Best Management Practices (BMPs):
Regulations and Case Studies

800 E. Ocean Blvd, Suite 105
Long Beach, CA 90802
562-391-2925
www.StormWaterSystems.net
Minimum BMPs Required

The Industrial General Permit (IGP) includes Minimum BMPs

**Minimum BMPs**

- Good Housekeeping
- Preventive Maintenance
- Spill and Leak Prevention
- Material Handling / Waste Management
- Erosion/Sediment Controls
- Employee Training Program
- Quality Assurance/Record Keeping

**Advanced BMPs**

- Exposure Minimization BMPs (storm resistant shelters)
- Water Containment and Discharge Reduction BMPs (divert, infiltrate, reuse, contain, or reduce runoff)
- Treatment Control BMPs (mechanical, chemical, biologic)
- Other Advanced BMPs
Basic BMPs: Wattles and Socks

What are Basic BMPs?

- Wattles – Sediment removal
- Metal Socks – Dissolved metals removal
- Flocculant Socks – Sediment removal, oil encapsulation, solids clump and settle
- Oil Booms and Pillows – Oil removal
- Drain Filters – Sediment removal and debris control
- Metal Removing Catch Basin Filter – Dissolved metals removal
Basic BMPs:
Deploying Wattles and Socks
Basic BMPs: Deploying Wattles and Socks
In the direction the water is flowing, place wattle closest to the drain or sample point, with the metal media sock, oil pillow and flocculant sock layered in order after the wattle.
Intermediate BMPs

What are Intermediate BMPs?

- Sweeper Trucks
- Regenerative Airflow Vacuums
- Down Spouts Media Filters

What are Intermediate Structural BMPs?

- Berms
- Control Water Flow to One Location
Advanced BMPs: Containment and Shelters
Advanced BMPs: Treatment
Concrete Company BMP Case Study

Overview of Pollutant Challenges

• High Total Suspended Solids (TSS) and high Iron (Fe) were problems for this facility due to concrete dust.
• Industrial material stockpiles were causing high TSS – the solids needed to be filtered.
• Runoff needed to be minimized to decrease pollutants.
• Storm water flow needed to be slowed to promote storm water retention to aid settling of solids.
• Industrial materials needed to be covered to avoid exposure.
• Discharge needed to be removed at one of the outfalls.
• Perimeter was eroding and discharging into a creek.
• Run-on from neighboring businesses was causing problems.
Concrete Company BMP Case Study (cont’d.)

BMP Recommendations Implemented

• Drive-through gravel-line basins have been excavated in key areas of storm water flow to promote storm water retention and slow down storm water velocity which facilitates the settling of solids susceptible to suspension in fast-moving water.
• Flocculant was also broadcast into the basins, upstream of the basins and across the site in unpaved areas to aid in the clumping of fine solids.
• Straw wattles are deployed in front of material stockpiles prior to rain events to filter solids and minimize the runoff of aggregate materials which have been identified as a source for TSS and Fe.
• Tarps are deployed over material stockpiles prior to rain to minimize the exposure of storm water to aggregate materials which have been identified as a source for TSS and Fe. Industrial wattles deployed in front of materials.
• Discharge has been eliminated at Outfall 2.
• A berm is installed along the north perimeter to prevent erosion and eliminate direct discharge into a water body along one point.
• Run-on from neighboring businesses eliminated via perimeter re-grading.
Concrete Company BMP Case Study (cont’d.)

Additional BMP Recommendations

• Vacuum areas around batch operations and aggregate unloading areas to minimize buildup.

• Regularly inspect integrity of bunkers, transfer equipment, and support equipment and repair as necessary.

• Regularly inspect and dispose of products no longer usable in designated waste dumpsters and keep lids closed/covered to prevent dispersal by wind or rain.

• Remove packaged finished products from exposure prior to rain events.
Concrete Company BMP Case Study: Sample Results

**Samples 2012-2014**

<table>
<thead>
<tr>
<th></th>
<th>pH</th>
<th>TSS</th>
<th>O&amp;G</th>
<th>Fe</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA IGP NALs</td>
<td>6 to 9</td>
<td>100</td>
<td>15</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Sample Point</th>
<th>pH</th>
<th>TSS</th>
<th>O&amp;G</th>
<th>Fe</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/1/2012</td>
<td>SP</td>
<td>8.51</td>
<td>2650</td>
<td>-</td>
<td>93.7</td>
</tr>
<tr>
<td>12/12/2014</td>
<td>SP</td>
<td>8.67</td>
<td>1790</td>
<td>-</td>
<td>353</td>
</tr>
</tbody>
</table>

**Before BMP Recommendations**

**Samples 2015-2016**

<table>
<thead>
<tr>
<th></th>
<th>pH</th>
<th>TSS</th>
<th>O&amp;G</th>
<th>Fe</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA IGP NALs</td>
<td>6 to 9</td>
<td>100</td>
<td>15</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Sample Point</th>
<th>pH</th>
<th>TSS</th>
<th>O&amp;G</th>
<th>Fe</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/22/2015</td>
<td>SP #7</td>
<td>7</td>
<td>62</td>
<td>&lt; 3.1</td>
<td>2.5</td>
</tr>
<tr>
<td>1/5/2016</td>
<td>SP #7</td>
<td>8.06</td>
<td>140</td>
<td>&lt; 1.5</td>
<td>4.9</td>
</tr>
<tr>
<td>1/31/2016</td>
<td>OUTFALL 1</td>
<td>7</td>
<td>20</td>
<td>2.1</td>
<td>0.65</td>
</tr>
</tbody>
</table>

**After BMP Recommendations**

**Stormwater Year Average**

<table>
<thead>
<tr>
<th></th>
<th>pH</th>
<th>TSS</th>
<th>O&amp;G</th>
<th>Fe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.35</td>
<td>74.00</td>
<td>2.57</td>
<td>2.68</td>
</tr>
</tbody>
</table>