

# MS4 OUTFALL FIELD SCREENING SURVEY

## GIS TOOLS FOR MS4 COMPLIANCE REPORTING

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SPOTTS | STEVENS | MCCOY  
[@ssmgroup.com](https://www.ssmgroup.com)

# 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 GIS apps
- Report generation through Microsoft mail-merge tools
- Record keeping through GIS-based infrastructure asset management program

# The Brave New GIS World

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- Web-based GIS applications have provided new means to create, store, and access GIS data.



# ArcGIS



**Country Population Estimates, 2015, from**



**Seismic Seafloor Feature Anomalies (Deprecated)**



**Southern Pine Beetle Prevention Program**



**Streets**

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# 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 Parcel  
Viewer

**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

# Municipal Separate Storm Sewer Systems (MS4)

- National Pollutant Discharge Elimination System (NPDES)
  - In Pennsylvania, there are
    - two Large MS4 communities,
    - no Medium MS4 communities, and
    - 1,059 Small MS4 communities
- 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: <input type="text"/>		NPDES Permit No.: PA <input type="text"/>		
Date of Inspection: <input type="text"/>		Outfall ID No.: <input type="text"/>		
Land Uses in Outfall Drainage Area (Select All):		Latitude: <input type="text"/> ° <input type="text"/> ' <input type="text"/> "		
<input type="checkbox"/> Industrial <input type="checkbox"/> Urban Residential		Longitude: <input type="text"/> ° <input type="text"/> ' <input type="text"/> "		
<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: <input type="text"/>		Date of Previous Precipitation: <input type="text"/>		
Inspector Name(s): <input type="text"/>		Amount of Previous Precipitation: <input type="text"/> 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: <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"/>	
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. <input type="text"/>				
Does the dry weather flow contain an odor? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. <input type="text"/>				
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. <input type="text"/>				
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. <input type="text"/>				

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

Were sample(s) collected of the dry weather flow?  Yes  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?  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).

Responsible Official Name  Signature

Telephone No.  Date

# Data Sources

# System-specific Information

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

3800-FM-BCW0521 12/2015  
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. [ ]				

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

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: [ ]		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

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

# Field Inspection Information

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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	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. [ ]				

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).

Responsible Official Name	Signature
Telephone No.	Date

# Data Sources

# Post Inspection Information

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MS4 Outfall Field Screening Report



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DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF CLEAN WATER

## MS4 OUTFALL FIELD SCREENING REPORT

BACKGROUND INFORMATION				
Permittee Name: <input type="text"/>		NPDES Permit No.: PA <input type="text"/>		
Date of Inspection: <input type="text"/>		Outfall ID No.: <input type="text"/>		
Land Uses in Outfall Drainage Area (Select All):		Latitude: <input type="text"/> ° <input type="text"/> ' <input type="text"/> "		
<input type="checkbox"/> Industrial	<input type="checkbox"/> Urban Residential	Longitude: <input type="text"/> ° <input type="text"/> ' <input type="text"/> "		
<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: <input type="text"/>	Date of Previous Precipitation: <input type="text"/>		
Inspector Name(s): <input type="text"/>		Amount of Previous Precipitation: <input type="text"/> 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: <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"/>	
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. <input type="text"/>				
Does the dry weather flow contain an odor? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide a description below. <input type="text"/>				
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. <input type="text"/>				
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. <input type="text"/>				

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

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	<input type="text"/>	GPM	Fecal Coliform	<input type="text"/>	No./100 mL
pH	<input type="text"/>	S.U.	COD	<input type="text"/>	mg/L
Total Residual Chlorine (TRC)	<input type="text"/>	mg/L	BOD5	<input type="text"/>	mg/L
Conductivity	<input type="text"/>	µmhos/cm	TSS	<input type="text"/>	mg/L
Ammonia-Nitrogen	<input type="text"/>	mg/L	TDS	<input type="text"/>	mg/L
Other: <input type="text"/>	<input type="text"/>	<input type="text"/>	Oil and Grease	<input type="text"/>	mg/L
Other: <input type="text"/>	<input type="text"/>	<input type="text"/>	Other: <input type="text"/>	<input type="text"/>	<input type="text"/>

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. <input type="text"/>	
Describe corrective actions taken by the permittee in response to the finding of an illicit discharge. <input type="text"/>	
Inspector Comments: <input type="text"/>	

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).	
<input type="text"/>	Signature
Responsible Official Name	<input type="text"/>
<input type="text"/>	Date
Telephone No.	<input type="text"/>

# Data Sources

# Report Generation

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: [ ]		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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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

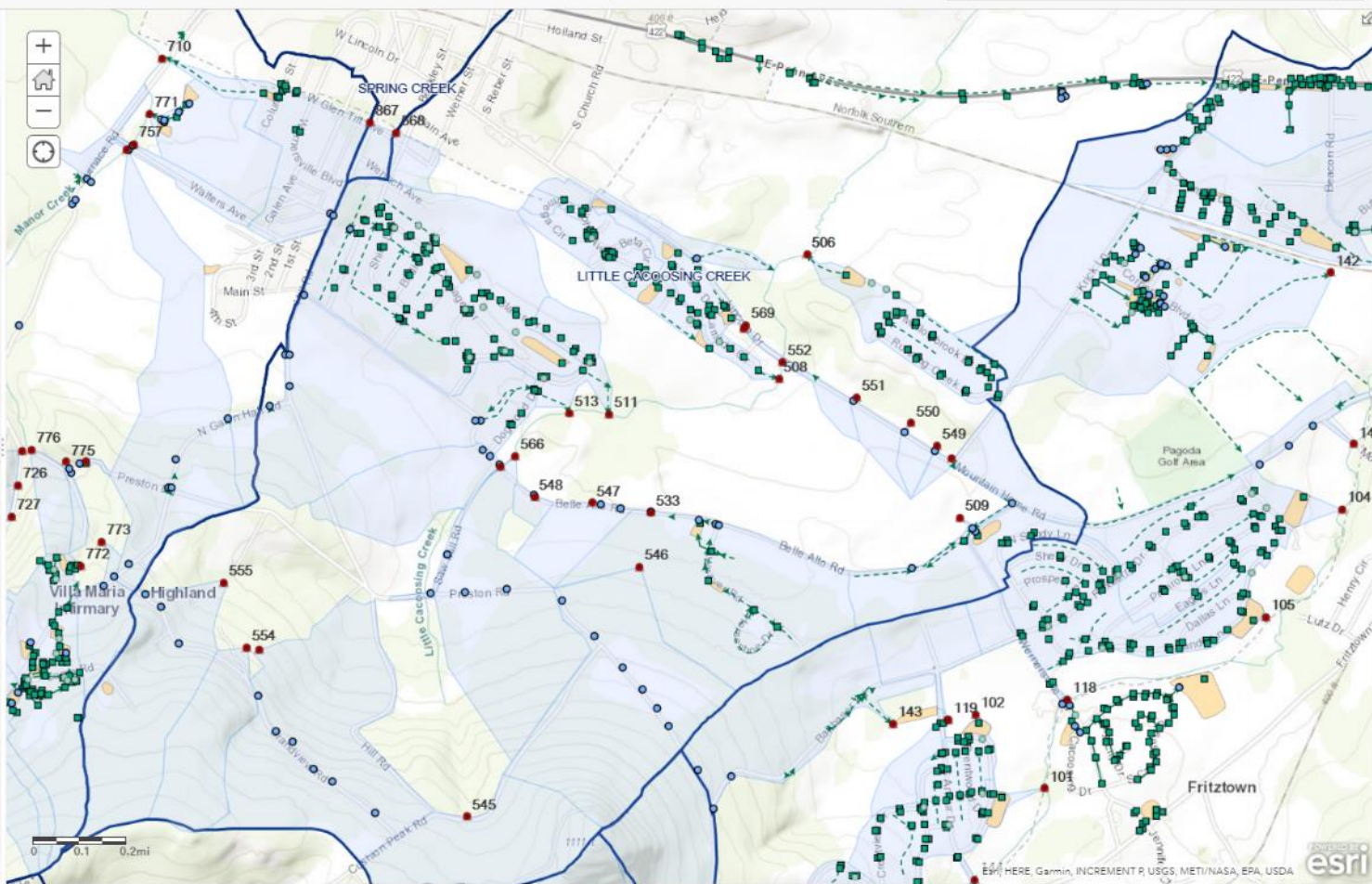
Details Add Edit Basemap Analysis

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

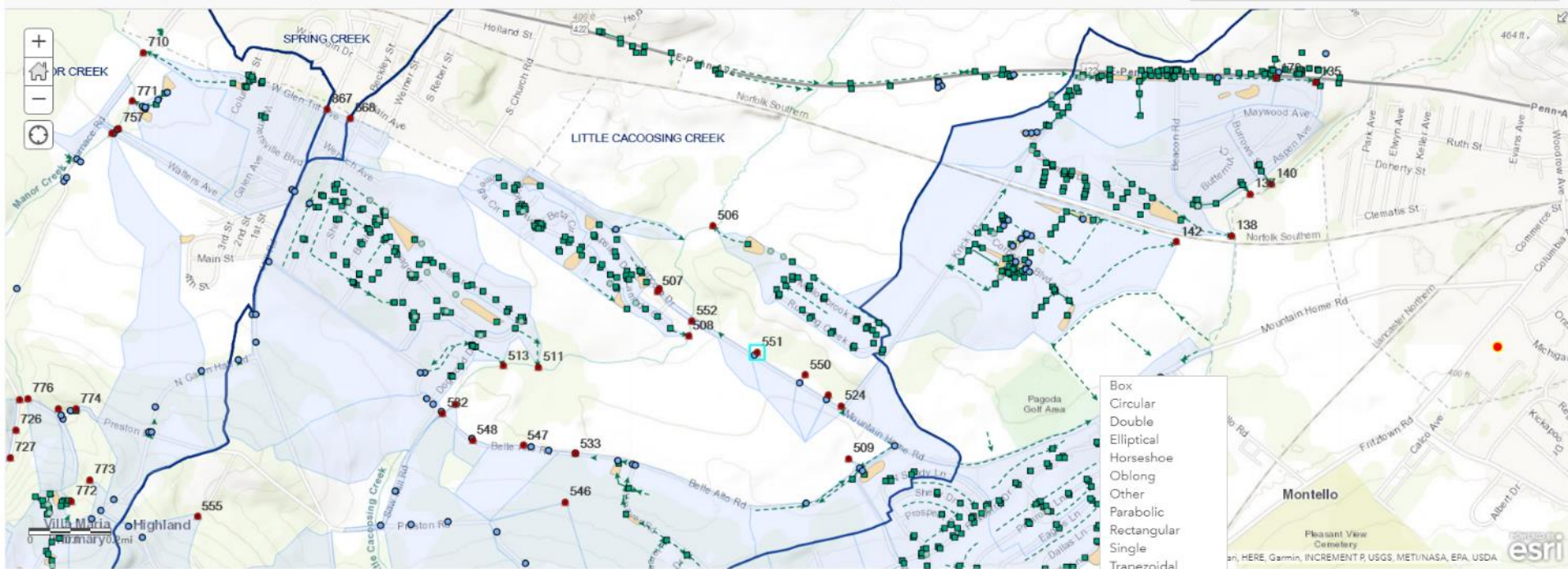
- Dimensions

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

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 value

For multiple samples, list all results separated by commas.

Turbidity units

Other analysis conducted

255

Field Inspection Comments

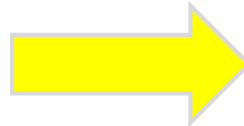
## Data Sources

- **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**



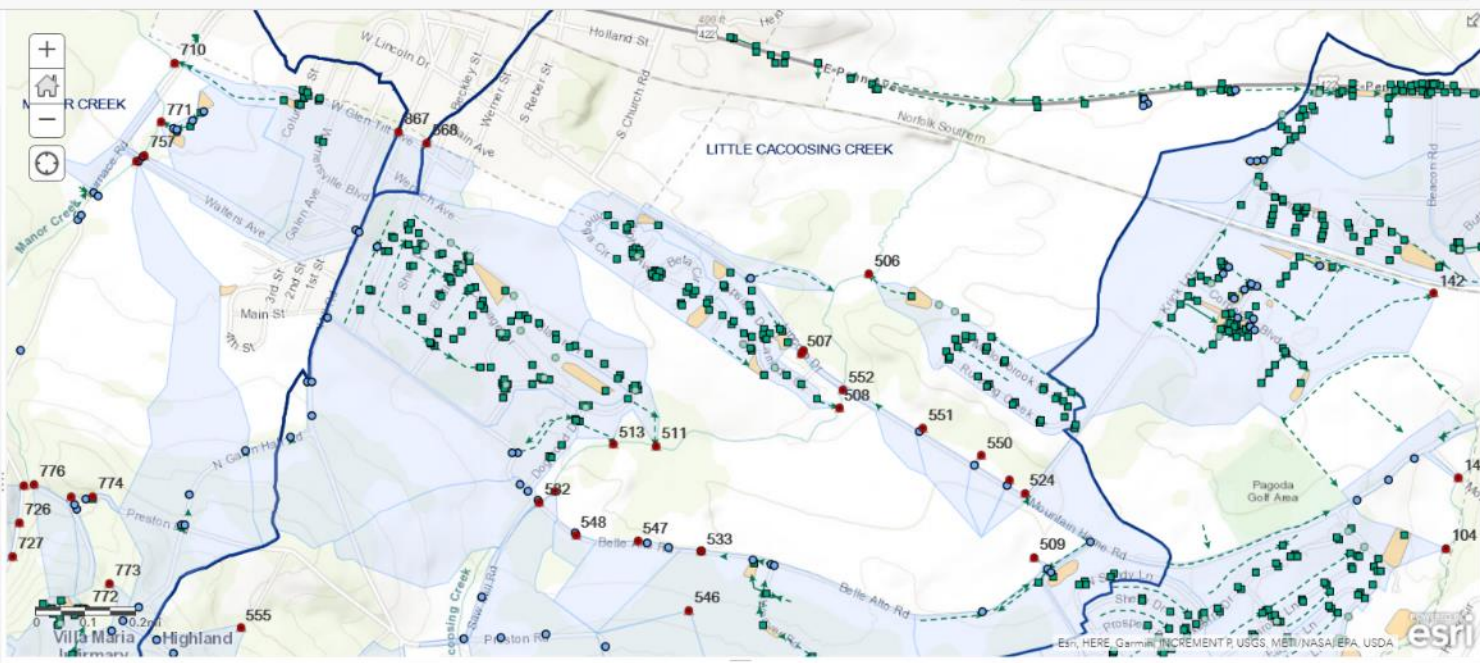
- Additional fields in Survey feature layer

About Content Legend

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- MS4 Outfall Field Screening Survey
- Outfall
- swCulvert pts
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- swControlValve
- swCleanOut
- swCasing
- swVirtualDrainline
- swPressurePipe
- swOpenDrain
- swGravityMain
- swCulvert

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**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

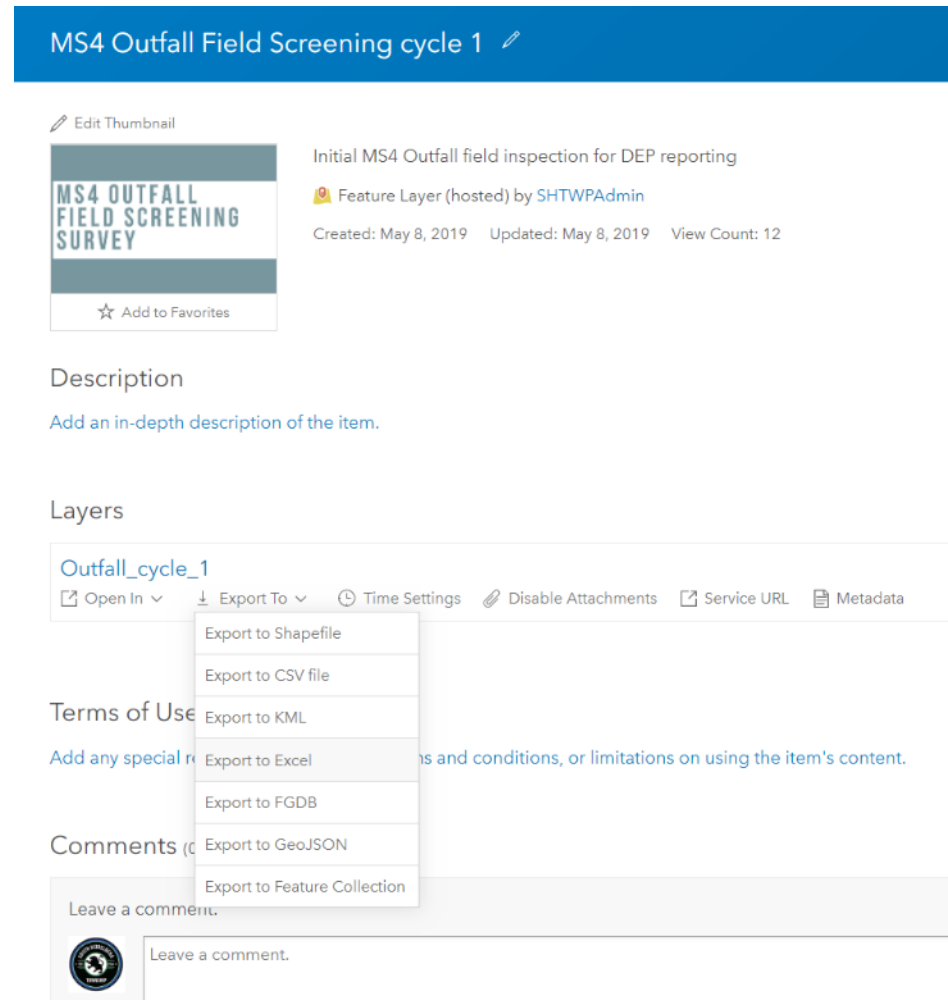
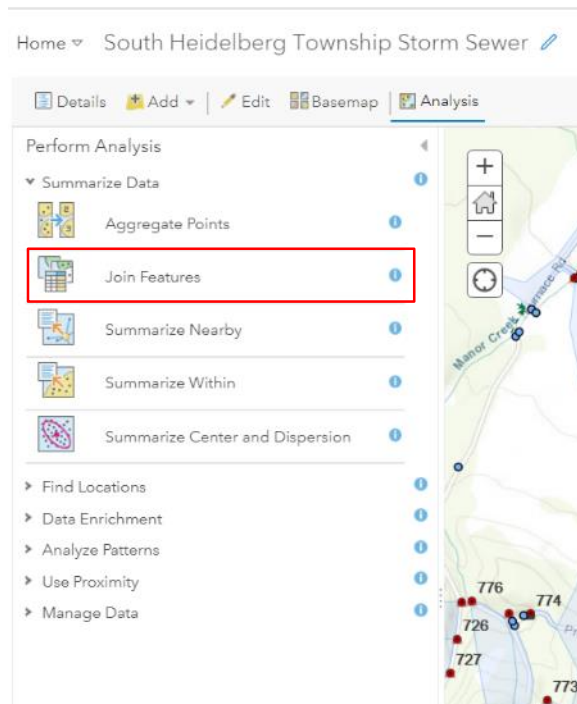
- **Post Inspection Information**



- Additional fields in Survey feature layer

# Post Processing

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



# Microsoft Mail Merge

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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: 40 ° 20 ' 43.2 "		
<input checked="" type="checkbox"/> Industrial <input type="checkbox"/> Urban Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Suburban Residential <input checked="" type="checkbox"/> Open Space <input checked="" type="checkbox"/> Other: Other Land Use		Longitude: -75 ° 57 ' 31.1 "		
		Dry Weather Inspection? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
		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: 1.1 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? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (If No, skip to Certification Section)				
Description of Flow Rate: <input checked="" type="checkbox"/> Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Significant <input type="checkbox"/> N/A				

# Photo Attachments

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## MS4 OUTFALL FIELD SCREENING REPORT



### PHOTOGRAPH

Permittee Name: Example Report

NPDES Permit No.: PA00000

Date of Inspection: 3/21/2019

Outfall ID No.: 1





# 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



**Spotts, Stevens and McCoy**

SURVEY + INFRASTRUCTURE + BUILDINGS + ENVIRONMENT

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# About the Speaker

## Alfred C. Guiseppe, PG

Director | Water Resources

[al.guiseppe@ssmgroup.com](mailto: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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[www.ssmgroup.com](http://www.ssmgroup.com)