repair	12-Jul
47-235 to 47-207	Total Replacement	12-Jul

Televising

Pipe Sizes			
6"	8"	10"	12"
14'	36,598'	5,529'	2,504'

Total: 44,645ft

Additions to LRSD’s System

Volo Historic

- 11 sampling manholes in Volo were added the LRSD system
- Manholes were tested, LRSD inspected the manholes and inventoried them into our CMMS
- New manholes were added to LRSD’s GIS program using a GPS (Thales)

New Service Connections

- LRSD staff inspects all service connections to verify that the correct pipe, fittings, pitch, bedding and backfill are used in accordance with the LRSD ordinances.
- The connections are documented and scanned into the server, which can be viewed in the field via I-Pad.

Sanitary Manholes

Inspections were completed on 21 of 30 Drainage Basins

System Total: 2060 manholes

Percentage inspected: 54%

Basin	Tributary / Basin Name	# MHs	Completed	# MH Inspected
01	Anderson Lift Station	57	3/28/2013	57
02	Hickory Lift Station	10	3/14/2013	10
03	Milwaukee Lift Station	17	3/14/2013	17
04	Long Beach Lift Station	3	1/31/2013	3
05	Park & Reed Lift Station	14	3/14/2013	14
06	Forest Lift Station	106	3/29/2011	0
07	Blackhawk Lift Station	110	1/31/2012	0
08	Myrtle Lift Station	11	2/25/2013	11
09	Olive Lift Station	32	5/15/2012	32
10	Oak Lift Station	13	3/12/2013	13
11	Luther Lift Station	26	3/14/2013	26
12	Helen Court Lift Station	5	1/31/2013	5
14	Sunnybrook Lift Station	6	1/31/2013	6
15	Brooks Farm Lift Station	183	4/15/2013	183
16	Terra Springs Lift Station	87	4/12/2013	87
17	Holiday Park Lift Station	53	4/15/2013	53
18	Big Hollow Lift Station	35	4/4/2012	0
19	Volo Lift Station	391	12/7/2012	166
20	JCYS Lift Station	39	4/17/2012	0
21	Remington Pointe North	56	4/17/2012	0
41	Cedar Ridge / Prairie Trail	119	3/22/2013	119
42	Fox Lake Pump Station	17	6/26/2012	17
44	LCPW Main Street Pumping Station	57	2/2/2012	0
45	LCPW Main Street Pumping Station	63	3/14/2013	63
46	Rollins Road Basin	225	4/10/2013	225
47	Rollins Road Basin	232	11/12/2010	0
48	Duck Lake Crossing	11	7/26/2012	11
49	Remington Pointe	46	6/21/2011	0
50	Dawn Marie	31	3/8/2012	0
51	Wal-Mart	5	4/2/2013	5
30		2047		1123

Total manholes inspected: 1123 Repairs Manholes

- 10 manholes were adjusted and reset in basin 47
- 5 structures were chemically grouted to eliminate infiltration

Manhole Repairs

Repairs		
Manhole	Type of Repair	Date of Repair
46-017	Grout	April
47-034	Grout	April
06-012	Grout	April
06-013	Grout	April
06-106	Grout	April

Lift Stations

Inspections are done by LRSD Staff to maintaining 20 Lift Stations.

- Volo Lift Station is monitored 7 days a week to verify correct odor control chemical dosing and record daily flow readings
- Three times a week the stations are visited to check the performance of the pumps, seal fail lights, tripped out pumps, and remove excess grease from floats
- The pump hours are recorded weekly and compared to previous average (onsite & via SCADA)
- Flow meters (where available) are recorded weekly and compared to previous average (onsite & via SCADA)
- All 20 of the wetwells were cleaned using a Vactor to remove all grease and debris and done on a yearly basis 04/2013

Volo Lift Station Odor Control

- Calcium Nitrate is added to the wet well to help eliminate high H₂S levels at the discharge junction chamber located along Fish Lake Rd
- The lower H₂S levels also help prevent the deterioration of the downstream 24 inch RCP gravity main
- Calcium Nitrate storage tank levels are taken daily to assure that the correct amount needed is being discharged into the wet well (onsite & via SCADA)
- LRSD staff retrieves a sewage sample daily from a downstream manhole (MH#18-025) and tests for dissolved Hydrogen Sulfide and Nitrate to determine the amount of Calcium Nitrate needed and adjusts the dosing pumps regularly
- An Odalog L2 unit is placed in a downstream manhole to monitor the H₂S levels every 60 seconds for 24 hours and is retrieved daily to be reviewed
- The test results and the Odalog graph are forwarded to the District Manager and LRSD engineering firm to keep them updated on the progress and changes in dosing amount
- Cleaning of the force main (Pigging) is done every six to eight weeks to insure there is no debris or air build-up which increases pump hours and wear dramatically. 110,000 gallons of water is needed to surcharge the system in order to complete this task along with a minimum of three staff members
- The ten air release valves located along the two mile force main are checked and exercised bi-weekly to help eliminate the build-up of excess air in the main

Grinder and Chemical Feed System for Volo Lift Station Were Completed late summer 2012

- A Muffin Monster grinder has been installed to help eliminate the build-up of rags/debris in the wet well, pumps and air release valves along the two mile force main 7/2012
- LRSD upgraded their chemical storage tank from 1500 gallons to 2500 gallons. This will help reduce some of the delivery charges and get a low "Bulk" rate per gallon of chemical 6/2012
- Two new chemical feed pumps were tied into the (VFD) Variable Frequency Drives to batch dose the chemical for a more efficient dose cycle. This will eliminate wasteful over dosing during low flow. 6/2012
- A more accurate flow meter chart was installed to assist in correct chemical dosing 6/2012

Auxiliary Power inspection and maintenance

- All 11 Gen Sets are exercised monthly
- Engine oil in all 11 of the Gen Sets is changed in on a yearly basis or as needed
- Batteries are tested monthly for volts, correct water level, and corrosion
- Gen Set at Lift Station Oak 10 had the battery charger and battery replaced
- Gen Set at Lift Station JCYS 20 had the battery replaced

Contingency

- LRSD owns a Godwin Emergency By-Pass Pump that can be used at 8 lift stations using the forcemain and at the other 12 using hoses
- The Godwin Emergency By-Pass Pump is exercised bi-monthly under load

Alarm System

- LRSD remove the existing telemetry system and replaced it with a new SCADATA system
- LRSD staff installed new underground conduit by hand for the radio boxes
- Brackets were custom fabricated in house by LRSD staff to mount all 23 radio boxes

LIFT STATION REPAIRS

- Lift Station 1 (Anderson) repaired check valve, replaced pump 2
- Lift Station 2 (Hickory) installed new stainless steel pipe on pump 2, replaced float
- Lift Station 3 (Milwaukee) No major repairs
- Lift Station 4 (Long beach) No major repairs
- Lift Station 5 (Park & Reed) Replaced check valve springs
- Lift Station 6 (Forest) Replaced Main breaker on pump 2, installed seals on pump 3, new cap and cord on pump 3
- Lift Station 7 (Blackhawk) Replaced seal flange pump1, pulled pump 1 and 2 to remove bed sheets form both pumps, replaced impeller pump 1
- Lift Station 8 (Myrtle) Replaced alternating relay, replaced float 1
- Lift Station 9 (Olive) rebuilt contactor pump 1
- Lift Station 10 (Oak) Replaced battery charger on generator
- Lift Station 11 (Luther) No major repairs
- Lift Station 12 (Helen Ct) No major repairs
- Lift Station 14 (Sunnybrook) No major repairs
- Lift Station 15 (Brooks Farm) Replaced damper actuator on vent system, replaced battery on generator
- Lift Station 16 (Terra Springs) Rebuilt pump 1 with rewound motor, installed upper and lower seals pump 1
- Lift Station 17 (Holiday Park) No major repairs
- Lift Station 18 (Big Hollow) Replaced generator coolant relay
- Lift Station 19 (Volo) Replaced Pump 2 VFD internal fan, installed 50ft stainless steel chain on pump 1, installed two batteries on generator
- Lift Station 20 (JCYS) Installed seals, bearings, and stainless steel chain pump1
- Lift Station 21 (Remington) No major repairs

SANITARY SEWER OVERFLOW (SSO)

- Lakes Region Sanitary had no SSO during the fiscal year

JULIE

LRSD locates a 17sq mile area for all locates called into JULIE locating system.

- Julie tickets are received 24/7 via email and conflicting sewer lines are marked promptly to avoid costly damage to LRSD's sanitary collection system.
- Emergency Julie locates are required to be marked by LRSD within 2 hours.

Month	JULIE Ticket Received
May	224
June	218
July	191
Aug	193
Sept	182
Oct	207
Nov	154
Dec	103
Jan	128
Feb	124
March	145
April	263
Total	2132

PROPERTY MAINTENANCE

LRSD staff is responsible for the maintenance of over 4 acres of lawn spread out over 20 lift stations, 10 air release valves.

- Mulch is added to all trees at the lift stations and District Office
- The driveways at 10 of the lift stations are, as needed, seal coated to prolong the life of the asphalt
- Snow removal is done by LRSD staff at all 20 lift stations and the district office area
- Tree trimming and storm blow down is done at all 20 lift stations and district office area by LRSD staff