Stormwater Mapping & Successful Illicit Discharge Detection
April 4, 2017
Port Commission

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Port of Houston

• 25-mile-long
• Diverse public and private facilities
• 150 private industrial companies
• 8 public terminals
- Environmental management of its 9 terminals (14,000 acres)
- Cargo operations (3,400 acres) comprise approximately 15 percent of the overall commerce that occurs along the HSC.
- An environmental leader for all industries and terminal operators located along the HSC.
- No regulatory authority over the operations or activities of these private facilities.
- Adheres to the same municipal, state, federal, and international laws and regulations as the private facilities.
MISSION
To move the world and drive regional prosperity

The Port of Houston provides 1.175 million jobs to Texas

Annual statewide economic impact is $265 billion
VISION

Americas’s distribution hub for the next generation

First in Foreign waterborne tonnage
First in U.S. import tonnage
First U.S. export tonnage
Second in total tonnage

Replacing aging infrastructure with more modern equipment
Barbours Cut Terminal 3-29-17

ISO 14001 EMS

The Port of Houston Authority will:

• **Comply** with environmental laws and regulations
• **Create** business practices to prevent pollution and support sustainability
• **Communicate**, engage, and collaborate with stakeholders
• **Commit** to being a recognized maritime industry leader in environmental stewardship
• **Continuously improve** environmental performance
BAYPORT
BARBOURS CUT
TURNING BASIN
Illicit Discharge Detection and Elimination

(a) Illicit Discharges

A section within the SWMP must be developed to establish a program; including inspection procedures, methods and a schedule; to detect, prevent, and eliminate illicit discharges and improper disposal to the MS4. The SWMP must include the manner and process to be used to effectively prohibit illicit discharges. To the extent allowable under state and local law, a legal authority mechanism such as a statute, ordinance, permit, contract, lease, or tariff, must be utilized to prohibit and eliminate illicit discharges. Elements must include:
(d) Storm Sewer Map

(1) The permittee shall continue to develop and revise as necessary a map of the storm sewer system. The map must include the following:

(i) the location of storm sewer pipes, ditches, and other conveyances owned by the permittee, or at a minimum, the drainage area for each outfall;

(ii) the location of all outfalls; and

(iii) the names and locations of all waters of the U.S. that receive discharges from the outfalls.
<table>
<thead>
<tr>
<th>Terminal</th>
<th>Terminal ID</th>
<th>Receiving Water</th>
<th>Estimated No. of Outfalls</th>
<th>Permit Year A</th>
<th>Permit Year B</th>
<th>Permit Year C</th>
<th>Permit Year D</th>
<th>Permit Year E</th>
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<tbody>
<tr>
<td>South Side Turning Basin</td>
<td>SSD</td>
<td>Buffalo Bayou (HSC)</td>
<td>7</td>
<td>Q1: 7</td>
<td>Q2: 7</td>
<td>Q3: 7</td>
<td>Q4: 7</td>
<td>Q5: 7</td>
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<tr>
<td>Industrial Park East</td>
<td>IPE</td>
<td>Buffalo Bayou (HSC)</td>
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<td>Q1: 4</td>
<td>Q2: 4</td>
<td>Q3: 4</td>
<td>Q4: 4</td>
<td>Q5: 4</td>
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<tr>
<td>Manchester</td>
<td>MAN</td>
<td>Buffalo Bayou (HSC)</td>
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<td>Q2: 4</td>
<td>Q3: 4</td>
<td>Q4: 4</td>
<td>Q5: 4</td>
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<tr>
<td>Turning Basin</td>
<td>TET</td>
<td>Buffalo Bayou (HSC)</td>
<td>33</td>
<td>Q1: 33</td>
<td>Q2: 33</td>
<td>Q3: 33</td>
<td>Q4: 33</td>
<td>Q5: 33</td>
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<tr>
<td>Barbour's Cut</td>
<td>BCT</td>
<td>Barbour's Cut Channel</td>
<td>24</td>
<td>Q1: 24</td>
<td>Q2: 24</td>
<td>Q3: 24</td>
<td>Q4: 24</td>
<td>Q5: 24</td>
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<tr>
<td>Woodhouse</td>
<td>WHS</td>
<td>Buffalo Bayou (HSC)</td>
<td>18</td>
<td>Q1: 18</td>
<td>Q2: 18</td>
<td>Q3: 18</td>
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<td>Q5: 18</td>
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<tr>
<td>Sims Bayou</td>
<td>SIM</td>
<td>Sims Bayou</td>
<td>4</td>
<td>Q1: 4</td>
<td>Q2: 4</td>
<td>Q3: 4</td>
<td>Q4: 4</td>
<td>Q5: 4</td>
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<tr>
<td>Tank Materials Handling</td>
<td>BHMMP</td>
<td>Confluence of Buffalo Bayou (HSC) and Greens Bayou</td>
<td>7</td>
<td>Q1: 7</td>
<td>Q2: 7</td>
<td>Q3: 7</td>
<td>Q4: 7</td>
<td>Q5: 7</td>
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<tr>
<td>Jacintoport</td>
<td>JPT</td>
<td>Buffalo Bayou (HSC)</td>
<td>5</td>
<td>Q1: 5</td>
<td>Q2: 5</td>
<td>Q3: 5</td>
<td>Q4: 5</td>
<td>Q5: 5</td>
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<tr>
<td>Care</td>
<td>CAR</td>
<td>Buffalo Bayou (HSC)</td>
<td>3</td>
<td>Q1: 3</td>
<td>Q2: 3</td>
<td>Q3: 3</td>
<td>Q4: 3</td>
<td>Q5: 3</td>
</tr>
<tr>
<td>Bayport</td>
<td>BFT</td>
<td>Bayport Channel</td>
<td>5</td>
<td>Q1: 5</td>
<td>Q2: 5</td>
<td>Q3: 5</td>
<td>Q4: 5</td>
<td>Q5: 5</td>
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<tr>
<td><strong>Total No. of Outfalls</strong></td>
<td></td>
<td></td>
<td><strong>154</strong></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>FACILITY NAME</td>
<td>OUTFALL ID</td>
<td>REPRESENTATIVE PHOTOGRAPH</td>
<td>ELEVATED</td>
<td>OUTFALL SIZE</td>
<td>OUTFALL TYPE</td>
<td>TRAJECTORY AFFECTED</td>
<td>LATITUDE</td>
<td>LONGITUDE</td>
</tr>
<tr>
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</tr>
<tr>
<td>Barbours Cut Terminal</td>
<td>BCT-001</td>
<td><img src="image1.jpg" alt="Image" /></td>
<td>10'</td>
<td>Elevated</td>
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<td>Barbours Cut Terminal</td>
<td>BCT-002</td>
<td><img src="image2.jpg" alt="Image" /></td>
<td>4'</td>
<td>Elevated</td>
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<td>Barbours Cut Terminal</td>
<td>BCT-003</td>
<td><img src="image3.jpg" alt="Image" /></td>
<td>5'</td>
<td>Elevated</td>
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<tr>
<td>Barbours Cut Terminal</td>
<td>BCT-004</td>
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<td>4'</td>
<td>Elevated</td>
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<td>Barbours Cut Terminal</td>
<td>BCT-005</td>
<td><img src="image5.jpg" alt="Image" /></td>
<td>5'</td>
<td>Elevated</td>
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</tbody>
</table>
## General Information

- **Terminal Name:**
- **Time:**
- **Date:**
- **Outfall No.:**
- **Inspection Team Members:** (Circle Crew Leader)
- **Time Since Last Rain:** >24 hrs. <24 hrs.
- **Last Rain Amount:** >0.1 in. <0.1 in.

## Field Site Description

- **Open Channel**
- **Manhole**
- **Outfall**
- **Other**

## Floatables Observation

Identify the level of debris and indicate by clicking all of the types of debris that are observed.

<table>
<thead>
<tr>
<th>Level of Trash/Debris</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Organic Material</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardboard/Chipboard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Plastic</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Glass</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Styrofoam/Polyurethane</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood-Processed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloth/Fabric</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cigarette Butts</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Other</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

## Field Analysis

- **Water Temp.:** °C
- **Chlorine (Total):** mg/L
- **pH:**
- **Sulfate:** mg/L
- **Phenol:** mg/L
- **Detergents:** mg/L

## Laboratory Sample Collected

- **Yes**
- **No**

If Yes, copy of chain-of-custody record number:

## Comments

- **Visual Observations:**
  - **Photo Taken:** Yes  No
  - **Photo No.:**
  - **Odor:** None  Musty  Sewage  Rotten Eggs  Petroleum Chemical  Other
  - **Color:** Clear  Red  Yellow  Brown  Green  Grey  Other
  - **Clarity:** Clear  Cloudy  Opaque
  - **Presence of Sheen:** Yes  No
  - **Deposits/Stains:** None  Sediments Only  Other
  - **Vegetation Condition:** None  Normal  Excessive Growth  Stunted
  - **Structural:** Normal  Concrete Cracking  Metal Corrosion  Other
  - **Biological:** Mosquito Larvae  Algae  Other
FIRST WE START WITH THE HOUSTON SHIP CHANNEL