Stormwater Inspection Data Collection and Management

R. Chad Wallace, P.E.
Initial Program

• Our “You Can Do Better” Moment
  – 2009 – Administrative Order –

• Small and Large Construction Permits
  – Monitoring, Reporting and Recordkeeping
  – Develop construction guidelines for BMP’s

• Consulting Services Contract
  – Assistance in bringing things up to standard

• Develop a Comprehensive Program
  – Established Training for Certification (2005) incorporated
  – Implement a more comprehensive Storm Water Inspection Program
  – Assistance in Managing a Stewardship and Compliance Program
  – Document Findings
From then to now ...  
Bettering the Stormwater Program

- Inspections and Summaries developed by independent 3rd Party
- Follow-up responsibilities determined
- Site Ratings established and then improved
- System improvements needed to
  - manage this information and
  - assist in recognizing issues related to these inspections.
Challenges in Storm Water Inspection
Addressing the needs for ...

- Streamlined process
- Easy to use tool for inspectors and quality control
- Large amounts of data
- Electronic storage of data
- Reports and Data easily accessible
The Process

- Field Inspections
  - Use Smart Client
  - Offline for Field Use
  - Online for QA/QC
  - Editing

- Report Creation

- Data Archival

- Email Notifications

- Performance Management

Web Site
Smart Client Operations

- Smart Client Server/Database
- Caching Data
- Synchronizing Data
- Client Computer
Inspector / Reviewer Roles

Diagram:
- Online Mode:
  - Inspector
  - Cache Data
  - New Inspection

- Offline Mode:
  - New Inspection
  - Update Inspection
  - Only if Needed

- Synchronize Data

- Report Submittal
- QC/QA
- Reviewer

MDOT (Mississippi Department of Transportation)
Project Location

GeoMedia Smart Client [V13.0.0.2_20130718.3] - MDOT Stormwater - Offline

Stormwater Inspections  Stormwater Inspections (Online)  Measure  Printing  Redline

New Inspection  QA/QC Inspection  Update Inspection

Search

Legend

Overview

M = 1 : 3,453,934

Project Search

<table>
<thead>
<tr>
<th>Project Type</th>
<th>District</th>
<th>County</th>
<th>Project Number</th>
<th>Project Detail</th>
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1 - 10 of 95 items
Following questions vary based on initial responses
Project Information

General Site Information

- Was the project documentation reviewed during the inspection? Yes/No/Comment
- Small Construction Notice of Intent (SCNOI), if 1 to 5 acres: None
- Storm Water Pollution Prevention Plan (SWPPP): None
- Erosion Control Plan (ECP): None
- Monthly Inspection Reports? None
- Has the contractor's CECI person changed? None
- Has the project engineer received a letter from the contractor concerning his borrow pits and spoil areas? None
- Has MDEQ been notified of an anticipated or unanticipated noncompliance since the last inspection? None

< Back Save >
Site Observation
Record Observation

Observation Type: Major Deficiency
Location: 35+00
Problem: Sediment deposits observed off right-of-way in areas that do not directly impact waters of the state
Corrective Action: The contractor should install, maintain, or replace BMPs as needed to prevent further sediment impact. The MDOT P.E. should be contacted and kept informed. Contact the Environmental Division for assistance, if needed.

GeMedia Smart Client [V13.0.0.2_20130718.3]
CAPTURE GPS

GeoMedia Smart Client [V13.0.0.2_20130718.3] - MDOT Stormwater - Offline

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Message

GPS point captured at Latitude: 32.30267, Longitude: -90.184402

OK
Add Photo
Repeat as Necessary
**Project Status**

Project Documentation Wt. 15%  8
ECP/SWPPP Implementation Wt. 15%  9
Installation of BMP's Wt. 20%  7.5
Maintenance of BMP's Wt. 30%  8.3
Effectiveness of BMP's Wt. 20%  9.4
Preparedness Rating (Weighted Avg.)  8.4

Grade Scale: 0-3 Follow-up inspection required by Consultant; 3-6 Follow-up Inspection required by MDOT; 6-7 Poor; 7-8 Fair; 8-9 Good; 9+ Minor/No Deficiencies
# MDOT Stormwater Inspection Summary Report

**Project No:** ACNH-9204-00(007) / 100486-301000  
**Termini:** I-55 FROM OLD AGENCY TO SR 463 W/HIGHLAND COLONY CONNECTION PHASE II [Add 2 Lanes, Split Interchange, Frontage Roads]  
**Representatives:**  
- MDOT: Jerry Lake  
- Consultant: Bob Smith  
- Contractor: Bennett Baker  
- Inspected By: Mike Cresap

### Observation 1

<table>
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<tr>
<th>Observation Type</th>
<th>Location</th>
<th>BMP Category</th>
<th>BMP</th>
<th>Problem</th>
<th>Corrective Action</th>
<th>Comments</th>
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<td>Deficiency</td>
<td>50-00</td>
<td>Sediment Control BMPs</td>
<td>Silt fence</td>
<td>Incorrect application</td>
<td>The specified silt fence is being used in a concentrated flow. It should be removed and replaced with a BMP approved for concentrated flow applications, such as rock checks, filter rock checks, or wattles</td>
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### Observation 2

<table>
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<th>Problem</th>
<th>Corrective Action</th>
<th>Comments</th>
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<tr>
<td>Major Deficiency</td>
<td>55-00</td>
<td>Sediment deposits observed off right-of-way in areas that do not directly impact waters of the state</td>
<td>The contractor should install, maintain, or replace BMPs as needed to prevent further sediment impact. The MDOT P.E. should be contacted and kept informed. Contact the Environmental Division for assistance, if needed.</td>
<td></td>
</tr>
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</table>

**Date:** 4/10/2014
Observation Locations
### Report Generation

#### MDOT Construction Stormwater Management Inspection Report

**Date:** 04-10-2014

**General Site Information**

- **Project type:** MDOT
- **Local Public Agency (LPA):** No
- **State Aid:** Yes
- **Inspection type:** Unannounced
- **Scheduled Follow-up:** Yes
- **District:** 5
- **County:** Madison
- **Project No:** ACNH4224-000071/H09486-301000
- **Project Term:** Critical Path
- **Prime Contractor:** LIBERTY MUTUAL INSURANCE COMPANY
- **Subcontractor:** Jerry Lake
- **Contractor:** Bennett Baker
- **Consultant Engineer (LPA):**
- **Consultant Stormwater Inspector:** Mike Creasey
- **Weather Conditions:** Partly Cloudy, 63°F
- **Report reviewed by:**

**Project Status**

<table>
<thead>
<tr>
<th>Project Preparedness Rating</th>
<th>Overall Overall Grade</th>
<th>ECP/SWPPP Implementation (20% of)</th>
<th>BMP's (5% of)</th>
<th>Maintenance of BMP's (20% of)</th>
<th>Effectiveness of BMP's (20% of)</th>
<th>PreParade Rating (10%)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>9</td>
<td>7.5</td>
<td>8.3</td>
<td>9.4</td>
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<td>Grade scale:</td>
<td>Minor/No Deficiencies: 80%</td>
<td>Poor: 20% Good: 60%</td>
<td>Fair: 40% Poor: 20%</td>
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<td>3x6 Follow-up inspection required by MDOT</td>
<td>Follow-up inspection required by Consultant</td>
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#### Site Observations

**Date:** 04-10-2014

**Location:** 52±30

**BMP Cat:** Sediment Control BMPs

**Deficiencies:**

- Incorrect application

**Deficiency Status:**

- **Correction:** The specified till fence is being used in a concentrated flow. It should be removed and replaced with a BMP approved for concentrated flow applications, such as rock chutes, filter rock chutes, or silt fences.

**Comments:**

- [Image of site observation]
**Equipment Challenges**

- **JAVA**
- **Pad Functionality**
  - Maintaining GPS signal if in a vehicle
    - Vehicle mounts and usb antenna
  - Glare issues
    - small visor attachable as needed
- **Photography**
  - Web cam will not zoom for photographs
  - Separate Camera used to this point – Bluetooth or SD Card Transfer
QA / QC

• Done in Administrative Offices
• Confirmation of Known elements
  – Inspectors,
  – Project related information,
  – Populated from FMS database
• Inspectors contacted for questionable or inconclusive findings to confirm results as necessary
• New inspectors make this a must.
Performance Management

- ProjectWise Data Archive
  - Inspection Reports
  - Follow-ups
  - Erosion Control Plans
  - Permit Information*

- Project Reporting Summaries
  - PDF reports
    - Inspection Progress
    - Reports by District

- Why GIS?
  - Analyze project performance
  - Show deficiency “Hot Spots”
  - Confirmation of contractual elements (CECI, etc.)
  - Potential long-term conversion of Construction BMP’s to Post Construction BMPs