RUTGERS
New Jersey Agricultural Experiment Station

Hamilton Township (Mercer County)

ILLICIT DISCHARGE INVESTIGATION 2021

Developed by the Rutgers Cooperative Extension Water Resources Program
Funded by Hamilton Township, Mercer County, New Jersey

August 31, 2021

Acknowledgements

The Hamilton Township (Mercer County) Illicit Discharge Investigation – Summer 2021 has been produced by the **Rutgers Cooperative Extension (RCE) Water Resources Program**.

Funding for this project was generously provided by the **Township of Hamilton, Mercer County, New Jersey** and in part by the **New Jersey Agricultural Experiment Station** through the United States Department of Agriculture.

Illicit Discharge Investigation, Hamilton Township – Summer 2021

The Rutgers Cooperative Extension (RCE) Water Resources Program collected samples from eight outfall sites in Hamilton Township, Mercer County, New Jersey during the summer of 2021 (See Figure 1) that exhibited dry weather flow. These eight outfall sites were part of a larger group of 25 outfalls that were identified as being potential illicit discharges based on visual inspections conducted during the summers of 2015, 2017, and 2019 and reports of having cloudy brown or grey water with an odor (See Attachment 1 and Attachment 2).

These outfalls were visually assessed first to see if there was flow after three days of dry weather, on May 12, May 14, May 19, May 25, and May 26 (Attachment 1). Eight of these outfalls were observed to be flowing and were revisited for sample collection and testing on July 29 and August 5 (Attachment 2). Samples collected on these days were analyzed in the field by Water Resources Program staff for potassium, ammonia as N, and surfactants to determine if the sites were characteristic of an illicit discharge (See Attachment 2). The results of these analyses as well as the calculated ammonia to potassium ratio, can be found in Table 1.

Four outfalls were not located (44, 89, E605, and D0214) during the initial round of investigations, but illicit connection inspection reports were completed for continuity. One outfall, which was found to be flowing during dry weather, B0306, was flowing at such a low rate that sample collection was not possible on August 5. During the August 5 inspections an additional outfall was found to be flowing during dry weather. This outfall had not been identified during any previous outfall inspections and is located under the Pond Run overpass between Johnston Avenue and Fletcher Avenue along D'Arcy Avenue. This outfall is referred to as the "bridge site" in this report, and a picture is included in the illicit reports section.

Samples were analyzed using a HACH D1900 spectrophotometer and the following HACH analytical methods were referenced: TNT 874 Anionic Surfactants for detergents, Tetrephenylborate Method #8049 for potassium, USEPA Nessler Method #8038 for ammonia, and USEPA SPADNS 2 Methods #10225 for fluoride (Attachment 3). The Illicit Discharge Identification Flow Chart provided by the New Jersey Department of Environmental Protection (NJDEP) in chapter 3.6 of the Municipal Separate Storm Sewer System Tier A Guidance

Document (Figure 2) was used to determine the presence of an illicit discharge. As seen from the results in Table 1, detergent concentrations greater than 0.06 mg/L were measured in samples collected from each site, so no fluoride testing was needed. Given the presence of surfactants, these dry weather flows may be from sanitary wastewater or washwater sources, or they may be illicit discharges of industrial wastewater, rinse water, backwash or cooling water (NJDEP, 2018). The ratio of ammonia as N to potassium can be used to distinguish a sanitary wastewater source from a washwater source. The ammonia as N to potassium ratio of sanitary sewage is characteristically greater than 1.0. Dry weather flows with an ammonia as N to potassium ratio less than 1.0 are likely to be a washwater source and not a sanitary wastewater source (NJDEP, 2018). The ratios in Table 1 illustrate that the dry weather flows observed are most likely from a washwater source.

Most industrial discharges can be identified by high potassium concentrations and/or high ammonia as N concentrations. The benchmark concentration for potassium to identify industrial discharges is $\geq$ 20 mg/L, and the benchmark concentration for ammonia as N to identify industrial discharges is $\geq$ 50 mg/L (Brown, Caraco, and Pitt, 2004). All potassium and ammonia as N concentrations reported in Table 1 are well below these benchmark concentrations, illustrating that the dry weather flows observed are most likely not from an industrial source.

Evidence of illicit discharges was detected at the eight outfall sites sampled in Hamilton Township, Mercer County, New Jersey on July 29, 2021 and August 5, 2021. Further investigations into the sources of these possible illicit sewer connections may be needed to determine the presence of industrial discharges.

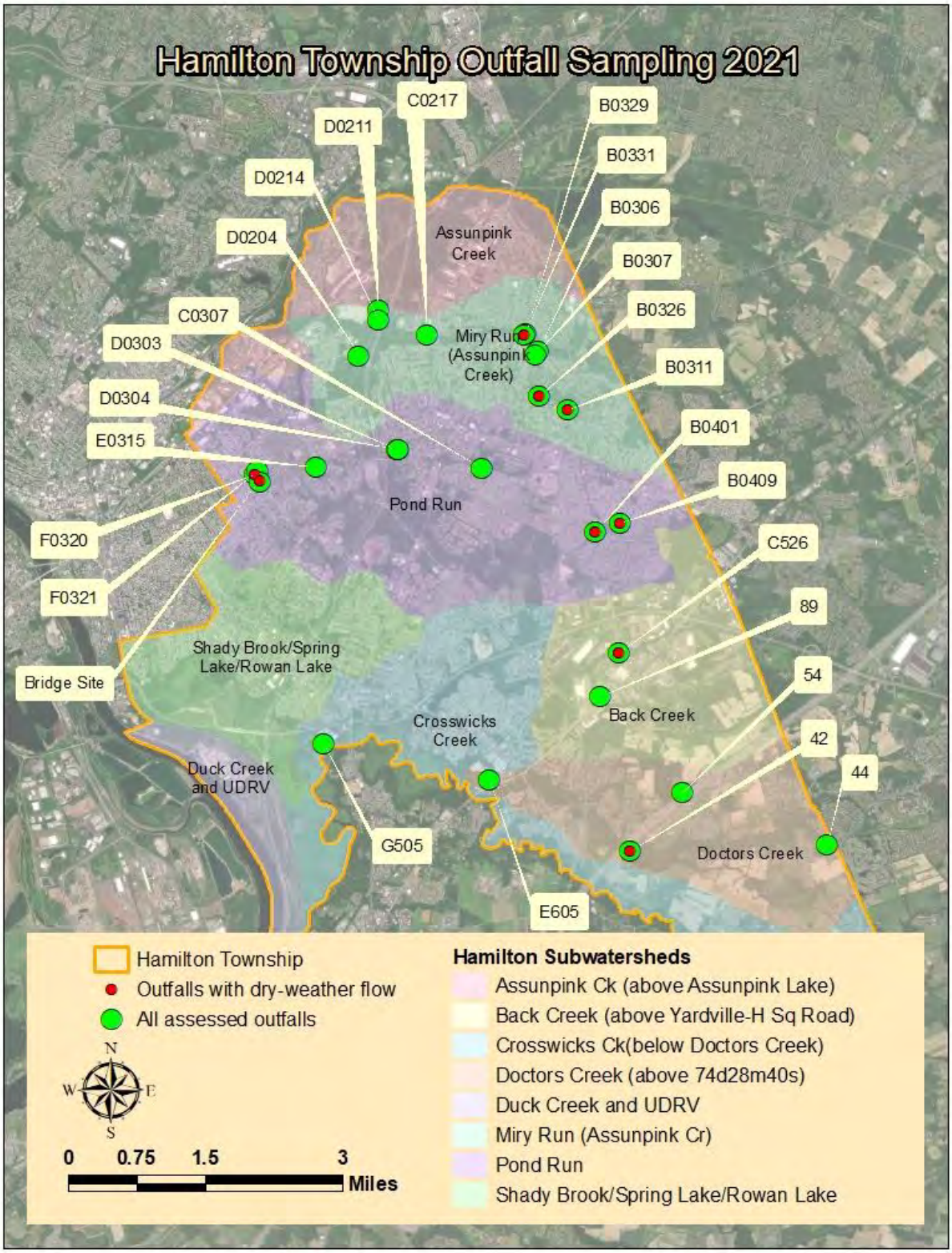


Figure 1: Hamilton Township outfall sampling sites, 2021

Table 1: Results from Hamilton Township outfall sampling, 2021

Outfall ID #	Date/Time of sampling	Surfactants (MBAS) (mg/L)	Temp (C)	Ammonia (mg/L)	Potassium (mg/L)	ratio NH3:K	flouride
42	July 29/2:35pm	0.354	26.8	0.18	3.2	0.0563	n/a
B0311	July 29/11:29am	0.269	21	0.6	3.1	0.1935	n/a
B0331	July 29/10:17am	0.137	22.5	0.18	2.6	0.0692	n/a
B0401	July 29/1:18pm	0.193	23.5	ND	4.4	-	n/a
B0409	July 29/12:53pm	0.199	24.3	0.1	2.9	0.0345	n/a
B0306	August 5/ -	-	-	-	-	-	n/a
C526	August 5/10:27am	0.268	22.6	0.74	1.6	0.4625	n/a
F0320	August 5/12:52pm	0.227	24.3	0.27	2.6	0.1038	n/a
bridge site	August 5/10:39am	0.164	22.2	0.5	2.4	0.2083	n/a

ND = non-detect
MBAS = methylene blue active substances

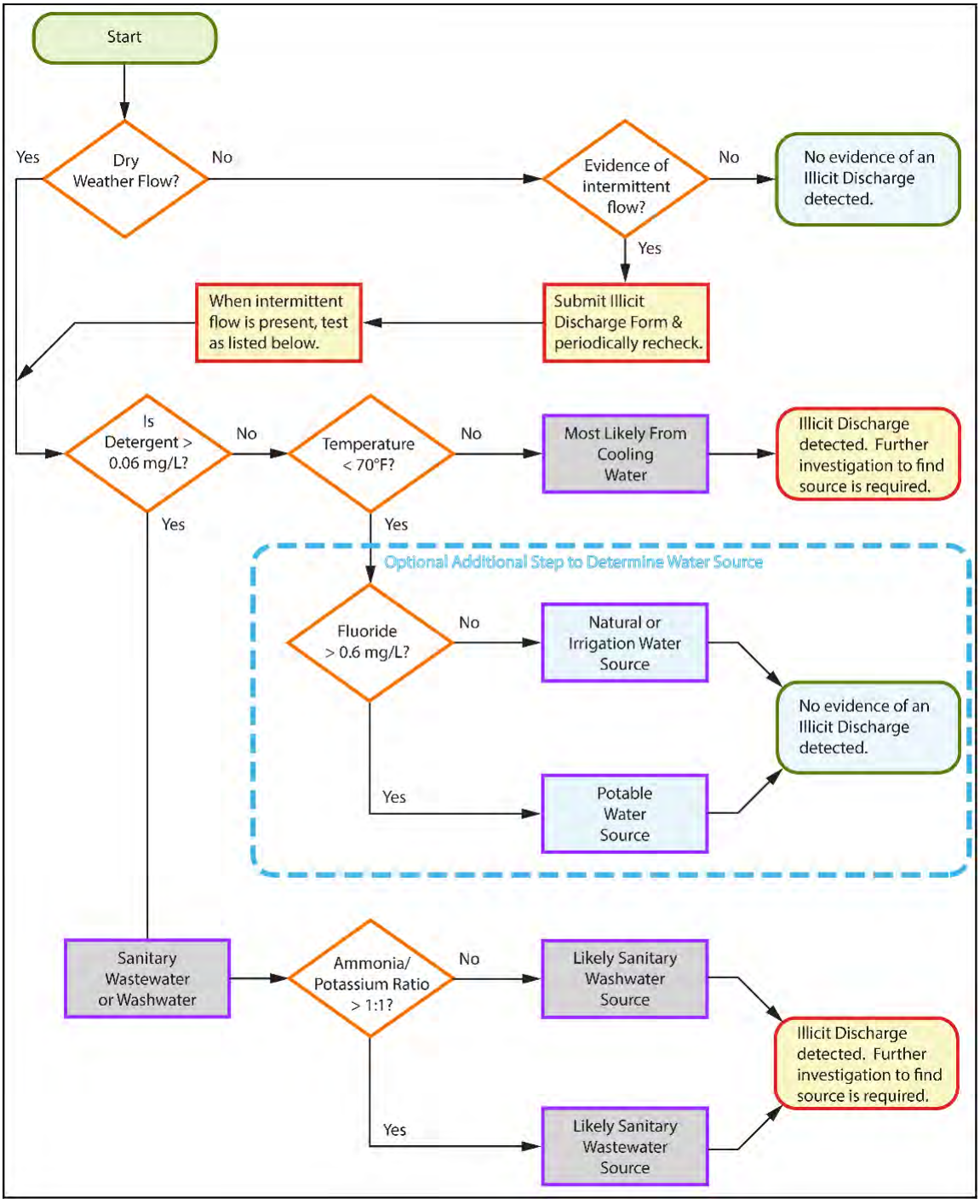


Figure 2: Illicit Discharge Identification Flow Chart, NJDEP 2018

Resources

Brown, E., Caraco, D., Pitt, R. 2004. Illicit Discharge Detection and Elimination: A Guidance Manual: Chapter 12 Indicator Monitoring, pp. 134-135.

New Jersey Department of Environmental Protection (NJDEP). 2018. Tier A Municipal Stormwater Guidance Document. Chapter 3.6: MS4 Outfall Pipe Mapping and Illicit Discharge and Scour Detection Control, pp. 6-12.

Attachment 1: 2021 Illicit Connection Visual Inspection Reports

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: BO 331 Location: Edinburg Rd & Wesleyan Drive Hamilton NJ 08619

Receiving Waterbody: Miry Run

1. Is there a dry weather flow? Y (X) N ( )
2. If "YES", what is the outfall flow estimate? 1/so gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y (X) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS:**

(a) **ODOR:** (none) sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR:** (none) yellow brown green red gray other: _____

(c) **TURBIDITY:** (none) cloudy opaque

(d) **FLOATABLES:** none petroleum sheen sewage other: some trash

(e) **DEPOSITS/STAINS:** (none) sediment oily other: _____

(f) **VEGETATION CONDITIONS:** normal (excessive growth) inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES:**

IDENTIFY STRUCTURE: outfall pipe

DAMAGE: (none) concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS:** _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? unknown

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: [signature]

Date: [redacted] 5/12

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #BO331

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: B0329 Location: Edinburg Rd & Wesleyan Dr. Hamilton, NJ 08619

Receiving Waterbody: Miry Run

1. Is there a dry weather flow? Y ( ) N (X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N (X)
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: none yellow brown green red gray other: _____

(c) **TURBIDITY**: none cloudy opaque

(d) **FLOATABLES**: none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: none sediment oily other: _____

(f) **VEGETATION CONDITIONS**: normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y (X) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pysnik

Title: Program Coordinator

Signature: _____

Date: 5/12

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #B0329

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: E605 Location: 87 Martin's Ln, Hamilton NJ 08620

Receiving Waterbody: Doctors Creek

1. Is there a dry weather flow? Y ( ) N (X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N (X)
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS:**

(a) **ODOR:** none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR:** none yellow brown green red gray other: _____

(c) **TURBIDITY:** none cloudy opaque

(d) **FLOATABLES:** none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS:** none sediment oily other: _____

(f) **VEGETATION CONDITIONS:** normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES:**

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS:** _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/14

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: GSØ5 Location: Hobson Ave. Hamilton NJ 08610

Receiving Waterbody: Crosswicks Creek

1. Is there a dry weather flow? Y ( ) N (X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N (X)
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS:**

(a) **ODOR:** none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR:** none yellow brown green red gray other: _____

(c) **TURBIDITY:** none cloudy opaque

(d) **FLOATABLES:** none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS:** none sediment oily other: _____

(f) **VEGETATION CONDITIONS:** normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES:**

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS:** _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: [signature]

Date: 5/14

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #G505

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: 42 Location: Crosswicks Hamilton Sq. Rd. & NJTP Hamilton 08691

Receiving Waterbody: Doctor's Creek

1. Is there a dry weather flow? Y (X) N ( )
2. If "YES", what is the outfall flow estimate? 1 gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y (X) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: (none) sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: (none) yellow brown green red gray other: _____

(c) **TURBIDITY**: (none) cloudy opaque

(d) **FLOATABLES**: (none) petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: none (sediment) oily other: _____

(f) **VEGETATION CONDITIONS**: (normal) excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: outfall pipe

DAMAGE: (none) concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? unknown

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/14

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #42

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: E0315 Location: 1961 Hamilton Ave, Trenton NJ 08619

Receiving Waterbody: Branch of Pond Run

1. Is there a dry weather flow? Y ( ) N (X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N (X)
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS:**

(a) **ODOR:** none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR:** none yellow brown green red gray other: _____

(c) **TURBIDITY:** none cloudy opaque

(d) **FLOATABLES:** none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS:** none sediment oily other: _____

(f) **VEGETATION CONDITIONS:** normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES:**

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS:** _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/19

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #E0315

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: F032Ø Location: Johnston Ave & Quincy Ave Hamilton NJ 08629

Receiving Waterbody: Pond Run

1. Is there a dry weather flow? Y (X) N ( )
2. If "YES", what is the outfall flow estimate? 1/100 gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y (X) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS:**

(a) **ODOR:** (none) sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR:** (none) yellow brown green red gray other: _____

(c) **TURBIDITY:** (none) cloudy opaque

(d) **FLOATABLES:** (none) petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS:** (none) sediment oily other: _____

(f) **VEGETATION CONDITIONS:** (normal) excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES:**

IDENTIFY STRUCTURE: outfall pipe

DAMAGE: (none) concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS:** _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Ryshnik

Title: Program Coordinator

Signature: _____

Date: 5/19

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #F0320

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: FØ321 Location: 103 Bonnie Ave Hamilton NJ 08629

Receiving Waterbody: Pond Run

1. Is there a dry weather flow? Y ( ) N (X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N (X)
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS:**

(a) **ODOR:** none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR:** none yellow brown green red gray other: _____

(c) **TURBIDITY:** none cloudy opaque

(d) **FLOATABLES:** none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS:** none sediment oily other: _____

(f) **VEGETATION CONDITIONS:** normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES:**

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS:** _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: [signature]

Date: 5/19

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #F0321

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: D03b3 Location: Grayson Ave & Erie Ave Hamilton NJ 08619

Receiving Waterbody: Branch of Pond Run

1. Is there a dry weather flow? Y ( ) N (X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N (X)
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: none yellow brown green red gray other: _____

(c) **TURBIDITY**: none cloudy opaque

(d) **FLOATABLES**: none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: none sediment oily other: _____

(f) **VEGETATION CONDITIONS**: normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/19

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: D03Ø4 Location: Grayson Ave & Erie Ave Hamilton NJ 08619

Receiving Waterbody: Branch of Pond Run

1. Is there a dry weather flow? Y ( ) N(X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N(X)
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: none yellow brown green red gray other: _____

(c) **TURBIDITY**: none cloudy opaque

(d) **FLOATABLES**: none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: none sediment oily other: _____

(f) **VEGETATION CONDITIONS**: normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/19

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #B0303 & #BO304

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: C03f7 Location: 833 Estates Blvd Hamilton NJ 08690

Receiving Waterbody: Branch of Pond Run

1. Is there a dry weather flow? Y ( ) N (X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N (X)
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: none yellow brown green red gray other: _____

(c) **TURBIDITY**: none cloudy opaque

(d) **FLOATABLES**: none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: none sediment oily other: _____

(f) **VEGETATION CONDITIONS**: normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/19

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #C0307

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: B04φ1 Location: 1009 Estates Blvd. Hamilton NJ 08690

Receiving Waterbody: Pond Run

1. Is there a dry weather flow? Y (X) N ( )
2. If "YES", what is the outfall flow estimate? 1/3 gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y (X) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: (none) sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: none (yellow) (brown) green red gray other: iron deposits

(c) **TURBIDITY**: none (cloudy) opaque

(d) **FLOATABLES**: (none) petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: none (sediment) oily other: iron

(f) **VEGETATION CONDITIONS**: (normal) excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: outfall pipe

DAMAGE: (none) concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? unknown

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Ryshnik

Title: Program Coordinator

Signature: [signature]

Date: 5/19

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #B0401

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: B0409 Location: (George Dye Tract) 37 Carl Sandburg Dr Hamilton NJ 08690

Receiving Waterbody: Pond Run

1. Is there a dry weather flow? Y (X) N ( )
2. If "YES", what is the outfall flow estimate? 1/5 gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y (X) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: (none) sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: (none) yellow brown green red gray other: _____

(c) **TURBIDITY**: (none) cloudy opaque

(d) **FLOATABLES**: (none) petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: (none) sediment oily other: _____

(f) **VEGETATION CONDITIONS**: normal (excessive growth) inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: outfall pipe

DAMAGE: (none) concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/19

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #B0409 (pipe is at the end of concrete pictured above)

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: C0217 Location: 3100 Quakerbridge Rd Hamilton NJ 08619

Receiving Waterbody: Miry Run

1. Is there a dry weather flow? Y ( ) N (X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N (X)
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: none yellow brown green red gray other: _____

(c) **TURBIDITY**: none cloudy opaque

(d) **FLOATABLES**: none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: none sediment oily other: _____

(f) **VEGETATION CONDITIONS**: normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/25

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #C0217

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: D0204 Location: 3291 E. State St. Trenton NJ 08619

Receiving Waterbody: Miry Run Tributary

1. Is there a dry weather flow? Y ( ) N(X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N(X)
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: (none) sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: (none) yellow brown green red gray other: _____

(c) **TURBIDITY**: none cloudy opaque

(d) **FLOATABLES**: none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: none sediment oily other: _____

(f) **VEGETATION CONDITIONS**: normal (excessive growth) inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N ( )

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/25

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #D0204 (on right)

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: D0211 Location: 295 on-ramp from Sloan Ave Hamilton NJ 08619

Receiving Waterbody: Ming Run Tributary

1. Is there a dry weather flow? Y ( ) N (X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N (X)
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: none yellow brown green red gray other: _____

(c) **TURBIDITY**: none cloudy opaque

(d) **FLOATABLES**: none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: none sediment oily other: _____

(f) **VEGETATION CONDITIONS**: normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: [signature]

Date: 5/25

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #D0211 (only headwall visible)

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: D0214 Location: 295 on-ramp at Sloan Ave Hamilton NJ 08619

Receiving Waterbody: Miry Run Tributary

1. Is there a dry weather flow? Y ( ) N (X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N (X)
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS:**

(a) **ODOR**: none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: none yellow brown green red gray other: _____

(c) **TURBIDITY**: none cloudy opaque

(d) **FLOATABLES**: none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: none sediment oily other: _____

(f) **VEGETATION CONDITIONS**: normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES:**

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/25

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: BØ311 Location: Hoagland Tract Hamilton NJ 08690

Receiving Waterbody: Miry Run

1. Is there a dry weather flow? Y (X) N ( )
2. If "YES", what is the outfall flow estimate? 1/5 gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y (X) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: (none) sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: (none) yellow brown green red gray other: _____

(c) **TURBIDITY**: (none) cloudy opaque

(d) **FLOATABLES**: (none) petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: (none) sediment oily other: _____

(f) **VEGETATION CONDITIONS**: (normal) excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: outfall pipe

DAMAGE: (none) concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? unknown

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/26

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #B0311

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: C0526 Location: Klockner Rd & Water View Dr. Hamilton NJ 08690

Receiving Waterbody: Edges Brook / Back Creek

1. Is there a dry weather flow? Y (X) N ( )
2. If "YES", what is the outfall flow estimate? 1/5 gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y (X) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: none sewage (sulfide) oil gas rancid/sour other: _____

(b) **COLOR**: none (yellow) (brown) green red gray other: _____

(c) **TURBIDITY**: none (cloudy) opaque

(d) **FLOATABLES**: none petroleum (sheen) sewage other: _____

(e) **DEPOSITS/STAINS**: none (sediment) oily other: _____

(f) **VEGETATION CONDITIONS**: (normal) excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: outfall pipe

DAMAGE: (none) concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/26

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #C0526

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: B0326 Location: 54 Crestwood Dr. Hamilton NJ 08690

Receiving Waterbody: Miry Run Tributary

1. Is there a dry weather flow? Y ( ) N (X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N(X)
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS:**

(a) **ODOR:** none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR:** none yellow brown green red gray other: _____

(c) **TURBIDITY:** none cloudy opaque

(d) **FLOATABLES:** none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS:** none sediment oily other: _____

(f) **VEGETATION CONDITIONS:** normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES:**

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS:** _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/26

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #B0326

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: B03Ø7 Location: 40 Wesleyan Dr. Hamilton NJ 08690

Receiving Waterbody: Miry Run Tributary

1. Is there a dry weather flow? Y ( ) N (X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N (X)
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: none yellow brown green red gray other: _____

(c) **TURBIDITY**: none cloudy opaque

(d) **FLOATABLES**: none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: none sediment oily other: _____

(f) **VEGETATION CONDITIONS**: normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/26

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #B0307

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: BØ3Ø6 Location: 46 Wesleyan Dr Hamilton NJ 08690

Receiving Waterbody: Ming Run Tributary

1. Is there a dry weather flow? Y (X) N ( )
2. If "YES", what is the outfall flow estimate? 1/100 gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y (X) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: (none) sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: (none) yellow brown green red gray other: _____

(c) **TURBIDITY**: (none) cloudy opaque

(d) **FLOATABLES**: (none) petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: (none) sediment oily other: _____

(f) **VEGETATION CONDITIONS**: (normal) excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: outfall pipe

DAMAGE: (none) concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? unknown

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: [signature]

Date: 5/26

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #B0306

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: 54 Location: 215 Uncle Pete's Rd. Trenton NJ 08691

Receiving Waterbody: Doctors Creek

1. Is there a dry weather flow? Y ( ) N ~~(X)~~
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N ~~(X)~~
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS:**

(a) **ODOR:** none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR:** none yellow brown green red gray other: _____

(c) **TURBIDITY:** none cloudy opaque

(d) **FLOATABLES:** none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS:** none sediment oily other: _____

(f) **VEGETATION CONDITIONS:** normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES:**

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS:** _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/24

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #54

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: 44 Location: 4 Hidden Hollow Dr. Hamilton, NJ 08620

Receiving Waterbody: Doctors Creek Tributary

1. Is there a dry weather flow? Y ( ) N (X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N (X)
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: none yellow brown green red gray other: _____

(c) **TURBIDITY**: none cloudy opaque

(d) **FLOATABLES**: none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: none sediment oily other: _____

(f) **VEGETATION CONDITIONS**: normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/26

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #44 - no outfall pipe located

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: 89 Location: 601 US-130, Robbinsville Twp, NJ 08691

Receiving Waterbody: Back Creek

1. Is there a dry weather flow? Y ( ) N (X)
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: none yellow brown green red gray other: _____

(c) **TURBIDITY**: none cloudy opaque

(d) **FLOATABLES**: none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: none sediment oily other: _____

(f) **VEGETATION CONDITIONS**: normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: _____

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: _____ mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** _____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** _____ °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N (X)

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 5/26

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID #89 - no outfall pipe located

Attachment 2: 2021 Illicit Connection Sample Analysis Reports

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: 42 Location: _____

Receiving Waterbody: _____

1. Is there a dry weather flow? Y ( ) N ( )
2. If "YES", what is the outfall flow estimate? _____ gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS:**

(a) **ODOR**: none sewage sulfide oil gas (rancid/sour) other: _____

(b) **COLOR**: none yellow brown green red (gray) other: _____

(c) **TURBIDITY**: none (cloudy) opaque

(d) **FLOATABLES**: none petroleum sheen sewage other: foam

(e) **DEPOSITS/STAINS**: (none) sediment oily other: _____

(f) **VEGETATION CONDITIONS**: normal (excessive growth) inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES:**

IDENTIFY STRUCTURE: pipe

DAMAGE: (none) concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: 0.354 mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** 0.18 / 3.2 = 0.56

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** 26.8°C = 80.24 °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? unknown

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: [signature]

Date: 7/29

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: BØ311 Location: Hoagland Tract Hamilton NJ 08610

Receiving Waterbody: Miry Run

1. Is there a dry weather flow? Y (X) N ( )
2. If "YES", what is the outfall flow estimate? 1/5 gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y (X) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: (none) sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: (none) yellow brown green red gray other: _____

(c) **TURBIDITY**: (none) cloudy opaque

(d) **FLOATABLES**: (none) petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: (none) sediment oily other: _____

(f) **VEGETATION CONDITIONS** (normal) excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES:**

IDENTIFY STRUCTURE: Pipe

DAMAGE: (none) concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: 0.269 mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** 0.6 / 3.1 = 0.19

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** 21.0°C = 69.8 °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? unknown

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 7/29

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: B Ø 331 Location: Edinburg : Wesleyan Dr. Hamilton NJ 08619

Receiving Waterbody: Miry Run

1. Is there a dry weather flow? Y (X) N ( )
2. If "YES", what is the outfall flow estimate? 1/50 gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y (X) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS:**

(a) **ODOR:** (none) sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR:** (none) yellow brown green red gray other: _____

(c) **TURBIDITY:** (none) cloudy opaque

(d) **FLOATABLES:** (none) petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS:** (none) sediment oily other: _____

(f) **VEGETATION CONDITIONS:** normal (excessive growth) inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES:**

IDENTIFY STRUCTURE: outfall pipe

DAMAGE: (none) concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS:** 0.137 mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** 0.18 / 2.6 = 0.069

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** 22.5 °C = 72.5 °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? unknown

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 7/29

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: B04 01 Location: 1069 Estates Blvd Hamilton NJ 08610

Receiving Waterbody: Pond Run

1. Is there a dry weather flow? Y (X) N ( )
2. If "YES", what is the outfall flow estimate? 1/3 gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y (X) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: (none) sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: none (yellow) (brown) green red gray other: _____

(c) **TURBIDITY**: none (cloudy) opaque

(d) **FLOATABLES**: (none) petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: (none) (sediment) oily other: _____

(f) **VEGETATION CONDITIONS**: (normal) excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**: pipe

IDENTIFY STRUCTURE: _____

DAMAGE: (none) concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: 0.193 mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** ND / 4.4

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** 23.5 = 74.3 °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? unknown

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 7/29

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: B0909 Location: (George Dye Tract) 37 Carl Sandburg Dr. Hamilton NJ 08690

Receiving Waterbody: Pond Run

1. Is there a dry weather flow? Y (X) N ( )
2. If "YES", what is the outfall flow estimate? 1/5 gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y (X) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS:**

(a) **ODOR:** (none) sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR:** (none) yellow brown green red gray other: _____

(c) **TURBIDITY:** (none) cloudy opaque

(d) **FLOATABLES:** (none) petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS:** (none) sediment oily other: _____

(f) **VEGETATION CONDITIONS:** normal (excessive growth) inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES:**

IDENTIFY STRUCTURE: pipe

DAMAGE: (none) concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS:** 0.199 mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** 0.1 / 2.9 = 0.034

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** 24.3°C = 75.74 °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? unknown

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: [signature]

Date: 7/29

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: CBS 26 Location: Klockner Rd & Water View Dr. Hamilton NJ 08690

Receiving Waterbody: Edges Brook / Back Creek

1. Is there a dry weather flow? Y (X) N ( )
2. If "YES", what is the outfall flow estimate? 1/5 gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y (X) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS:**

(a) **ODOR:** none sewage (sulfide) oil gas rancid/sour other: _____

(b) **COLOR:** none (yellow) (brown) green red gray other: _____

(c) **TURBIDITY:** none (cloudy) opaque

(d) **FLOATABLES:** none petroleum (sheen) sewage other: _____

(e) **DEPOSITS/STAINS:** none (sediment) oily other: _____

(f) **VEGETATION CONDITIONS:** (normal) excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES:**

IDENTIFY STRUCTURE: Pipe

DAMAGE: (none) concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS:** 0.268 mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** 0.74 / 1.6 = 0.46

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** 22.6°C = 72.68 °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? unknown

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: [signature]

Date: 8/5

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: FØ32Ø Location: Johnston Ave & Quincy Ave Hamilton NJ 08629

Receiving Waterbody: Pond Run

1. Is there a dry weather flow? Y (X) N ( )
2. If "YES", what is the outfall flow estimate? 20 gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y (X) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS:**

(a) **ODOR:** (none) sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR:** (none) yellow brown green red gray other: _____

(c) **TURBIDITY:** (none) cloudy opaque

(d) **FLOATABLES:** none petroleum sheen sewage other: foam

(e) **DEPOSITS/STAINS:** (none) sediment oily other: _____

(f) **VEGETATION CONDITIONS:** (normal) excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES:**

IDENTIFY STRUCTURE: pipe

DAMAGE: (none) concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS:** 0.227 mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** 0.27 / 2.6 = 0.10

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** 24.3 75.74 °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? unknown

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 8/5

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Illicit Connection Inspection Report Form

Highway Agency Information

Highway Agency: _____

NJPDES # :NJG _____ PI ID #: _____

Team Member: _____

Date _____ Effective Date of Permit Authorization (EDPA): _____

Outfall #: Bridge Site Location: D'Arcy Ave btwn Johnston Ave and Pletcher Ave Hamilton NJ08629

Receiving Waterbody: Pond Run

1. Is there a dry weather flow? Y (X) N ( )
2. If "YES", what is the outfall flow estimate? 1/50 gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y(X) N ( )
4. If you answered "**NO**" to BOTH question #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department, but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) **ODOR**: none sewage sulfide oil gas rancid/sour other: _____

(b) **COLOR**: none yellow brown green red gray other: _____

(c) **TURBIDITY**: none cloudy opaque

(d) **FLOATABLES**: none petroleum sheen sewage other: _____

(e) **DEPOSITS/STAINS**: none sediment oily other: _____

(f) **VEGETATION CONDITIONS**: normal excessive growth inhibited growth

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE: outfall pipe

DAMAGE: none concrete spalling/cracking peeling paint
metal corrosion other damage _____

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**
   * field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**: 0.164 mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) **AMMONIA (as N) TO POTASSIUM RATIO:** 0.5 / 2.4 = 0.21

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.06:1, then the pollutant is from another washwater source.)

(c) **FLUORIDE:** _____ mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and ground water infiltration, you will have to rely on temperature.)

(d) **TEMPERATURE:** 22.2 °C = 71.96 °F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y (X) N ( )

   If "**YES**", what is the suspected source? unknown

   If "**NO**", skip to signature block on the bottom of this page.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N (X)

   If "**YES**", proceed to question #9.

   If "**NO**", skip to signature block on the bottom of this page.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source (including whether source is from Highway Agency or another entity). _____

   What plan of action will follow to eliminate the illicit connection or report the illicit connection to the NJDEP?

   Resolution: _____

   _____

   _____

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit Connection Inspection Report Form.

Inspector's Name: Elizabeth Pyshnik

Title: Program Coordinator

Signature: _____

Date: 8/5

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Outfall ID “bridge site”

Attachment 3: HACH Analysis Procedures

TNT 874 Anionic Surfactants

DOC312.53.94109

0.1–4.0 mg/L MBAS (as SDBS (Sodium dodecylbenzene sulfonate)) TNTplus®

Scope and application: Analysis of surface water, wastewater and process analysis.

Test preparation

Reagent storage

Storage temperature: 15–25 °C (59–77 °F)

pH/Temperature

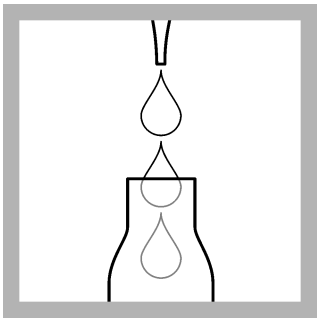
The pH of the water sample must be between pH 4–9.

The temperature of the water sample and reagents must be between 15–25 °C (59–77 °F).

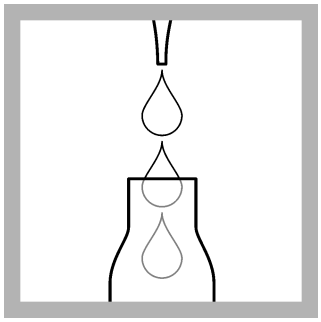
Before starting

Please read **Safety Advice** and **Expiration Date** on the package.
Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment. Dispose of reacted solutions according to local, state and federal regulations. Refer to the Safety Data Sheets for disposal information for unused reagents. Refer to the environmental, health and safety staff for your facility and/or local regulatory agencies for further disposal information.
Review safety information and expiration date on the package.
If streaks or small drops of water forms in the lower part of the vial, tilt the vial 90 degrees and rotate it at the same time to remove the streaks or drops.
Note: If the ambient temperature decreases, light turbidity can form in the chloroform phase. Increase the vial temperature briefly (for example, hold the vial in hands) to remove turbidity.
Make sure to work at the recommended temperature to get correct results.
Make sure to perform **procedure step 3** (shaking) always the same way and with same intensity using **both** hands. For example: for preparation of a new user LAS standard calibration curve, shake **all vials together** at the **same time** to get better results.

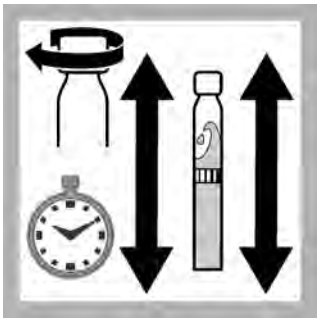
Procedure



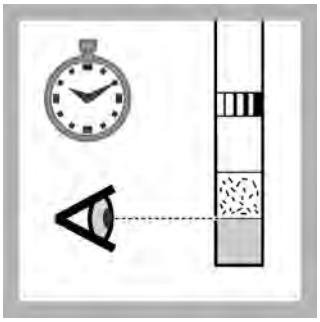
1. Carefully pipet **2.0 mL** of **sample**.



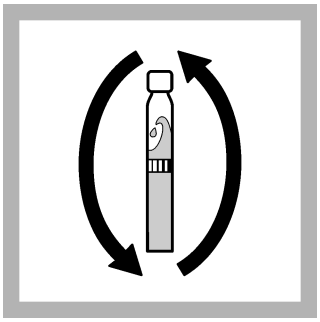
2. Carefully pipet **0.2 mL** of **solution A**.



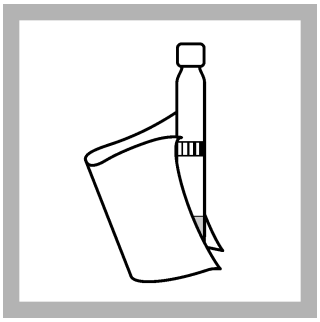
3. Close the vial. Hold the vial between the screw cap and the base, shake it for **60 seconds**.



4. Then leave the vial standing upright for **30 seconds** to allow phase separation to occur.



5. Carefully invert the vial **twice**.



6. Thoroughly clean the outside of the vial and evaluate.

7. Insert the vial into the cell holder.
DR 1900: Push **READ**.

Interferences

The ions listed in the table have been individually checked against the given concentrations and do not cause interference. The cumulative effects and the influence of other ions have not been determined.

Cationic surfactants cause low-bias results.

The measurement results must be subjected to plausibility checks (dilute and/or spike the sample).

Interference level	Interfering substance
1000 mg/L	K^+, Na^+, SO_4^{2-}
500 mg/L	Cl^-
250 mg/L	NO_4^+, PO_4^{3-}
100 mg/L	Mg^{2+}, NO_2^-, Ca^{2+}, NO_3^-, Cu^{2+}
50 mg/L	H_2O_2, $S_2O_8^{2-}$
25 mg/L	$S_2O_3^{2-}$, Fe^{2+}
10 mg/L	Cr^{3+}, Cr^{6+}, Cl_2
5 mg/L	SO_3^{2-}, Ni^{2+}, Zn^{2+}
2 mg/L	Fe^{3+}

Summary of method

Anionic surfactants react with methylene blue to form complexes, which are extracted in chloroform and measured photometrically.

The method is calibrated using the standard substance SDBS (Sodium dodecylbenzene sulfonate). Measurements of standards prepared from **SDBS or LAS (Linear Alkylbenzene sulfonate)** is possible. The results are measured at 653 nm. The intensity of the blue color is directly proportional to the increase of surfactant concentration.

TNTplus®

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05/2018, Edition 2

Nitrogen, Ammonia

DOC316.53.01078

USEPA[1] Nessler Method[2]

Method 8038

0.02 to 2.50 mg/L NH_3–N

Reagent Solution

Scope and application: For water, wastewater and seawater. Distillation is required for wastewater and seawater.

[1] USEPA accepted for wastewater analysis (distillation required), Method 350.2.
[2] Adapted from *Standard Methods for the Examination of Water and Wastewater,* 4500-NH_3 B & C, 15th Edition.

Test preparation

Instrument-specific information

Table 1 shows all of the instruments that have the program for this test. The table also shows sample cell and orientation requirements for specific instruments.

To use the table, select an instrument, then read across to find the applicable information for this test.

Table 1 Instrument-specific information

Instrument	Sample cell orientation	Sample cell
DR 6000 DR 3800 DR 2800 DR 2700 DR 1900	The fill line is to the right.	2495402 
DR 5000 DR 3900	The fill line is toward the user.	

Before starting

Hold the reagent droppers and dropper bottles vertically, not at an angle, when the reagent is added.
The reagents that are used in this test contain mercury. Collect the reacted samples for safe disposal.
If the Pour-Thru Cell is used, clean the cell periodically. To clean, add several crystals of sodium thiosulfate pentahydrate into the cell funnel. Add deionized water to dissolve the crystals. Rinse fully with deionized water.
Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.
Dispose of reacted solutions according to local, state and federal regulations. Refer to the Safety Data Sheets for disposal information for unused reagents. Refer to the environmental, health and safety staff for your facility and/or local regulatory agencies for further disposal information.

Items to collect

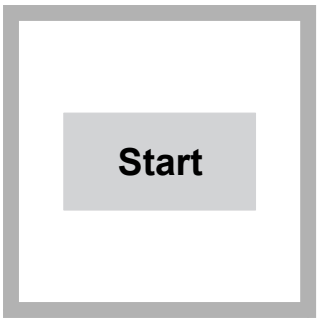
Description	Quantity
Ammonia Nitrogen Reagent Set	1
Water, deionized	25 mL
Pipet, serological, 1-mL	1
Mixing cylinder, graduated, 25 mL, glass stopper	2
Sample cells (For information about sample cells, adapters or light shields, refer to Instrument-specific information on page 1.)	2

Refer to Consumables and replacement items on page 5 for order information.

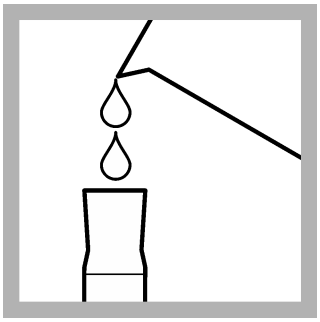
Sample collection and storage

- Collect samples in clean glass or plastic bottles.
- If the sample contains chlorine, add one drop of 0.1 N sodium thiosulfate for each 0.3 mg/L chlorine in 1 liter of sample.
- To preserve samples for later analysis, adjust the sample pH to less than 2 with concentrated sulfuric acid (approximately 2 mL per liter). No acid addition is necessary if the sample is tested immediately.
- Keep the preserved samples at or below 6 °C (43 °F) for a maximum of 28 days.
- Let the sample temperature increase to room temperature before analysis.
- Before analysis, adjust the pH to ~7 with 5 N sodium hydroxide solution.
- Correct the test result for the dilution caused by the volume additions.

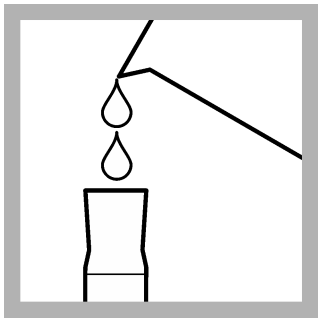
Test procedure



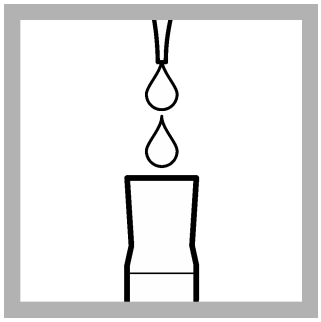
1. Start program **380 N, Ammonia, Ness**. For information about sample cells, adapters or light shields, refer to Instrument-specific information on page 1.



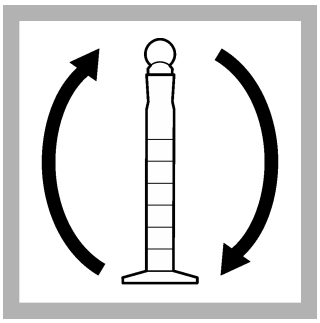
2. Prepare the sample: Fill a mixing cylinder to the 25-mL line with sample.



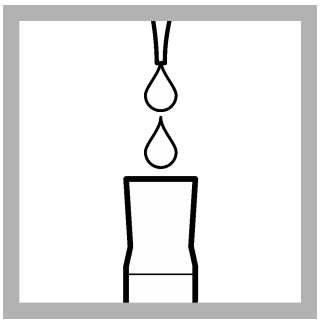
3. Prepare the blank: Fill a mixing cylinder to the 25-mL line with deionized water.



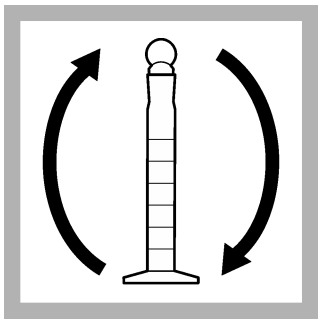
4. Add 3 drops of Mineral Stabilizer to each mixing cylinder.



5. Put the stopper on the mixing cylinders. Invert the mixing cylinders several times to mix.

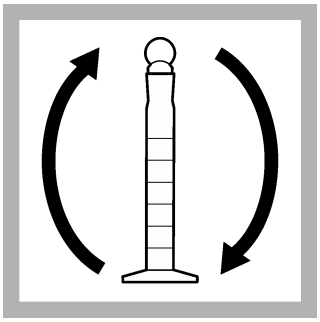


6. Add 3 drops of Polyvinyl Alcohol Dispersing Agent to each mixing cylinder.



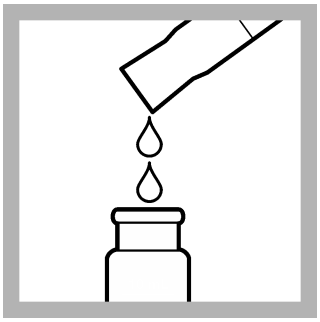
7. Put the stopper on the mixing cylinders. Invert the mixing cylinders several times to mix.

8. Use a pipet to add 1.0 mL of Nessler Reagent to each mixing cylinder.

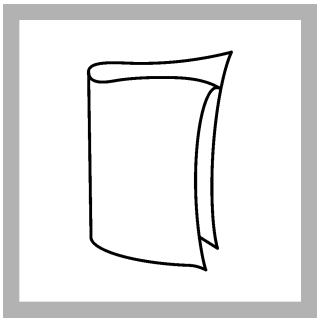


9. Put the stopper on the mixing cylinders. Invert the mixing cylinders several times to mix.

10. Start the instrument timer. A 1-minute reaction time starts.

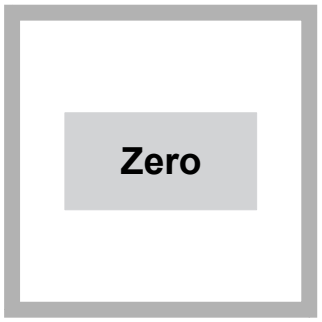


11. Pour 10 mL from the blank cylinder into a sample cell.

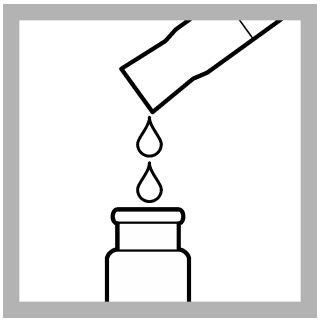


12. When the timer expires, clean the blank sample cell.

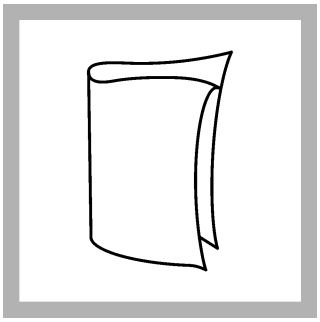
13. Insert the blank into the cell holder.



14. Push **ZERO**. The display shows 0.00 mg/L NH_3–N.



15. Pour 10 mL from the sample cylinder into a second sample cell.



16. Clean the prepared sample cell.

17. Insert the prepared sample into the cell holder.

18. Push **READ**. Results show in mg/L NH_3–N.

Interferences

Table 2 Interfering substances

Interfering substance	Interference level
Chlorine	Remove residual chlorine from a 250 mL sample by adding 1 drop of sodium thiosulfate for each mg/L chlorine (Cl_2). Sodium arsenite can be used instead of sodium thiosulfate. Refer to Sample collection and storage on page 2.
Hardness	A solution containing a mixture of 500 mg/L $CaCO_3$ and 500 mg/L Mg as $CaCO_3$ does not interfere. If the hardness concentration is more than these concentrations, add extra Mineral Stabilizer.
Iron	Interferes at all levels by causing turbidity with Nessler Reagent.

Table 2 Interfering substances (continued)

Interfering substance	Interference level
Seawater	Add 1.0 mL (27 drops) of Mineral Stabilizer to the sample before analysis. This complexes the high magnesium concentrations found in sea water, but the sensitivity of the test is reduced by 30% due to the high chloride concentration. For best results, make a calibration with standards that contain the same chloride concentration as seawater, or distill the sample.
Sulfide	Interferes at all levels by causing turbidity with Nessler Reagent.
Glycine, various aliphatic and aromatic amines, organic chloramines, acetone, aldehydes and alcohols	May cause greenish or other off colors or turbidity. Distill the sample if these compounds are present.

Pollution prevention and waste management

The Nessler reagent contains mercuric iodide. The reacted samples and blanks will contain mercury and must be disposed of as a hazardous waste. Dispose of reacted solutions according to local, state and federal regulations.

Distillation

To eliminate most interferences, distill the sample, then use the distilled sample in the test procedure.

1. Set up the distillation apparatus for general purpose distillation. Refer to the Distillation Apparatus manual for proper assembly.
2. Measure 250 mL of sample into a 250-mL graduated cylinder.
3. Pour the sample into a 400-mL beaker. If the sample contains chlorine, add 1 drop of 0.1 N sodium thiosulfate solution for each 1 mg/L Cl_2 to remove the chlorine.
4. Add 25 mL of borate buffer solution and mix. Adjust the pH to approximately 9.5 with 1 N sodium hydroxide solution. Use a pH meter to monitor the pH.
5. Pour the solution into the distillation flask.
6. Add a magnetic stir bar and 5 glass beads.
7. Use a graduated cylinder to measure 25 mL of deionized water into a 250-mL Erlenmeyer flask. Add the contents of one Boric Acid Powder Pillow. Mix thoroughly.
8. Set the flask under the distillation apparatus drip tube. Elevate the flask so that the end of the tube is immersed in the solution.
9. Set the stirrer power to on. Set the stir control to 5.
10. With the thermometer inserted, set the heat control to 10. The yellow pilot lamp is an indication that the heater is on.
11. Turn on the water and adjust to maintain a steady flow through the condenser.
12. When 150 mL of distillate has been collected, turn the heater off. Immediately remove the collection flask. Measure the distillate to make sure 150 mL was collected (total volume = 175 mL).
13. Adjust the pH to approximately 7 with 1 N sodium hydroxide solution. Use a pH meter to monitor the pH.
14. Quantitatively transfer the distillate into a 250-mL volumetric flask. Dilute to the mark with deionized water. Mix well. Use the diluted distillate in the test procedure.

Accuracy check

Standard additions method (sample spike)

Use the standard additions method (for applicable instruments) to validate the test procedure, reagents and instrument and to find if there is an interference in the sample.

Items to collect:

- 50-mg/L Nitrogen-Ammonia Standard Solution

- Mixing cylinders, 25-mL (3x)
- TenSette Pipet and pipet tips

1. Use the test procedure to measure the concentration of the sample, then keep the (unspiked) sample in the instrument.
2. Go to the Standard Additions option in the instrument menu.
3. Select the values for standard concentration, sample volume and spike volumes.
4. Open the standard solution.
5. Prepare three spiked samples: use the TenSette pipet to add 0.1 mL, 0.2 mL and 0.3 mL of the standard solution, respectively, to three 25-mL portions of fresh sample. Mix well.
6. Use the test procedure to measure the concentration of each of the spiked samples. Start with the smallest sample spike. Measure each of the spiked samples in the instrument.
7. Select **Graph** to compare the expected results to the actual results.

   Note: *If the actual results are significantly different from the expected results, make sure that the sample volumes and sample spikes are measured accurately. The sample volumes and sample spikes that are used should agree with the selections in the standard additions menu. If the results are not within acceptable limits, the sample may contain an interference.*

Standard solution method

Use the standard solution method to validate the test procedure, the reagents and the instrument.

Items to collect:

- 1-mg/L Nitrogen-Ammonia Standard Solution

1. Use the test procedure to measure the concentration of the standard solution.
2. Compare the expected result to the actual result.

   Note: *The factory calibration can be adjusted slightly with the standard adjust option so that the instrument shows the expected value of the standard solution. The adjusted calibration is then used for all test results. This adjustment can increase the test accuracy when there are small variations in the reagents or instruments.*

Method performance

The method performance data that follows was derived from laboratory tests that were measured on a spectrophotometer during ideal test conditions. Users can get different results under different test conditions.

Program	Standard	Precision (95% confidence interval)	Sensitivity Concentration change per 0.010 Abs change
380	1.00 mg/L NH_3–N	0.99–1.01 mg/L NH_3–N	0.02 mg/L NH_3–N

Summary of Method

The Mineral Stabilizer complexes hardness in the sample. The Polyvinyl Alcohol Dispersing Agent helps the color formation in the reaction of Nessler Reagent with ammonia and certain other amines. A yellow color is formed that is proportional to the ammonia concentration. The measurement wavelength is 425 nm.

Consumables and replacement items

Required reagents

Description	Quantity/test	Unit	Item no.
Ammonia Nitrogen Reagent Set, includes:	—	—	2458200
Nessler Reagent	2 mL	500 mL	2119449
Mineral Stabilizer	6 drops	50 mL SCDB	2376626

Consumables and replacement items (continued)

Description	Quantity/test	Unit	Item no.
Polyvinyl Alcohol Dispersing Agent	6 drops	50 mL SCDB	2376526
Water, deionized	varies	4 L	27256

Required apparatus

Description	Quantity/test	Unit	Item no.
Mixing cylinder, graduated, 25 mL with stopper	1	each	2088640
Pipet, serological, 1 mL, glass	1	50/pkg	2093135
Pipet filler, safety bulb	1	each	1465100

Recommended standards

Description	Unit	Item no.
Nitrogen Ammonia Standard Solution, 1.0-mg/L NH_3–N	500 mL	189149
Nitrogen Ammonia Standard Solution, 10-mL Voluette® Ampule, 50-mg/L NH_3–N	16/pkg	1479110
Wastewater Effluent Standard Solution, Mixed Parameter, for NH_3-N, NO_3-N, PO_4^{3-}, COD, SO_4^{2-}, TOC	500 mL	2833249

Optional reagents and apparatus

Description	Unit	Item no.
Ampule Breaker, 10-mL Voluette® Ampules	each	2196800
Distillation apparatus set, general purpose	each	2265300
Distillation heater and support for apparatus set, 115 VAC option	each	2274400
Distillation heater and support for apparatus set, 230 VAC option	each	2274402
Pipet, TenSette®, 0.1–1.0 mL	each	1970001
Pipet tips for TenSette® Pipet, 0.1–1.0 mL	50/pkg	2185696
Sodium Hydroxide Standard Solution, 5.0 N	100 mL MDB	245032
Sodium Thiosulfate, 0.1 N	100 mL	32332
Sulfuric Acid, ACS	500 mL	97949

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04/2017, Edition 9

Potassium

DOC316.53.01127

Tetraphenylborate Method

Method 8049

0.1 to 7.0 mg/L K

Powder Pillows

Scope and application: For water, wastewater and seawater.

Test preparation

Instrument-specific information

Table 1 shows all of the instruments that have the program for this test. The table also shows sample cell and orientation requirements for reagent addition tests, such as powder pillow or bulk reagent tests.

To use the table, select an instrument, then read across to find the applicable information for this test.

Table 1 Instrument-specific information

Instrument	Sample cell orientation	Sample cell
DR 6000 DR 3800 DR 2800 DR 2700 DR 1900	The fill line is to the right.	2495402 
DR 5000 DR 3900	The fill line is toward the user.	
DR 900	The orientation mark is toward the user.	2401906 

Before starting

For turbidimetric methods, install the instrument cap or cover on all instruments before ZERO or READ is pushed.
Clean sample cells with soap, water and a brush soon after each test to prevent a build-up of film on the sample cells.
Filter samples that are turbid with filter paper and a funnel.
The test results can vary with different lots of reagent. For best results, calibrate the instrument with each new lot of reagent. Refer to Calibration on page 5.
Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.
Dispose of reacted solutions according to local, state and federal regulations. Refer to the Safety Data Sheets for disposal information for unused reagents. Refer to the environmental, health and safety staff for your facility and/or local regulatory agencies for further disposal information.

Items to collect

Description	Quantity
Potassium 1 Reagent Powder Pillow	1
Potassium 2 Reagent Solution Pillow	1

Items to collect (continued)

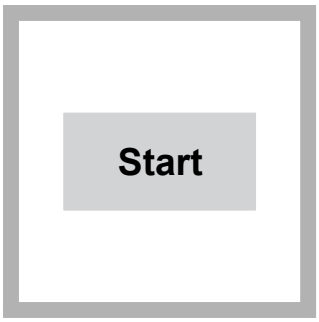
Description	Quantity
Potassium 3 Reagent Powder Pillow	1
Mixing cylinder, graduated, 25 mL, glass stopper	1
Clippers (shears), to open plastic pillows, stainless steel	1
Sample cells (For information about sample cells, adapters or light shields, refer to Instrument-specific information on page 1.)	2

Refer to Consumables and replacement items on page 6 for order information.

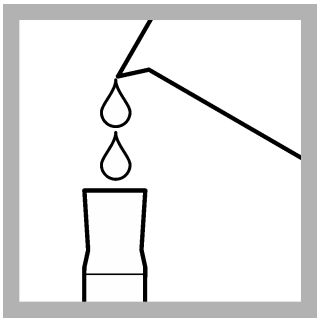
Sample collection and storage

- Collect samples in clean glass or plastic bottles that have been cleaned with 6 N (1:1) hydrochloric acid and rinsed with deionized water.
- To preserve samples for later analysis, adjust the sample pH to less than 2 with concentrated nitric acid (approximately 2 mL per liter). No acid addition is necessary if the sample is tested immediately.
- Keep the preserved samples at room temperature for a maximum of 6 months.
- Before analysis, adjust the pH to 4–5 with 5 N sodium hydroxide solution.
- A pH probe can contaminate the sample. If a pH probe is used, pour a portion of sample into a separate beaker for pH measurement or use pH paper.
- Correct the test result for the dilution caused by the volume additions.

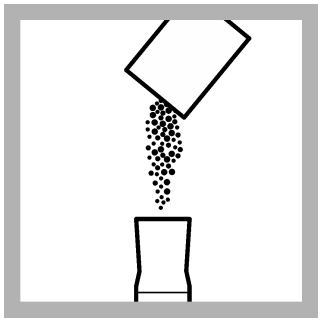
Test procedure



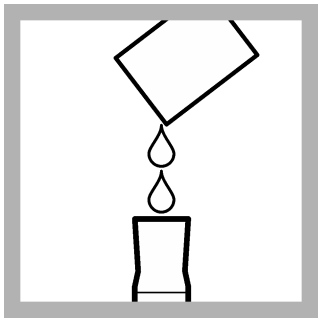
1. Start program **905 Potassium**. For information about sample cells, adapters or light shields, refer to Instrument-specific information on page 1.



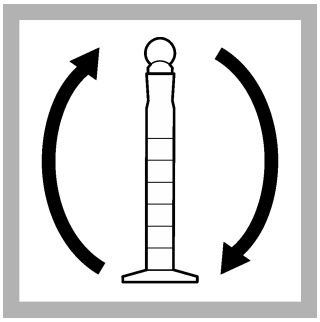
2. Prepare the sample: Fill a mixing cylinder to the 25-mL line with sample. **DR 900:** Use a 25-mL sample cell as an alternative to the mixing cylinder.



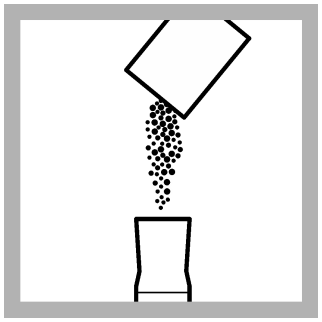
3. Add the contents of one Potassium 1 Reagent Pillow.



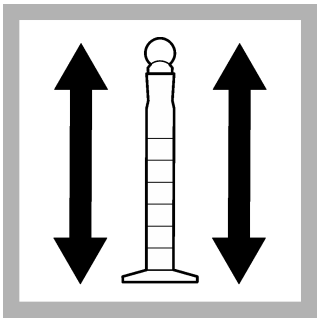
4. Add the contents of one Potassium 2 Reagent Pillow.



5. Put the stopper on the mixing cylinder. Invert the mixing cylinder several times to mix.
Let the solution become clear.

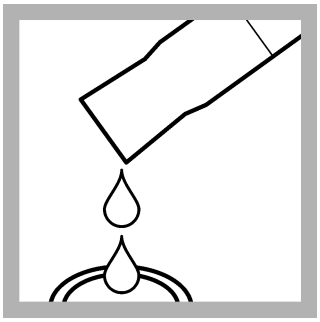


6. Add the contents of one Potassium 3 Reagent Pillow.

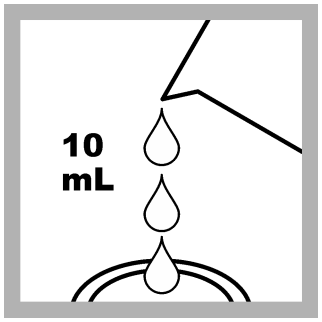


7. Put the stopper on the mixing cylinder. Shake the cylinder for 30 seconds.
A white turbidity forms if potassium is in the sample.

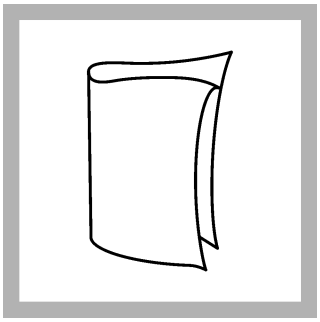
8. Start the instrument timer. A 3-minute reaction time starts.



9. Pour 10 mL of the solution from the mixing cylinder into the sample cell.

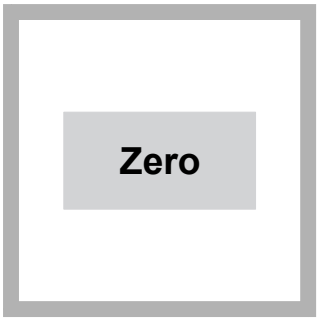


10. Prepare the blank: Fill a sample cell with 10 mL of fresh sample.

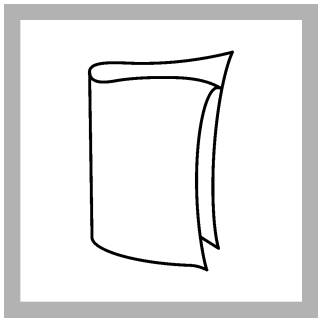


11. When the timer expires, clean the blank sample cell.

12. Insert the blank into the cell holder.



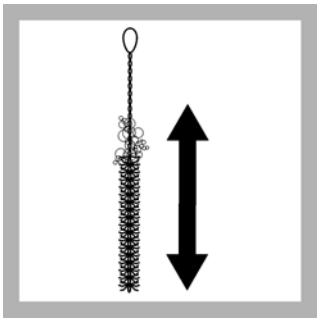
13. Push **ZERO**. The display shows 0.0 mg/L K.



14. Clean the prepared sample cell.

15. Within 7 minutes after the timer expires, insert the prepared sample into the cell holder.

16. Push **READ**. Results show in mg/L K.



17. Immediately clean the graduated cylinder and sample cells with soapy water and a brush. Rinse with deionized water.

Interferences

Table 2 shows the substances that were tested in non-diluted samples and will not interfere at or below the levels stated. If these substances are present at higher levels, conduct interference studies at the higher levels to determine if the substance interferes.

Table 2 Interfering substances

Interfering substance	Interference level
NH_4^+–N	15 mg/L
Ca^{2+} as $CaCO_3$	7000 mg/L
Cl^-	15,000 mg/L
Mg^{2+} as $CaCO_3$	6000 mg/L

Accuracy check

Standard additions method (sample spike)

Use the standard additions method (for applicable instruments) to validate the test procedure, reagents and instrument and to find if there is an interference in the sample.

Note: *This procedure is not applicable to user programs.*

Items to collect:

- 250-mL Potassium Standard Solution
- 25-mL mixing cylinders, graduated (3)
- Pipet, TenSette®, 0.1–1.0 mL and tips
- Ampule breaker

1. Use the test procedure to measure the concentration of the sample, then keep the (unspiked) sample in the instrument.
2. Go to the Standard Additions option in the instrument menu.
3. Select the values for standard concentration, sample volume and spike volumes.
4. Open the standard solution.
5. Prepare three spiked samples: use the TenSette pipet to add 0.1 mL, 0.2 mL and 0.3 mL of the standard solution, respectively, to three 25-mL portions of fresh sample. Mix well.
6. Use the test procedure to measure the concentration of each of the spiked samples. Start with the smallest sample spike. Measure each of the spiked samples in the instrument.

7. Select **Graph** to compare the expected results to the actual results.

   Note: *If the actual results are significantly different from the expected results, make sure that the sample volumes and sample spikes are measured accurately. The sample volumes and sample spikes that are used should agree with the selections in the standard additions menu. If the results are not within acceptable limits, the sample may contain an interference.*

Calibration

This method requires a user-prepared calibration curve. Enter the calibration curve into the instrument as a user program. Make a new calibration curve when a new lot of reagents is used.

Prepare the standard solutions

Prepare the standard solutions for calibration as follows.

Items to collect:

- 100-mg/L Potassium Standard Solution
- 100-mL volumetric flasks (8), Class A
- 1–10 mL TenSette pipet and tips
- Deionized water

1. Prepare eight calibration standard solutions (1, 2, 3, 4, 5, 6, 7 and 8 mg/L potassium) as follows:
   a. Use a pipet to add 1, 2, 3, 4, 5, 6, 7 and 8 mL of the 100-mg/L standard solution into eight different 100-mL volumetric flasks.
   b. Dilute each flask to the mark with deionized water. Mix well.
2. Use deionized water for the 0 mg/L potassium standard.
3. Go to user programs and enter the calibration information. Refer to Enter the calibration as a user program on page 5.

Enter the calibration as a user program

After the calibration standards are prepared, make a user program to store the calibration information in the instrument. Select the user program to measure the concentration of samples. The steps that follow are general instructions for all instruments. Refer to the user manual for the instrument that is used for the correct menu options.

1. Go to **User Programs**.
2. For the initial calibration, make a new user program. Set up the basic information for the new program:

Option	Description
Program number	Enter an available number for the user program.
Program name	Enter a name for the user program, (e.g., the name of the parameter).
Program type	Select single wavelength (for applicable spectrophotometers).

3. Enter the settings for the user program:

Option	Description
Units	mg/L
Wavelength	650 nm
Concentration resolution	0.1
Chemical form	K
Upper limit	8.0
Lower limit	–0.2

Option	Description
Timer 1	3:00
Calibration	Read standards

4. In the Read Standards menu, enter the concentration of the prepared standard solutions.
5. Use the test procedure to prepare the standard solutions for measurement.
6. Insert the blank solution into the cell holder and push **ZERO**.
7. Insert the first prepared standard solution into the cell holder. Make sure that the standard solution concentration is selected on the display and push **READ**.
8. Continue to measure the remaining standard solutions.
9. When all of the standard solutions have been measured, compare the graph options. Select the best curve.
10. Save (store) the user program. When the user program is selected in the test procedure, the calibration curve is used to measure the sample concentration.

Method performance

The method performance data that follows was derived from laboratory tests that were measured on a spectrophotometer during ideal test conditions. Users can get different results under different test conditions.

Program	Standard	Precision (95% confidence interval)	Sensitivity Concentration change per 0.010 Abs change
905	5.0 mg/L K	4.7–5.3 mg/L K	0.1 mg/L K

Summary of Method

Potassium in the sample reacts with sodium tetraphenylborate to form potassium tetraphenylborate, an insoluble white solid. The amount of turbidity produced is proportional to the potassium concentration. The measurement wavelength is 650 nm for spectrophotometers or 610 nm for colorimeters.

Consumables and replacement items

Required reagents

Description	Quantity/test	Unit	Item no.
Potassium Reagent Set, includes:	—	—	2459100
Potassium Reagent 1 Powder Pillow	1	25/pkg	1432198
Potassium Reagent 2 Solution Pillow	1	25/pkg	1432298
Potassium Reagent 3 Powder Pillow	1	100/pkg	1432399

Required apparatus

Description	Quantity/test	Unit	Item no.
Mixing cylinder, graduated, 25 mL, glass stopper	1	each	189640
Clippers (shears), to open plastic pillows, stainless steel	1	each	2369400

Recommended standards

Description	Unit	Item no.
Potassium Standard Solution, 10-mL Voluette® Ampule, 250 mg/L	16/pkg	1479010
Potassium Standard Solution, 100-mg/L	500 mL	2351749

Optional reagents and apparatus

Description	Unit	Item no.
Ampule Breaker, 10-mL Voluette® Ampules	each	2196800
Brush, test tube	each	69000
Flask, volumetric, Class A, 100-mL	each	1457442
Hydrochloric Acid Solution, 6.0 N (1:1)	500 mL	88449
Nitric Acid, concentrated	500 mL	15249
Paper, pH, 0–14 pH range	100/pkg	2601300
Pipet, TenSette®, 0.1–1.0 mL	each	1970001
Pipet tips for TenSette® Pipet, 0.1–1.0 mL	50/pkg	2185696
Pipet, TenSette®, 1.0–10.0 mL	each	1970010
Pipet tips for TenSette® Pipet, 1.0–10.0 mL	50/pkg	2199796
Sodium Hydroxide Solution, 5 N	50 mL	245026
Water, deionized	4 L	27256

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 04/2018, Edition 9

Fluoride

DOC316.53.01184

USEPA SPADNS 2 Method[1] **Method 10225**

0.02 to 2.00 mg/L F^- **Reagent Solution or AccuVac® Ampuls**

Scope and application: For water, wastewater and seawater; USEPA accepted for reporting for drinking and wastewater analyses (distillation required).[2]

[1] Adapted from Standard Methods for the Examination of Water and Wastewater, 4500-F B & D.
[2] Procedure is equivalent to USEPA Method 340.1 for drinking water and wastewater.

Test preparation

Instrument-specific information

Table 1 shows sample cell and orientation requirements for reagent addition tests, such as powder pillow or bulk reagent tests. Table 2 shows sample cell and adapter requirements for AccuVac Ampul tests. The tables also show all of the instruments that have the program for this test.

To use the table, select an instrument, then read across to find the applicable information for this test.

Table 1 Instrument-specific information for reagent addition

Instrument	Sample cell orientation	Sample cell
DR 6000 DR 3800 DR 2800 DR 2700 DR 1900	The fill line is to the right.	2495402 
DR 5000 DR 3900	The fill line is toward the user.	
DR 900	The fill line is toward the user.	2401906 

Table 2 Instrument-specific information for AccuVac Ampuls

Instrument	Adapter
DR 6000 DR 5000 DR 900	—
DR 3900	LZV846 (A)
DR 3800 DR 2800 DR 2700	LZV584 (C)
DR 1900	9609900 or 9609800 (C)

Before starting

Install the instrument cap on the DR 900 cell holder before ZERO or READ is pushed.
The sample and deionized water must be at the same temperature (±1 °C). Temperature adjustments can be made before or after the reagent addition.
Measure the volume of the reagent accurately. Use a volumetric or high precision pipet if possible.
If the test result is over-range, dilute a fresh sample with a known volume of deionized water and do the test again. Multiply the result by the dilution factor.
Minor variations between lots of reagent become measurable above 1.5 mg/L. While results above 1.5 mg/L are usable for most purposes, for the best accuracy dilute the sample to a lower concentration.
The SPADNS 2 Reagent contains a non-toxic reducing agent to prevent chlorine interference. SPADNS 2 Reagent does not contain sodium arsenite.
The reagent that is used in this test is corrosive. Use protection for eyes and skin and be prepared to flush any spills with running water.
Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.
Dispose of reacted solutions according to local, state and federal regulations. Refer to the Safety Data Sheets for disposal information for unused reagents. Refer to the environmental, health and safety staff for your facility and/or local regulatory agencies for further disposal information.

Items to collect

Reagent solution test

Description	Quantity
Pipet filler, safety bulb	1
Pipet, volumetric, Class A, 2.00-mL	1
Pipet, volumetric, Class A, 10.00-mL	1
SPADNS 2 Reagent Solution	4 mL
Thermometer	1
Sample cells (For information about sample cells, adapters or light shields, refer to Instrument-specific table PPAV.)	2
Water, deionized	10 mL

Refer to Consumable and replacement items on page 6 for order information.

AccuVac Ampuls

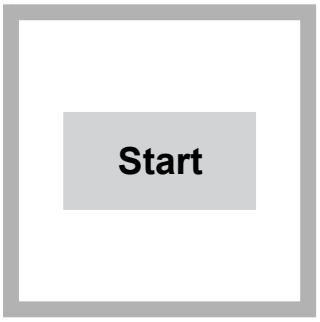
Description	Quantity
Beaker, 50-mL	1
SPADNS 2 Fluoride Reagent AccuVac® Ampuls	1
Stoppers, for 18-mm tubes and AccuVac Ampuls	2
Water, deionized	40 mL

Refer to Consumable and replacement items on page 6 for order information.

Sample collection and storage

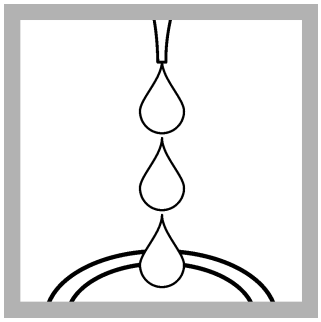
- Collect samples in clean glass or plastic bottles.
- Samples can be kept for up to 28 days.
- Let the sample temperature increase to room temperature before analysis.

Reagent solution test

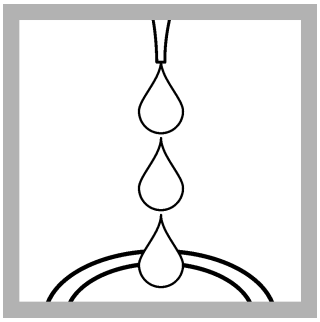


1. Start program **190 Fluoride**. For information about sample cells, adapters or light shields, refer to Instrument-specific table PPAV.

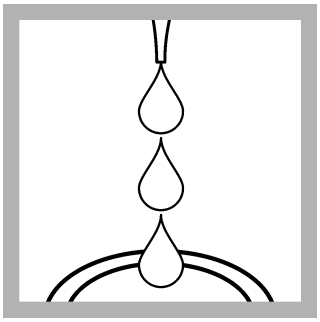
Note: *Although the program name can be different between instruments, the program number does not change.*



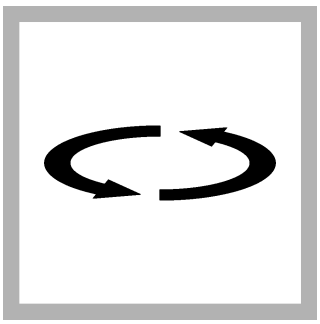
2. Prepare the sample: Use a pipet to add 10.0 mL of sample to a dry sample cell.



3. Prepare the blank: Use a pipet to add 10.0 mL of deionized water to a dry sample cell.

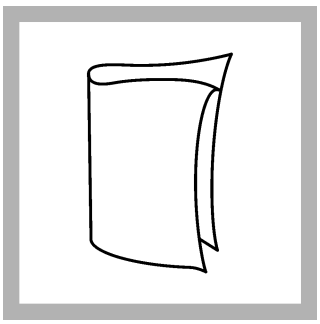


4. Use a pipet to add 2.0 mL of SPADNS 2 reagent to each cell.



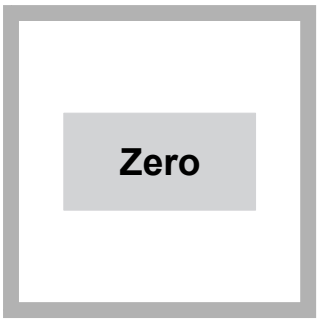
5. Swirl to mix.

6. Start the instrument timer. A 1-minute reaction time starts.

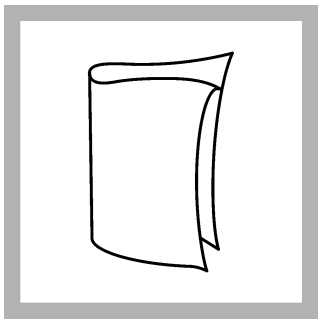


7. When the timer expires, clean the blank sample cell.

8. Insert the blank into the cell holder.



9. Push **ZERO**. The display shows 0.00 mg/L F^-.

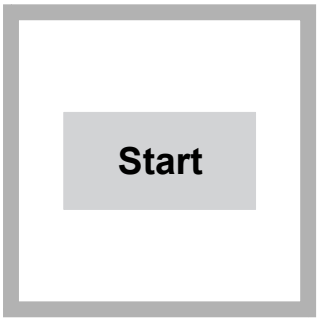


10. Clean the prepared sample cell.

11. Insert the prepared sample into the cell holder.

12. Push **READ**. Results show in mg/L F^-.

AccuVac Ampul test

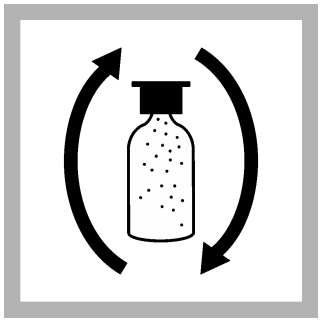


1. Start program **195 Fluoride AV**. For information about sample cells, adapters or light shields, refer to Instrument-specific table PPAV.

Note: *Although the program name can be different between instrumens, the program number does not change.*

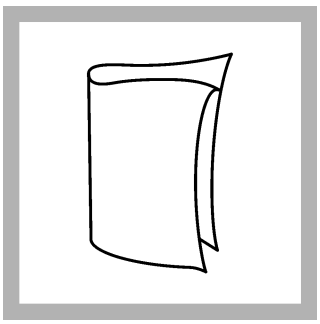
2. Prepare the sample: Collect at least 40 mL of sample in a 50-mL beaker. Fill the AccuVac Ampul with sample. Keep the tip immersed while the AccuVac Ampul fills completely.

3. Prepare the blank: Pour at least 40 mL of deionized water into a 50-mL beaker. Fill an AccuVac Ampul with deionized water. Keep the tip immersed while the AccuVac Ampul fills completely.



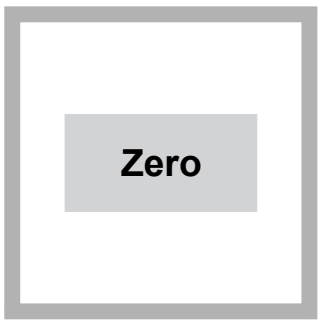
4. Quickly invert the AccuVac Ampuls several times to mix.

5. Start the instrument timer. A 1-minute reaction time starts.

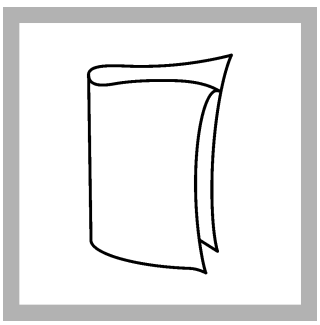


6. When the timer expires, clean the blank AccuVac Ampul.

7. Insert the blank AccuVac Ampul into the cell holder.

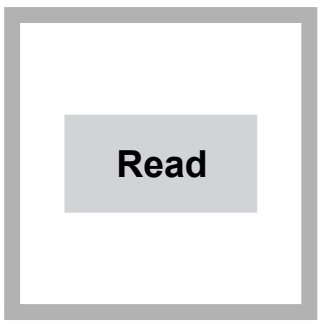


8. Push **ZERO**. The display shows 0.00 mg/L F^-.



9. Clean the AccuVac Ampul.

10. Insert the prepared sample AccuVac Ampul into the cell holder.



11. Push **READ**. Results show in mg/L F^-.

Interferences

This test is sensitive to small amounts of contamination. Glassware must be very clean (acid rinse before each use). Repeat the test with the same glassware to make sure that the results are accurate.

Interfering substance	Interference level
Alkalinity (as $CaCO_3$)	At 5000 mg/L, it causes a –0.1 mg/L F^- error.
Aluminum	At 0.1 mg/L, it causes a –0.1 mg/L F^- error. To find whether there is an aluminum interference, read the concentration 1 minute after reagent addition, then again after 15 minutes. An appreciable increase in concentration suggests aluminum interference. To remove the effect of up to 3.0 mg/L aluminum, wait 2 hours, then take the final reading.
Chloride	At 7000 mg/L, it causes a +0.1 mg/L F^- error.
Chlorine	SPADNS 2 Reagent contains enough non-toxic reductant to remove interference of up to 5 mg/L chlorine. For higher chlorine levels: **1.** Dilute the sample with deionized water by a factor that will lower the chlorine concentration to below 5 mg/L. **2.** Use the test procedure to measure the fluoride concentration. **3.** Multiply the result by the dilution factor to get mg/L fluoride.
Iron, ferric	At 10 mg/L, it causes a –0.1 mg/L F^- error.
Phosphate, ortho	At 16 mg/L, it causes a +0.1 mg/L F^- error.
Sodium hexametaphosphate	At 1.0 mg/L, it causes a +0.1 mg/L F^- error.
Sulfate	At 200 mg/L, it causes a +0.1 mg/L F^- error.

Distillation

To eliminate most interferences, distill the sample, then use the distilled sample in the test procedure.

Prerequisite—prepare the distillation solution:

1. Measure 60 mL of deionized water into a 250-mL, glass Erlenmeyer flask.
2. With constant stirring, add 120 mL of concentrated sulfuric acid. **Caution: The mixture will become very hot. Put the flask in an ice bath to decrease the temperature of the solution.**

Distillation procedure:

1. Set up the distillation apparatus for general purpose distillation. Refer to the Distillation Apparatus manual for proper assembly.
2. Set up a 125-mL Erlenmeyer flask to collect the distillate.
3. Turn on the water and adjust to maintain a steady flow through the condenser.
4. Use a 100-mL graduated cylinder to add 100 mL of sample into the distillation flask.
5. Add a magnetic stir bar and 5 glass beads.
6. Set the stirrer power to on. Set the stir control to 5.
7. Use a 250-mL graduated cylinder to carefully add 150 mL of distillation solution into the flask.

   Note: *For samples with large amounts of chloride, add 5 mg of silver sulfate to the sample for every mg/L of chloride in the sample.*
8. With the thermometer inserted, set the heat control to 10. The yellow pilot lamp is an indication that the heater is on.
9. When the temperature is 180 °C (356 °F) or when 100 mL of distillate has been collected, turn the still off (takes about 1 hour).
10. Dilute the distillate to a volume of 100 mL, if necessary. Use the diluted distillate in the test procedure.

Accuracy check

Standard solution method

Use the standard solution method to validate the test procedure, the reagents and the instrument.

Items to collect:

- Standard solution within the test range.

1. Use the test procedure to measure the concentration of the standard solution.
2. Compare the expected result to the actual result.

   Note: *The factory calibration can be adjusted slightly with the standard adjust option so that the instrument shows the expected value of the standard solution. The adjusted calibration is then used for all test results. This adjustment can increase the test accuracy when there are slight variations in the reagents or instruments.*

Method performance

The method performance data that follows was derived from laboratory tests that were measured on a spectrophotometer during ideal test conditions. Users can get different results under different test conditions.

Program	Standard	Precision (95% Confidence Interval)	Sensitivity Concentration change per 0.010 Abs change
190	1.00 mg/L F^-	0.97–1.03 mg/L F^-	0.024 mg/L F^- at 1 mg/L
195	1.00 mg/L F^-	0.92–1.08 mg/L F^-	0.03 mg/L F^- at 1 mg/L

Summary of method

The SPADNS 2 Method for fluoride determination involves the reaction of fluoride with a red zirconium-dye solution. The fluoride combines with part of the zirconium to form a colorless complex that bleaches the red color in an amount proportional to the fluoride concentration. This method is equivalent to the EPA method for NPDES and NPDWR reporting purposes when the samples have been distilled. Seawater and wastewater samples require distillation. The measurement wavelength is 580 nm for spectrophotometers or 610 nm for colorimeters.

Consumable and replacement items

Required reagents

Description	Quantity/Test	Unit	Item no.
SPADNS 2 Reagent Solution	4 mL	500 mL	2947549
OR			
SPADNS 2 Fluoride Reagent AccuVac® Ampuls	2	25/pkg	2527025
Water, deionized	varies	4 L	27256

Required apparatus

Description	Quantity/Test	Unit	Item no.
Pipet filler, safety bulb	1	each	1465100
Pipet, volumetric, Class A, 2.00-mL	1	each	1451536
Pipet, volumetric, Class A, 10.00-mL	1	each	1451538
Thermometer	1	each	2635700
Beaker, 50-mL	1	each	50041H
Stoppers for 18-mm tubes and AccuVac Ampuls	2	6/pkg	173106

Recommended standards

Description	Unit	Item no.
Fluoride Standard Solution, 0.2-mg/L F^-	500 mL	40502
Fluoride Standard Solution, 0.5-mg/L F^-	500 mL	40505
Fluoride Standard Solution, 0.8-mg/L F^-	500 mL	40508
Fluoride Standard Solution, 1.0-mg/L F^-	1000 mL	29153
Fluoride Standard Solution, 1.0-mg/L F^-	500 mL	29149
Fluoride Standard Solution, 1.2-mg/L F^-	500 mL	40512
Fluoride Standard Solution, 1.5-mg/L F^-	500 mL	40515
Fluoride Standard Solution, 2.0-mg/L F^-	500 mL	40520
Fluoride Standard Solution, 100-mg/L F^-	500 mL	23249
Drinking Water Standard, Mixed Parameter, Inorganic for F^-, NO_3–N, PO_4^{3-}, SO_4^{2-}	500 mL	2833049

Distillation reagents and apparatus

Description	Unit	Item no.
Graduated cylinder, 100-mL	each	50842
Graduated cylinder, 250-mL	each	50846
Distillation apparatus set, general purpose	each	2265300
Distillation heater and support for apparatus set, 115 VAC option	each	2274400
Distillation heater and support for apparatus set, 230 VAC option	each	2274402
Flask, Erlenmeyer, 125-mL	each	2089743
Flask, Erlenmeyer, 250-mL	each	50546
Glass beads	100/pkg	259600
Stir bar, magnetic	each	1076416
Sulfuric Acid, ACS	500 mL	97949

Optional reagents and apparatus

Description	Unit	Item no.
Silver Sulfate	113 g	33414
Balance, analytical, 80 g x 0.1 mg 100–240 VAC	each	2936701
Paper, for weighing, 100 x 100 mm	500/pkg	1473885

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