

The background of the slide is a composite image. The top-left portion is a solid blue triangle. The bottom-left portion is a photograph of a water treatment facility, showing large circular tanks with aeration equipment and metal walkways. The right portion of the slide is white.

Is Your Facility Flushing \$\$\$ Down the Drain – Literally?

BURNS  MCDONNELLSM

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Situation

- ▶ Major Chemical Company had been notified by St. Louis Metropolitan Sewer district (MSD) that there would be an increase in their effluent surcharges. Based on use of MSD's surcharge calculator, the cost was estimated to be an increase of approximately \$200,000 ANNUALLY or 6X current bill. I was contacted based on previous work at the Site

Cost Basis for Increase

- ▶ Measured increase in BOD and COD readings;
- ▶ Effluent volumes as “estimated” by the facility; and,
- ▶ Proportionate contributions from each of two contributing operations as submitted to MSD by the facility.

Unless otherwise provided herein, whenever the fees and charges required by this Ordinance are based on estimated values or estimated quantities, the Chief Engineer shall make such determinations in accordance with generally accepted engineering estimating practices.

All significant industrial users (SIUs) shall at a minimum submit biannually a report indicating the nature and concentration of pollutants in the discharge which are limited by pretreatment standards and the measured or estimated average and maximum daily flows for the reporting period.

Clearwater, Florida

General Ordinances; Chapter 32 – DIV. 2: Pretreatment and Discharge Restrictions

All connections that are not single-family residential units, or are single-family residential units with larger than a five-eighths by three-quarter inch (5/8" x 3/4") water meter service, except as noted above, shall have the number of single-family residential equivalents (SFRE's) determined through the size of the water service taps serving the building, structure, or premise, and in certain cases (determined by the water service tap size) shall use the alternate calculation method including estimated quantities of flow, BOD, SS, and TKN to be discharged to the system.

Westminster, CO (Denver Metro)
Chapter 8, City Codes

Flows are estimated for First Tier Customers, City of **Detroit** retail and industrial customer groups. A system-wide unit cost is then calculated based on the projected flows and costs. The system wide unit cost is applied to each customer's flow to express their share of the costs on a proportional basis.

The parcel listed above is one of more than 20,000 parcels that contribute to the city's drainage flows ... Beginning in October 2016, we will bill these parcels at a rate of \$750 per impervious acre per month.

Provide the total plant flow rate (average and maximum) to the sanitary sewer in gallons per day (GPD). If accurate flow measurements are unavailable, provide the best estimate... In order to provide City with a complete understanding of the facility's processes, location of pretreatment facilities and sampling points, the discharger is required to submit a schematic of each process and a schematic of wastewater flows. Flow rates may be estimated.

When required by the Director or by State or Federal regulations, any user who discharges any wastewater or storm water to the District's system shall submit to the Director self-monitoring reports identifying the nature and concentration or mass of prohibited or regulated substances in discharges from regulated processes or from the user's premises. The results shall be reported as concentration if the pollutant limits are given in concentration terms and shall be reported as mass if the pollutant limits are given as mass. The report shall include a record of all measured or estimated average and maximum daily flows during the reporting period.

**St. Louis Metropolitan Sewer District
Ordinance**

All significant industrial users shall, at a frequency determined by the Director of Public Works, but in no case less than twice per year (in June and December), submit a report indicating the nature and concentration of pollutants in the discharge which are limited by pretreatment standards and the measured or estimated average and maximum daily flows for the reporting period.

Orlando, Florida

**City Ordinance : Chap 30- Regulation of Sewer Use
and Rates**

The report must include a record of the mass and concentrations of the permit-limited pollutants that were measured. Reports shall include a record of all flow measurements taken at designated sampling locations. The Director may accept reports of average and maximum flows estimated by verifiable techniques if the Director determines that actual measurement is not feasible.

Portland, Oregon
City Code: Chapter 17.34.090 Reporting
Requirements.

Problem(s)

- ▶ Company's previous Site Environmental Manager (circa mid-2006) had developed a table for estimating effluent flow that had components that no one now onsite understood;
- ▶ No one knew where the data for the MSD User Questionnaire submitted in 2010 (basis for current discharge permit) had come from;
- ▶ Consequently, Site had no real understanding of what comprised their effluent.

Challenges

- ▶ Multiple departments – multiple responsibilities – multiple cooks in kitchen;
- ▶ Even though much of formulation processes were computerized, little additional information was available on pumps, discharge rates, etc. outside of product formulation;
- ▶ Helpful documentation compiled previously was frequently buried in archives;
- ▶ Available Site maps of sewer lines were inaccurate or incomplete;
- ▶ Lack of site knowledge w/ current staff

Initial Approach

- ▶ Gather available Site maps of sewer lines to review outlets/inlets; **Maps were dated and inaccurate**
- ▶ Interviewed process and operations personnel to gather information on pumps, discharge rates, etc.; **Staff were generally knowledgeable of their areas, but knew little of how their departments interfaced with others and equipment information**
- ▶ Reviewed table for estimating effluent flow developed by previous Site Environmental Manager (circa mid-2006); **Calcs resulting from table were inconsistent with standard flow calcs**
- ▶ Reviewed previous effluent flow & contribution model developed for the Site by us in 2004-2005; **Model had not been updated to reflect changes in Site processes and was no longer used**

Revised Approach

- ▶ Site maps of sewer lines were updated and reconciled with water supply drawings;
- ▶ Gathered verifiable process information where possible and on pump makes, models, specs whenever possible;
- ▶ Revised table for estimating effluent flow developed by previous Site Environmental Manager to make consistent with standard flow calcs;
- ▶ Revised and updated previous effluent flow & contribution model developed previously to reflect changes in Site processes and equipment layout;
- ▶ Reviewed and updated spreadsheet of water component in products compiled by others;
- ▶ Compared contributions to effluent from Site operations (as reported by Site) to water supplied

Findings

- ▶ Actual water used in products was 3-5% higher than Reduction Factor (RF) reported by Site (as determined by Site personnel) to MSD, thereby impacting volume of water estimated to be in effluent;
- ▶ Table for estimating effluent flow developed by previous Site Environmental Manager was generating effluent volumes several times MORE THAN THE SITE WAS BEING SUPPLIED;
- ▶ Revised and updated effluent flow & contribution model was still a viable tool to predict contaminate concentrations at compliance points;

Results

- ▶ Revised RF reduced discharge fees approximately \$17,000 annually based on new surcharges;
- ▶ Revised table for estimating & reporting effluent flow now had facility reporting a volume that was a % of water supplied, resulting in approximately \$156,000 in estimated annual savings based on new surcharges.

QUESTIONS??

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