IMPACT OF TROPICAL STORM ISAAC ON STORMWATER TREATMENT AREAS

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Technical Oversight Committee Meeting

December 18, 2012
Tropical Storm Isaac
August 26 – 27, 2012

• **Record Rainfall Event (last 20 years)**
  - 2\textsuperscript{nd} largest 1-day rainfall event
  - 3\textsuperscript{rd} largest 2-day rainfall event

• **Heaviest rainfall in Palm Beach, Broward & Dade Counties**
  - C-51 Basin: 1 in 100 year rainfall event
  - Almost 15 inches rain in 72 hr period

STA-1W G-303 gated structure
Flooded field at Knights Farm on east side of Sam Senter Road. Photo from T. Strowd Water Conditions Report, October 2012 Governing Board.
Impact on STAs

- Elevated Inflow flows, total phosphorus (TP) loads & concentrations
- 24 hr pumping @ STA-1E, STA-1W, STA-2 & STA-3/4
  - S-5A & S-319 maximum pumping rate
- Some STA-1E/STA-1W structures under repair
- Deep water depths
- Diversions into Water Conservation Area 1 (WCA-1)
- STA-5 & STA-6 unaffected

STA-1E Cell 3 outflow structure S-367A vegetation TuffBoom© buckled due to high flows. Vegetation remaining on the railing on left indicates elevated water levels.
STA-1E Water Depths

STA-1E Animation

Notes:
1. Updated 10/2/12.
2. Drawing Not to Scale.
3. Cell Areas calculated using digitized levee centerlines and do not include inflow canals or distribution cells.
Average values and standard error bars are shown for 2007 - 2011. Graph contains preliminary data.
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STA-2 Water Depths

STA-2

<table>
<thead>
<tr>
<th>Treatment Cell Acreage</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cell 1</td>
<td>1798</td>
</tr>
<tr>
<td>Cell 2</td>
<td>2270</td>
</tr>
<tr>
<td>Cell 3</td>
<td>2270</td>
</tr>
<tr>
<td>Cell 4</td>
<td>1902</td>
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<tr>
<td>Total Eff. Area</td>
<td>8240</td>
</tr>
</tbody>
</table>

Water Depth (feet)

- <2.5'
- 0.0'
- 2.5'
- 5.0'
- 10'
- >15'

Structures
- Remote Operated
- Manually Operated
- Passive
- Pump Station

Features
- Canals
- Seepage Canals
- Emergent Treatment Cell
- SAV Treatment Cell
- Upland/Other Area
- Boat Ramp

Flow
- Inflow
- Treatment Flow
- Outflow
- Seepage Return Flow
- Diversion Flow

Not to Scale and drawings are approximations

STA-2 Animation
Average values and standard error bars are shown for 2007 - 2011. Graph contains preliminary data.
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STA-3/4 Water Depths

STA-3/4 Animation

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
Average values and standard error bars are shown for 2007 - 2011. Graph contains preliminary data.
Water Quality Impacts

Average values and standard error bars are shown for 2007 - 2011. Graph contains preliminary data.

Standard error bars shown. Graph contains preliminary data.
STA-1E/STA-1W Diversion

48-Hour Isaac Estimated Rainfall Amounts
8pm Saturday - 8pm Monday (Aug 25-27)
STA-1E & STA-1W Diversion

- Maximum discharges to Lake Okeechobee
- Maximum discharges to Lake Worth Lagoon
- Maximum discharges to STA-1E and STA-1W
- Rising stages in STA-1 Inflow Basin and upstream canals

Water levels at the top of the inflow gate.
STA-1E/STA-1W Diversion Structures

Loxahatchee National Wildlife Refuge

Wellington
Upstream Gauges
Prior to Diversion
<table>
<thead>
<tr>
<th>Date</th>
<th>G-300 (STA-1E) Flow, cfs</th>
<th>G-301 (STA-1W) Flow, cfs</th>
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<tbody>
<tr>
<td>8/27/2012</td>
<td>372</td>
<td>445</td>
</tr>
<tr>
<td>8/28/2012</td>
<td>1,500</td>
<td>734</td>
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<tr>
<td>8/29/2012</td>
<td>1,221</td>
<td>740</td>
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<tr>
<td>8/30/2012</td>
<td>1,653</td>
<td>609</td>
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<tr>
<td>8/31/2012</td>
<td>2,039</td>
<td>359</td>
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<tr>
<td>9/1/2012</td>
<td>2,046</td>
<td>118</td>
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<tr>
<td>9/2/2012</td>
<td>1,517</td>
<td>34</td>
</tr>
<tr>
<td>9/3/2012</td>
<td>669</td>
<td>0</td>
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</tbody>
</table>

cfs = cubic feet per second
Summary of Flow Volume, TP Load & TP Concentrations
August 27 – September 3, 2012

<table>
<thead>
<tr>
<th>STA Diversion Structure</th>
<th>Flow Volume (Acre-feet)</th>
<th>Total Phosphorus</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Load (metric tons)¹</td>
<td>Flow-Weighted Mean Concentration², (mg/L)</td>
</tr>
<tr>
<td>G-300</td>
<td>21,850</td>
<td>10.0</td>
<td>0.371</td>
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<tr>
<td>G-301</td>
<td>6,026</td>
<td>3.1</td>
<td>0.421</td>
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</tbody>
</table>

¹Note: one metric ton equals 1,000 kilograms.
²Based on flow-proportionate composite samples collected 9/4/2012
Flows to STA-1E and STA-1W
Diversions to Loxahatchee National Wildlife Refuge & Transfers to Eastern C-51 Basin

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Graph showing flow volumes (acre-feet) from 26 Aug to 9 Sep, comparing To STA-1E/1W, Through S155A, and Diversion to Refuge.
Questions?