

MS4 OUTFALL FIELD SCREENING SURVEY

GIS TOOLS FOR MS4 COMPLIANCE REPORTING

2019 PA GIS Conference

May 14, 2019



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GIS Tools for MS4 Compliance Reporting

- Municipal Separate Storm Sewer Systems (MS4)
 - Outfall Field Screening Report
- Data management through ArcGIS Online
- Field data collection through mobile apps
- Report generation through Microsoft mail-merge tools
- Record keeping through GIS-based infrastructure asset management program

Municipal Separate Storm Sewer Systems (MS4)

- National Pollutant Discharge Elimination System (NPDES)
 - Phase II MS4 Stormwater Program
 - 953 MS4 communities in Pennsylvania
- Annual MS4 Status Report (due September 30th)
 - Minimum Control Measure (MCM)
 - Best Management Practices (BMPs)
 - Outfall Field Screening Report
- GIS-based infrastructure asset management program

Outfall Field Screening Report

3800-FM-BCW0521 12/2015
MS4 Outfall Field Screening Report



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

3800-FM-BCW0521 12/2015
MS4 Outfall Field Screening Report

MS4 OUTFALL FIELD SCREENING REPORT

BACKGROUND INFORMATION				
Permittee Name: _____		NPDES Permit No.: PA _____		
Date of Inspection: _____		Outfall ID No.: _____		
Land Uses in Outfall Drainage Area (Select All):		Latitude: _____° _____' _____"		
<input type="checkbox"/> Industrial <input type="checkbox"/> Urban Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Suburban Residential <input type="checkbox"/> Open Space <input type="checkbox"/> Other: _____		Longitude: _____° _____' _____"		
		Dry Weather Inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No		
		Date of Previous Precipitation: _____		
		Amount of Previous Precipitation: _____ in		
Inspector Name(s): _____		Were Photographs Taken? <input type="checkbox"/> Yes <input type="checkbox"/> No		
		Are Photographs Attached? <input type="checkbox"/> Yes <input type="checkbox"/> No		
OUTFALL DESCRIPTION				
TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
<input type="checkbox"/> Closed Pipe	<input type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other	<input type="checkbox"/> Circular <input type="checkbox"/> Single <input type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other <input type="checkbox"/> Other	Diameter: _____ in	<input type="checkbox"/> In Water <input type="checkbox"/> With Sediment
<input type="checkbox"/> Open Channel	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Rip-Rap <input type="checkbox"/> Other	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other	Depth: _____ in Top Width: _____ in Bottom Width: _____	
Dry Weather Flow Present at Outfall During Inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No (If No, skip to Certification Section)				
Description of Flow Rate: <input type="checkbox"/> Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Significant <input type="checkbox"/> N/A				
DRY WEATHER FLOW EVALUATION				
Does the dry weather flow contain color? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. _____				
Does the dry weather flow contain an odor? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. _____				
Is there an observed change in the receiving waters as a result of the discharge? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. _____				
Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. _____				

FIELD / LABORATORY ANALYSIS					
PARAMETER	RESULTS	UNITS	PARAMETER	RESULTS	UNITS
Flow Rate	_____	GPM	Fecal Coliform	_____	No./100 mL
pH	_____	S.U.	COD	_____	mg/L
Total Residual Chlorine (TRC)	_____	mg/L	BOD5	_____	mg/L
Conductivity	_____	µmhos/cm	TSS	_____	mg/L
Ammonia-Nitrogen	_____	mg/L	TDS	_____	mg/L
Other: _____	_____	_____	Oil and Grease	_____	mg/L
Other: _____	_____	_____	Other: _____	_____	_____
Were sample(s) collected of the dry weather flow? <input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, No. Samples: _____)					
Indicate the parameters above that were analyzed by a DEP-certified laboratory: _____					
ILLICIT DISCHARGES					
Is the dry weather flow an illicit discharge? <input type="checkbox"/> Yes <input type="checkbox"/> No					
If Yes, describe efforts made to determine the source(s) of the illicit discharge. _____					
Describe corrective actions taken by the permittee in response to the finding of an illicit discharge. _____					
Inspector Comments: _____					
RESPONSIBLE OFFICIAL CERTIFICATION					
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowledge of violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).					
_____			_____		
Responsible Official Name			Signature		
_____			_____		
Telephone No.			Date		

Data Sources

System-specific Information

3800-FM-BCW0521 12/2015
MS4 Outfall Field Screening Report

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Date of Inspection: []		Outfall ID No.: []		
Land Uses in Outfall Drainage Area (Select All):		Latitude: []° []' []"		
<input type="checkbox"/> Industrial <input type="checkbox"/> Urban Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Suburban Residential <input type="checkbox"/> Open Space <input type="checkbox"/> Other: []		Longitude: []° []' []"		
		Dry Weather Inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No		
		Date of Previous Precipitation: []		
		Amount of Previous Precipitation: [] in		
Inspector Name(s): []		Were Photographs Taken? <input type="checkbox"/> Yes <input type="checkbox"/> No		
		Are Photographs Attached? <input type="checkbox"/> Yes <input type="checkbox"/> No		
OUTFALL DESCRIPTION				
TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
<input type="checkbox"/> Closed Pipe	<input type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other	<input type="checkbox"/> Circular <input type="checkbox"/> Single <input type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other <input type="checkbox"/> Other	Diameter: [] in	<input type="checkbox"/> In Water <input type="checkbox"/> With Sediment
<input type="checkbox"/> Open Channel	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Rip-Rap <input type="checkbox"/> Other	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other	Depth: [] in Top Width: [] in Bottom Width: []	
Dry Weather Flow Present at Outfall During Inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No (If No, skip to Certification Section)				
Description of Flow Rate: <input type="checkbox"/> Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Significant <input type="checkbox"/> N/A				
DRY WEATHER FLOW EVALUATION				
Does the dry weather flow contain color? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				
Does the dry weather flow contain an odor? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				
Is there an observed change in the receiving waters as a result of the discharge? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				
Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				

Were sample(s) collected of the dry weather flow? Yes No (If Yes, No. Samples: [])

FIELD / LABORATORY ANALYSIS					
PARAMETER	RESULTS	UNITS	PARAMETER	RESULTS	UNITS
Flow Rate	[]	GPM	Fecal Coliform	[]	No./100 mL
pH	[]	S.U.	COD	[]	mg/L
Total Residual Chlorine (TRC)	[]	mg/L	BOD5	[]	mg/L
Conductivity	[]	µmhos/cm	TSS	[]	mg/L
Ammonia-Nitrogen	[]	mg/L	TDS	[]	mg/L
Other: []	[]	[]	Oil and Grease	[]	mg/L
Other: []	[]	[]	Other: []	[]	[]

Indicate the parameters above that were analyzed by a DEP-certified laboratory:
[]

ILLICIT DISCHARGES

Is the dry weather flow an illicit discharge? Yes No

If Yes, describe efforts made to determine the source(s) of the illicit discharge.
[]

Describe corrective actions taken by the permittee in response to the finding of an illicit discharge.
[]

Inspector Comments:
[]

RESPONSIBLE OFFICIAL CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowledge of violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

[]	Signature
Responsible Official Name	[]
Telephone No.	Date

Data Sources

Outfall-specific Information

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Date of Inspection: []		Outfall ID No.: []		
Land Uses in Outfall Drainage Area (Select All):		Latitude: []° []' []"		
<input type="checkbox"/> Industrial	<input type="checkbox"/> Urban Residential	Longitude: []° []' []"		
<input type="checkbox"/> Commercial	<input type="checkbox"/> Suburban Residential	Dry Weather Inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No		
<input type="checkbox"/> Open Space	<input type="checkbox"/> Other: []	Date of Previous Precipitation: []		
Inspector Name(s): []		Amount of Previous Precipitation: [] in		
		Were Photographs Taken? <input type="checkbox"/> Yes <input type="checkbox"/> No		
		Are Photographs Attached? <input type="checkbox"/> Yes <input type="checkbox"/> No		
OUTFALL DESCRIPTION				
TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
<input type="checkbox"/> Closed Pipe	<input type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other	<input type="checkbox"/> Circular <input type="checkbox"/> Single <input type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other <input type="checkbox"/> Other	Diameter: [] in	<input type="checkbox"/> In Water <input type="checkbox"/> With Sediment
<input type="checkbox"/> Open Channel	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Rip-Rap <input type="checkbox"/> Other	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other	Depth: [] in Top Width: [] in Bottom Width: []	
Dry Weather Flow Present at Outfall During Inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No (If No, skip to Certification Section)				
Description of Flow Rate: <input type="checkbox"/> Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Significant <input type="checkbox"/> N/A				
DRY WEATHER FLOW EVALUATION				
Does the dry weather flow contain color? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				
Does the dry weather flow contain an odor? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				
Is there an observed change in the receiving waters as a result of the discharge? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				
Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				

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Were sample(s) collected of the dry weather flow? Yes No (If Yes, No. Samples: [])

FIELD / LABORATORY ANALYSIS					
PARAMETER	RESULTS	UNITS	PARAMETER	RESULTS	UNITS
Flow Rate	[]	GPM	Fecal Coliform	[]	No./100 mL
pH	[]	S.U.	COD	[]	mg/L
Total Residual Chlorine (TRC)	[]	mg/L	BOD5	[]	mg/L
Conductivity	[]	µmhos/cm	TSS	[]	mg/L
Ammonia-Nitrogen	[]	mg/L	TDS	[]	mg/L
Other: []	[]	[]	Oil and Grease	[]	mg/L
Other: []	[]	[]	Other: []	[]	[]

Indicate the parameters above that were analyzed by a DEP-certified laboratory:
[]

ILLICIT DISCHARGES

Is the dry weather flow an illicit discharge? Yes No

If Yes, describe efforts made to determine the source(s) of the illicit discharge.
[]

Describe corrective actions taken by the permittee in response to the finding of an illicit discharge.
[]

Inspector Comments:
[]

RESPONSIBLE OFFICIAL CERTIFICATION

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[]

Responsible Official Name _____ Signature _____

Telephone No. _____ Date _____

Data Sources

Field Inspection Information

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Permittee Name: []		NPDES Permit No.: PA []		
Date of Inspection: []		Outfall ID No.: []		
Land Uses in Outfall Drainage Area (Select All):		Latitude: []° []' []"		
<input type="checkbox"/> Industrial	<input type="checkbox"/> Urban Residential	Longitude: []° []' []"		
<input type="checkbox"/> Commercial	<input type="checkbox"/> Suburban Residential	Dry Weather Inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No		
<input type="checkbox"/> Open Space	<input type="checkbox"/> Other: []	Date of Previous Precipitation: []		
Inspector Name(s): []		Amount of Previous Precipitation: [] in		
		Were Photographs Taken? <input type="checkbox"/> Yes <input type="checkbox"/> No		
		Are Photographs Attached? <input type="checkbox"/> Yes <input type="checkbox"/> No		
OUTFALL DESCRIPTION				
TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
<input type="checkbox"/> Closed Pipe	<input type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other	<input type="checkbox"/> Circular <input type="checkbox"/> Single <input type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other <input type="checkbox"/> Other	Diameter: [] in	<input type="checkbox"/> In Water <input type="checkbox"/> With Sediment
<input type="checkbox"/> Open Channel	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Rip-Rap <input type="checkbox"/> Other	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other	Depth: [] in Top Width: [] in Bottom Width: []	
Dry Weather Flow Present at Outfall During Inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No (If No, skip to Certification Section)				
Description of Flow Rate: <input type="checkbox"/> Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Significant <input type="checkbox"/> N/A				
DRY WEATHER FLOW EVALUATION				
Does the dry weather flow contain color? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				
Does the dry weather flow contain an odor? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				
Is there an observed change in the receiving waters as a result of the discharge? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				
Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				

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Were sample(s) collected of the dry weather flow? Yes No (If Yes, No. Samples: [])

FIELD / LABORATORY ANALYSIS					
PARAMETER	RESULTS	UNITS	PARAMETER	RESULTS	UNITS
Flow Rate	[]	GPM	Fecal Coliform	[]	No./100 mL
pH	[]	S.U.	COD	[]	mg/L
Total Residual Chlorine (TRC)	[]	mg/L	BOD5	[]	mg/L
Conductivity	[]	µmhos/cm	TSS	[]	mg/L
Ammonia-Nitrogen	[]	mg/L	TDS	[]	mg/L
Other: []	[]	[]	Oil and Grease	[]	mg/L
Other: []	[]	[]	Other: []	[]	[]

Indicate the parameters above that were analyzed by a DEP-certified laboratory:
[]

ILLICIT DISCHARGES

Is the dry weather flow an illicit discharge? Yes No

If Yes, describe efforts made to determine the source(s) of the illicit discharge.
[]

Describe corrective actions taken by the permittee in response to the finding of an illicit discharge.
[]

Inspector Comments:
[]

RESPONSIBLE OFFICIAL CERTIFICATION

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Responsible Official Name	Signature
Telephone No.	Date

Data Sources

Post Inspection Information

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BACKGROUND INFORMATION				
Permittee Name: []		NPDES Permit No.: PA []		
Date of Inspection: []		Outfall ID No.: []		
Land Uses in Outfall Drainage Area (Select All):		Latitude: []° []' []"		
<input type="checkbox"/> Industrial	<input type="checkbox"/> Urban Residential	Longitude: []° []' []"		
<input type="checkbox"/> Commercial	<input type="checkbox"/> Suburban Residential	Dry Weather Inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No		
<input type="checkbox"/> Open Space	<input type="checkbox"/> Other: []	Date of Previous Precipitation: []		
Inspector Name(s): []		Amount of Previous Precipitation: [] in		
		Were Photographs Taken? <input type="checkbox"/> Yes <input type="checkbox"/> No		
		Are Photographs Attached? <input type="checkbox"/> Yes <input type="checkbox"/> No		
OUTFALL DESCRIPTION				
TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
<input type="checkbox"/> Closed Pipe	<input type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other	<input type="checkbox"/> Circular <input type="checkbox"/> Single <input type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other <input type="checkbox"/> Other	Diameter: [] in	<input type="checkbox"/> In Water <input type="checkbox"/> With Sediment
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Dry Weather Flow Present at Outfall During Inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No (If No, skip to Certification Section)				
Description of Flow Rate: <input type="checkbox"/> Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Significant <input type="checkbox"/> N/A				
DRY WEATHER FLOW EVALUATION				
Does the dry weather flow contain color? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				
Does the dry weather flow contain an odor? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				
Is there an observed change in the receiving waters as a result of the discharge? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				
Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				

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Were sample(s) collected of the dry weather flow? Yes No (If Yes, No. Samples: [])

FIELD / LABORATORY ANALYSIS					
PARAMETER	RESULTS	UNITS	PARAMETER	RESULTS	UNITS
Flow Rate	[]	GPM	Fecal Coliform	[]	No./100 mL
pH	[]	S.U.	COD	[]	mg/L
Total Residual Chlorine (TRC)	[]	mg/L	BOD5	[]	mg/L
Conductivity	[]	µmhos/cm	TSS	[]	mg/L
Ammonia-Nitrogen	[]	mg/L	TDS	[]	mg/L
Other: []	[]	[]	Oil and Grease	[]	mg/L
Other: []	[]	[]	Other: []	[]	[]

Indicate the parameters above that were analyzed by a DEP-certified laboratory:
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ILLICIT DISCHARGES

Is the dry weather flow an illicit discharge? Yes No

If Yes, describe efforts made to determine the source(s) of the illicit discharge.
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[]	Signature
Responsible Official Name	[]
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Data Sources

Report Generation

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Does the dry weather flow contain color? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. []				
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FIELD / LABORATORY ANALYSIS					
PARAMETER	RESULTS	UNITS	PARAMETER	RESULTS	UNITS
Flow Rate	[]	GPM	Fecal Coliform	[]	No./100 mL
pH	[]	S.U.	COD	[]	mg/L
Total Residual Chlorine (TRC)	[]	mg/L	BOD5	[]	mg/L
Conductivity	[]	µmhos/cm	TSS	[]	mg/L
Ammonia-Nitrogen	[]	mg/L	TDS	[]	mg/L
Other: []	[]	[]	Oil and Grease	[]	mg/L
Other: []	[]	[]	Other: []	[]	[]
Were sample(s) collected of the dry weather flow? <input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, No. Samples: [])					
Indicate the parameters above that were analyzed by a DEP-certified laboratory: []					
ILLICIT DISCHARGES					
Is the dry weather flow an illicit discharge? <input type="checkbox"/> Yes <input type="checkbox"/> No					
If Yes, describe efforts made to determine the source(s) of the illicit discharge. []					
Describe corrective actions taken by the permittee in response to the finding of an illicit discharge. []					
Inspector Comments: []					
RESPONSIBLE OFFICIAL CERTIFICATION					
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowledge of violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).					
Responsible Official Name			Signature		
Telephone No.			Date		

Data Sources

- **System-specific Information**



- Enter directly into Report document

- **Outfall-specific Information**



- Attribute fields in Outfall feature layer

- **Field Inspection Information**



- Collected through Survey123 app

- **Post Inspection Information**



- Additional fields in Survey feature layer

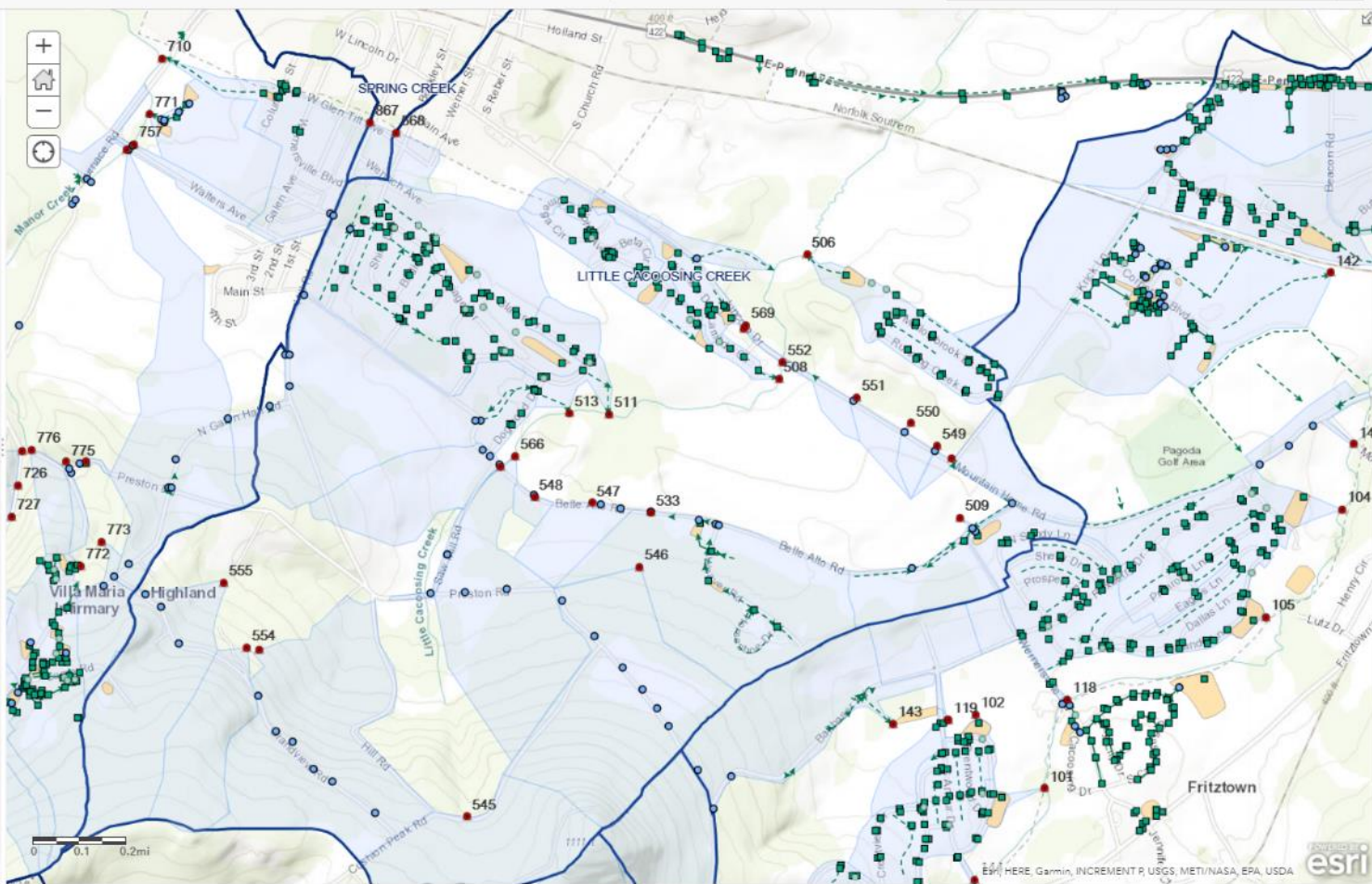
Details Add Edit Basemap Analysis

Save Share Print Directions Measure Bookmarks Find address or place

About Content Legend

Contents

- Outfall
 - swCulvert pts
 - swWeirStructure
 - swSystemValve
 - swNetworkStructure
 - swManhole
 - swInlet
 - swFitting
 - swDischargePoint
 - swControlValve
 - swCleanOut
 - swCasing
 - swVirtualDrainline
 - swPressurePipe
 - swOpenDrain
 - swGravityMain
 - swCulvert
 - swDetection
- Trust Center Contact Esri Report Abuse Contact Us



Outfall Information

- ESRI's Stormwater Utility Network Configuration Data Model

- Added fields

- Land Use

- Yes/No field for each category

Land Uses in Outfall Drainage Area (Select All):

<input type="checkbox"/> Industrial	<input type="checkbox"/> Urban Residential
<input type="checkbox"/> Commercial	<input type="checkbox"/> Suburban Residential
<input type="checkbox"/> Open Space	<input type="checkbox"/> Other: <input type="text"/>

- Outfall Description

- Type

- Material

- Shape

- Dimensions

OUTFALL DESCRIPTION				
TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
<input type="checkbox"/> Closed Pipe	<input type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other	<input type="checkbox"/> Circular <input type="checkbox"/> Single <input type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other <input type="checkbox"/> Other	Diameter: <input type="text"/> in	<input type="checkbox"/> In Water <input type="checkbox"/> With Sediment
<input type="checkbox"/> Open Channel	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Rip-Rap <input type="checkbox"/> Other	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other	Depth: <input type="text"/> in Top Width: <input type="text"/> in Bottom Width: <input type="text"/>	

- Create domains to match form

Search Fields

Pipe Shape



- OID
- Facility Identifier
- Average Discharge
- Discharge Identifier
- Discharge Type
- Peak Discharge
- Permitted
- Permit Identifier
- Install Date
- Location Description
- Rotation
- Diameter
- Enabled
- Active Flag
- Owned By
- Managed By
- AncillaryRole
- created_user
- created_date
- last_edited_user
- last_edited_date
- DMSLat

Description

 Edit

A brief summary of the item is not available.

Field Value Type

 Edit


Field Value type is not available.

Delete

Details

Type: String
Name: CPShape

Settings

Allows Null Values	Yes	
Editable	Yes	
Default Value	None	
Length	255	
Unique	No	 Edit

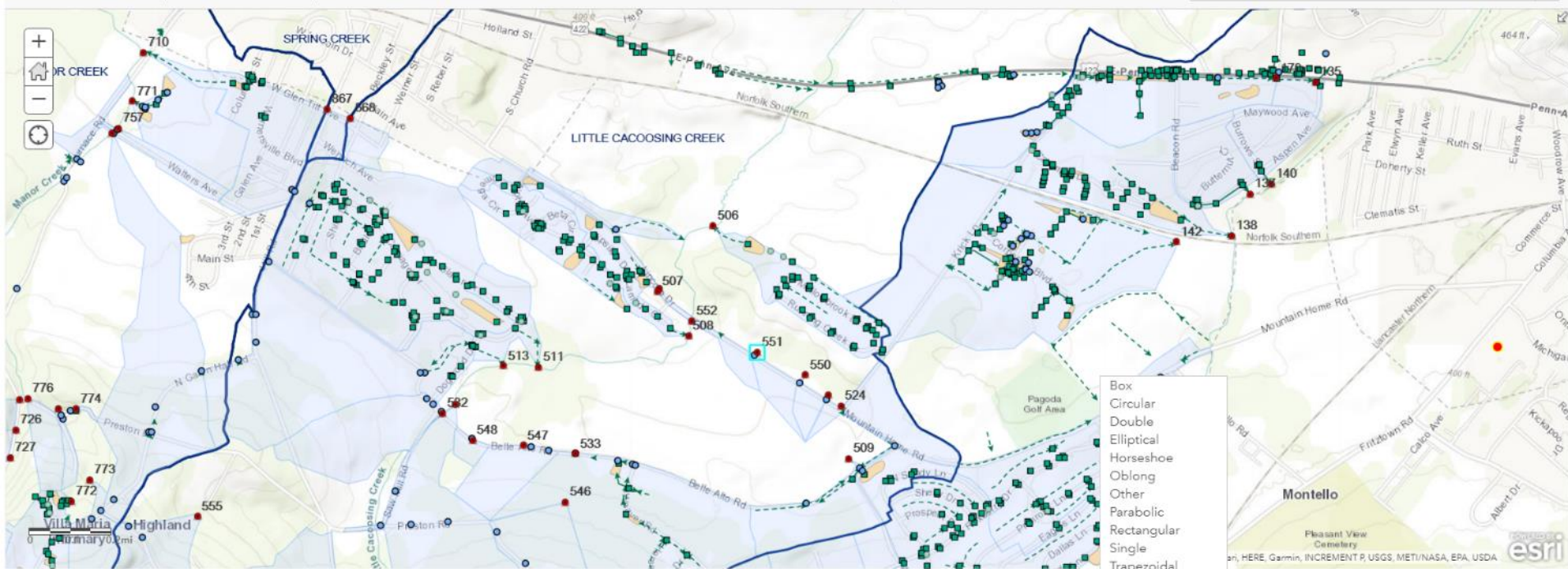
List of Values (Domain)

 Edit

Box
Circular
Double
Elliptical
Horseshoe
Oblong
Other
Parabolic
Rectangular
Single
Trapezoidal
Triangular

Details Add Edit Basemap Analysis

Save Share Print Directions Measure Bookmarks Find address or place



- Box
- Circular
- Double
- Elliptical
- Horseshoe
- Oblong
- Other
- Parabolic
- Rectangular
- Single
- Trapezoidal
- Triangular
- Triple
- Unknown
- empty -
- empty -

Outfall (Features: 71, Selected: 1)

Industrial Land Use	Commercial Land Use	Open Space Land Use	Suburban Residential Land Use	Other Land Use	Other Land Use Description	Type	Pipe Material	Open Channel Material	Open Channel Shape	Open Channel Size

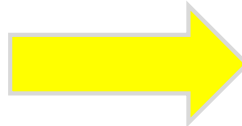
Data Sources

- **System-specific Information**



- Enter directly into Report document

- **Outfall-specific Information**



- Attribute fields in Outfall feature layer

- **Field Inspection Information**



- Collected through Survey123 app

- **Post Inspection Information**



- Additional fields in Survey feature layer

My Survey

Ammonia-Nitrogen (mg/L)

For multiple samples, list all results separated by commas.

Other analysis conducted

Turbidity

Turbidity value

For multiple samples, list all results separated by

2.5

Turbidity units

NTU

Other analysis conducted

Field Inspection Comments

Publish Survey - Survey123 Connect for ArcGIS

Publish MS4 Outfall Field Screening Survey

The survey will be updated without affecting the existing data.

Options Publish Survey Cancel

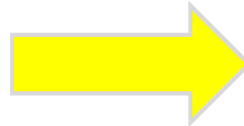
Data Sources

- **System-specific Information**



- Enter directly into Report document

- **Outfall-specific Information**



- Attribute fields in Outfall feature layer

- **Field Inspection Information**



- Collected through Survey123 app

- **Post Inspection Information**



- Additional fields in Survey feature layer

Post Inspection Information

- ArcGIS Online
 - Populate additional fields in completed Survey table

The screenshot displays the ArcGIS Online interface for a survey table. The top navigation bar includes Home, Gallery, Map, Scene, Groups, Content, and Organization. The user is identified as Sean McKee (SHTWPAdmin). The survey title is "MS4 Outfall Field Screening Survey". The current layer is "Outfall_Inspection_Form". The interface shows a table configuration view with a search bar for fields and a list of 72 fields. The fields are organized into columns: Display Name, Field Name, and Type. A filters sidebar is visible on the left.

Home Gallery Map Scene Groups Content Organization

MS4 Outfall Field Screening Survey Overview Data Visualization Usage Settings

Layer: Outfall_Inspection_Form Table Fields

+ Add Search Fields Table Order in Table Filter

72 of 72

Display Name	Field Name	Type
<input type="checkbox"/> ObjectID	objectid	ObjectID
<input type="checkbox"/> GlobalID	globalid	GlobalID
<input type="checkbox"/> Date of Inspection:	InsDate	Date
<input type="checkbox"/> Dry Weather Inspection?	DWIns	String
<input type="checkbox"/> Amount of Previous Precipitation:	LastPrecipAmnt	Double
<input type="checkbox"/> Were Photographs Taken?	PhotoTaken	String
<input type="checkbox"/> Dry Weather Flow Present at Outfall During Inspection?	DWFlow	String
<input type="checkbox"/> Description of Flow Rate:	FlowRateDesc	String
<input type="checkbox"/> Does the dry weather flow contain color?	DWColor	String
<input type="checkbox"/> If Yes, Provide a description below.	DWColorYes	String
<input type="checkbox"/> Does the dry weather flow contain an odor?	DWOdor	String
<input type="checkbox"/> If Yes, Provide a description below.	DWOdorYes	String

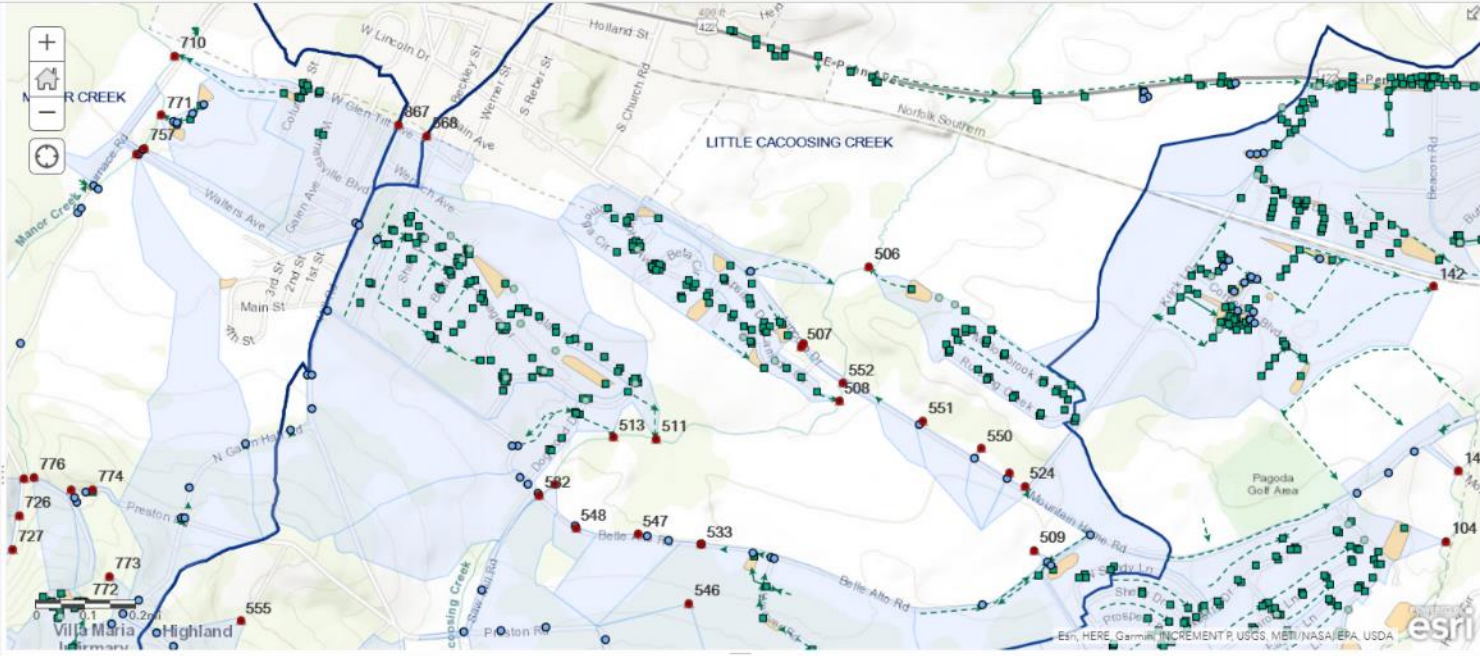
Filters

Type

- Number
- String
- Date
- ID
- Attachment
- Related Table

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 swCleanOut
 swCasing
 swVirtualDrainline
 swPressurePipe
 swOpenDrain
 swGravityMain
 swCulvert



MS4 Outfall Field Screening Survey (Features: 9, Selected: 1)

Other Parameter (3)	Other Result (3)	Other Units (3)	Other analysis (3)	Does the dry weather flow appear to be from an illicit discharge?	Provide a description.	Describe efforts made to determine the source(s) of the illicit discharge.	Describe corrective actions taken by the permittee in response to the finding of an illicit discharge.	Field Inspection Comments
				Yes	Automotive fluid leak.	<input type="text"/>		Another survey app test.
				No				Flowing quite a bit.
				No				Nothing too exciting.

Data Sources

- **System-specific Information**



- Enter directly into Report document

- **Outfall-specific Information**



- Attribute fields in Outfall feature layer

- **Field Inspection Information**



- Collected through Survey123 app

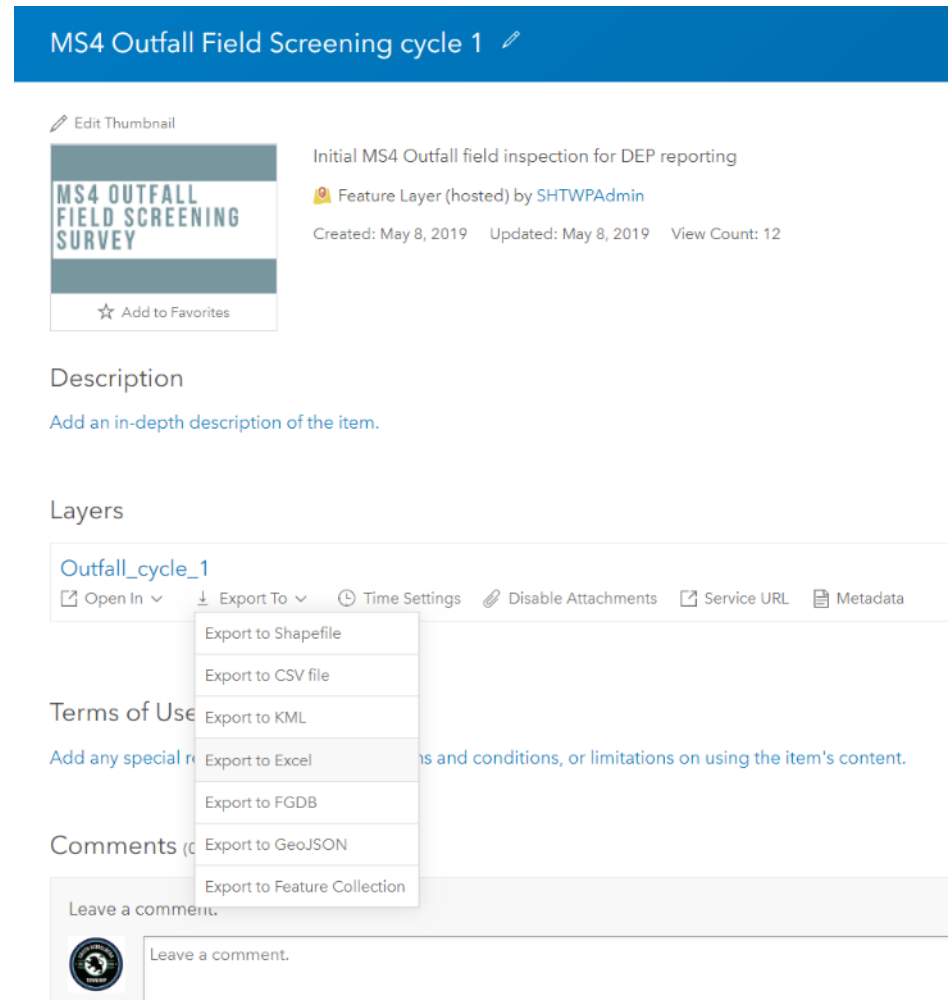
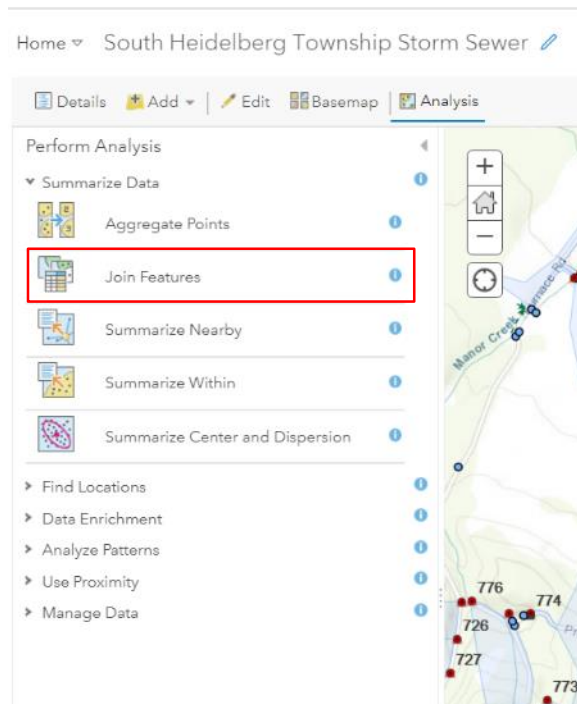
- **Post Inspection Information**



- Additional fields in Survey feature layer

Post Processing

- ArcGIS Online
 - Join Survey Table to Feature Layer
 - Export Table as Excel file



Microsoft Mail Merge

- Enter fields into Report form

3800-FM-BCW0521 12/2015
MS4 Outfall Field Screening Report

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER



MS4 OUTFALL FIELD SCREENING REPORT

BACKGROUND INFORMATION

Permittee Name: Example Report		NPDES Permit No.: PA00000	
Date of Inspection: 3/21/2019		Outfall ID No.: 1	
Land Uses in Outfall Drainage Area (Select All):		Latitude: <u>40</u> ° <u>20</u> ' <u>43.2</u> "	
<input checked="" type="checkbox"/> Industrial	<input type="checkbox"/> Urban Residential	Longitude: <u>-75</u> ° <u>57</u> ' <u>31.1</u> "	
<input type="checkbox"/> Commercial	<input type="checkbox"/> Suburban Residential	Dry Weather Inspection? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<input checked="" type="checkbox"/> Open Space	<input checked="" type="checkbox"/> Other: Other Land Use	Date of Previous Precipitation: 03/27/2019	
		Amount of Previous Precipitation: 0.01 in	
Inspector Name(s): Bradley		Were Photographs Taken? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
		Are Photographs Attached? <input type="checkbox"/> Yes <input type="checkbox"/> No	

OUTFALL DESCRIPTION

TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
<input checked="" type="checkbox"/> Closed Pipe	<input type="checkbox"/> RCP <input checked="" type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other	<input type="checkbox"/> Circular <input type="checkbox"/> Single <input type="checkbox"/> Elliptical <input type="checkbox"/> Double <input checked="" type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other <input type="checkbox"/> Other	Diameter: <u>1.1</u> in	<input checked="" type="checkbox"/> In Water <input type="checkbox"/> With Sediment
<input type="checkbox"/> Open Channel	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Rip-Rap <input type="checkbox"/> Other	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other	Depth: _____ in Top Width: _____ in Bottom Width: _____	

Dry Weather Flow Present at Outfall During Inspection? Yes No (If No, skip to Certification Section)

Description of Flow Rate: Trickle Moderate Significant N/A



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Data Formatting Issues

- Date Format

BACKGROUND INFORMATION						
Permittee Name: Example Report		NPDES Permit No.: PA00000				
Date of Inspection: 3/21/2019		Outfall ID No.: 1				
Land Uses in Outfall Drainage Area (Select All):		Latitude: <u>40</u> ° <u>20</u> ' <u>43.2</u> "				
<input checked="" type="checkbox"/> Industrial	<input type="checkbox"/> Urban Residential	Longitude: <u>-75</u> ° <u>57</u> ' <u>31.1</u> "				
<input type="checkbox"/> Commercial	<input type="checkbox"/> Suburban Residential	Dry Weather Inspection? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
<input checked="" type="checkbox"/> Open Space	<input checked="" type="checkbox"/> Other: Other Land Use	Date of Previous Precipitation: 03/27/2019				
		Amount of Previous Precipitation: 0.01 in				
Inspector Name(s): Bradley		Were Photographs Taken? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
		Are Photographs Attached? <input type="checkbox"/> Yes <input type="checkbox"/> No				
OUTFALL DESCRIPTION						
TYPE	MATERIAL		SHAPE		DIMENSIONS	SUBMERGED
<input checked="" type="checkbox"/> Closed Pipe	<input type="checkbox"/> RCP	<input checked="" type="checkbox"/> CMP	<input type="checkbox"/> Circular	<input type="checkbox"/> Single	Diameter: <u>1.1</u> in	<input checked="" type="checkbox"/> In Water
	<input type="checkbox"/> PVC	<input type="checkbox"/> HDPE	<input type="checkbox"/> Elliptical	<input type="checkbox"/> Double		<input type="checkbox"/> With Sediment
	<input type="checkbox"/> Steel	<input type="checkbox"/> Other	<input checked="" type="checkbox"/> Box	<input type="checkbox"/> Triple		

Data Formatting Issues

- Latitude/Longitude format

Geoprocessing

Convert Coordinate Notation

Parameters Environments

Input Table: swOutfall

Input Coordinate System: NAD_1983_StatePlane_Pennsylvania

Output Feature Class: swOutfall_ConvertCoordinateN1

Output Coordinate System: GCS_WGS_1984

Input Coordinate Format: DMS 2

Output Coordinate Format: DMS 2

Exclude records with invalid notation

DMSLat	DMSLon	Lat_D	Lat_M	Lat_S	Lon_D	Lon_M	Lon_S
40 20 43.20140414N	075 57 31.12637632W	40	20	43.2	-75	57	31.1
40 20 22.24108148N	075 58 00.78946107W	40	20	22.2	-75	58	00.7
40 20 25.30281400N	075 57 58.00854984W	40	20	25.3	-75	57	58.0
40 21 19.23008441N	075 57 51.51975064W	40	21	19.2	-75	57	51.5
40 20 42.73040520N	075 57 31.74436239W	40	20	42.7	-75	57	31.7
40 20 58.27287693N	075 56 59.91834300W	40	20	58.2	-75	56	59.9
40 20 28.12899253N	075 57 20.58142775W	40	20	28.1	-75	57	20.5
40 20 42.25940627N	075 56 41.58142775W	40	20	42.2	-75	56	41.5
40 20 52.15019898N	075 58 00.78946107W	40	20	52.1	-75	58	00.7
40 20 48.14682894N	075 58 11.58142775W	40	20	48.1	-75	58	11.5
40 20 01.98557161N	075 57 51.51975064W	40	20	01.9	-75	57	51.5

Outfall ID No.: «Facility_Identifier»

Latitude: «Lat_D» ° «Lat M»' «Lat S»"

Longitude: «Lon_D» ° «Lon M»' «Lon S»"

Outfall Field Screening Report

Complete form boxes based on attribute field values

DRY WEATHER FLOW EVALUATION	
Does the dry weather flow contain color? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below.	<code>{ IF { MERGEFIELD Does_the_dry_weather_flow_contain_color } = "yes" "X" "" }</code>
color 1	
DRY WEATHER FLOW EVALUATION	
Does the dry weather flow contain color? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below.	
color 1	
Indicate the parameters above that were analyzed by a DEP-certified laboratory:	
pH TRC Conductivity Ammonia-Nitrogen Fecal Coliform COD BOD5 TSS TDS O&G one six eleven	
Indicate the parameters above that were analyzed by a DEP-certified laboratory:	
<pre>{ IF { MERGEFIELD Analyzed_in_the_field_or_by_a_DEPcertif } = "Laboratory" "pH " "" }{ IF { MERGEFIELD Analyzed_in_the_field_or_by_a_DEPcertif1 } = "Laboratory" "TRC " "" }{ IF { MERGEFIELD Analyzed_in_the_field_or_by_a_DEPcertif2 } = "Laboratory" "Conductivity " "" }{ IF { MERGEFIELD Analyzed_in_the_field_or_by_a_DEPcertif3 } = "Laboratory" "Ammonia-Nitrogen " "" }{ IF { MERGEFIELD Analyzed_in_the_field_or_by_a_DEPcertif4 } = "Laboratory" "Fecal Coliform " "" }{ IF { MERGEFIELD Analyzed_in_the_field_or_by_a_DEPcertif5 } = "Laboratory" "COD " "" }{ IF { MERGEFIELD Analyzed_in_the_field_or_by_a_DEPcertif6 } = "Laboratory" "BOD5 " "" }{ IF { MERGEFIELD Analyzed_in_the_field_or_by_a_DEPcertif7 } = "Laboratory" "TSS " "" }{ IF { MERGEFIELD Analyzed_in_the_field_or_by_a_DEPcertif8 } = "Laboratory" "TDS " "" }{ IF { MERGEFIELD Analyzed_in_the_field_or_by_a_DEPcertif9 } = "Laboratory" "O&G " "" }{ IF { MERGEFIELD Analyzed_in_the_field_or_by_a_DEPcertifi10 } = "Laboratory" { MERGEFIELD Other_analysis_conducted } "" }{ IF { MERGEFIELD Analyzed_in_the_field_or_by_a_DEPcertifi11 } = "Laboratory" " " "" }{ IF { MERGEFIELD Analyzed_in_the_field_or_by_a_DEPcertifi11 } = "Laboratory" { MERGEFIELD Other_analysis_conducted1 } "" }{ IF { MERGEFIELD Analyzed_in_the_field_or_by_a_DEPcertifi12 } = "Laboratory" " " "" }{ IF { MERGEFIELD Analyzed_in_the_field_or_by_a_DEPcertifi12 } = "Laboratory" { MERGEFIELD Other_analysis_conducted2 } "" }</pre>	

GIS Tools for MS4 Compliance Reporting

- Municipal Separate Storm Sewer Systems (MS4)
 - Outfall Field Screening Report
- Data management through ArcGIS Online
- Field data collection through mobile apps
- Report generation through Microsoft mail-merge tools
- Record keeping through GIS-based infrastructure asset management program

MS4 OUTFALL
FIELD SCREENING
SURVEY

SOUTH HEIDELBERG TOWNSHIP

Geographic Information Systems



South Heidelberg Township Infrastructure



South Heidelberg Township
Transportation



South Heidelberg Township
Storm Sewer



South Heidelberg Township
Municipal Authority Sanitary

South Heidelberg Township is a community rich in history, and partly known for its magnificent South Mountain Resorts which were designed mainly to attract the wealthy. Many of their guests traveled from the East Coast to the Resorts to enjoy the clean air, pure spring water and excellent cuisine.

555A Mountain Home Road, Sinking Spring, PA 19608 Phone: 610-678-9652 Fax: 610-678-9411

About the Speaker

Alfred C. Guiseppe, PG

Director | Water Resources

al.guiseppe@ssmgroup.com



A graduate of Millersville University of Pennsylvania and the University of Wyoming, Mr. Guiseppe is the Director of the Water Resources Group at SSM and Manager of the GIS Department.

Overseeing a staff of environmental scientists, Mr. Guiseppe manages various water resources-related projects including groundwater supply development, watershed management and source water protection.

In addition, Mr. Guiseppe is responsible for the management and development of GIS services and utility management.

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