March 24, 2019

To: Metropolitan St. Louis Sewer District Rate Commission
From: Pam Lemoine, Black & Veatch Management Consulting, LLC
Nicole Young, Lion CSG
CC: Lisa Stump, Lashly & Baer. P. C.
Subject: Review of MSD CIRP Project Development – Draft Memorandum

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During the Rate Commission Workshop held on Friday, March 22, 2018, several Rate Commission members requested a summary of how the Metropolitan St. Louis Sewer District (MSD)'s Capital Improvement and Replacement Program (CIRP) has evolved over time, and the measures MSD is required to meet under its consent decree, other regulatory requirements, and other capital needs. Lion CSG has compiled the following brief synopsis of how the MSD CIRP is developed.

MSD System

- MSD created in 1954.
- Over decades of time, consolidated 79 different systems with 35 treatment facilities.
- MSD currently handles 93 municipalities covering 525 square miles and population of 1.4 million.
- Portions of the system are over 150 years old.
- 9,600 miles of pipe, 4th largest system in the US.

Clean Water Act (1972)

- Basis of Clean Water Act was enacted in 1948 as the Federal Water Pollution Control Act; the 1972 amendments became known as "Clean Water Act" (CWA or Act).
- Key provisions include:
  - Unlawful to discharge any pollutant from a point source into navigable waters, unless a permit is obtained.
  - Requires compliance with both technology-based and water quality-based effluent limitations.
  - Allows the issuance of National Pollutant Discharge Elimination System (NPDES) permits that allow pollutant discharges that meet the requirements of the Act.
  - Allows the States to administer the NPDES permit program.

Development of the CIRP

The CIRP is comprised of three components: Consent Decree related projects, Other Regulatory Requirements that are not Consent Decree related, and other Asset Management projects that are neither Consent Decree related or required by other regulatory requirements. A summary of each component follows:

CONSENT DECREE (EXHIBIT MSD 37) ($1,163,433,000)

- Parties included: United States Environmental Protection Agency (USEPA), Missouri Department of Natural Resources (MDNR), and Missouri Collation for the Environment.
- Began with June 11, 2007 complaint for Clean Water Act violations.
- Violations included: Combined Sewer Overflows (CSOs) and 300 Constructed Sanitary Sewer Overflows (SSOs), NPDES violations, and untreated sewage to homes, yards, parks, playgrounds, and streets.
- Consent Decree Effective Date April 27, 2012.
- 23-year program ending in 2034 (amended to 2039 with 6/22/18 amendment).
- Abatement of SSOs, CSOs, bypasses at WWTF, and basement backups.
- Total cost estimated at $4.7B in 2011 dollars.
- List of required Constructed SSOs to be eliminated by 2012.
- Development of SSO Control Master Plan (See below).
- CSO Control Measures to 2034 (amended to 2039) (See below).
- Post Construction Monitoring Program for CSOs.
- Supplemental Environmental Project Plan - $1.6M annually to remove septic systems.

CONSENT DECREE: AMENDMENT TO CONSENT DECREE (EXHIBIT MSD 37A)

- MSD approached Regulators with a request to amend the consent decree due to the financial burden imposed by new regulatory requirements for incinerators. The amended Consent Decree became effective 6/22/18 and includes:
- Extends CSO Control Measures for five years to 2039 for:
  - Upper River Des Peres Storage Tunnel (2039),
  - River Des Peres Tributaries Storage Tunnel (2035),
  - CSO Treatment Unit (2037), and
  - Lower & Middle River Des Peres Storage Tunnel (2037).
- Adds Green Infrastructure for Lemay Service Area, total of $20M.

CONSENT DECREE: REMEDIAL MEASURES AND SCHEDULES FOR SANITARY SEWER SYSTEM

- Sanitary Sewer Overflow (SSO) Control Master Plan (Exhibit MSD 37C)
  - To comply with Paragraphs 23 through 30 of Consent Decree.
  - Original - December 21, 2013
  - Final Revision – August 29, 2014
  - Elimination of all Constructed SSOs
  - Includes Sewer System Evaluation Survey (21 watershed/subareas) to determine condition of sewers with data review, flow monitoring, and field investigations.
  - Hydraulic modeling (five models for WWTF service areas) developed to assess hydraulic capacity.
  - Includes Capacity Assurance Evaluation (five reports) projecting capacity for growth through 2035.
  - **Total program of $2.062B (June 2013 dollars).**
    - **Remedial Measures of $336M: sanitary relief, tunnel, storage facility, pump station / force main, inflow/infiltration reduction, and WWTF projects)**

- **Remedial Requirements (Elimination Projects) of $1.726B: 87 conceptual projects to remove 149 Constructed SSO Outfalls.**
- Schedule of Elimination of Constructed SSOs:
  - 85% by December 31, 2023.
  - 15% by December 31, 2033.

- **Capacity Management Operations and Maintenance Program Plan (CMOM) (See Exhibit 61F for Review of Program)**
  - Ongoing asset management
  - Assessment of Conditions and Recommendations with associated risk & opportunities

CONCENT DECREE: IMPLEMENTATION OF CSO CONTROL MEASURES AND POST-CONSTRUCTION MONITORING

- **CSO Long Term Control Plan (LTCP) (Exhibits MSD 37B – 37B5)**
  - 1989 USEPA issued National CSO Control Policy
    - Ensure that if CSOs occur, they are only as a result of wet weather,
    - Bring all wet weather CSO discharge points into compliance with the technology-based and water quality-based requirements of the Clean Water Act, and
    - Minimize the impacts of CSOs on water quality, aquatic biota, and human health.
  - Missouri CSO Strategy approved in 1990.
  - MSD initiated CSO management planning in 1991.
  - Final federal policy in 1994.
  - Original LTCP submitted by MSD to MDNR in 1999 but due to conflicts MDNR could not approve. Second LTCP in 2004 was approved by MDNR but disapproved by USEPA. 2011 Update approved by MDNR & USEPA.
  - LTCP Includes: Existing Conditions, System Characterization, Modeling, Projected Loadings, Alternative Evaluation, Public Participation, Financial Analysis, Selected Plan.
  - **Selected Plan**
    - **Urban streams control to the point of diminishing returns ("knee of the curve") and Green Infrastructure.**
      - **New technologies**
      - **Sewer separation**
      - **Treatment Units**
      - **Storage tanks**
      - **Tunnels**
    - **Green Infrastructure**
      - **$100M total investment in Bissell**
      - **$20M total investment in Lemay (by amendment)**
  - Supplement 1, September 2013 (Exhibit MSD 37B1). Moves CSO Treatment Unit from upstream end of the CSTO storage tunnel to near the treatment facility.
  - Supplement No. 2, September 2013 (Exhibit MSD 37B2). Replace two of the CSO Control Measures (CSO Treatment Unit at Bissell Point Outfall 051 and Bissell Point Outfall 052 Storage Tank) with a single 12.5 million-gallon CSO storage facility.
  - Modifications A & B, February 2015 submittal, July 2015 approval (Exhibit MSD 37B3).

- Modification A - Eliminate CSO Control measure and In-Sewer Storage Upstream of Lemay Outfall #63, and increase Lower and Middle River Des Peres Storage Tunnel by a corresponding 25 million gallons.
- Modification B – Changes wording to allow for alternative means of meeting criteria for outfalls discharging to the Upper River Des Peres, River Des Peres tributaries, and Lower and Middle River Des Peres Storage Tunnels.

- Supplement No. 3, June 2018 (Exhibit MSD 37B5). Schedule modifications in consideration of regulatory requirement and financial burden of incinerators.

- Post Construction Monitoring (See Appendix E of Exhibit MSD 37)
  - Performance Monitoring and Sampling.
  - Evaluate and document effectiveness of each CSO Control Measure.
  - Water Quality Monitoring Plan.
  - Public education.

REGULATORY BUT NOT CONSENT DECREE RELATED ($339,088,000)

- Construct fluidized bed incinerators at the Bissell and Lemay wastewater treatment facilities, to include redundant sludge acceptance systems and solids handling system improvements.
- Projects at Pump Stations & Treatment Facilities related to asset management and sludge transfer to incinerators.

ASSET MANAGEMENT, NOT CONSENT DECREE OR REGULATORY RELATED ($14,000,000)

- Floodwall ORS pump stations, gates, and structures are over 50 years old, and need rehabilitation.