Input Briefing: RWQC & Council Request for Performance Metrics

May 24, 2017

King County
Department of Natural Resources and Parks
Wastewater Treatment Division
Purpose of the request

- The RWQC and Council have requested WTD post metrics:
  - Present operational patterns
  - Highlight system dynamics and stresses
  - Identify approaching challenges
  - Share an overview of the system
  - Serve as a common status communications tool
Dashboard metrics requested

- Volumes of flows, solids and biosolids
- Sediment and water quality data
- Permit violations and reports to regulators
- Energy generation and usage (gas and electricity)
- Rate and capacity charge revenue and expenditures
- Significant cost changes of major capital projects
Dashboard update schedule

- Prepare and electronically post metrics monthly
- Metrics transmitted to the Council and the RWQC by September 1, 2017
- Regular monthly posting of the metrics shall begin by November 2017
- WTD goals is to have first summary report by August 2017
MWPAAC feedback

• What additional performance metrics do you believe would be helpful to ensure we are being responsive and accountable?

• What recommendations do you have regarding how best to graphically depict these measures so they are best understood?
The King County Wastewater Treatment Division Dashboard provides relevant information on operational, financial and regulatory performance of the utility. Much of the information provided is updated monthly. If you have any questions regarding the information on this dashboard, please contact:

Robert Tovar, Wastewater Treatment Division
206-477-5374
robert.tovar@kingcounty.gov
Potential Dash Board Look

Flows & Volumes:

Solids & Biosolids:

Energy Generation:

Regulatory Compliance:

Financials:

Capital Program:
Example – Flows & Volumes

WTD Flows 2017

MGD (daily avg.)

Rain, inches/day


BW  SP  MLK  EW  Carkeek  Alki  WP  Rain
West Section Treated CSO TP Discharge Volumes (January - April 2017)

Discharge Volume (Million Gallons)

- January: Alki 30.1, Carkeek 12.4, H/MLK 61.4
- February: Alki 121.3, Carkeek 50.8, H/MLK 14.5
- March: Alki 56.6, Carkeek 14.2, H/MLK 0
- April: Alki 29.5, Carkeek 4.8, H/MLK 1.6
The sources are the 39 County CSO locations that discharge to Lake Washington, Lake Union, the Lake Washington Ship Canal, the Duwamish River, Elliott Bay, and Puget Sound as shown on this map…

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**Activity Description:**
Q1 of 2017 saw more precipitation (rain and snow) than previous years, which limits distribution options. During winter we send biosolids to Natural Selection Farms (NSF) for storage and GroCo. We were challenged this year at our storage site in Yakima (NSF) which required us to divert solids to Boulder Park Incorporated (BPI). Heavy snow followed by rain near BPI made roads and fields difficult to travel, leaving many trucks stranded. We anticipate the forestry sites to increase application as the mountains dry.
Examples - Biosolids

Biosolids Distribution 2000-2016

- Compost
- Forestry
- Agriculture
- Land Reclamation
- Research, Misc. Small Projects

Wet Tons

**NPDES Permit Exceedances (Reportable Events Subject to Potential Penalties) – Wastewater Treatment Facilities or Conveyance System**

<table>
<thead>
<tr>
<th>Facility</th>
<th>January 2017</th>
<th>February 2017</th>
<th>March 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Effluent Limitations at Wastewater Treatment Facilities (number of exceedances)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Point</td>
<td>0</td>
<td>14 *</td>
<td>21 *</td>
</tr>
<tr>
<td>South Plant</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Brightwater</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Vashon</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>Carnation</td>
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<td>Henderson/MLK CSO</td>
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<td>Alki CSO</td>
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<tr>
<td>Carkeek CSO</td>
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<td>Elliott West CSO</td>
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<td>4</td>
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<td><strong>Dry Weather Overflows in Combined or Separated Systems</strong></td>
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<tr>
<td>West Division – Dry Weather Overflows at CSO Outfalls</td>
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<td>West Division – Sanitary Sewer Overflows</td>
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<tr>
<td>East Division – Sanitary Sewer Overflows</td>
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<td>0</td>
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</table>

* Effluent limitation exceedances as a result of West Point flooding and equipment damage incident.

Notes: Goal for compliance for all events is “zero”, and all exceedances have potential to be assessed penalties.
Example – Energy

West Point Biogas Production and Use
Example – Energy
West Point Biogas Production and Use
Example – Energy

Graph SP2 - South Plant Electricity Use and Biogas Produced (MMBTU/day)

- Effluent Flow
- Total PSE Electricity Used
- Previous 3-yr Avg PSE+CoGen for current Month
- BiogasRecovered For PSE and SP Use
- Biogas Previous 3 year Current Month Avg

Energy in MMBTU/day (Total PSE, Previous 3 yr, Biogas Recovered)

Final Effluent Flow (MGD)

Dates:
- 4/1/17
- 4/4/17
- 4/7/17
- 4/10/17
- 4/13/17
- 4/16/17
- 4/19/17
- 4/22/17
- 4/25/17
- 4/28/17
Example – Energy

**Graph SP3** - South Plant Biogas Production and Use

- **Total Biogas Captured for Use**
- **Scrubbed Boiler Gas Used**
- **Last 3 Years Monthly PMC**
- **Pressure Modulation Combustion (PMC)**
- **Total Biogas Produced**

Therm (1 Therm = 100,000 BTU)

- 25,000
- 20,000
- 15,000
- 10,000
- 5,000

Dates:
- 4/1/17
- 4/4/17
- 4/7/17
- 4/10/17
- 4/13/17
- 4/16/17
- 4/19/17
- 4/22/17
- 4/25/17
- 4/28/17
Example – Rate & Capacity Charge

WTD Revenue and Expenditures Y-T-D

January: $37,239,700
February: $38,669,279
March: $42,131,346
April: $39,082,837
Year-to-date: $157,123,162

January: -$3,927,167
February: $22,821,017
March: $27,107,090
April: $28,289,265
Year-to-date: $82,144,539

Legend:
- RCE Revenue
- Capacity Charge Revenue
- WTD Capital Expenditures
- WTD Operating Expenditures
## Capital Costs Changes

### REPORT: Baseline Summary - Master Projects
Quarter 1 2017

<table>
<thead>
<tr>
<th>Project</th>
<th>BPS No.</th>
<th>Phase</th>
<th>Baseline Name</th>
<th>Budget Baseline</th>
<th>Baseline Schedule Duration</th>
<th>Budget Variance</th>
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<tr>
<td>Assess &amp; Refurbish or Replace Duty Pump's VFD's at SP ETS</td>
<td>1114373</td>
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<td>Gate 3-Baseline (08/10/2014)</td>
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<td>Liberty Boat Replacement</td>
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<td>North Creek Interceptor</td>
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<td>South Plant ETS Feeding Pumps VFDs, Assess &amp; Replace</td>
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<td>South Plant ETS Feeding Pumps VFDs, Assess &amp; Replace</td>
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<td>South Plant Localized Hypo and Caustic Chemical Storage</td>
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<td>Sunset/Heathfield Pump Station Replacement &amp; Foreman Upgrade</td>
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<td>WP Complete Process Compost Floating Lids</td>
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King County
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Questions and feedback

Contact Robert Tovar,
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(206) 477-5374