

## ATTACHMENT B

### COMPLIANCE ACTIVITIES, OPERATIONS CHANGES, COLLECTION SYSTEM IMPROVEMENTS, REGIONALIZATION, AND UPGRADE AND EXPANSION PLANS FOR THE SEWER MAINTENANCE DISTRICT 1 WASTEWATER TREATMENT PLANT

#### Summary

This attachment describes County of Placer's (County) compliance and facility improvement actions undertaken since adoption of the current NPDES permit and Cease and Desist Order (CDO) for the Sewer Maintenance District 1 (SMD 1) Wastewater Treatment Plant (WWTP) on June 23, 2005. The County has been very aggressive over the last 5 years in addressing all aspects of improving existing WWTP performance and planning for the future. Actions undertaken include the following.

- NPDES Permit Related Studies, Plans and Reports. Completing NPDES permit-related work plans, special studies and reports, at the cost of approximately \$200,000.
- Upgrade and Expansion Planning and Design. Planning for and funding the upgrade and expansion of the SMD 1 WWTP to achieve compliance with existing and anticipated future waste discharge requirements, with expenditures totaling approximately \$620,000 as of March 31, 2010.
- Operations Improvements. Evaluating and implementing operations changes at the SMD 1 WWTP to improve treatment process efficiency and final effluent quality, at the cost of approximately \$290,000.
- Collection System Investigations and Improvements. Investigating and improving the collection system and initiating the Siphon Relief Project to reduce inflow and infiltration (I/I) and peak WWTP influent flows, at the total cost of approximately \$5.1 million.
- Regional Sewer Planning. Planning and securing grant funding for regionalization of SMD 1 wastewater treatment at the City of Lincoln's Wastewater Treatment and Reclamation Facility (WTRF). As of March 2010, the County has spent over \$1.4 million on work for the Regional Sewer Project.

Specific details of the actions undertaken by the County are described in detail on the following pages.

#### NPDES Permit Related Studies, Plans and Reports

Below is a summary of a number of NPDES permit-related studies, work plans and reports that were completed. Many of these were documents that were also submitted to the Regional Water Board.

- September 2005 – Industrial Pretreatment Program

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- September 2005 – Sludge Disposal Plan.
- December 2005 – Pollution Prevention Plan.
- November 2006 – Electrical Conductivity and Total Dissolved Solids Assessment.
- December 2006 – Data Collection Plan in Support of NPDES Permit Study Provision F.10 and Cease and Desist Order Item 3.
- June 2007 – Placer County SMD 1 Wastewater Master Plan, Cease and Desist Order Item 2, Data Collection Plan.
- July 2007 – Study report for achieving compliance with final effluent nitrate and nitrite limitations.
- July 2007 – Study report for achieving compliance with final effluent limitations foralachlor, aluminum, atrazine, chloroform, mtbe, manganese, phthalate acid esters (PAEs), persistent chlorinated hydrocarbon pesticides, tributyltin and turbidity.
- July 2007 – Study report for achieving compliance with final effluent limitations for bis(2-ethylhexyl)phthalate, bromodichloromethane, copper, dioxins and furans, lead, PCBs, silver, and zinc.
- July 2007 – Inflow and Infiltration Priority Repairs and Schedule.
- January 2008 – Placer County SMD 1 Wastewater Master Plan, BPTC Analysis Report.
- September 2009 – Placer County SMD 1 WWTP Upgrade & Expansion, Report of Waste Discharge NPDES Permit No. CA0079316.
- October 2009 – Antidegradation Analysis for the Placer County SMD 1 Wastewater Treatment Plant.
- January 2010 – Submitted a report documenting effectiveness of repairs on the reduction of inflow and infiltration.
- April 2010 – In the process of procuring a consultant to assist in updating and implementing the Industrial Pretreatment Program. Received proposals in response to a request for proposals and have begun negotiating with the highest ranked firm. Contract anticipated to be approved by the County Board of Supervisors in June 2010.

The cost to the County to complete the above studies and plans from 2005-2010 was approximately \$200,000.

### **Upgrade and Expansion Planning and Design**

The County has worked to complete the predesign of a project to upgrade and expand the capacity of the existing SMD 1 WWTP in parallel with the planning effort for the project to regionalize the treatment and disposal of wastewater in the SMD 1 service area (the latter project is discussed below in the “Regional Sewer and Treatment Project” section). The proposed

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design replaces the existing WWTP with the modern treatment technologies necessary to comply with current regulatory standards and anticipated new discharge requirements. A two-phase capacity increase is also included, with the first phase taking the WWTP from its existing capacity of 2.18 million gallons per day (mgd) to 2.7 mgd. The first phase expansion is expected to be sufficient for growth in the area through the year 2034. The total project cost of completing this first phase is estimated to be \$87 million. Below is a summary of progress milestones for this project.

- June 2007 – Completed Existing Facilities Evaluation Technical Memorandum No. 1.
- June 2007 – Completed Recommended Interim Modifications Technical Memorandum No. 2. This TM recommended several operation changes or WWTP modifications (The specific WWTP modifications implemented are described below in the “SMD 1 WWTP Operations Improvements” section).
- October 2007 – Completed Interim Improvements Study.
- December 2007 – Completed Facility Assessment Report.
- April 2009 to January 2010 – Completed thirteen (13) engineering technical memoranda in support of the Preliminary Design Report.
- August 2009 – Met with State Revolving Fund Loan staff to discuss availability and options for funding the project.
- September 2009 to February 2010 – Issued request for proposals for design, reviewed proposals, recommended top-ranked firm, and negotiated design contract.
- April 2010 – Completed Preliminary Design Report.
- April 2010 – Ready to begin design and prepare environmental documentation once contracts are executed.

The County has spent approximately \$620,000 through March 31, 2010 to complete the above activities.

### **Operations Improvements**

The County has implemented several changes in operations and modifications to the SMD 1 WWTP to improve the treatment performance and effluent quality since adoption of the current NPDES permit in 2005, consistent with the Recommended Interim Modifications Technical Memorandum No. 2 identified in the previous section. These are summarized below.

- Set up electronic notification system for sanitary sewer overflows.
- Changed weir in the clarifier effluent junction box and installed a filter effluent flow meter, which provides better flow monitoring and splitting.

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- Experimented with modifying the step-feed to the rotating biological contactors to improve efficiency of biochemical oxygen demand and ammonia removals.
- Cleaned the primary and secondary digesters to reduce solids and ammonia loading from digester overflow.
- Moved the settling polymer injection point to the influent primary clarifiers for more efficient turbidity removal and increased biochemical oxygen demand removal in the primary clarifiers.
- Experimented with sludge removal rates in the final clarifiers to improve clarifier efficiency and achieve better turbidity removal. This will allow for higher capacity in the filter units by reducing the quantity of solids discharged from the clarifiers.
- Implemented changes to operate the equalization basins as primary clarifiers during high flow events to obtain better treatment during these conditions.
- Implemented changes to take chlorine contact basin (CCB) #1 out of service during high flow events, as it constrains the hydraulic treatment capacity.
- Experimented with filter run times to increase filter capacity and optimize the performance of the equalization basins.
- Changed polymer to improve treatment performance and reliability for the filters.
- Changed chlorine analyzers to obtain more accurate results and optimize chlorine and dechlorination feed, which affects effluent coliform levels and chemical usage.
- Implemented changes in standard operating procedures to operate trickling filter pumps during high flow events to achieve less solids sloughing to the clarifiers, thereby improving the performance of the clarifiers and tertiary filters.
- Installed a caustic feed station at CCB #3 for improved effluent pH control.

The cost to the County for the above described evaluations and improvements was approximately \$290,000.

### **Collection System Investigations and Improvements**

The County initiated an assessment of the collection system in 2005 to identify and reduce sources of inflow and infiltration (I/I). From 2005-2010, the County conducted the following inspections of the collection system.

- Approximately 290 manholes were inspected.
- Temporary flow meters were deployed at approximately 20 locations.
- Approximately 370 pipeline inspections were completed.
- Smoke testing was conducted each year and defects identified were repaired.

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As a result of these inspections, the County repaired approximately 60 pipelines through pipeline replacement, point repairs, and re-lining of approximately 13,760 feet of pipeline. In addition, approximately 110 manholes were repaired. The total County staff time and contract cost for the I/I assessment and collection system repairs was approximately \$2.3 million. Assessment of I/I within the SMD 1 sewer shed remains an ongoing project of the County.

Also, the County initiated the Siphon Relief Project, which consists of a condition assessment (completed), and construction of a new pump station and storage in the collection system (nearly completed). The addition of the storage will help lower the peak flow from the station as well as reduce I/I. The previous storage tank (which provided significantly less storage) was old and had substantial I/I during wet weather. The total cost of that project is approximately \$2.8 million.

### **Regional Sewer Planning**

The Proposed Regional Sewer Project (Regional Project) to serve SMD 1 consists of construction of a new pump station, pipeline, storage structures and appurtenances to convey wastewater to the City of Lincoln's WTRF for treatment and use as recycled water. The County has been a partner in this project as a member of the Placer Nevada Wastewater Authority (PNWA) along with the Cities of Lincoln and Auburn since 1998. The Regional Project capital cost is currently estimated at \$141 million. To be economically feasible for the County and the SMD 1 rate payers, the project must be funded, in significant part, by grants. Grant funding to date has been secured through the U.S. Army Corps of Engineers (USACE), authorized by the Energy and Water Development Act (EWDA), and the U.S. Environmental Protection Agency (EPA).

Since renewal of the NPDES permit in 2005 for the SMD 1 WWTP, the County has initiated and/or completed several actions to plan for and secure funding to regionalize treatment of the SMD 1 wastewater flows, as follows:

- March 2006 – The County contracts with Jones & Stokes for environmental/planning work on the Regional Project, at a cost of \$1 million.
- April 2006 – Bickford Ranch, a County development project, begins construction on the downstream section of the pipeline portion of the Regional Sewer Project. This pipeline connects to the pipelines that were previously constructed by the City of Lincoln to convey Regional Sewer Project flows through Lincoln's sewer collection system to the Lincoln WWTP (Several elements of the Lincoln WWTP were oversized to accommodate Regional Sewer Project flows). As of today, this pipeline has not yet been completed due to financial difficulties encountered by the developer.
- June 2006 – EPA appropriated \$600,000 for the Regional Project bringing total EPA funds to \$5.1 million to date.
- November 2006 – Congress appropriated \$2 million of EWDA funds.
- August 2007 – Brown & Caldwell, under contract with the County, begins work on a routing study to determine feasible alignments for the Regional Sewer Project pipeline.

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- January 2008 – EPA notified County that Bickford Ranch pipeline construction costs may not be used as local match which adds an additional financial burden to Regional Sewer Project partner agencies.
- April 2008 – PNWA completed a pipeline cost study concluded that the capital cost for the Lincoln- Auburn pipeline would be \$141 million, which is much higher than previous estimates.
- June 2008 – County Board of Supervisors conducted a workshop on SMD 1 WWTP compliance alternatives. Board members expressed support for the Regional Project provided the cost difference is not excessive.
- August 2008 – EPA informed the County it must contribute 45% local match before receiving additional EPA funds. The local match needed at this time to catch up was \$1,470,000.
- September 2008 – The County signed a Grant agreement with the USACE to allow the use of the EDWA grant funds for the Regional Sewer Project.
- November 2008 – County conducted an extensive outreach campaign, including a public workshop and survey of public opinion regarding SMD 1 WWTP compliance options: 75% of respondents expressed support for on-site upgrade of SMD 1 WWTP; 25% supported the Regional Sewer Project.
- November 2008 – Congress appropriated an additional \$1 million of EDWA funds.
- January 2009 – County Board of Supervisors conducted second workshop to discuss SMD 1 WWTP compliance alternatives.
- July 2009 – The County and City of Auburn begin discussions on how to share the cost of additional engineering work to refine Regional Sewer Project costs. The total cost of the additional engineering work is estimated to be \$2.7 million.
- March 2009 – County Board of Supervisors elected to move forward with preliminary design of SMD 1 WWTP improvements while continuing to pursue additional funding assistance for regionalization in recognition of the need to come into compliance with SMD 1 NPDES Permit as soon as possible.
- November 2009 – Congress appropriated an additional \$900,000 in EDWA funds.
- February 2010 – The County and City of Auburn begin preparation of a request for proposals for the preliminary design of the Regional Sewer Project in an effort to further refine the preliminary cost estimate of \$141 million.

As of March 2010, the County has spent over \$1.4 million on work for the Regional Sewer Project.