Leveraging mobile Esri technology at VDOT to move into the 21st Century

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Presentation Overview
Agenda

❖ Introduction
❖ NPDES Construction Runoff Data Collection Process
❖ Pre-ArcGIS Survey 123 Collection Process
❖ What is ArcGIS Survey 123?
❖ ArcGIS Survey 123 NPDES Data Collection Process
❖ Road Ahead and Next Steps
❖ Issues and Lessons Learned
Project Team Overview
NPDES Construction Runoff Data Collection Process
Construction Runoff Data Collection Process

❖ The forms are used on active Construction General Permit (CGP) sites by VDOTs National Pollution Discharge Elimination System (NPDES) Coordinators
  ❖ Pre-construction meetings
  ❖ Inspections with VDOT Environmental Construction Inspectors
  ❖ Periodic inspections

❖ Inspection schedules vary depending on the site and if there are problems
❖ The sites are inspected for compliance with the CGP
Pre-ArcGIS Survey 123 Process
Pre-ArcGIS Survey 123 Process

❖ Answered questions in field on paper forms
  ❖ Paper copies of 2 forms
❖ Captured pictures separately
❖ Returned to office
❖ Created report in Word and inserted pictures with explanations
❖ Emailed or sent hard copies to management and Project Managers
Pre-ArcGIS Survey 123 Process

Old Workflow
Pre-ArcGIS Survey 123 Process

Old Workflow
Pre-ArcGIS Survey 123 Process

**Old Workflow**

1. **Contractor and Inspector** discuss
2. **Contractor** may add comments/appeals on CRCIF (must initial)
3. **Inspector** adds Corrective Action Date

**Both Contractor and Inspector**
1. Sign CRCIF
2. Maintain original document with other SWPPP documents

**Deficiencies Remain Uncorrected**
1. Project suspension in-part or whole
2. Remedy deficiencies by state forces and deduct costs from contractor
3. Other contract penalties

**Contractor Correct Deficiencies**

**Finish*****

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**Notes**
* This process does not address work order or claim procedures which should be considered separately.
** Certified Contractor means contractor employee certified through the VDCP Erosion and Sediment Control Contractor Certification (ESCC) Program.
*** Certified Inspector VDOT Employee or a consultant inspector working directly for VDOT on a DEQ services contract who is certified through DEQ's Erosion and Sediment Control Certification program and who is knowledgeable in the area of pollution prevention practices at construction sites. Confirmation shall be in the form of a joint inspection with the certified Contractor or an independent inspection by a certified Inspector. For Design-Build Projects the QAM or QAI is responsible for signing as the Certified Inspector.
**** See Note #1 on sheet 4.
***** Refers to one inspection event.

**Legend**
- **Authorized Representative**
- **Action**
- **Decision**
- **Joint Action**
- **Contractor Path**
- **Inspector Path**
- **Joint Path**
Pre-ArcGIS Survey 123 Process
What is Survey 123 for ArcGIS?
What is Survey 123 for ArcGIS?

Mobile App with Form Centric Data Collection

Create smart forms

Collect anytime, anywhere

Analyze & share results
What is Survey 123 for ArcGIS?

1- Ask Questions
   (Design & Publish)

2- Get Answers
   (Capture Data)

3- Make Decisions
   (View & Analyze)

- Create smart forms
- Collect anytime, anywhere
- Analyze & share results
ArcGIS Survey 123 Data
NPDES Collection Process
ArcGIS Survey 123 Data Collection Process

Benefits
❖ Form-centric web application
❖ Integrated with VDOT’s ArcGIS Online organization
❖ Leverages existing investment in ArcGIS Platform
❖ Mobile or Desktop Availability
❖ Real time data capture and photos
❖ Meets DEQ/EPA’s requirements for MCM4 from Individual Permit
ArcGIS Survey 123 Data Collection Process

NPDES Inspection Web Map
1. Select inspection site point
2. Launch Survey123 from popup
ArcGIS Survey 123 Data Collection Process

Choose the form for a specific type of inspection
- NPDES Coordinator's Inspection Form 1
- NPDES Coordinator's Inspection Form 2
- NPDES Coordinator's Inspection Form 3

Select 1 of 3 forms
ArcGIS Survey 123 Data Collection Process

NPDES DETAILED INSPECTION SHEET - PART I
- Project Information
- Inspection Information
- ESC Inspection Questions
- Pollution Prevention (P2) Inspection Questions
- SWPPP Update and Modification Questions
- Site Rating

NPDES COORDINATOR'S INSPECTION SHEET
- Project Information
- Inspection Information
- Attendee Information
- Observations & Recommendations
- Site Rating
ArcGIS Survey 123 Data Collection Process

Pre-populated forms
ArcGIS Survey 123 Data Collection Process

Example questions from form:

1) Have stabilization activities been initiated on all disturbed areas that have reached final grade or that will remain dormant for more than 14 days?
   - Yes
   - No
   - N/A

2) Have stabilization activities been completed within 7 days of initiation?
   - Yes
   - No

3) Have disposal/borrow areas been stabilized and/or sediment trapping measures?
   - Yes
   - No

Additional information:
- Item 1: Have stabilization activities been initiated on all disturbed areas that have reached final grade or that will remain dormant for more than 14 days?
  - N/A
  - Yes
  - No
- If no, list item number, describe problem, location, and recommended corrective action
- Date to corrected by:
  - Date
- Date corrective action completed:
  - Date
- Photo
  - [Camera]
ArcGIS Survey 123 Data Collection Process

Report generation and analysis tools
### ArcGIS Survey 123 Data Collection Process

#### Choose report type (3 reports)

<table>
<thead>
<tr>
<th>Choose a form.</th>
<th>Project Name</th>
<th>UPC Number</th>
<th>VAR9 Permit Number</th>
<th>Charge Number</th>
<th>MS4 CUA Name</th>
<th>Contractor</th>
<th>Inspector's Name</th>
<th>DEQ Co Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPDES Coordinator's Inspection Form</td>
<td>DRAFT, Gordonsville AMQ Chemical Storage Building</td>
<td>107905</td>
<td>VAR103377</td>
<td>000107997</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-107 Part 1</td>
<td>0095-153-952%2C C501%2C B601%2C B602</td>
<td>83164</td>
<td>VAR104991</td>
<td>000107997</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ArcGIS Survey 123 Data Collection Process

Methods of exporting

- CSV
- Excel
- KML
- Shapefile
- File Geodatabase
Road Ahead and Next Steps
Road Ahead and Next Steps

❖ Next steps for the NPDES construction runoff collection process
  ❧ Continue using Survey 123
  ❧ Continue to improve the forms with updates
❖ Downstream artifacts from Survey 123 collection process
  ❧ Site rating dashboard
  ❧ Inspection results analysis
  ❧ Completing the workflow
❖ Other planned uses for Survey 123 within the context of MS4
  ❧ Storm water management basic inventory
  ❧ Nutrient credit purchases and tracking
  ❧ IDDE reporting
Identified Issues and Lessons Learned
Identified Issues and Lessons Learned

❖ **Current issue related to survey 123**
  ❖ Connecting to survey 123 within VDOT’s LAN consistently
  ❖ Sending forms to the cloud and not uploading
  ❖ Customized reports are not working consistently
  ❖ Creating paper copies of the forms for temporary collection

❖ **Provide guidance manual on using the software (desktop and mobile)**

❖ **Provide sufficient hands-on training (office and field)**

❖ **Develop a contingency plan for potential issues**
  ❖ Develop potential workarounds
  ❖ Creating paper copies of the forms
  ❖ Create a log of bugs and fixes