



LAKES REGION SANITARY DISTRICT

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Lakes Region Sanitary District

Annual Sanitary Sewer System Maintenance Report

Work performed from 5/1/2011 to 4/30/2012

BOARD OF TRUSTEES

James A. Raihle
Kurt S. Stimpson
Nancy W. Dague

DISTRICT MANAGER

Mohammed M. Haque, P.E.

FINANCIAL MANAGER

Gary L. Bogolin

O&M MANAGER

Kevin R. Hausherr

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

- 3 Maintenance Operators
- 2047 Manholes
- 20 Lift Stations
- 75 Miles of gravity Sanitary Sewer
 - 6" – 23,904 ft
 - 8" – 278,188 ft
 - 10" – 37,474 ft
 - 12" – 22,166 ft
 - 15" – 8,185 ft
 - 18" – 2,248 ft
 - 21" – 12,316 ft
 - 24" – 6,424 ft
 - 30" – 4,747 ft
 - 36" – 64 ft
 - Total: 395,717 ft
- Force Main
 - Range from Single 2" up to Twin 16"
 - 9.7 Miles -- 51,380 ft

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 Total Force main cleaned: 66,851 ft

Air Release Valves maintenance done by LRSD Staff

- All 26 valves flushed and cleaned semiannually
- 8 of the valves were rebuilt with stainless steel parts 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 if needed
- Regular checks of known "problem" areas in manholes and sewer mains and 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: H2S, Nitrate
- 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 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
46-107 to 46-106	CCIP	12-Jan
46-119 to 46-052	CCIP	11-Dec
46-017 to 46-016	CCIP	12-Jan

CCIP = Cured in Place Pipe

Additions to LRSD’s System

Volo Historic

- 4 sampling manholes were added the LRSD system
- Manholes were vacuum tested. We 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, fitting, pitch, bedding and backfill are used in accordance with the LRSD ordinances
- The connections are document scanned into the server and can viewed in the field via I-Pad

Sanitary Manholes

Inspections were completed on 22 of 30 Drainage Basins

System Total: 2047 manholes

Percentage inspected: 55%

Basin	Tributary / Basin Name	# MHs	Completed	# MH Inspected
01	Anderson Lift Station	57	3/7/2012	57
02	Hickory Lift Station	10	2/1/2012	10
03	Milwaukee Lift Station	17	2/1/2012	17
04	Long Beach Lift Station	3	1/31/2012	3
05	Park & Reed Lift Station	14	1/31/2012	14
06	Forest Lift Station	106	3/29/2011	0
07	Blackhawk Lift Station	110	1/31/2012	110
08	Myrtle Lift Station	11	4/2/2012	11
09	Olive Lift Station	32	2/24/2011	0
10	Oak Lift Station	13	4/20/2012	13
11	Luther Lift Station	26	4/20/2012	26
12	Helen Court Lift Station	5	4/2/2012	5
14	Sunnybrook Lift Station	6	1/31/2012	6
15	Brooks Farm Lift Station	183	5/25/2010	0
16	Terra Springs Lift Station	87	4/3/2012	87
17	Holiday Park Lift Station	53	4/13/2010	0
18	Big Hollow Lift Station	35	4/4/2012	35
19	Volo Lift Station	380	2/15/2012	380
20	JCYS Lift Station	39	4/17/2012	39
21	Remington Pointe North	56	4/17/2012	56
41	Cedar Ridge / Prairie Trail	119	9/7/2011	119
42	Fox Lake Pump Station	17	9/15/2010	0
44	LCPW Main Street Pumping Station	57	2/2/2012	57
45	LCPW Main Street Pumping Station	63	11/5/2010	0
46	Rollins Road Basin	224	10/30/2010	0
47	Rollins Road Basin	231	11/12/2010	0
48	Duck Lake Crossing	11	10/14/2011	11
49	Remington Pointe	46	6/21/2011	46
50	Dawn Marie	31	3/8/2012	31
51	Wal-Mart	5	3/29/2012	5
30		2047		1138

Total manholes inspected: 1138

Repairs Manholes

- 8 manholes were adjusted and reset in basin 10 and 11

Lift Stations

Inspections are done by LRSD Staff maintaining 20 Lift Stations

- Volo Lift Station is checked 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
- Flow meters (where available) are recorded weekly and compared to previous average
- All 20 of the wetwells were cleaned using a Vactor to remove all grease and debris and done on a yearly basis 11/2011
- LRSD had the six (75h.p.) pumps at three of the lift stations pulled for inspection annually by a contractor due to weight restraints

Volo Lift Station Odor Control

- Bioxide 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 main
- Bioxide storage tank levels are taken daily to assure that the correct amount needed is being discharged into the wet well
- 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 Bioxide 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 to 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 needs to be surcharge in the system in order to complete this task along with a minimum of three staff members
- Sodium Hypochlorite is added during Pigging to reduce build-up of odor creating organisms
- 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 to be completed late summer 2012

- A Muffin Monster grinder will be installed to help eliminate the build-up of rags/debris in the wet well and air release valves along the two mile force main
- 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
- 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.
- A more accurate flow meter chart will be installed to assist in correct chemical dosing

Auxiliary Power inspection and maintenance

- All 11 Gen Sets are exercised monthly
- Engine oil in all 11 of the Gen Sets were changed in 2011
- 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's 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 inspection and maintenance

- The radios are tested monthly to verify signal
- Currently LRSD staff is installing a new alarm system SCADATA

LIFT STATION REPAIRS

- Lift Station 1 (Anderson) repaired check valve, changed carbon air filter
- Lift Station 2 (Hickory) replaced float number 1
- Lift Station 3 (Milwaukee) installed new transformer in alarm
- Lift Station 4 (Long beach) excavated exterior of wet well to replaced check valves and manifold with stainless steel, repaired 90degree elbow in discharge pipe for pump 1
- Lift Station 5 (Park & Reed) No major repairs
- Lift Station 6 (Forest) pulled pump 2 full of rags replaced seal, stator rewound, wear ring and replaced transducer, and changed gen set oil 80qt
- Lift Station 7 (Blackhawk) seal failure pump 2 replaced seal, replaced bellows pump 1 and 2, installed new alternating relay
- Lift Station 8 (Myrtle) Driveway was paved
- Lift Station 9 (Olive) replaced contactor
- Lift Station 10 (Oak) changed oil in gen set 4qt; new gen set battery and battery charger
- 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) pulled both pumps for annual inspection
- Lift Station 16 (Terra Springs) replaced transducer and back-up floats
- Lift Station 17 (Holiday Park) replaced transducer in wet well
- Lift Station 18 (Big Hollow) pulled both pumps for annual inspection
- Lift Station 19 (Volo) pulled both pumps for annual inspection
- Lift Station 20 (JCYS) changed gen set oil 7qt, gen set battery was replaced
- Lift Station 21 (Remington) changed gen set oil 7qt

SANITARY SEWER OVERFLOW (SSO)

8/18/2011 : Volo Village Road Lift Station Force Main Line "A"

- Air Release Valve had rock lodged in seal
- Approximately 1,500 gallons
- Vac Truck cleaned all ponding water
- Reported to IL EPA within 24hrs
- LRSD has added IL EPA's recommendations to their preventive maintenance

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 the LRSD staff has 2 hours to mark conflicting lines

Month	JULIE Ticket Received
May	226
June	210
July	170
Aug	217
Sept	179
Oct	198
Nov	130
Dec	109
Jan	86
Feb	75
March	154
April	195
Total	1949

PROPERTY MAINTENANCE

LRSD staff is responsible for the maintenance of over 4 acres of lawn spread out over 20 lift stations, 8 air release valves, and 16 manholes

- 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
- Insect control for Gypsum Moths is done as needed by LRSD staff