

Director of Engineering Report

Feb 20, 2013

District staff manages projects, consultants, contractors and equipment suppliers. Consultant reports and Project Managers reports are included in this section and detail the status of the associated study, design, or construction projects.

Active Projects

2011 Trestle Improvement Project: This project includes Replacement of the 4 concrete North Stevens Creek trestles (reusing existing piers) and repair the New Main Interceptor trestle.

- *Contractor: ECI; Contract end date: July 20, 2012*
- Contractor has been directed to correct the installation of the hobas pipe/couplings and finish their work on the trestles.
- Contractor is mobilizing 1/18/13 to begin work.
- Specification for remedial work is prepared; review is in process.

2011 Primary Clarifier #1 & #2 Rehab: This project includes the removal and replacement of the primary clarifiers #1 and #2 drive mechanisms; the replacement of the bridge; and replaces electrical conduit and controls.

- Contractor: Joseph J Henderson % Son, Inc. (JJH)
- *Work is Complete; Training is Complete; SDD is waiting for lien waivers to close the project out.*

2012 Energy Efficiency Projects: Grant amount of \$538,512 was received July 5th, 2012. It reflects the following projects:

- Replacement of Waste Activated Sludge Mixers (6)
- Channel Aeration Blowers (2 replacements and modification of control)
- Primary Sludge Modifications (piping changes to reduce pumping required)
- New Blowers have been placed; piping is being run.
- WAS Valves needed replaced to bring tanks off line – Time and Material Field Order was issued.

2013 Digester Complex Improvements Project: This project consists of upgrades to the primary digesters' mixing systems with 4 Linear Motion Mixers to replace the current Pearth mixing systems; the addition of an electrical building to gain NFPA 820 code compliance in the primary digester complex; installation of automated drip traps and condensate collectors in the digester complex; and replacement of the waste gas burner to a separate location away from the digester complex.

- *District final QA/QC of Design documents is completed. Donohue is incorporating final changes and will be ready to advertise.*
- *Loan Application and Construction Permits are submitted as planned.*

2012 CCTV Digester Complex Improvements Project: *This project consists of cleaning and televising approximately 42,000 LF of District Sewers. The following segments are out for bid. Southeast Sewer (36") Larkdale/Richland Sewer (24, 18, 15") Larkdale Sewer (36, 18, 15") Damon South Sewer (42, 24, 21, 18, 15") Damon North Sewer (18") Country Club Sewer (30, 27, 24, 18")*

- *Project Advertised – 2/5/13; Bid Open Scheduled for 2/22/13.*

2012 BioMass to Energy Project: To continue with upgrading the digester complex and reducing the energy needs of the district, the district is evaluating grant opportunities again in 2012 to look at opportunities to tap into DCEO Public Sector Energy Grants, DECO Public Sector Biogas Grants, and an Illinois Clean Energy Foundation Biogas/Biomass Grant. .

- DECO Public Sector Biomass to Energy grant application was signed off at \$500,000.
- 500-kW high efficiency combined heat and power (CHP) engine (replacement of 1 co-gen unit)
- Installation of gas cleaning system
- Review of Preliminary Engineering Design Report complete. District evaluated the alternatives and have elected to continue on with the lowest capital cost alternative of replacing a cogen unit and the required gas cleaning. Last months update indicated a payback period between 8.2 and 9.1 years (based on variable power rates)
- The different alternatives required differing process steps the table below is a summary of what was included in the cost alternatives:

ALTERNATIVE →	CHP	Microturbine	CHP w/Pipeline Grade	CHP w/ CNG Fueling	CNG Fueling Only
Generator Type	Engine Generator	Turbine	Engine Generator	Engine Generator	None
Biological Treatment H2S Removal (to 150 ppm)	X	X	X	X	X
Additional H2S Removal		X	X	X	X
Compressor Chiller, Siloxane Removal		X	X	X	X
Pressure Swing Adsorbtion => Compression => Odorization			X	X	X
Vehicle Fueling Station					X
ESTIMATED CAPITAL COST	2.128M	3.751M	6.488M	5.588M	4.352

- This project is being advertised 2/19/13.
- High variability in H2S was linked back to inconsistent ferrous chloride feed in the primary; the feed system is being upgraded as part of this project.

INTERGOVERNMENTAL ACTIVITIES

- None this period

Other Activities:

Hickory Point Pump Station: District staff is preparing for 2013 projects. One of the projects is the rehabilitation of the Hickory Point Pump Station.

- Initial meeting was held with Clark-Dietz in preparation for the design of this station.
- No additional work this period.

South Shores Drive Bridge Replacement: Construction is on-going. New piers are being poured in preparation for the relocation of the sewer pipe.

Water Tower Maintenance Contract: The water tower is in need of several maintenance items, most notably the interior coating of the tank. Bids documents being developed are for Interior Coating and physical components of the water tower that currently need repair.

- o *No work on specifications this last period.*

Effluent Pump Station Design: The District enlisted the services of Crawford Murphy and Tilly (CMT) to provide a review and recommendations for the Effluent Pump Station. In the early 2000's, two VFD driven vertical turbine pumps were retrofitted into the existing station. Since that time, every two-three years the vertical turbine pump(s) have had major work. There are ongoing vibration issues. CMT is reviewing pump suppliers for this application, design changes, if necessary, within the station, and providing plan sheets for SDD to incorporate into bid specifications consistent with their recommendations.

- o *Recommendations have not arrived as expected by the end of Jan; expecting it any day.*

Levee Certification: Levee certification is a technical finding for floodplain mapping purposes as part of the National Flood Insurance Program (NFIP), which concludes there is reasonable certainty that the levee protecting the area will contain the base 100-year regulatory flood. FEMA does not certify levees; FEMA is the recipient of levee certification determination which is forwarded by the District. If levee certification documentation is found to be in order, FEMA will then accredit the levee and the associated flood insurance rate maps depicting flood hazard will show the floodplain areas as protected from the base flood.

The details of requirements are still being reviewed, however the submittal will at least require by the district is a LOMR, Letter of Map Revision. The LOMR for the SDD LEVEE will require the submittal of 3 FEMA forms.

1. A quote has been requested of Stantec, who manages flood plain LOMR submittals, and reviews the same for FEMA on a continual basis. The steps below (excerpt from Scope of Work presented to Stantec) outline remaining steps required to certify levee for exclusion of FEMA flood insurance. The plan drawings and site borings of the district site have been provided to Stantec for the development of their quote.
2. Last year, the district met with the Macon County Hazard Mitigation coordinators, and submitted the Levee / Certification as a potential item for funding. We have a conference call scheduled to discuss opportunities and needs if this were to move forward.

LOMR Approved by FEMA; which requires

- a. **Successful certification of the levee;** which requires

- i. **Riverine Hydrology and Hydraulics analysis;** which requires

1. **Hydraulics Review** – Up/Down Stream limits identified and Hec-Ras Model completed. The Hec-Ras Model was run by Dave Harp of BGM Engineers and digital files of the various runs have been provided to SDD.
2. **Pre-Submittal Review of Hydraulic Model** – This would be a service provided by Stantec.
3. **Certified topographic work map** – This map would be provided by Stantec
4. **Base Flood Elevation Increase** – The LOMR request will correct a mistake in the original Corps of Engineer study that missed a pinch point at a landfill downstream of the plant; LOMR will also incorporate bridges that were not included in the original study.
5. **Evidence of Regulatory Floodway Revision Notification-** Since LOMR will change the regulatory floodway; all property owners affected must be provided notification of the change. These notifications would be provided by Stantec.

- ii. **Riverine Structures Review;** which will require

1. **Levee/Floodwall Evaluation** – The base levee was constructed in 1983 under the grants program for Waste Water Treatment Plant Upgrades. The original Levee was build under Corps of Engineers permit # 110047. The floodwall modification was considered maintenance, and no permit was required. The floodwall construction created a floodwall/levee system that will need reviewed and approved by the COE if the system is to be approved by FEMA. This evaluation requires
 - a. Submittal of certified drawings
 - b. Freeboard certification above the Base Flood Elevation
 - c. Closure certification – Access gates through the levee to the outside of the plant.

- d. Embankment and Foundation Stability Analysis (“seepage analysis”)
- e. Floodwall and Foundation Stability Analysis
- f. Overall written O&M Plan.

The evaluation would be done by Stantec; written O&M by SDD, reviewed by Stantec for appropriateness for application.

- 2. **Bridges Evaluation** – There were two bridges along Stevens Creek (west side of plant) and one that crosses the Sangamon River downstream of the plant that will need design detail submitted as part of the MT-Form3 along with review in the Riverine Hydraulics. This would be completed by Stantec.

PROPOSED BOARD ACTION

For the Board’s consideration from the Engineering Department this meeting:

1. NONE

Further details can be found in the Summary of Motions.

If there are any questions, please contact me by telephone at 422-6931 ext 216, or by email at DonM@sdd.dst.il.us

Sanitary District Of Decatur
501 Dipper Lane * Decatur, Illinois 62522 * 217/ 422-6931

MONTHLY ACTIVITY SUMMARY

Main Plant Facility Maintenance Division

To: Don Miller

Fr: Fred McKinney / Craig Jones

Date December 9, 2012

Work Orders:

For the month of December, these are the totals of work orders completed.

WORK ORDER SUMMARY	June-12	July-12	AUG-12	Sept-12	Oct-12	Nov-12	Dec-13	Jan-13	
Total # Work-Orders Completed	928	926	746	801	972	673	761	955	
Total # PM Work Orders Completed	787	746	623	648	813	564	610	799	
COMPLETED BY TYPE									
Weekly PM's	632	620	534	527	615	496	501	668	
Safety PM's	20	15	2	11	42	32	15	4	
6 Month PM's	110	87	32	62	115	24	79	103	
Yearly PM's	25	24	12	48	41	23	20	10	

Nitrification Clarifiers:

Installation of the number two nitrification clarifier scum trough has been put on hold until spring due to valve problems in the center structure.

W.A.S. room 112:

The new #8 Thickened sludge pump has arrived and has been installed and running .The #3 feed pump has arrived, installed and on line.

D.A.F.-113 bldg:

The D.A.F. units are all being brought up to proper working order, excluding #1 unit.

CC. Monte Cherry
Kent Newton

OUTSIDE FACILITIES MONTHLY REPORT
Feb 2013

TO: Don Miller, Director of Engineering

FROM:

- **Larkdale Pump #1**
 - Pulled pump & took to DIE for repair.
 - Repair cost is \$30,000. New pump (replace in kind) cost is \$49,370.
 - Installation was Completed this period

- **Wyckles Facility**
 - Lagoon Mixer is not repairable. Replacement quote is in hand, considering operating strategy prior to replacement of the mixer.
 - Wet well needs rehabilitated. Couplings, discharge piping, pump rails/brackets, are rusted and structural integrity is compromised. Replacement of ladder into wet will also be included as part of this work.
 - We are writing a scope of work for obtaining quotes.

- **2012 CCTV Project**
 - Project is out for Bid; Open Bids on 2/22/13

- **DAMON Ave Pump #1**
 - Pump failed 2/11/13. Pump was pulled and taken to BRI for repair.
 - Repair cost – \$16,085

- **Country Club #2**
 - Pump failed 2/11/13. Motor on the pump had failed. Taken to DIE for repair.
 - Motor was Not Economical to repair.
 - Motor is being replaced in-kind (150hp) – \$11,224

- **7th Ward Mixer**
 - Mixer was seized up. It is an older style and cannot be repaired.
 - Waiting for replacement quotes.

- **Stevens Creek Interceptor (42" section) – Exposed section of pipe**
 - There is a section of the 42" interceptor just West of Oakland Ave where the cover dirt over the interceptor has washed away due to storm water over the years (originally installed in 1953).

Sanitary District of Decatur
501 Dipper Lane * Decatur, Illinois 62522 * 217/422-6931

MEMORANDUM

TO: Don Miller

DATE: February 12, 2013

FR: Roger Dudley

RE: 2011 PRIMARY CLARIFIERS #1 & #2 REHABILITATION PROJECT
PROGRESS REPORT #12

Project consists of removal & replacement of clarifier mechanism in primary clarifiers #1 & #2, coating the interior walls and channels of both clarifiers.

Notice of Award was issued on January 30, 2012.

Notice to Proceed was issued on March 22, 2012.

Contract was completed on December 31, 2012.

Awaiting final change order & lien waivers for project close out.