
**NATIONAL POLLUTANT DISCHARGE
ELIMINATION SYSTEM**

**KENT COUNTY MS4
Permit No. DE 0051144**

**submitted by
DELAWARE DEPARTMENT OF TRANSPORTATION**

ANNUAL REPORT FOR CALENDAR YEAR 2010

**Volume 1 of 1
DeIDOT Report and Appendices**



Submitted July 1, 2011

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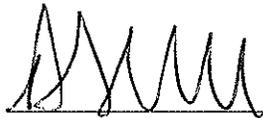
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CERTIFICATION

I certify under penalty of perjury that this document and all attachments are true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. As to the identified portions of this document for which I cannot personally verify their truth and accuracy, I certify as Delaware Department of Transportation's official having responsibility for the persons who, acting under my direct instruction, made the verification that this information is true, accurate, and complete.



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Program Summary and Projection

The objective of the Delaware Department of Transportation NPDES Program is to reduce stormwater pollutants from the MS4 (municipal separate storm sewer system) to the maximum extent practicable. This is accomplished through the implementation of a comprehensive stormwater pollution prevention and management program as contained in the NPDES Permit No. DE 0051144 effective July 1, 2003.

The purpose of this review and update is to summarize activities for 2010 and provide a projection of work for calendar year 2011. Table A summarizes the Minimum Control Measures, BMPs, Measurable Goals, and Status of Implementation for the entire permit term. Work projections for 2011 are provided at the end of this section in Table B.

2010 Program Summary

Public Education and Outreach

DelDOT's public education program includes the following accomplishments for calendar year 2010:

- Partnered with the Appoquinimink River Association for public education and outreach.
- DelDOT is continuing the "Door hanger campaign," begun in 2006, as an educational tool to neighborhoods where illicit disposal are reported.
- DelDOT staff participated in the following public outreach events and distributed educational materials including bookmarks, brochures, calendars and promotional giveaways that carry a water quality message:
 - Delaware Rural Water Association – we exhibited our display board and graphics and touch screen stormwater slide show;
 - Delaware Green Fest, Dover Legislative Mall – exhibited our display, interactive game and distributed educational materials.
 - Technology Students Association – served as judges on environmental and engineering projects.
 - Delaware State Fair – we exhibited our display board and graphics and touch screen stormwater quiz.
- Initiated the "Delaware Livable Lawns" fertilizer reduction program.
- Served on the board of directors with the Delaware Association for Environmental Education (DAEE) and helped organize the first annual statewide environmental education conference.

Public Involvement and Participation

DelDOT makes opportunities for members of the public to participate in program development and implementation through:

- Public participation in the DelDOT budget process.

- The Adopt-a-Highway program, a volunteer program to reduce litter along state roadways.
- DeIDOT held its sixth annual “Imagine a Litter Free Delaware” cleanup day along roads, highways and community areas.
- DeIDOT is continuing with its door hanger campaign to solicit public participation to report illegal dumping and “neighborhood watch.”

Illicit Discharge Detection and Elimination (IDDE)

DeIDOT completed inventory, inspection and dry-weather screening of all parts of the DeIDOT owned stormwater conveyance system in the Phase II urbanized area in 2007. These data are incorporated into the existing comprehensive GIS database that enables users to view the entire stormwater system, corresponding inspection data and photographs. KCI Technologies and Century Engineering continue to expand the inventory and inspection program to the rest of Kent and Sussex Counties and to update new structures that are added to the system. New outfalls are screened for illicit discharges as they are inventoried and inspected.

DeIDOT also continued its door hanger campaign to residents in subdivisions where an illicit discharge or illegal dumping activity was discovered or reported. It solicits public participation to anonymously report illegal dumping and serves as a “neighborhood watch.”

Construction Site Stormwater Runoff Control

The Department of Natural Resources and Environmental Control has delegated the authority to administer a sediment and stormwater program to DeIDOT. Satisfactory performance of the delegated responsibilities will be considered compliance with this component of the SWMP. This delegation was renewed for another three years for 2009 - 2012.

Post-Construction Stormwater Management in Newly Developed Areas and in Redeveloped Areas

The Department of Natural Resources and Environmental Control has delegated the authority to administer a sediment and stormwater program to DeIDOT. Satisfactory performance of the delegated responsibilities will be considered compliance with this component of the SWMP. This delegation was renewed for another three years for 2009 - 2012.

Pollution Prevention and Good Housekeeping

DeIDOT has developed and implemented an operation and maintenance program with a goal of preventing and/or reducing discharges of pollutants associated with our operations through implementation of the following:

- Maintenance of the roadways and stormwater conveyance system.
- Maintaining a 4:2:1 street sweeping frequency.

- Continued to upgrade the existing snow removal fleet with ground speed spreader controls, plow balance valves and apply the techniques of anti-icing and pre-wetting in an effort to reduce overall salt usage during the winter season. New trucks will be fully equipped with ground speed spreader controls and plow balance valves. To date, all DelDOT trucks are equipped with the latest snow fighting equipment.
- Litter pickup by Department maintenance staff, prison crews, and the Adopt-a-Highway Program, and an annual “Imagine a Litter Free Delaware” cleanup day.
- Monitoring of stormwater outfalls at our maintenance yards per Pollution Prevention Plans.
- Implemented a Stormwater Pollution Prevention Program (SWPPP) at all DelDOT maintenance facilities. Quarterly wet and dry weather inspections are conducted at each yard.
- Continue to implement Spill Prevention Control and Countermeasures (SPCC) plans for all maintenance yards.
- Continuation of a pilot study on alternative vegetation management strategies for guardrails to reduce pesticide usage.
- Conducted employee training through:
 - Training videos on the SWPPP’s
 - Training videos on SPCC Plans
 - Maintenance bulletins posted at each maintenance facility.

2010 Work Projection and Plan:

Work projections for 2010 are provided at the end of this section in Table B (page xi).

Table A. Minimum Control Measures , BMPs, Measurable Goals, and Status of Implementation for DeIDOT Phase II NPDES.

MCM #1: Public Education and Outreach Program		
BMP	Measurable Goal	Status of Implementation
A. Citizen Outreach / Educational Materials	Conduct citizen outreach using media and materials:	
Educational bookmark	Distribute 11,000 to 7th graders in public and private schools	Completed 2005
Stormwater brochures	Distribute at public events	Annually since 2002
Kid's activity booklet	Distribute 9,000 booklets to 4th graders in public and private schools statewide	Annually since 2004, continuing through permit
Book cover	Distribute 4,000 at public events and per teacher request	Completed 2006
Restaurant placemat	Distribute 7,500 placemats to 11 restaurants statewide	Completed 2005
Public Service Announcement	Air twenty 60-second PSA spots in spring on WSTW, 93.7 FM	Completed Spring 2005
Bags-on-Board	Distribute 4,000 units, tipcard and follow-up survey to vet clinics, dog groomer, dog trainer, animal rescue	Completed 2006
B. Watershed Training Workshop	Present four 2 ½-hour watershed training course on basic watershed education and good-housekeeping measures to DeIDOT and NCCo. employees	Completed 2002
C. Stormwater Web Page	Develop a website to educate the public on stormwater issues and good housekeeping measures; update as needed; track web-site visits	Completed 2003, continuing through permit
D. Storm Drain Marking	Install water quality message markers on the estimated 4,500 storm drains	Completed June 2007

Table A (cont.). Minimum Control Measures , BMPs, Measurable Goals, and Status of Implementation for DeIDOT Phase II NPDES.

E. School Participation	Engage public and private schools statewide in stormwater education	
Statewide drawing contest	Coordinate "Clean Water Begins and Ends with You!" drawing contest for K-12 graders	Annually from 2004 - 2008; 1,500 participants in 2008, canceled due to budget cuts
Technology Students Asso.	Judge TSA competition for middle and high school students statewide; students develop restaurant placemat and coloring book cover	Annually since 2003, continuing through permit
F. Public Event Participation/Display	Develop display and interactive stormwater game for use at public events	Completed 2002, continuing through permit
G. Promotional giveaways	Purchase items that display a water quality message for prizes and giveaways at public events	Annually since 2002, continuing through permit
H. Local Group Interaction	Partner with local non-profit groups in the development of education materials and outreach manuals, pet waste campaign and user surveys	Completed 2005, continuing through permit
I. Stormwater Video	Reprint "Protecting Our Water: Who's Got the Power" video. We will reprint the video into a DVD format and offer it as a teacher package at public events and watershed training for Tributary Action Team participants.	Completed September 2007
J. Newspaper Advertisements	Submit newspaper advertisements to increase public awareness on the importance water quality related to stormwater.	Completed October 2008
K. Storm System Inventory Brochure	Revise and distribute existing brochure for all residents in Phase II area	Completed February 2008

Table A (cont.). Minimum Control Measures , BMPs, Measurable Goals, and Status of Implementation for DeIDOT Phase II NPDES.

MCM #2: Public Participation/Involvement		
BMP	Measurable Goal	Status of Implementation
A. Litter control programs		
Adopt-a-Highway	DeIDOT will continue the Adopt-a-Highway program and document all participants and solicit new volunteers through newspaper ads and DeIDOT website.	Continuous program since 2003
"Imagine a Litter Free Delaware" cleanup day.	Statewide public event for clean up along roads, highways and community areas.	Annually since 2005
Anti-litter education program	Education program for elementary students all across Delaware to educate kids about the harmful effects of littering and encourage participation in the Adopt-a-Highway program	2005-2006
B. Public workshop – maintenance organizations	Hold two public workshops for Kent and Sussex County maintenance organizations on stormwater pond maintenance and the NPDES program and solicit public comment through a survey and comment form	Completed May 2007
C. Development of stormwater and watershed presentation/survey for community groups	Review and revise current watershed presentation.	Completed May 2008
D. Door hanger campaign	Distribute door hangers to all subdivision residents where illegal dumping was reported or discovered. Solicit public participation for future reporting.	Annually since 2005
E. Tributary Action Teams	Participate in TAT meetings of the Murderkill and St. Jones River watersheds to assist in the development of Pollution Control Strategies and to determine the effect of TMDL implementation on DeIDOT projects.	2002-2007; participate as new TATs are formed
F. National Nonpoint Education for Municipal Officials (NEMO)	Serve on the Delaware NEMO steering committee and co-author a chapter on stormwater management.	2003-2006

Table A (cont.). Minimum Control Measures , BMPs, Measurable Goals, and Status of Implementation for DeIDOT Phase II NPDES.

MCM #3: Illicit Discharge Detection and Elimination		
<u>BMP</u>	<u>Measurable Goal</u>	<u>Status of Implementation</u>
A. Storm Sewer System Map	Develop map showing location of all outfalls & names and location of all waters of the US receiving discharges from them	
Database and viewer application	Develop storm sewer system system inventory and inspection database application and GIS mapping viewer application for Kent County.	Completed 2003
Inventory and inspection	Complete initial inventory and inspection of all storm sewer system components in the permitted area, at a rate of 20% each year,	Completed 2007
Database update	Update database at least annually to include inventory and initial inspection of all new system components in the permitted area	Ongoing, annually
Expand to rest of Kent & Sussex Counties	Expand inspection database and mapping to include all of Kent and Sussex Counties	Ongoing, begun in 2007
<hr/>		
B. Dry Weather Outfall Screening		
	Screen 20% of known DeIDOT outfalls in the permitted area per year	Completed 2007
	Conduct screening on new outfalls added to the system since the original inventory.	Ongoing, annually
<hr/>		
C. Public Reporting and Education		
	Publicize phone number for reporting illicit discharges or dumping into the storm sewer system through all education and outreach materials and in public workshops.	Ongoing
	Distribute educational door hangers to homes in all neighborhoods in which illicit dumping activities have been reported, found or suspected.	Completed 2006, and ongoing

Table A (cont.). Minimum Control Measures , BMPs, Measurable Goals, and Status of Implementation for DeIDOT Phase II NPDES.

MCM #4 & #5: Construction Site Runoff Control/Post Construction Stormwater Management		
<u>BMP</u>	<u>Measurable Goal</u>	<u>Status of Implementation</u>
A. Delegated Agency	DeIDOT is a delegated agency to administer its own Sediment and Storm Water Management Program per Delaware's Sediment and Stormwater Regulations. Review delegation every 3-years.	Annually since 1991
B. Operations and Maintenance of BMPs	Annually inspect stormwater BMPs statewide.	Annually since 2001
C. BMP maintenance contract	Maintain stormwater ponds in need of major repairs that are functioning below design standard for quantity and quality.	Annually as budget allows.

Table A (cont.). Minimum Control Measures , BMPs, Measurable Goals, and Status of Implementation for DeIDOT Phase II NPDES.

MCM #6: Pollution Prevention/Good Housekeeping for Municipal Operations		
BMP	Measurable Goal	Status of Implementation
A. Litter Control Programs		
Adopt-a-Highway	DeIDOT will continue the Adopt-a-Highway program and document all participants and solicit new volunteers through newspaper ads and DeIDOT website.	Continuous program since 2003
"Imagine a Litter Free Delaware"	DeIDOT will continue the program and solicit new volunteers through newspaper ads and DeIDOT website	Annually since 2005
Inmate Crew	DeIDOT will continue to utilize the inmate crew to assist current staff levels to reduce the floatables entering the storm sewer system.	Continuous program since 2002
B. Storm Water Pollution Prevention Plans		
	DeIDOT developed SWPPPs at all maintenance facilities.	Completed 2004
Quarterly Inspections	DeIDOT staff will complete a Dry and Wet Weather inspection each quarter.	Quarterly since 2004
Purchase spill kits	The NPDES Section purchased wall mount spill kits for placement in vehicle shop buildings.	Completed 2003
Security Fence	As part of the SWPPPs, DeIDOT enclosed all maintenance facilities with security fences and gates.	Completed 2005
C. Statewide Vehicle Wash Water Practices for DeIDOT Maintenance Yards		
	Treat all wash water through a treatment train prior to leaving the site.	Report completed July 2005; stormwater retrofits fully implemented
Central District Headquarters	Catch basin inserts were installed and water is treated through a oil/water separator.	Completed 2005
Magnolia Yard	A detention pond was designed and constructed, and catch basin inserts were installed.	Completed 2006
D. Statewide Salt Best Management Practices for DeIDOT Maintenance Yards		
	DeIDOT developed a report that documents operational practices and strategies for salt delivery, stockpiling, and mixing.	Completed 2004
Construct salt barns	DeIDOT constructed 3 salt barns	Completed 2005
E. Spill Prevention and Response		
Spill Kits for Vehicles	DeIDOT to purchase 450 vehicle spill kits for use on the roadway	Completed 2007

Table A (cont.). Minimum Control Measures , BMPs, Measurable Goals, and Status of Implementation for DeIDOT Phase II NPDES.

Spill Prevention, Control and Countermeasures Plans (SPCC)	DeIDOT developed a SPCC plan for each maintenance facility. These plans include proper procedures for spill response	Completed 2007
F. Retrofits		
St. Jones Watershed Assessment	Partner with DNREC and their consultant to complete a comprehensive watershed assessment of the St. Jones. This assessment will give the Department locations for retrofits of the stormwater system.	Completed 2008
BMP Analysis	DeIDOT, through our consultant, will perform a detailed inspection of our BMPs to determine any that are in need of a retrofit.	Completed 2007, ongoing annual inspections
G. Stormwater Conveyance System	DeIDOT will manage a program to ensure the stormwater conveyance system is properly maintained and operating.	
Drainage Maintenance	DeIDOT will maintain the system when notified of an issue.	Continuous Program since 2001
Storm System Inventory and Inspection	DeIDOT will perform a detailed inventory and inspection of the MS4 system.	Completed 2007
Inspection and Preventative Maintenance Program	DeIDOT will determine the appropriate re-inspection schedule for the stormwater system	Completed 2007
	DeIDOT will begin the re-inspection program	Began 2009, ongoing
H. Sweeping Program	DeIDOT upgraded the sweeping program to a full time operation with the addition of new sweepers.	Completed 2002, continuing through permit
I. Training	Develop a training program for DeIDOT staff to educate staff on ways to prevent and reduce storm water pollution from their daily activities.	
PPP training videos	Develop 3 videos entitled (1) Facility and Vehicle Maintenance, (2) Stormwater Contamination and Spill Prevention, (3) Vegetative Control and Pollution Prevention on Public Roads.	Completed 2003, continuing training through permit
Maintenance Bulletins	Develop informative bulletins for District staff to educate them on stormwater management and pollution prevention BMPs	Continuous Program since 2003
Spill Prevention and Response Videos	DeIDOT to develop and use three training videos on Spill Prevention and response.	Completed 2007, continuing training through permit

Table B. Projection of Work to be performed during Calendar Year 2011.

Public Education and Outreach

- Participate and distribute education materials at outreach events: Delaware Rural Water Association Conference and the Delaware State Fair.
- Place storm drain markers, carrying a water quality message, on DelDOT owned inlets.
- Update web site as necessary and make available all outreach material and training presentations.
- Distribute pet waste dispensers to licensed dog owners, veterinary clinics and shelters.
- Network and coordinate educational efforts with other state and local organizations through participation in the newly formed Delaware Association for Environmental Education.
- Continue Phase I of the Delaware Livable Lawns project to commercial lawn care companies.

Public Involvement and Participation

- Recruit new volunteers for Adopt-a-Highway.
- Solicit public participation for reporting illegal dumping through DelDOT's door hanger campaign.
- "Imagine a Litter Free Delaware" cleanup day.
- Begin development of Phase II of Delaware Livable Lawns, an educational/outreach campaign to reduce fertilizer application to home owners.

Illicit Discharge Detection and Elimination

- Continue inventory and inspection of outfalls and drainage structures in Kent and Sussex Counties.
- Inspect all stormwater ponds and BMPs in Kent and Sussex Counties; add collected data to the existing inventory database.
- Identify, track to source and eliminate any illicit connections/pollutants entering the MS4.
- Continue door hanger campaign to residents where illegal discharges/dumping has occurred.

Construction Site Stormwater Runoff Control

- Delegation of the sediment and stormwater program is granted through the year 2012. DelDOT will comply with all state requirements.
- Continue to seek improvements in contractor compliance.
- Plan for future implementation of effluent turbidity monitoring and other effluent limit guidelines that will be incorporated into the 2011 update of the NPDES General Permit.

Post-Construction Stormwater Management in Newly Developed Areas and in Redeveloped Areas

- Delegation of the sediment and stormwater program is granted through the year 2012. DelDOT will comply with all state requirements.

Pollution Prevention and Good Housekeeping

- Update the Pollution Prevention Plans for DelDOT maintenance facilities.
- Continue requiring maintenance staff to view pollution prevention and spill prevention training videos annually.
- Continue to develop and distribute Stormwater Pollution Prevention Bulletins to each maintenance yard statewide on a quarterly basis.
- Continue 4:2:1 sweeping frequency. Initiate installation of GPS units in sweepers to conduct a pilot test of sweepers as a means of tracking and confirming compliance and development of a sweeper management plan.
- Continue implementation of the “Statewide Vehicle Wash Water Practices for DelDOT Maintenance Yards” retrofits.
- Continue implementation of the Integrated Roadside Vegetation Management (IRVM) manual developed in 2009.
- Continue to update the statewide guardrail inventory, as needed.
- Begin to use data from the guardrail inventory to develop a strategy for continued reduction of pesticide use.
- Continue the guardrail vegetation management study initiated in 2008 through the growing season of 2011.

SWPP&MP Assessment

This section is an annual review of the current SWPP&MP. Revised in June 2007, we conclude that no modification to the SWPP&MP is required at this time.

Public Education

Partnerships

The NPDES Section contracts with several non-profit organizations to assist with development of education and outreach programs. The Partnership for the Delaware Estuary, the Appoquinimink River Association (ARA) and the Delaware Nature Society have specialties in watershed and water quality education. Partnering with these organizations has proven to be an effective means of expanding our limited staff resources in a cost effective manner.

With many watersheds facing TMDLs for nutrients and bacteria, we decided to pilot an outreach effort in a two-phased approach to commercial lawn care companies and property owners. We therefore executed an agreement with the ARA to (1) develop a program called “Delaware Livable Lawns” that certifies commercial lawn care companies for their efforts that reduce fertilizer runoff through educating their clients on best practices, soil testing, and reporting fertilizer quantities while meeting homeowners needs; (2) In Phase II of the program, we will be targeting individuals in housing developments to be demonstration lawns for various types of fertilizer applications and organic products.

Our draft Phase I NPDES permit requires DeIDOT to meet a minimum 250,000 “impressions” about stormwater quality to the general public. We are under agreement with the University of Delaware to assist the co-permittees in achieving the education requirements of the permit and making these efforts more effective and meaningful for New Castle County, DeIDOT and the six municipalities regulated under the permit. This project will also strive to get the public and businesses involved in NPDES stormwater quality education. We will therefore use the results of this effort in modifying our Phase II SWMP.

Public Events

Part of our public outreach effort is participating in public events. Because we have limited budget and staff, we focus on large, multi-day events where there is substantial foot traffic. The biggest event each year is the Delaware State Fair, where we participate for 10 days serving over 30,000 visitors through our building. Our theme this year will focus on the “Delaware Livable Lawns” project to reduce fertilizer runoff. We have the University of Delaware under agreement to design a static display as well as an interactive touch screen game.

Teacher’s Packet

A popular free service we provide to educators is “Teacher’s Packets” containing stormwater and watershed education information. The packets contain stormwater/watershed videos, kid’s activity booklet, brochures, book mark, our “Delaware

Nonpoint Source Educational Materials Survey” and “Delaware Nonpoint Source Public Events and Programs Survey” booklets and CD.

Public Participation/Involvement

Door Hanger

Our door hanger campaign has brought awareness to the public and allows them to be proactive in reporting illicit discharges in their neighborhood. When illegal substances are found in storm inlets or are reported by the public, we distribute door hangers to the surrounding neighborhood. We have found this to be a very effective program for generating public awareness and public involvement. This typically generates phone calls to our office where we explain the program and direct them to our web site. In 2010, we distributed 42 door hangers statewide, but none were required in Kent and Sussex County Phase II areas.

Illicit Discharge Detection and Elimination

Map Viewer

After several iterations we completed the NPDES map viewer including simplified querying and report creation. There has been significant interest from our maintenance, designer and survey staff to use this for their daily work. We will hold training sessions in the spring 2011.

Pesticide, Herbicide, Fertilizer

Following discussions with the Roadside Environmental Section seeking ways to develop additional PHF reduction strategies, the following programs have been initiated:

1. Guardrail Projects: Review of DelDOT’s assets that are treated with herbicide showed that guardrails comprise a significant amount of chemicals applied over an estimated 250 guardrail miles on an annual basis. Often retreatment is necessary. We believe this was a way to effect a significant overall reduction, as well as eliminating treatment altogether at sections that meet certain environmental qualifiers. Therefore, we concluded that our program required a statewide inventory and a pilot study to investigate various methods of ground treatment under guardrail.
 - a. Guardrail inventory – We completed a statewide inventory. Attributes collected included type of guardrail, material under guardrail and surrounding landscape and environmental features. As new guardrail is added to the roadway, we review the construction plans and forward locations to the consultant to inventory. By keeping current with new roadway projects, we will save the cost of having to completely re-inventory the entire state. With this information we can determine a course of action to apply the treatment methods, in lieu of or to reduce herbicide, or identify “no-spray” zones as described in the guardrail pilot study.

- b. Guardrail pilot study – In 2008, we began a study to investigate alternative vegetation management strategies for guardrail and sign posts. Vegetation management of some kind is necessary to keep guard rails from being obstructed by vegetation. Currently growth of vegetation under and around these structures is controlled by annual applications of herbicide. The goal is to find ways to reduce the use of pesticides used to treat guardrail vegetation without compromising safety and aesthetics.

Treatments being evaluated include weed control barriers, chemicals, low-growing vegetation, and hand cutting of existing vegetation. They are being compared based on effectiveness, ease of implementation, aesthetics, cost and longevity. Test locations were selected to represent typical roadway settings in which guardrails are utilized.

At the end of the 2010 growing season, we felt that sufficient data had been collected on herbicide treatments and pavement plots. In August 2010, a decision was made to suspend herbicide treatments and focus on establishing low fescue vegetation, installing universal weed barrier from road edge to guardrail (to eliminate weed growth at edge of pavement), installing a new type of rubber weed barrier and treating the remaining plots with hand trimming. In early September, all sites were visited and plots marked. They will be monitored through 2011.

2. The Roadside Environmental Section staff attended various courses and workshops for re-certification, pesticide credits, and ISA (International Society of Arboriculture) credits including:
 1. Horticulture Industry and Expo: January 2010
 2. Ornamental and Turf Workshop: November 2010

Construction Site Runoff

E & S Plan Compliance and BMP Performance

Erosion and sediment control at DelDOT construction sites falls under the purview of the Division of Transportation Solutions (DOTS). However, the NPDES Program, through its permit and consent decree, is responsible for ensuring E & S control compliance. The NPDES Program staff assessed the E & S program again in 2009:

1. Currently, the contractor provides the CCR for major construction jobs. This has proven to be, on occasion, ineffective. Reports are not completed weekly or after storm events and often contractors do not provide a daily crew to maintain and/or correct deficiencies for E & S. We therefore executed two agreements with consultants to conduct the daily CCR construction duties in lieu of the contractor.
2. Changes to the DelDOT Standard Specifications, as well as new E & S control requirements and BMP standard details, have made the current version of the *DelDOT Erosion and Sediment Control Field Guide* somewhat obsolete. Therefore, the NPDES Program executed an Agreement with Whitman, Requardt and Associates to completely rewrite the *Field Guide* and put it into a more user-friendly format with a completion date in mid-summer 2011. Along with increased CCR training for

DelDOT staff, we hope that the new guide will help improve compliance with E&S plans on our construction sites.

3. Draft General Permit: This draft construction general permit includes new requirements that implement the technology-based Effluent Limitation Guidelines and New Source Performance Standards, which were issued by EPA for the construction and development industry on December 1, 2009. The draft permit also includes new water quality-based requirements for construction sites discharging stormwater to waters requiring additional pollutant control.
4. Sediment and Stormwater Regulations: The Governor's Surface Water Task Force recommended revision of the Sediment and Stormwater Regulations to address volume management, flooding, and plan review process improvement. Federal requirements for water quality improvement (e.g. TMDL) are being addressed as well. As a delegated agency, DelDOT is required to follow these regulations.

Pollution Prevention and Good Housekeeping for Municipal Operations

Street Sweeping Program

Under the current NPDES permit, DelDOT sweeps an annual 4:2:1 frequency on primary, secondary and tertiary roads. The draft Phase I permit requires DelDOT to quantify the expected pollutant load reductions from all controls (e.g. sweeping) to meet the TMDL (Total Maximum Daily Load) and Waste Load Allocation goals. In order to obtain the required information we will need to retrofit our sweepers with GPS units. Through the use of GPS units we will:

1. Determine number of miles swept,
2. Identify roads by name, maintenance number or type,
3. Obtain estimates of pollutant load reductions resulting from sweeping to meet the TMDL and WLA goals as required by the NPDES permit.

NPDES Program staff will be able to evaluate and optimize the sweeping program so we get maximum pollutant removal for the least amount of cost by determining what roads, if any, can be excluded from sweeping (e.g. sweep only: roads with closed drainage, subdivisions, beach resorts, interstates, etc.).

Vehicle Wash Plan

The use of the *Statewide Vehicle Wash Water Practices for DelDOT Maintenance Yards* manual, developed in July 2005, has resulted in designated locations for vehicle washing that are treated via a stormwater treatment train series of BMPs. We completed the last retrofit at the Harrington maintenance facility in summer 2010.

Pollution Prevention Plans

In assessing the PPP's, we determined that many of the plans need to be updated to include new maps of facilities and drainage systems, new BMPs, and new staff responsible for PPP implementation. We will be updating these plans in 2011.

Salt Plan

DelDOT's *Statewide Salt Best Management Practices for DelDOT's Maintenance Yards* has resulted in the purchase of salt structures to comply with storing salt under roof. Quarterly inspections and increased training through SWPP&MP videos and maintenance bulletin posters have also resulted in greater awareness of and compliance with the provisions of the salt plan by maintenance staff.

NPDES staff is part of a road salt working committee with DNREC and drinking water suppliers in New Castle County. Although DelDOT has implemented many salt reducing strategies into its snow/ice program, intake water often has high chloride levels due to salt runoff into surface waters that supply their customers following snow/ice events. Therefore, NPDES staff is working with Maintenance and Operations staff to pilot a test of salt alternatives/additives such as beet juice derivatives into its snow and ice control program.

Other

Storm sewer system inventory and inspection

Although not a permit requirement, we have extended the storm sewer system inventory and inspection program to Kent and Sussex Counties. This program assists the Districts with maintenance and pollutant tracking through the map viewer database.

We made a programmatic change to the inspection schedule. We will add additional inspection teams in Kent and Sussex Counties in an effort to complete the entire state on an accelerated schedule.

Stormwater Retrofits: Partnering on stormwater retrofits provides a cost saving benefit and increases the ability to leverage grant money.

Agriculture Museum: DelDOT is partnering with DNREC on a stormwater retrofit in the Phase II area in Dover adjacent to the Agriculture Museum. The retrofit would treat currently untreated road runoff and reduce ponding along State Street before it enters Silver Lake/St. Jones River.

Inland Bays: Although not in the Phase II permit area, we took advantage of a grant opportunity through DNREC's Nonpoint Source Program to partner with the Center for the Inland Bays. This project will help treat stormwater for the Anchorage Canal drainage area.

1. Public Education and Outreach

Requirement:

DeIDOT shall implement a public education program to distribute educational materials to the community, or conduct equivalent outreach activities about the impacts of stormwater discharges on local water bodies and the steps that can be taken to reduce stormwater pollution. In addition, DeIDOT shall determine the appropriate best management practices (BMPs) and measurable goals for this minimum control measure.

Performance/Measurable Goals:

- We continued our door hanger campaign to residents in subdivisions where an illicit discharge or illegal dumping activity was discovered or reported as part of our outreach program to residents. The front side of the door hanger lists the date and type of pollutant found and what water body affected. On the back, the door hanger describes stormwater pollution and guidelines to reduce pollution at the home or workplace (see Annual Report 2007, Volume 2 of 2, Figure 11- 3). We distributed 42 door hangers in 2010. This program also helps meet the public education requirements of Part II.A.6. *Illicit Discharges and Improper Disposal* of the NPDES Permit.
- DeIDOT distributed several hundred activity booklets to schools and the general public that highlight stormwater pollution, the water cycle and watersheds.
- DeIDOT developed a stormwater website (www.deldot.gov/stormwater). We continually update the “Hot Topics” section on the home page. A “Report a Problem” link allows the public to email or call to report illegal discharges or dumping and stormwater maintenance problems. In 2010, Google Analytics reported an average of about 276 visits per month (range 190-349) (Table 1-1).
- Appoquinimink River Association

“Delaware Livable Lawns” Project:

DeIDOT executed an agreement with the Appoquinimink River Association (ARA) to lead and execute an education and outreach program to provide information to the public on ways to reduce nonpoint source pollution. We have developed an educational/outreach campaign to reduce fertilizer application by changing watershed residents’ lawn care practices. The “Delaware Livable Lawns Program” certifies lawn care companies that follow environmentally-friendly best practices in fertilizer application while educating homeowners on these best practices. The goal of the program is to reduce fertilizer runoff from residential lawns. Phase I of the program targets commercial lawn care companies recognizing them for environmentally friendly lawn care plans (e.g. soil tests, organic products, low or no nitrogen fertilizers, only fall applications, annual reporting, distribution of educational materials, etc.) while also meeting homeowners’ needs and educating them on best practices. Once the results are analyzed, the team is ready to introduce the program to lawn care professionals and gather their feedback and reactions to it.

We participated in a focus group workshop to gather feedback from commercial lawn care companies on the benefits and/or negative consequences of the program. As a result of these focus groups, the team will have a better idea of how to adjust the Delaware Livable Lawns Program to increase the likelihood of a successful implementation.

In Phase II of the program, we will be targeting individuals in housing developments to be demonstration lawns for various types of fertilizer applications and organic products.

“Bacteria Reduction” project

A second project we completed was a pet waste campaign to reduce bacteria from pet waste. Many watersheds are facing Total Maximum Daily Load (TMDL) regulations for bacteria and nutrients. We used DNREC’s dog license data base to target residents in southern New Castle County and Dover to send them a portable pet waste bag container called “Bags-on-Board.” This product clips onto a leash and holds approximately 15 bags for pet waste clean-up. An educational tip card will also accompany the container. Over 7,200 portable pet waste collection bag holders were distributed to animal shelters (4,730), veterinary offices (900), training facilities (300), at outreach events (425), and by mail to dog owners (900).

Additional work accomplished by the ARA is documented in their 2010 annual progress report (Appendix A).

- As part of the storm drain inventory and inspection in the Dover and Camden/Wyoming area of Kent County, KCI Technologies is continuing to label each inlet with a storm drain marker that carries a water quality message.
- To assist teachers with stormwater and watershed education, we developed a “Teachers Packet” that consisted of stormwater/watershed videos, kid’s activity booklet, brochures, book mark, our “Delaware Nonpoint Source Educational Materials Survey” and “Delaware Nonpoint Source Public Events and Programs Survey” booklets and CD. The free packets were mailed to 5 teachers who registered for the packets at our 2010 public events.
- We participated in and/or distributed educational materials including bookmarks, brochures, calendars and promotional give-a-ways, that carry a water quality message, at the following public events and conferences:
 - Delaware State Fair held in July 2010. NPDES staff participated for 10 days and evenings;
 - The Delaware Rural Water Association Annual Conference, held in Harrington on February 23–24, 2010.
 - Delaware Green Fest, held in Dover on April 18, 2010.
- DelDOT teamed with Technology Students Association (TSA), and our staff served as judges in the April 2010 State Conference.

Table 1-1. Monthly visit statistics in 2010 for DelDOT's Stormwater Quality website (www.deldot.gov/stormwater).

Month	Visits (Google Analytics)	Pageviews	Unique Visitors
January	250	448	197
February	190	276	159
March	285	450	235
April	297	458	249
May	284	445	245
June	218	374	185
July	208	385	180
August	332	702	273
September	305	491	235
October	323	527	278
November	349	580	300
December	269	469	229

2. Public Participation/Involvement

Requirement:

DelDOT shall include the public in developing, implementing and reviewing the stormwater program. DelDOT shall make opportunities for members of the public to participate in program development and implementation and will comply with all applicable State, Tribal, and local public notice requirements. DelDOT shall determine the appropriate best management practices (BMPs) and measurable goals for this minimum control measure.

Performance/Measurable Goals:

A. *Budget Process*

As part of the DelDOT budget process the community has the opportunity to suggest projects for the following year.

B. *Adopt-a Highway*

Adopt-a-Highway is a cooperative program between DelDOT's Division of Public Relations and volunteers to reduce litter along State roadways and subsequent discharge to waters of the State. This program supplements efforts by DelDOT's maintenance forces to control litter. This has a water quality benefit because it reduces floatable debris entering streams. The volunteer groups are required to collect litter a minimum of twice per year and submit activity reports following each cleanup for inclusion in the program. Each group maintains approximately two miles of roadway. DelDOT maintains an Adopt-a-Highway website (www.deldot.gov/information/community_programs_and_services/) and submits press releases to solicit volunteers. There are currently 774 volunteer groups statewide maintaining 1,548 lane miles. In 2010 Adopt-a-Highway crews picked up 5,944 bags of trash from Delaware highways.

C. *Litter Control Programs*

DelDOT held its sixth annual "Imagine a Litter Free Delaware" cleanup day along roads, highways and community areas in October 2010. Public participation was solicited via newspaper ads and DelDOT's website.

D. *Door Hanger Campaign*

Since it is often difficult or impossible to catch someone in the act of improperly disposing of yard waste, oil, paint, etc. into the storm drain, DelDOT began a door hanger campaign to residents in subdivisions where an illicit discharge or illegal dumping activity was discovered or reported as part of our outreach program to residents. This effort solicits public participation to anonymously report illegal dumping and serves as a "neighborhood watch."

The front side of the door hanger lists the date and type of pollutant found and what water body affected. On the back, the door hanger describes stormwater pollution and guidelines to reduce pollution at the home or workplace (See Annual Report 2006, Figure 2-1). In

2010, we distributed 42 door hangers statewide, but none were required in Kent and Sussex County Phase II areas.

E. Stream Watch

Delaware Stream Watch is a grassroots volunteer waterway protection program focusing on citizen involvement through monitoring, education, and advocacy. Stream Watch is co-sponsored by the Delaware Nature Society and DNREC, representing a unique partnership of government, environmental interests, and industry.

The Stream Adoption program allows people and groups of all ages to adopt and monitor a local water body of their own choosing. Typical assessments include visual, macroinvertebrate and chemical surveys. Interested participants can download a form from the Delaware Nature Society website.

F. Tributary Action Teams

The Delaware Department of Natural Resources and Environmental Control coordinate teams of citizens known as Tributary Action Teams (TAT), who develop strategies for reducing water pollution in impaired watersheds. DeIDOT staff participated in TAT meetings of the Christina River and Appoquinimink River in New Castle County, St. Jones River and Murderkill River in Kent County, and the Nanticoke River, Broadkill River, and Inland Bays in Sussex County to assist in the development of Pollution Control Strategies (PCS) for those watersheds and to determine the effect of TMDL implementation on DeIDOT projects.

According to DNREC, a new TAT will be organizing for the Leipsic River watershed in early 2011. DeIDOT staff will participate in the development of the PCS.

G. Website

DeIDOT developed a new stormwater website (www.deldot.gov/stormwater). A “Report a Problem” link allows the public to email or call to report illegal discharges or dumping and stormwater maintenance problems.

3. Illicit Discharge Detection and Elimination

Requirements:

- A storm sewer system map, showing the location of all outfalls and the names and locations of all waters of the United States that receive discharge from those outfalls.
- Through an ordinance, or other regulatory mechanism, a prohibition (to the extent allowable under State, Tribal or local law) on non-storm water discharges into the MS4, and appropriate enforcement procedures and actions.
- A plan to detect and address non-storm water discharges, including illegal dumping into the MS4.
- The education of public employees, businesses and the general public about the hazards associated with illegal discharges and improper disposal of waste.
- Determine the appropriate best management practices (BMPs) and measurable goals for this minimum control measure.

Performance/Measurable Goals:

During 2010, KCI Technologies, Inc., and their subconsultant Century Engineering, Inc. (CEI), continued to perform MS4 inventory and inspection tasks for DeIDOT to ensure our compliance with the NPDES Phase II requirements for illicit discharge detection and elimination. This work was conducted under Agreement No. 1354. The work includes expanding the MS4 inventory and inspection program to parts of Kent and Sussex Counties beyond the permitted areas, as well as performing inspections of new structures, reinspections and screening of the MS4 in the Phase I and Phase II permitted areas. These consultants also perform annual BMP inspections for DeIDOT and conduct dry-weather screening of outfalls. The dry-weather outfall monitoring is conducted under Agreement 1495 with KCI Technologies.

Specific progress during calendar year 2010 includes the following:

A. Inventory and Mapping

DeIDOT completed the initial inventory and inspection of all parts of the DeIDOT-owned stormwater conveyance system in the Phase II urbanized area in 2007. This work included: all outfalls, drainage inlets, manholes, associated piping, stream channels, ditches, pipes and storm drains, and identifying which drainage inlets function as catch basins. Stormwater ponds and other BMPs also have been inventoried and receive annual inspections. These data are incorporated into the existing comprehensive GIS database that enables users to view the entire stormwater system, corresponding inspection data and photographs.

During the inspection process, each structure was opened and evaluated for material construction and condition. Physical measurements were also made. Digital photographs of the structure and each associate pipe were taken and connectivity between structures verified. At the completion of the inspection process a marker

was placed on each structure to encourage residents to not dispose of waste down the inlet. If a structure had a material deficiency, a Maintenance Work Order (MWO) was generated and forwarded to DeIDOT.

Following completion of the inventory and inspection in the Phase II area, KCI Technologies and Century Engineering (CEI) were hired under Agreement 1354 to complete the inventory and inspection of the DeIDOT-owned storm system in all other areas of the state, including the rest of Kent and Sussex Counties and new subdivisions and roadways statewide.

CEI continued initial inventory and inspection work in Kent and Sussex Counties in 2010. KCI continued with one field crew in Kent County until October 2010, when DeIDOT requested that KCI's second field crew also begin work in Kent County. The KCI/CEI Team inventoried and inspected 41 subdivisions and 296 miles of non-subdivision roadways, for a total of 11,689 structures in Kent and Sussex Counties (Table 3-1). A complete summary of work performed by KCI and CEI through the end of calendar year 2010 is included in this report as Appendix B.

Table 3-1. 2010 initial inventory and inspection totals for the MS4 in Kent and Sussex Counties.

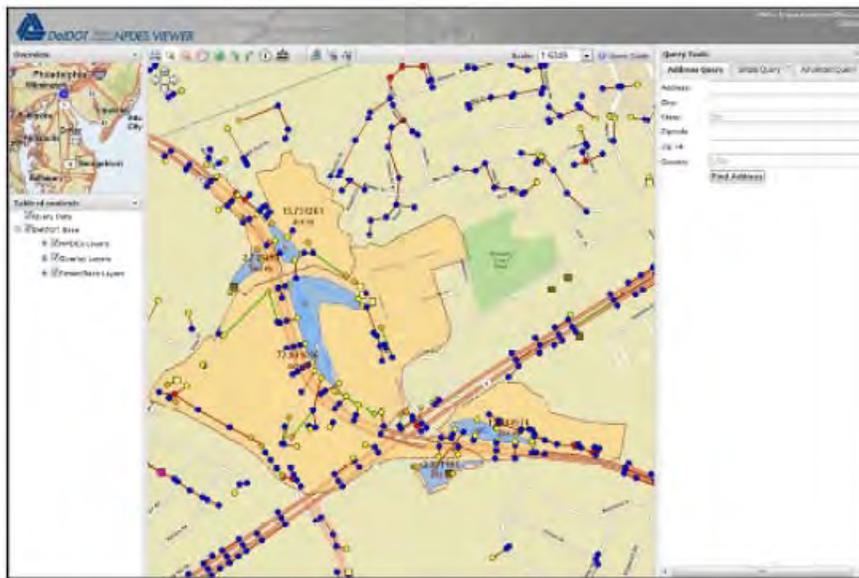
Month (2010)	Subdivisions	Non-Subdivision Roadway Miles	Structures
January	2	17.5	1,144
February	7	8.9	613
March	17	24.6	1,142
April	2	25.5	975
May	2	16.1	664
June	4	18.4	910
July	2	26.7	749
August	4	31.5	846
September	1	24.5	864
October	0	41.4	1,251
November	0	33.9	1,218
December	0	27.4	1,313
TOTAL	41	296.4	11,689

The mapping requirements of the Phase II Permit are met through an existing GIS viewer originally developed for the storm sewer system inventory in New Castle County (Figure 3-1). The viewer is available to all DeIDOT employees with access to the intranet. This satisfies the requirements of 40 CFR Part 122.21(f)(7) or Part 12.34.(b)(3)(i). This statewide map shows the location of all outfalls, the names and location of all waters of the United States that receive discharges from those outfalls, condition assessment data, and photographs.

In 2010, KCI completed the refinements to the Map Viewer including simplifying querying and report creation for BMPs, conveyances and structures, and adding a drainage area layer for BMPs and Major Outfalls. In addition, KCI developed a *Map Viewer User's Guide* to assist with the use of the viewer.

In 2011, KCI expects to assist DeIDOT in formal training sessions to educate DeIDOT design and maintenance staff on the use of the Map Viewer.

Figure 3-1. Screen shot from DeIDOT's NPDES Map Viewer application, developed by KCI Technologies, Inc.



B. Outfall Screening in Urbanized Areas of Kent County

Dry weather outfall screening in the Phase II permitted area of the state began in 2004 and was completed in 2007 (see the 2007 Annual Report). Thus we have fulfilled the permit requirements. No additional dry weather screening was performed within the Phase II permitted area in 2010.

Each new outfall that is inventoried and inspected is screened for dry weather flow. In calendar year 2010, a total of 832 DeIDOT-owned outfalls were inventoried and screened in Kent and Sussex Counties, all outside of the permitted urbanized area. If flow is observed after 72 hours of no rain, the flow is sampled. If testing of the samples indicates a potential illicit connection, further investigation and follow-up is initiated in order to identify the source. If the flow is clear, and less than 72 hours has passed since the last rain, the outfall is checked again after another 72 hours.

C. Prevention of Illicit Discharges and Illegal Dumping

Since it is often difficult or impossible to catch someone in the act of improperly disposing of yard waste, oil, paint, etc. into the storm drain, DeIDOT has for several years conducted a door hanger campaign to residents in subdivisions where an illicit discharge or illegal dumping activity was discovered or reported. This campaign is part of our outreach program to residents. It solicits public participation to anonymously report illegal dumping and serves as a “neighborhood watch.”

The front side of the door hanger lists the date and type of pollutant found and what water body affected. On the back, the door hanger describes stormwater pollution and guidelines to reduce pollution at the home or workplace (see Annual Report 2006, Figure 2-1).

Statewide during 2010, 17 potential illicit discharges (PIDs) were either reported to the DeIDOT NPDES Program or discovered during KCI's MS4 inspection activities. Of these, all but one were in New Castle County. Each was investigated by KCI crews, and follow-up action was taken where appropriate. Educational door-hangers were distributed in three of these communities to discourage future dumping into storm drains. Additional information regarding the PIDs is provided in KCI's 2010 Outfall Screening Report (Appendix C).

Another statewide program that contributes to our efforts to prevent illegal dumping is DNREC's "TrashStoppers" campaign. The campaign is an outward appeal to the public for help in stopping illegal trash dumping along Delaware roadways to stop illegal dumping of garbage, debris, and hazardous wastes.

The "TrashStoppers" program relies upon the placement of numerous surveillance cameras. The public is called upon to help identify the persons (or their vehicles) in the surveillance photos (<http://www.awm.delaware.gov/Enforcement/Pages/TrashStoppers.aspx>). Since the surveillance cameras were deployed in 2009, 14 arrests have been made on 16 illegal dumping charges, all resulting in convictions with guilty pleas.

4. Construction Site Stormwater Runoff Control

Requirement:

The permittee shall continue to implement and enforce a program to reduce, to the maximum extent practicable, the discharge of pollutants from construction sites.

Performance/Measurable Goals:

A. *Delegated Agency*

The Department of Natural Resources and Environmental Control has delegated the authority to administer a sediment and stormwater program to DelDOT. The delegation is reviewed every three years. In 2009, DelDOT received delegation extension from DNREC through June 30, 2012. The components of the Delaware Sediment and Stormwater Regulations delegated to DelDOT are: review and approval of construction plans, review of construction sites, and inspection and maintenance of completed stormwater management facilities. Satisfactory performance of the delegated responsibilities will be considered compliance with this component of the SWPP&MP (see Annual Report 2003, Appendix F).

Enforcement of construction site erosion and sediment controls is accomplished through each construction contract. Section 110, Erosion, Sediment Control and Water Pollution, of the Delaware Department of Transportation Standard Specifications lays out a progressive step-wise approach to gaining compliance with approved plans, regulations, and laws. This section was significantly rewritten to demonstrate positive movement toward improving the Erosion & Sediment Program (See Annual Report 2007, Appendix F). The following items summarize the major changes:

1. Contractor required to provide CCR and must submit name at the time of bid and must conduct E&S reviews jointly with a member of DelDOT's construction staff.
2. Required pre-construction meeting specifically designed to address E&S compliance.
3. Better defined division of responsibilities among site reviewers, contractor engineer, project engineer, stormwater engineer
4. Strengthening of actions to gain compliance
5. Environmental Compliance Supervisor – This position at DelDOT has the responsibility to regularly track and review the construction site reviews submitted on a weekly basis from Notice of Intent (NOI) to Notice of Termination (NOT) and annually assess CCR's performance (Appendix D). The purpose of the Contractor Performance Evaluation Program is to better assure that CCRs considered for contract either possess, or will likely possess at the time contract performance is set to begin, all qualifications necessary to successfully complete the project on time. Getting the contractor CCRs to submit timely reports to DelDOT has been inconsistent. We therefore determined that annual reviews may increase

reporting compliance. The implementation of a mandatory, standardized system of evaluating CCR's performance is expected to yield consistency, objectivity, fairness, and accountability.

We executed an agreement with two consulting firms to perform the weekly CCR inspections in lieu of contractor provided CCRs as described in number 1 above. This will improve compliance with the required weekly and rain event reporting. The consultant will also have the authority to hire a third party contractor to correct E&S deficiencies if the prime contractor refuses.

The CCR reporting form was changed as a result of our delegation review with DNREC. Added were slots for the plan expiration date, rain event box, and a page dedicated to Pollution Prevention. All uncorrected deficiencies must show a reason for remaining incomplete.

DelDOT staff involved with erosion and sediment issues (E & S inspections, designing stormwater systems or review of stormwater plans) is required to complete DNREC's 3-day Certified Construction Reviewer (CCR) course.

DelDOT is in the process of publishing a new, upgraded and updated version of its Erosion and Sediment Control Field Guide, which is made available to all DelDOT and contractor staff who install, inspect, and/or maintain construction BMPs. This field guide will be available in summer 2011.

The Environmental Protection Agency (EPA) has proposed new turbidity effluent guidelines. Construction sites that have greater than 10 acres of disturbed area would be required to maintain turbidity levels at, or below, 280 NTU for all storms events up to the 2-yr frequency. Owners/operators would be required to monitor the discharge from their sites to ensure compliance. However, the ruling was challenged and EPA was sued. The EPA discovered after promulgation that the data used to calculate the numeric limit was misinterpreted. The Agency initiated a stay for the numeric limit for turbidity until June 30, 2011, so that the limit can be recalculated.

B. Inspection and Operation of BMPs

DelDOT has an annual obligation to inspect its constructed best management practice (BMP) devices, structures and stormwater management facilities. The purpose of this statewide program is to: (1) inventory, inspect, measure water quality performance, identify noxious and/or invasive species and maintain functionality of DelDOT's stormwater BMPs such as stormwater ponds, sand filters, bioswales, bioinfiltration trenches, etc., (2) maintain a comprehensive database, (3) coordinate with the Districts on the submittal of work orders as needed, and (4) provide technical assistance and guidance to the Department regarding appropriate maintenance strategies for stormwater BMPs.

A field inspection manual and forms were developed to effectively perform field inspections to evaluate BMP performance and identify maintenance requirements. The procedures outlined in this manual assist DelDOT with decisions on inspection, maintenance, repair, and retrofit of BMP facilities. Overall performance and

functionality are graded A-D. Table 4-1 describes the BMP rating system used by DelDOT in 2010.

Annual BMP inspections are conducted throughout the state by KCI Technologies, under Agreement 1354. KCI inspected 208 BMPs in 2010. Table 4-2 shows the 2010 rating summary by each maintenance district.

C. BMP Maintenance

BMPs are evaluated and placed on contract for maintenance as necessary and as money permits. Maintenance functions are performed by the Districts or through contractors specializing in noxious and invasive species control, or maintenance of specific BMP types.

In 2010, 27 BMPs were inspected in the Phase II permitted area. Five of these BMPs warranted major maintenance. Invasive species control will occur in fall 2011 by specialized contractors. The major maintenance work will be performed under contract in the fall of 2012.

Table 4-1. DelDOT's stormwater BMP rating system.

Rating	Description
A	No Performance Issues BMP with no issues affecting performance.
B	Minor Maintenance BMP with minor maintenance required; repaired by DelDOT Maintenance District or third-party invasives spray contractor.
C	Major Maintenance BMP with major maintenance required; repaired by third-party contractor, with oversight by DelDOT NPDES Engineer.
D	Retrofit BMP with retrofit requirements; BMP is failing; needs to be redesigned or rebuilt with input from DelDOT Stormwater Quality Program.

Table 4-2. 2010 BMP Inspection Ratings Summary.

DISTRICT	# INSPECTED	A	B	C	D
North District	49	19	28	2	0
Canal District	81	31	43	6	0
Central District	27	10	12	5	0
South District	51	42	9	1	0
TOTAL NO.	208	102	92	14	0

5. Post-Construction Stormwater Management in Newly Developed Areas and in Redeveloped Areas

Requirement:

The permittee shall continue to implement and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb areas greater than or equal to one acre, including projects that disturb less than one acre that are part of a larger common plan of development, and that discharge to the storm sewer system.

Performance/Measurable Goals:

The Department of Natural Resources and Environmental Control has delegated the authority to administer a sediment and stormwater program to DeIDOT. Satisfactory performance of the delegated responsibilities, through triennial reviews, will be considered compliance with this component of the SWMP.

6. Pollution Prevention and Good Housekeeping

Requirement:

DelDOT shall develop and implement an operation and maintenance program with a goal of preventing and/or reducing discharges of pollutants associated with our operations as described in the Application page 13, Permit page 10, Part II.A.6.

Performance:

DelDOT staff and contractors continue to implement the practices set forth in Section 110 of the Standard Specifications for Erosion, Sediment Control and Water Pollution, modified in 2007. This Section addresses practices to control stormwater runoff from soil disturbance activities, spill prevention, material management and good housekeeping practices. Details may be found in Section 4 of this report (Construction Site Stormwater Runoff Control).

A. Road Repair and Maintenance

There are various ways in which the Department maintains the roadways that help reduce the discharge of pollutants. Routine maintenance and improvements reduce the pollutants coming from the roadway in several ways. The patching of potholes and sealing of cracks reduces the amount of pavement that will break away and be transported into the nearest waterway. Repairing potholes also decreases the wear and tear on vehicles, thus reducing the fluids, miscellaneous sediments, and tire particles that could be dislodged from vehicles. Money for roadway maintenance activities is programmed into the District's Maintenance funds.

DelDOT has a Standard Operating Procedure developed for responding and managing spills on the roadways classified as **Category E, Type E-1** incidents (Traffic Hazards, Fuel, Oil or other HAZMAT spills on or near the roadway). Most DelDOT vehicles have been equipped with spill kits in the event of an accidental spill or as a first responder to a vehicle accident; employees have been trained on spill response and protection of water quality.

All road projects are required to follow the Delaware Sediment and Stormwater Regulations. Projects designated as minor, medium or major shall have an approved sediment and stormwater management plan. Medium and major projects must also have a site reviewer who is a Certified Construction Reviewer (CCR).

B. Sweeping Program

DelDOT's sweeping program reduces pollutants by maintaining the cleanliness of the roadway. The street sweeping program includes the roadways, shoulder, intersections, and toll plaza lanes on primary, secondary and tertiary roads. The roadways are swept on the following cycle: roads with ADT (Average Daily Traffic) greater than 20,000 are swept 4 times a year, roads with ADT between 5,000 and 20,000 are swept 2 times a year and roads with ADT less than 5,000 are swept once a year.

DelDOT currently has 31 sweepers in its fleet statewide. Eleven of the vehicles operate in Kent and Sussex Counties. No new sweepers were added to the fleet in 2010.

DelDOT's NPDES Section is trying to quantify the expected pollutant load reductions from controls such as sweeping. To help in this effort, DelDOT's Equipment Management Section is developing a contract to install GPS units in sweepers to pilot a study to:

1. Track sweeper routes to ensure the required sweeping frequency on primary, secondary, and tertiary roads is met per the SWMP;
2. Obtain estimates of pollutant load reductions resulting from sweeping to meet the TMDL and WLA goals as required by the NPDES permit.

NPDES Program staff will evaluate and optimize the sweeping program so we get maximum pollutant removal for the least amount of cost by determining what roads, if any, can be excluded from sweeping. This may result, for example, in sweeping only streets with curb and gutter with a closed drainage system, subdivisions, beach resorts, interstates, etc.

C. Litter Program

DelDOT's Litter Program reduces the discharge of floatables to the MS4. DelDOT's maintenance staff and prison crews help reduce the discharge of floatables to the MS4 through routine pick up of trash and debris from the roadways and medians and right-of-way. DelDOT staff is also responsible for removal of dead animals and clean up of illegal dump sites from the roadside. Additional litter control programs are described below.

Adopt-a-Highway

Adopt-a-Highway is a cooperative program between DelDOT's Division of Public Relations and volunteers to reduce litter along State roadways and subsequent discharge to waters of the State. This program supplements effort by DelDOT's maintenance forces to control litter. The volunteer groups are required to collect litter a minimum of twice per year and submit activity reports following each cleanup for inclusion in the program. Each group maintains approximately two miles of roadway. DelDOT maintains an Adopt-a-Highway website (www.deldot.gov) and submits press releases to solicit volunteers. In 2010 there were 1,344 volunteers in Kent County and 1,891 in Sussex County resulting in 3,751 bags of trash removed from these Delaware highways.

Anti-Litter Campaign

The Department of Natural Resources and Environmental Control began a campaign in an outward appeal to the public for help in stopping illegal trash dumping along Delaware roadways to stop illegal dumping of garbage, debris, and hazardous wastes.

The "TrashStoppers" program relies upon the placement of numerous surveillance cameras. Since the surveillance cameras were deployed in 2009, 14 arrests have been made on 16 illegal dumping charges, all resulting in convictions with guilty pleas.

Roadside Clean-up

DelDOT held its sixth annual "Imagine a Litter Free Delaware" cleanup day along roads, highways and community areas in October 2010.

D. Snow and Ice Program

Effective salt management practices can help reduce the amount of road salt that enters the environment. This translates into savings for DelDOT, protection against liability, and minimization of impacts of salt on our environment. DelDOT has many practices in place, both for the roadway and all maintenance facilities.

DelDOT continues to follow the salt management practices established by the "Statewide Salt Best Management Practices for DelDOT Maintenance Yards" plan developed in 2004.

All salt stored at the maintenance facilities is stored under roof. Only during loading and unloading does the potential exist for salt to enter the stormwater system. Standard procedures call for DelDOT maintenance staff to clean up loading areas as soon as practicable after a storm event. Compliance with these procedures is ensured through annual inspections.

Salt application rates to roadways can vary depending on storm conditions, but the goal is 100 to 400 pounds of salt per lane mile, as recommended by AASHTO. The rate is achieved by calibrating the equipment annually and sending maintenance personnel to a one-day seminar provided by The Salt Institute. The seminar instructs on proper salt application procedures and quantities, balanced with safety and environmental considerations.

DelDOT has developed and continues to implement advanced snow fighting practices. These include ground speed spreader controls, anti-icing, pre-wetting, and plow balance valves. These advanced techniques in snow and ice removal help DelDOT meet its goal of improved service to customers, reduced impact to infrastructure, and conservation of salt. This also helps meet the goals of the NPDES Program by reducing the impact on the environment in the following ways:

- Ground speed spreader controls provide accurate control of material application.
- Anti-icing is the application of liquid deicers (salt brine) to road surfaces prior to a precipitation event to prevent the formation or development of bonded snow and ice. The Department presently has eleven brine units of 1300-gallon capacity and six units of 1800-gallon capacity that slide into the bed of a dump truck. We have also acquired four 5000-gallon tanker trailers equipped with spraying capabilities to be pulled by the Departments current fleet of truck tractors.
- Pre-wetting adds moisture to salt to “jump start” the melting action of the salt and causes the salt to stick to the road and prevent scatter or bouncing.
- Plow balance valves decrease the amount of weight that the plow cutting edge bears on the road surface, decreasing damage to the road surface.

All salt stored at the maintenance facilities is under roof. Only during loading and unloading does the potential exist for salt to enter the stormwater system. DelDOT is following the salt management practices established by the “Statewide Salt Best Management Practices for DelDOT Maintenance Yards” plan developed for area maintenance facilities (see Annual Report 2004, Appendix U).

E. Stormwater Conveyance Systems

Maintenance of the stormwater conveyance system ensures proper functioning of the stormwater system and BMPs and thereby reduces the pollutants that are carried to nearby waterways. Money for this is programmed into the Districts’ Maintenance funds. The MS4 and BMP inspections performed for DelDOT by KCI Technologies and Century Engineering continually generate and prioritize maintenance work orders.

This maintenance work includes three components:

- *Open system drainage* – General work to control erosion, as well as cleaning and reshaping of ditches. Stabilization of ditches reduces the amount of sediment that enters the local stream and waterways.

- *Closed system drainage* - Work performed on the components themselves, including general maintenance or replacement. This includes tasks such as drainage pipe repair and cleaning, catch basin/manhole repair and maintenance, and general maintenance on stormwater detention ponds.
- *Ponding problems* - Draining water off the roadways. This is usually the result of calls from citizens after a rain event.

F. Roadside Vegetation Management

All herbicide applications that are applied to DelDOT rights-of-way by contract applicators are reviewed prior to the award to the lowest bidder to insure that selected herbicides are labeled for the intended use, and that when feasible, a herbicide is selected that can be applied at a low-use rate. This review frequently reduces the total load of herbicide applied to DelDOT's rights-of-way.

DelDOT does not routinely fertilize its roadsides. The only nutrients applied to DelDOT's rights-of-way come as a result of leaving grass clippings on the ground after mowing. Degradation of this vegetative material results in the slow release of organic constituents, which are mineralized to plant nutrients by microorganisms and made available to turf grasses. This natural process results in minimal leaching of nutrients. Also this practice results in minimal surface runoff of nutrients from ground with a slope of 3 horizontal to 1 vertical or less.

Fertilizers are used in establishing turf grasses from seed on freshly prepared bare ground. This is generally done under contract with a firm using a hydroseeder. DelDOT's specifications require that 50% of the nitrogen product be a slow release form of ureaformaldehyde. The amount of nitrogen applied is 78 kg/ha. Phosphorous pentoxide is applied at 47 kg/ha of available P that is the sum of water soluble and citrate-soluble phosphate. Potassium oxide is applied at 31kg/ha of water soluble potash. In all cases areas that are seeded are covered with a recommended mulch.

Pesticides applied on DelDOT's rights-of-way are done according to label recommendations that are on the product and filed with EPA at the time of product registration. Pesticides applied on DelDOT's rights-of-way are done by contractors that are certified Delaware pesticide applicators. DelDOT employees that apply pesticides to DelDOT's rights-of-way are certified Delaware pesticide applicators or work under the supervision of a DelDOT employee that is a certified Delaware pesticide applicator. Typically, the only pesticides applied by DelDOT fall under the category of herbicides. DelDOT, however, may use other pesticides such as insecticides under certain circumstances.

DelDOT employees take required training courses that serve as credit toward renewal of their Delaware pesticide applicators license. Roadside Environmental Specialists attend conferences and working sessions on pest control technologies that are open to all DOT employees. Opportunities to use reduced amount of pesticides by using new low rate pesticides, adjuvants or surfactants that can enhance efficacy of pesticides and thus reduce rate, or alternatives to chemicals that are cost effective and efficacious are often topics of various sessions these specialists attend.

The following are active programs being initiated as part of the NPDES pesticide reduction strategy:

- *Guardrail Inventory* – DelDOT has the responsibility of maintaining a 4’ clear zone around the guardrail for both public safety and structural integrity via mowing, hand trimming and herbicides. We executed an agreement with Wallace Montgomery & Associates, LLP in May 2008 to inventory all guardrails statewide. The project was completed in June 2009 and inventoried 310 guardrail miles. Attributes collected included material under guardrail, guardrail type, surrounding environmental features and identification of sensitive/no spray zones. We currently monitor new construction contracts that modify or add new guardrail sections. When we reach a mileage threshold, we mobilize our consultant to inventory these new sections. The inventory and attributes collected will be used in development of a pesticide reduction strategy to limit the use of herbicides, particularly around environmental sensitive areas (e.g. streams, wetlands, drinking supply, etc.).
- *Guardrail Vegetation Management pilot study* – DelDOT and the University of Delaware developed a controlled research study to test the effectiveness of treatment types under guardrail for weed control. Two types of weed block material, asphalt, low-grow fescue and natural growth with periodic trimming were monitored against a control. We have extended this study through the 2011 growing season to monitor additional types of weed block material and the low-grow fescue plots.

The results of this study will determine if these materials are effective at reducing herbicide application and can be used in specific locations such as environmental sensitive areas and drinking water supply reservoirs. The study will continue through the growing season of 2011.

- *Contract language* – Since DelDOT outsources most of the herbicide spraying, DelDOT has strengthened its herbicide contract language to reduce the environmental impact of herbicide treatment. We now require contractors to:
 - a. Use an EPA-approved drift control agent as part of the mix
 - b. Use only formulations of glyphosate with a full aquatic label.
 - c. Be aware of the locations of “Sensitive” or “No spray” zones and avoid applications within the limits of these areas. These zones will be identified through the guardrail inventory and made available to the contractor.
- *Record keeping and pesticide usage* – Contractors and DelDOT applicators are required to submit records of spraying activities to DelDOT’s Environmental Roadside Section. The NPDES Program tracks herbicide quantities to establish baseline herbicide usage. By tracking herbicide quantities we will be able to identify the cause of spikes or declines in usage and use the data to assess pesticide reduction programs we have implemented.

G. Spill Prevention and Response on Roadways

DelDOT’s Transportation Management Center (TMC) coordinates operations and shares information among its own personnel as well as various other transportation and public safety-related agencies, serving as the transportation interface among all such agencies in the state. They operate 24-hours per day/7 days per week. The TMC serves as the central

communication point for DelDOT during major incidents, special events, and emergencies, and coordinates transportation management activities with other agencies. The TMC has special instrumentation that has been used to develop incident management capability.

The type of incident detected or called in has a direct effect on the notification process and steps that must be taken in order to be able to respond, assist, and document the incident in an expeditious manner. Incidents have been classified into one of seven categories, and then into sub-categories that further specify the type of incident that has occurred. These categories are listed below:

- Category A: Accidents (Emergency)
- Category B: Vehicle Fire (Emergency)
- Category C: Disable Vehicles (Emergency)
- Category D: Police Activity (Emergency)
- Category E: Traffic Hazards (Emergency)
- Category F: Roadway and Signal Operations (Traffic)
- Category G: Delay or Congestion (Traffic)

In June 2001, the TMC developed a manual of Standard Operating Procedures (SOP) that acts as a guideline for handling incidents and systems problems; as a training tool/resource for new employees and as a reference guide for the operations staff. *Category E: Traffic Hazards (Emergency)*, of the SOP describes the notification and documentation procedure involving fuel, oil or other HAZMAT spills on or near the roadway.

In the event of a spill such as fuel, oil, or HAZ-MAT, the TMC is required to notify the respective police agency since they are responsible for arranging for the particular traffic hazard to be removed. Generally, the police will contact the following agencies: Fire Board, DNREC (Department of Natural Resources and Environmental Control), tow company, and all other agencies that are required to attend such incidents.

In the event of a non-hazardous materials spill DelDOT mobilizes, responds and directs the clean up effort to prevent the material from entering the storm drain system or receiving waters. If the spill is of questionable material, DelDOT uses procedures as describe for HAZ-MAT spills. Most DelDOT maintenance vehicles have been supplied with spill kits, and maintenance staff are regularly trained on their use.

In addition to the TMC's Standard Operating Procedures, the NPDES Program has completed the Spill Prevention Control and Countermeasures Plans for DelDOT facilities that met the above ground storage tank minimums. These are described in section H below.

H. Pollution Prevention at the Maintenance Facilities

Pollution Prevention Plans

DelDOT's NPDES Program continues to manage a Stormwater Pollution Prevention Program (SWPPP) at each of the 16 DelDOT maintenance facilities. Development, implementation, and maintenance of the SWPPP provides the maintenance yards with tools to reduce pollutants contained in stormwater discharges and comply with the requirements of Delaware's "Regulations Governing Storm Water Discharges Associated with Industrial Activity." The program includes a written plan, timeline for plan implementation, inspection schedules, training and monitoring requirements, and proper storage and housekeeping measures. Each SWPPP has a pollution prevention team with designated responsibilities to carry out the plan.

Facility Inspections

Team members of the Pollution Prevention Plans are required to conduct quarterly inspections during dry and wet weather events to look for evidence of stormwater contamination. The inspection reports are submitted to the DelDOT NPDES Program and also filed with the SWPPP binders at each facility. Quarterly inspections continued during the 2010 calendar year. At least once per year, a member of the DelDOT NPDES Program staff also conducts a full inspection of each yard.

Spill Prevention Control and Countermeasures (SPCC)

Maintenance facilities that met the above ground storage minimums requiring a SPCC plan were developed in order to comply with EPA's Oil Pollution Prevention regulations (40 CFR 112) contained within the Clean Water Act. An SPCC Plan discusses how the maintenance facility conforms to oil spill prevention and containment procedures. Each SPCC Plan is unique to the facility. All plans were completed and distributed in 2007. Because of the addition of new above ground storage tanks at Harrington and Cheswold maintenance facilities, SPCC plans were also prepared for these areas in 2008.

Training

Three training videos developed for maintenance staff are required to be viewed annually. The videos train DelDOT personnel on:

- The regulatory requirements of the Spill Prevention Control and Countermeasures (SPCC) plans developed for each maintenance yard
- Spill response and emergency procedures
- The proper procedures for responding to facility and non-facility (roadway) based emergency events.

The videos used for training personnel working with Pollution Prevention Plans continue to be used to train DelDOT personnel and new hires. They include: Facility and Vehicle Maintenance, Stormwater Contamination and Spill Prevention, and Vegetation Control and Pollution Prevention on Public Roads and Highways.

Monitoring

The Pollution Prevention Plans currently require wet weather stormwater monitoring at four maintenance facilities. These facilities were chosen as representative of the 16 facilities located throughout the state. The four yards are: Kiamensi, Bear, Cheswold, and Harrington.

Monitoring was conducted during 2010 at each of the other four pond outfalls. Sampling techniques were performed in accordance with the Environmental Protection Agency (EPA) *Stormwater Sampling Guidance Document*, EPA 833-B-92-001 (July 1992). Semi-annual samples were collected once in each of the following six-month periods: January through June, and July through December.

The wet weather monitoring protocol includes 72 hours of antecedently dry conditions, minimum predicted rainfall depth of 0.10 inches, and two full days of standard maintenance yard operations since the last rainfall event. A first flush sample was collected within 30 minutes from the first noticeable flow, and delivered to the laboratory for analysis of total suspended solids, surfactants, chloride, pH, and total petroleum hydrocarbons: gasoline and diesel range organics. Measurements of flow, air

temperature, water temperature, pH and turbidity were recorded on-site at the time of sample collection.

Table 6-1 displays the first flush concentrations measured during 2010 for all parameters at each of the four sites.

The total suspended solids (TSS) levels measured in the August 2010 sample collected at the Cheswold yard outfall (548 mg/L) exceeded the benchmark value of 100 mg/L. Operations at the yard were investigated shortly after the test results were received in order to determine the source(s) of the excess sediment discharge. The facility supervisor attributed the excess sediment load to intensive ditch cleaning activities that took place during that week. Higher than normal amounts of mud were washed from dump trucks at the yard. NPDES are following up to see if additional BMPs are needed.

Chloride levels at pond outfalls were somewhat higher than usual in the winter samples. January through March of 2010 saw abnormally severe winter storms, with several feet of snowfall and continual emergency operations. Once the storm period passed, chloride levels returned to normal background levels.

Vehicle Wash Water Plan

In July of 2005, DelDOT submitted a report entitled *Statewide Vehicle Wash Water Practices for DelDOT Maintenance Yards* to DNREC (see Annual Report 2005). This report outlined the Department's proposal for treating vehicle wash water on-site at our sixteen (16) maintenance facilities. Our goal was to develop options to treat vehicle wash water and stormwater to acceptable levels before it exits our site and enters receiving waters. To meet this objective we developed a stormwater "treatment train" at each maintenance facility. This method incorporates multiple Best Management Practices (BMPs) to treat wash water to the maximum extent practicable. With the completion of the stormwater retrofit at Harrington maintenance facility in 2010, we have completed the stormwater retrofits required under this plan.

I. Employee Training Program

The following is a list of training workshops and conferences attended by DelDOT staff and training material produced in calendar year 2010:

- All maintenance staff is required to view the following videos as part of Pollution Prevention Plans: Stormwater Contamination & Spill Prevention, Vegetative Control & Pollution Prevention, and Facility & Vehicle Maintenance.
- All maintenance staff is required to view videos as part of the Spill Prevention Control and Countermeasures Plans. The three topics include: SPCC regulatory requirements, spill response and emergency procedures and roadside events.
- NPDES staff are members of the Nonpoint Source Advisory Committee and attend the annual workshop.
- The following training/workshops were attended by NPDES or DOTS stormwater staff:
 - Winter workshop. February 2010: Carol Sullivan gave presentation on BMP/outfall maintenance relative to protection of wetlands and receiving waters and on proper E&S controls regarding slope protection and use of blanket.

- November 4, 2010 Maximo (work order system) training
- November 9, 2010 – Certified Construction Reviewer recertification
- Webcasts viewed by NPDES staff:
 - March 1, 2010: Managing Nutrients in the National Estuary Programs.
 - March 16, 2010: Marine Debris -- A federal, state and local look into opportunities for action.
 - March 25, 2010 – Chesapeake Bay TMDL webinar: modeling.
 - March 25, 2010 – “Best Practices in Addressing NPDES and Other Water Quality Issues in Highway System Management: Results of a U.S. Domestic Scan Tour.”
 - June 29, 2010, Social skills of social media.
 - October 13, 2010: EPA’s healthy watersheds initiative, protecting our high quality waters and watersheds.
- The Roadside Environmental Section staff attended various courses and workshops for re-certification, pesticide credits, and ISA (International Society of Arboriculture) credits including:
 1. Horticulture Industry and Expo: January 2010
 2. Ornamental and Turf Workshop: November 2010

Table 6-1. 2010 wet weather monitoring results from DelDOT maintenance facility BMP outfalls. The samples were collected once in each of the following six-month periods: January through June, and July through December. All results are reported in mg/L.

PARAMETER	KIAMENSI		BEAR		CHESWOLD		HARRINGTON	
	03/12/10	10/14/10	03/12/10	10/14/10	01/17/10	08/12/10	01/17/10	10/14/10
Total Suspended Solids	72	6	18	34	36	548*	37	11
Surfactants, MBAs	0.89	0.11	0.17	0.16	0.16	0.42	0.10	0.05
Chloride	18,100	695	4530	83.7	7460	90.4	9000	98.8
TPH-Gasoline Range Organics	0.025	0.32	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TPH-Diesel Range Organics	1.80	0.20	0.50	0.10	1.70	0.40	0.70	0.10
pH	7.38	7.78	8.27	7.85	8.28	8.19	8.33	7.47

*Exceeds benchmark value.

Benchmark Values:

- TSS** – 100 mg/L
 - Surfactants** – 1.0 mg/L
 - Chlorides** – no benchmark exists
 - Oil and Grease** – 15 mg/L
 - pH** – 6 to 9 s.u.
-

Appendix A. Appoquinimink River Association summary report for 2010.

Appoquinimink River Association 2010 Report

Livable Lawns Campaign – Improper fertilization of lawns and open spaces is a huge problem in the entire state but especially in the Appoquinimink watershed with many new developments throughout. As a first phase of education on the topic, the Appoquinimink River Association, Department of Natural Resources and Environmental Control, Department of Transportation NPDES Program, Delaware Nursery and Landscape Association, Delaware Grounds Management Association, University of Delaware, USDA-Natural Resource



Conservation Service, Nutrient Management Commission and New Castle Conservation District began meeting to understand how commercial fertilizer companies must work in the state. They have developed and received comment on a system to recognize those applicators that are being environmentally friendly.

Pet Waste Education – Alongside the Departments of Natural Resources and Environmental Control and Transportation, the Appoquinimink River Association began an intensive pet waste education campaign throughout southern New Castle County and Dover. Over 7,200 portable pet waste collection bag holders were distributed to animal shelters (4,730), veterinary offices (900), training facilities (300), at outreach events (425), and by mail to dog owners (900).



Community Wildlife Habitats – Together the Delaware Nature Society, Department of Natural Resources and Environmental Control, Town of Townsend, and Appoquinimink River Association finished the three year



process to make Townsend the first Community Wildlife Habitat in the state of Delaware. As a part of this project, backyard habitats were established, two schoolyard habitats were created with the help of students at Townsend Elementary School, rain barrel workshops were held, and educational articles were written for the Town's newsletter.

Watershed Newsletter – There was a continuation by the Appoquinimink River Association of developing and sending residents of the watershed and surrounding areas of southern New Castle County newsletters in the spring and fall. Topics that were covered in 2010 included fertilizer education, native animals, soil tests, mulching,

healthy watersheds, water quality monitoring, and the value of clean water.

Technical Monitoring – The Association continued to support water quality monitoring efforts run by the Delaware Nature Society in which resident volunteers do monthly water monitoring at several sites throughout the Appoquinimink watershed.

Education and Outreach Events – The Appoquinimink River Association participated in education and outreach events like their 5K Race for Our Rivers with support from the Department of Transportation to hand out educational materials to the public like storm drain themed bags, stormwater education pamphlets, phosphate-free cleaners, soil test kits and pet waste materials.

Appendix B. KCI Technologies 2010 Storm Drain Inventory and Inspection Project
Summary Report.



DELDOT AGREEMENT 1354
STATEWIDE MS4 / BMP INVENTORY & INSPECTION
2010 ANNUAL REPORT



The following is a summary of work performed by KCI Technologies, Inc. (KCI) and Century Engineering, Inc. (CEI) from January 1 to December 31, 2010 on the Delaware Department of Transportation's (DelDOT) Agreement 1354. Notice to Proceed for this 5-year open-end contract was granted on December 20, 2006.

A. PROJECT MANAGEMENT

In 2010, KCI conducted five project status meetings and three miscellaneous meetings. KCI submitted to DelDOT a *2009 Agreement 1354 Annual Report* and a *2009 Annual BMP Inventory & Inspection Report*, as well as several Memorandums related to the Agreement.

Five project status meetings were held with DelDOT, KCI, and CEI to discuss work completed and outstanding issues (**Table 1**). KCI distributed an agenda at least two days prior to each meeting and prepared meeting minutes for each meeting within 48 hours, including an Action Item List highlighting necessary actions, responsible parties, and target completion dates. These meetings have been highly effective in coordinating with DelDOT, identifying potential issues, and resolving issues in a timely manner.

KCI conducted eight internal field staff meetings to discuss scheduling and to identify data collection issues (**Table 1**). The purpose of the internal meetings was to provide an opportunity for field crews to share their experiences with other field crews and to develop the most efficient and consistent inspection methodology. Additional internal meetings were held with KCI's Technology Services staff to discuss and schedule the final refinements to the NPDES Map Viewer according to DelDOT's comments.

Three additional meetings were held to discuss specific issues related to the Best Management Practices (BMPs) (**Table 1**). The topic of two of these meetings with DNREC was the translation of DelDOT BMP data from ESRI GeoDatabase format to NEINE XML format, as required by the United States Environmental Protection Agency (USEPA). The third meeting was between DelDOT and KCI BMP inspection staff to review BMP maintenance needs in the field. **Table 1** summarizes all project-related coordination meetings in 2010.

Table 2 lists the deliverables transmitted in 2010. A majority of these deliverables related to BMP inspections and reports. Other deliverables pertinent to Agreement 1354 are included in DelDOT's *Agreement 1495 Environmental Water Quality Monitoring 2010 Annual Report*, also prepared by KCI, including outfall screening and illicit discharge investigations, some of which originated from the Agreement 1354 inventory and inspection.

**TABLE 1
 COORDINATION MEETINGS**

Project Status	Internal Status	Miscellaneous	
02/17/10 (#31)	01-28-10	DeIDOT BMP Field	03/10/10
04/15/10 (#32)	03-08-10	DeIDOT/DNREC/KCI BMP Data Translation	04/06/10
06/17/10 (#33)	03-29-10	DNREC/KCI BMP Data Translation Conference Call	07/12/10
10/07/10 (#34)	04-20-10		
11/22/10 (#35)	04-26-10		
	06-08-10		
	07-15-10		
	12-07-10		

**TABLE 2
 DELIVERABLES**

Date	Deliverable
01/23/10	Draft 2009 Agreement 1354 Report
01/25/10	Draft 2009 Annual BMP Report
02/18/10	2/16/10 Additional Maintenance Work Order Recommendations Memo
03/10/10	Final 2009 Annual BMP Report
11/22/10	Hard Drive with Revised SWM Report PDF Files
11/23/10	BMP Retrofit Recommendations List

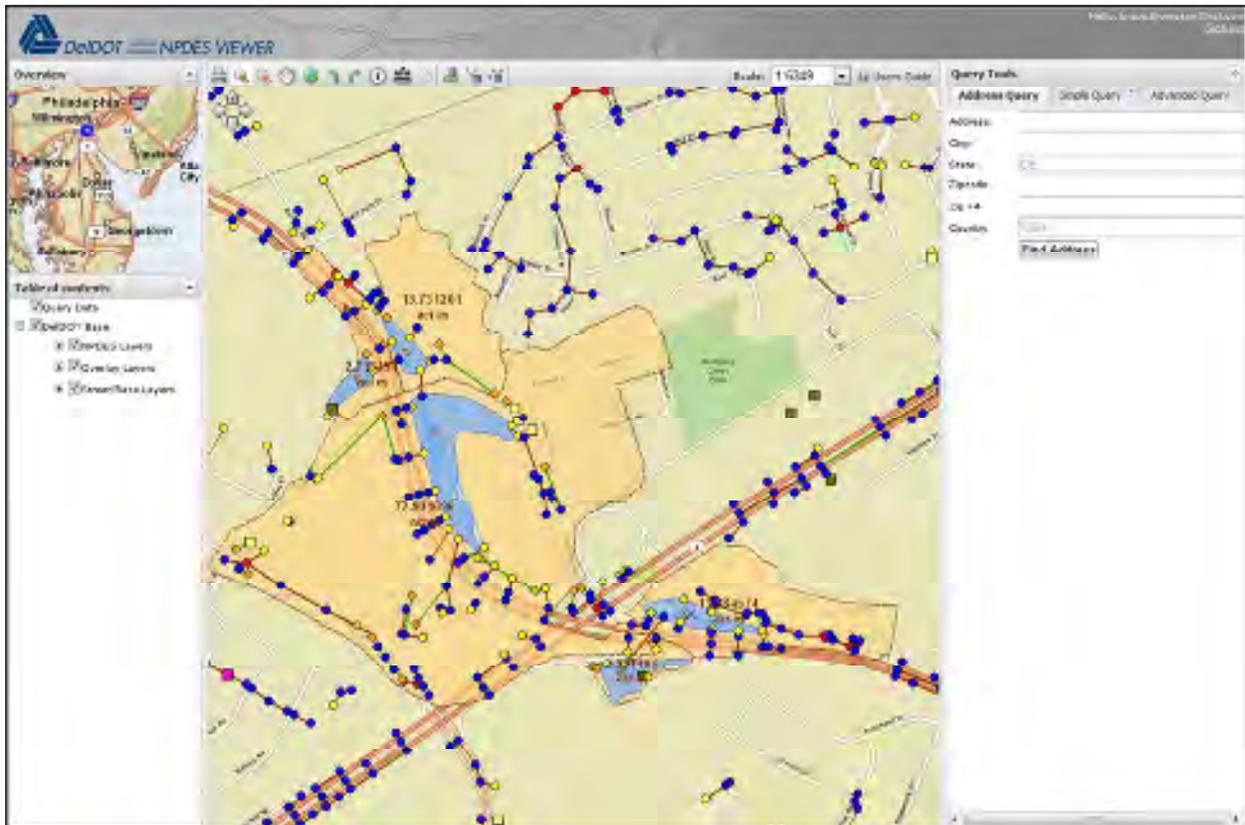
B. DATABASE MANAGEMENT

In 2007, KCI's Technology Services division developed a field application using advanced hardware, redesigned the existing Database structure to allow for re-inspections, migrated all existing data into the new Database design, and began development of a new field application to fit the new Database design.

In 2008, KCI's Technology Services division completed the development of the Field Application, Version 2 and developed a Web-based Map Viewer to replace and upgrade DelDOT's existing Map Viewer. In 2009, DelDOT expressed a desire for KCI to simplify the Map Viewer, especially the querying capabilities.

In 2010, KCI completed the refinements to the Map Viewer including simplifying querying and report creation for BMPs, conveyances and structures, and adding a drainage area layer for BMPs and Major Outfalls. In addition, KCI developed a *Map Viewer User's Guide* to assist with the use of the viewer.

In 2011, KCI expects to assist DelDOT in formal training sessions to educate DelDOT design and maintenance staff on the use of the Map Viewer.



2010 DELDOT NPDES MAP VIEWER

C. BEST MANAGEMENT PRACTICE (BMP) INVENTORY AND INSPECTION

In early 2011 under separate cover, KCI will submit the *2010 Annual BMP Inventory & Inspection Report*. The 2010 Annual Report will summarize the inspections for each BMP and provide recommended actions for BMPs in four categories:

- BMPs requiring **MAINTENANCE** by DelDOT maintenance staff (Maintenance Work Orders),
- BMPs requiring **INVASIVE SPECIES** to be eradicated by third party contractor,
- BMPs requiring **CONTRACTED WORK** by a third party contractor, and
- BMPs requiring **RETROFIT** evaluations by DelDOT’s Stormwater Quality Program staff.

BMPs will be assigned a summary rating based on the recommended actions identified during the inspections. These ratings are defined in **Table 3**. In 2010, KCI inspected only those BMPs that were rated A and B in 2009. BMPs rated C and D are being scheduled for maintenance as part of a separate DelDOT maintenance contract. **Table 4** summarizes the BMP inspections conducted in 2010 by KCI and CEI.

**TABLE 3
OVERALL BMP RATING SYSTEM**

Rating	Description
A	No Performance Issues BMP with No Issues affecting performance.
B	Minor Maintenance BMP with Minor Maintenance required; repaired by DelDOT maintenance district or third party invasive spray contractor.
C	Major Maintenance BMP with Major Maintenance required; repaired by third party contractor.
D	Retrofit BMP with Retrofit requirements; BMP is failing; needs to be redesigned or re-built with input from DelDOT Stormwater Quality Program.

**TABLE 4
2010 BMP INSPECTIONS**

District	Total BMPs Inspected	Total A's	Total B's	Total C's	Total D's
North	49	19	28	2	0
Canal	81	31	43	6	0
Central	27	10	12	5	0
South	51	42	9	1	0
TOTAL	208	102	92	14	0

D. NEW CASTLE COUNTY RE-INSPECTION

KCI began re-inspection of DeIDOT’s MS4 in New Castle County subdivisions in February 2008, based on KCI’s Agreement 1354 Subdivision Re-inspection Schedule (**Table 5**). The re-inspection schedule is based on a 5- and 10-year re-inspection cycle for subdivisions according to the acceptance date of the subdivisions. The subdivisions planned for re-inspection in 2009 (subdivisions accepted from 1951-1965) were completed in March 2010. In October 2010, DeIDOT requested that KCI dedicate both KCI field crews to Kent County Initial Inventory and Inspection work. KCI expects to complete the 1951-1965 subdivisions after initial inspections are completed in Kent and Sussex Counties. **Table 6** summarizes the Re-inspection work completed in 2010, which included 59 subdivisions and 2,818 structures.

**TABLE 5
SUBDIVISION RE-INSPECTION SCHEDULE**

Year	Subdivisions	Cycle	Re-inspect?	Date Completed
1	Database Re-design	--	--	December 2007
2	1935-1950	5	Yes	December 2008
3	1951-1965	5	Yes	May 2010
4	1966-1980	5	Yes	25% Complete*
5	1981-1995	10	Yes	
5	1996-2005	10	No	--

* In October 2010, all KCI and CEI Field Crews were dedicated to Kent/Sussex Counties for Initial Inventory and Inspection.

**TABLE 6
2010 RE-INSPECTION TOTALS**

Month (2010)	Number of Subdivisions	Number of Structures
January	5	371
February	1	104
March	6	365
April	7	441
May	13	315
June	5	254
July	16	535
August	2	284
September	2	109
October	2	40
November	0	0
December	0	0
TOTAL	59	2,818

E. NEW CASTLE COUNTY INITIAL INVENTORY AND INSPECTION

KCI continued Initial Inventory and Inspection work in New Castle County in 2010. This included performing Initial Inventory and Inspection work at subdivisions recently accepted by DeLDOT. KCI performed Initial Inventory and Inspection at two subdivisions for a total of 27 structures (**Table 7**).



New Castle County Initial Inventory and Inspection

**TABLE 7
 2010 INITIAL INVENTORY / INSPECTION TOTALS
 NEW CASTLE COUNTY**

Month (2010)	Subdivisions	Structures
February	2	27
TOTAL	2	27

F. KENT / SUSSEX COUNTIES INITIAL INVENTORY AND INSPECTION

CEI continued Initial Inventory and Inspection work in Kent and Sussex Counties in 2010. KCI continued with one field crew in Kent County until October 2010, when DelDOT requested that KCI's second field crew also begin work in Kent County. The KCI/CEI Team inventoried and inspected 41 subdivisions and 296 miles of non-subdivision roadways, for a total of 11,689 structures in Kent and Sussex Counties (**Table 8**).



Kent County Initial Inventory and Inspection

**TABLE 8
2010 INITIAL INVENTORY / INSPECTION TOTALS
KENT / SUSSEX COUNTIES**

Month (2010)	Subdivisions	Non-Subdivision Roadway Miles	Structures
January	2	17.5	1,144
February	7	8.9	613
March	17	24.6	1,142
April	2	25.5	975
May	2	16.1	664
June	4	18.4	910
July	2	26.7	749
August	4	31.5	846
September	1	24.5	864
October	0	41.4	1,251
November	0	33.9	1,218
December	0	27.4	1,313
TOTAL	41	296.4	11,689

G. 2010 MAINTENACE WORK ORDERS

Storm drain system deficiencies identified by KCI and CEI field inspection staff are submitted into DeLDOT’s maintenance work order system (MAXIMO). MAXIMO delivers the work order to the appropriate maintenance district, lists the concern, identifies a remedial action, and rates the concern (minor to severe). Any issues related to safety (i.e., missing or broken catch basin grate) are considered Immediate Action concerns, and the appropriate maintenance district staff is notified as soon as these safety issues are identified. **Table 9** documents the deficiencies in the storm drain system identified during the inspection process in 2010.

**TABLE 9
 2010 IDENTIFIED MAINTENANCE WORK ORDERS (NO.)**

Type	NCC	Kent	Sussex
Structures	133	86	15
Conveyances	209	120	10
BMPs	65	10	8
Immediate Action	2	3	0
TOTAL	409	219	33



Maintenance Work Order for Conveyance Pipe

H. STATEWIDE INVENTORY SUMMARY

Tables 10, 11 and 12 summarize the number of BMPs, Structures and Conveyances contained in the DeIDOT NPDES Database.

**TABLE 10
STATEWIDE STRUCTURES (NO.)**

Category	NCC	Kent	Sussex
Inlet	43,166	14,481	2,608
Outfall	8,017	7,473	1,751
Manhole	5,162	726	25
Swale End	4,622	2,458	187
TOTAL	60,967	25,138	4,571

**TABLE 11
STATEWIDE CONVEYANCES (LF)**

Type	NCC	Kent	Sussex
Open	2,194,569	4,630,954	481,888
Closed	4,657,471	1,275,132	172,679
TOTAL	6,852,040	5,906,086	654,567

**TABLE 12
STATEWIDE BMP (NO.)**

Type	NCC	Kent	Sussex
Check Dam	6	0	0
Bio-swale	36	7	39
Bio-retention	5	0	1
Dry Pond	44	4	2
Filter Strip	1	2	0
Infiltration Basin / Trench	4	1	0
Sand Filter	66	1	1
Sediment Forebay	4	0	3
Wet Pond	75	25	7
Wet Pond / Wetland	5	0	0
TOTAL	246	40	53

Appendix C. KCI Technologies 2010 Outfall Screening Summary Report.



**DELDOT AGREEMENT 1495
WATER QUALITY MONITORING
OUTFALL SCREENING
2010 ANNUAL REPORT**



As part of the Delaware Department of Transportation's (DelDOT) National Pollutant Discharge Elimination System (NPDES) General Permit Program Regulations Governing Stormwater Discharge, KCI Technologies, Inc. was contracted to conduct dry weather outfall inspection and monitoring of DelDOT-owned storm drain outfalls in New Castle County. Other activities conducted under this task included: Investigation of Potential Illicit Discharges (PIDs) and NPDES Flyer Awareness Distribution.

A. OUTFALL SCREENING & POTENTIAL ILLICIT DISCHARGES

In 2010, 1,109 outfalls were screened as part of the inventory, inspection and re-inspection tasks under Agreement 1354.

In 2010, 17 Potential Illicit Discharges (PIDs) were investigated. **Table 1** lists those PIDs that had dry weather flow discharge and the testing results, as well as PIDs that were investigated and determined to have no follow-up requirements. Detailed correspondence, field investigation information and documentation regarding PIDs are provided in **Appendix A. Table 1** indicates the corresponding **Appendix A** tab divider number (1-17) for each PID listed.



Outfall Screening



*PID: Red Lion Road
Illegal Connection*



*PID: East Side Village
15667 Walker Drive
Potential Sewage Flow*

TABLE 1
2010 POTENTIAL ILLICIT DISCHARGE DETERMINATIONS *

Date (Chrono. Order)	Structure	Neighborhood/ Address	Issue Reported By	Issue	Investigation Results	Determination	Appendix A Tab No.
01/18/10 03/02/10 06/25/10	32008040 71311737	Outfall to BMP 241/Rt. 7	Agr 1354 Field Crew	01/18/10: Dark green stain on outfall pipe leading to BMP 241 pond; outfall discharge clear; dead fish directly in front outfall pipe. 03/02/10: no dead fish; foam present in front outfall. 06/25/10 Revisit	01/18/10: Sampled tested within acceptable parameter levels. 03/02/10: Sampled tested high for detergents. 06/25/10: Sampled tested high for detergents.	Continue to monitor/ Revisit site.	1
03/02/10	71506	Todd Estates/42 Lynchfarm Dr.	Agr 1354 Field Crew	Pet waste in catch basin.	Pet waste on grate and in catch basin.	Distributed 25 doorhangers; Re-visit site.	2
03/02/10	74702	Brookside Park/ 30 McCord Dr.	Agr 1354 Field Crew	Dry weather flow.	Sampled tested within acceptable parameter levels.	No further action.	3
03/02/10	71075	Brookside Park/Intersection McCord Dr./ Matthews Rd	Agr 1354 Field Crew	Dry weather flow.	Sampled tested within acceptable parameter levels.	No further action.	4
03/08/10	74839	Todd Estates/ 23 Garrett Rd.	Agr 1354 Field Crew	Resident reported neighbor dumping leaves in catch basin.	Catch basin 75% full leaves.	Distributed 16 doorhangers; Re-visit site	5
04/01/10	52010030 1153011	East Side Village/15667 Walker Dr.	Agr 1354 Field Crew	Dry weather flow; strong odor of sewage; visual waste.	Confirm report. Specific source of discharge not found.	Notified DNREC Failing Septic Division.	6
04/07/10	16374	Minquadale East/920 Hazeldell Ave.	Agr 1354 Field Crew	Garbage dumped in catch basin.	No garbage in catch basin. Garbage observed along curb throughout neighborhood.	No further action.	7
04/07/10	71994	East Burn Acres/ 2004 Carol Dr.	Agr 1354 Field Crew	Motor oil on roadway.	Parked vehicle leaking oil.	Provided doorhanger; No further action.	8
06/02/10	2684	Newkirk Estates/ 117 Phyllis Dr.	Agr 1354 Field Crew	Drain hose in manhole 74285 upstream of outfall.	Confirmed hose in manhole; no active flow from hose or to outfall.	No further action.	9

Date (Chrono. Order)	Structure	Neighborhood/ Address	Issue Reported By	Issue	Investigation Results	Determination	Appendix A Tab No.
06/02/10	1364	Chestnut Hill Estates/Old Ogletown Rd.	Agr 1354 Field Crew	Dry weather flow.	Sampled tested within acceptable parameter levels.	No further action.	10
06/02/10	2256	Bellevue Manor/ 715 Woodsdale Dr.	Agr 1354 Field Crew	Dry weather flow.	Sampled tested within acceptable parameter levels.	No further action.	11
06/18/10 06/23/10	95458	2572 Red Lion Rd.	Resident/ DeIDOT	Possible illegal sewage connection; sewage smell; toilet paper.	Sample tested above recordable limits for detergents; ammonia levels within parameter limits. 3" pipe in wall of catch basin; prior URS inspection flow with soap suds.	Referred to DNREC by DeIDOT. DNREC capped illegal hook up after finding dye in pipe. Warrants pending for homeowners arrest.	12
08/03/10	77010, 77011	Casho Mill Rd./ Julie Ln.	City of Newark/ DeIDOT	Hot mix material in catch basin.	77010: Filled with hot mix blocking outflow pipe completely. 77011: No evidence of hot mix.	KCI field crew removed enough hot mix to allow positive flow; could not remove all due to hardening.	13
08/31/10	13	Lambeth Riding/ 404 Wesley Circle	Agr 1354 Field Crew	Dry weather flow.	Flow due to underground stream outfalling into creek bed; no sample tested.	No further action.	14
08/31/10	5143	Lambeth Riding/ 504 Lambeth Place	Agr 1354 Field Crew	PVC pipe in side wall of concrete pipe connecting to catch basin; flow observed from PVC pipe collecting in catch basin.	Sampled tested within acceptable parameter levels; could not find flow source.	Re-visit site.	15
11/01/10	11712- 11721	Mendenhall Village/ Lamplighter Way	DeIDOT	Report of grass clipping dumping in catch basin.	No evidence of grass clippings in any catch basins on Lamplighter Way.	Re-visit site.	16
11/01/10	New structure	316 Pigeon Point Rd.	DeIDOT	DeIDOT reported greenish substance in/around area of new inlet pipe.	No evidence of substance.	Re-visit site.	17

* Detailed correspondence, field investigation information and documentation regarding PIDs are provided in **Appendix A.**

B. NPDES FLYER AWARENESS DISTRIBUTION

The purpose of the NPDES flyer awareness distribution (doorhangers) is to inform the public and increase awareness of illegal dumping of pollutants into the surrounding storm sewer systems. Doorhangers were distributed to those areas where suspected illegal discharge/dumping had occurred, as observed by the general public and/or field crews performing storm drain inventories. In 2010, 42 doorhangers were distributed in two neighborhoods in New Castle County, as summarized in **Table 2**.

**TABLE 2
2010 DOORHANGER DISTRIBUTION**

Date	Neighborhood	ADC Map /	Waste Type	Water-body	No. Hangers
03/11/10	Todd Estates II	11/B10	Yard/Pet Waste	Christina River	41
04/07/10	East Burn Acres	11/G3	Motor Oil	White Clay Creek	1



C. MAJOR OUTFALL & BEST MANAGEMENT PRACTICES DRAINAGE AREAS

KCI completed drainage area delineations for major outfalls and Best Management Practices (BMPs) in New Castle County (**Tables 3 and 4**, respectively). For Kent and Sussex Counties, the drainage area delineation process is on-going. KCI completes BMP drainage areas as the MS4 information becomes available. QAQC is performed on the drainage areas prior to database upload. Completed drainage areas are included on the DelDOT NPDES Map Viewer.

**TABLE 3
MAJOR OUTFALL DRAINAGE AREAS DELINEATED**

Outfalls	North District	Canal District	Central District	South District	TOTAL	Chesapeake Bay Watershed
	260	241	25	0	541	

D. NEXT STEPS

KCI's goal for 2011 is to complete the delineation of drainage areas for all major outfalls in Kent and Sussex Counties, and the delineation of drainage areas for all DelDOT-owned BMPs throughout the state. In addition, KCI will continue to provide as-needed outfall screening activities in 2011. This includes investigating dry weather flow and potential illicit discharges at outfalls and storm drain structures discovered by KCI field crews, DelDOT maintenance staff or the public.

**TABLE 4
BMP DRAINAGE AREAS DELINEATED**

CHESAPEAKE BAY WS

BMP NUMBER	BMP TYPE	DRAINAGE AREA
145	Dry Pond	X
146	Dry Pond	X
180	Wet Pond	X
213	Wet Pond	X
221	Wet Pond	X
248	Bioretention	X
405	Bioswale	X
406	Bioswale	X
407	Bioswale	X
408	Bioswale	X
409	Bioswale	X
410	Bioswale	X
411	Bioswale	X
412	Bioswale	X
413	Bioswale	X
414	Bioswale	X
415	Bioswale	X

TOTAL COMPLETED 17

NORTH - NC COUNTY

BMP NUMBER	BMP TYPE	DRAINAGE AREA
6	Wet Pond	X
20	Dry Pond	X
21	Wet Pond	X
22	Dry Pond	X
23	Dry Pond	X
24	Dry Pond	X
25	Dry Pond	X
26	Bioswale	X
27	Bioswale	X
28	Dry Pond	X
30	Dry Pond	X
31	Wet Pond	X
32	Bioswale	X
33	Dry Pond	X
34	Bioswale	X
35	Sed Forebay	X
48	Wet Pond	X
49	Infil Trench	X
51	Bioswale	X
52, 54 - 73	Sand Filter	X
75	Bioswale	X
76	Wet Pond	X
78	Wet Pond	X
79	Dry Pond	X
80	Bioswale	X
82	Dry Pond	X
104	Bioswale	X
105	Wet Pond	X
142	Wet Pond	X
143	Wet Pond	X
182	Wet Pond	X
183	Dry Pond	X
184	Bioswale	X
192	Bioretention	X
194	Wet Pond	X
198	Wet Pond	X
199	Wet Pond	X
217	Wet Pond	X
218	Wet Pond	X
223	Wet Pond	X
224	Wet Pond	X
225	Dry Pond	X
229	Bioswale	X
230	Dry Pond	X
232	Filter Strip	X
233	Sed Forebay	X
234	Wet Pond	X
235	Wet Pond	X
239	Wet Pond	X
240	Wet Pond	X
241	Wet Pond	X
244	Wet Pond	X
245	Bioretention	X
253	Sh Marsh	X
254	Sh Marsh	X
313	Sed Forebay	X
314	Sed Forebay	X
354	Check Dam	X
355	Check Dam	X
357	Check Dam	X
358	Check Dam	X
359	Check Dam	X
360	Check Dam	X
364 - 397		X
421 - 430	Sand Filter	X
433	Bioretention	X
434	Wet Pond	X
435	Bioretention	X
436	Wet Pond	X
437	Bioretention	X
438	Wet Pond	X

TOTAL COMPLETED 133

**TABLE 4
BMP DRAINAGE AREAS DELINEATED**

CANAL - NC COUNTY

BMP NUMBER	BMP TYPE	DRAINAGE AREA
2	Infil Basin	X
3	Dry Pond	X
9	Wet Pond	X
11	Wet Pond	X
12	Wet Pond	X
13	Wet Pond	X
14	Wet Pond	X
15	Wet Pond	X
16	Wet Pond	X
19	Dry Pond	X
37	Bioswale	X
38	Dry Pond	X
39	Wet Pond	X
40	Wet Pond	X
41	Wet Pond	X
42	Wet Pond	X
43	Wet Pond	X
44	Wet Pond	X
46	Sand Filter	X
84	Dry Pond	X
85	Dry Pond	X
86	Dry Pond	X
87	Wet Pond	X
88	Wet Pond	X
89	Wet Pond	X
90	Wet Pond	X
91	Wet Pond	X
92	Dry Pond	X
93	Bioswale	X
95	Wet Pond	X
96	Wet Pond	X
97	Wet Pond	X
98	Wet Pond	X
99	Wet Pond	X
100	Wet Pond	X
101	Wet Pond	X
102	Dry Pond	X
107	Bioswale	X
108	Wet Pond	X
111	Wet Pond	X
118	Dry Pond	X
119	Infil Trench	X
120	Dry Pond	X
121	Dry Pond	X
122	Dry Pond	X
123	Dry Pond	X
124	Dry Pond	X
125	Dry Pond	X
127	Wet Pond	X
128	Wet Pond	X
129	Dry Pond	X
130	Wet Pond	X
131	Wet Pond	X
132	Dry Pond	X
133	Dry Pond	X
134	Dry Pond	X
135	Dry Pond	X
136	Dry Pond	X
137	Wet Pond	X
138	Dry Pond	X
139	Wet Pond	X
140	Dry Pond	X
141	Wet Pond	X
147	Bioswale	X
148	Bioswale	X
149	Bioswale	X
150	Bioswale	X
151	Bioswale	X
152	Bioswale	X
153	Bioswale	X
154	Bioswale	X

CANAL - NC COUNTY

BMP NUMBER	BMP TYPE	DRAINAGE AREA
155	Bioswale	X
156	Bioswale	X
160	Bioswale	X
162	Bioswale	X
163	Bioswale	X
166	Dry Pond	X
171	Wet Pond	X
173	Wet Pond	X
179	Wet Pond	X
181	Wet Pond	X
185	Wet Pond	X
186	Wet Pond	X
187	Wet Pond	X
188	Dry Pond	X
189	Wet Pond	X
190	Dry Pond	X
191	Wet Pond	X
193	Dry Pond	X
196	Dry Pond	X
202	Wet Pond	X
219	Wet Pond	X
221	Wet Pond	X
222	Wet Pond	X
237	Bioswale	X
238	Bioswale	X
242	Wet Pond	X
311	Bioswale	X
319	Infil Trench	X
398	Dry Pond	X
399	Dry Pond	X
400	Dry Pond	X
431	Dry Pond	X
432	Bioswale	X
464	Bioretention	X

**TOTAL
COMPLETED**

105

**TABLE 4
BMP DRAINAGE AREAS DELINEATED**

CENTRAL - KENT COUNTY

BMP NUMBER	BMP TYPE	DRAINAGE AREA
5	Wet Pond	X
7	Wet Pond	X
8	Wet Pond	X
10	Dry Pond	X
17	Wet Pond	X
18	Wet Pond	X
29	Wet Pond	X
77	Wet Pond	X
81	Wet Pond	X
83	Wet Pond	X
94	Dry Pond	X
106	Infil Basin	X
167	Wet Pond	
176	Sand Filter	X
177	Dry Pond	X
178	Dry Pond	X
197	Bioswale	X
203	Wet Pond	X
204	Wet Pond	X
205	Wet Pond	X
206	Wet Pond	X
207	Wet Pond	X
208	Wet Pond	X
209	Wet Pond	X
210	Wet Pond	X
211	Wet Pond	X
212	Wet Pond	X
216	Bioswale	X
243	Dry Pond	X
246	Wet Pond	X
312	Bioswale	X
328	Bioswale	X
329	Dry Pond	X
401	Filter Strip	
402	Bioswale	
403	Bioswale	
404	Bioswale	
439	Wet Pond	X
487	Filter Strip	
488	Wet Pond	

TOTAL COMPLETED 33

SOUTH - SUSSEX COUNTY

BMP NUMBER	BMP TYPE	DRAINAGE AREA
47	Bioswale	
103	Bioswale	
126	Sed Forebay	X
145	Dry Pond	X
146	Dry Pond	X
168	Sand Filter	X
174	Bioswale	
180	Wet Pond	X
200	Wet Pond	X
201	Wet Pond	X
213	Wet Pond	X
226	Wet Pond	
227	Bioswale	
228	Bioswale	
236	Wet Pond	
247	Wet Pond	
248	Bioretention	X
295	Sed Forebay	
296	Sed Forebay	
405	Bioswale	X
406	Bioswale	X
407	Bioswale	X
408	Bioswale	X
409	Bioswale	X
410	Bioswale	X
411	Bioswale	X
412	Bioswale	X
413	Bioswale	X
414	Bioswale	X
415	Bioswale	X
489	Bioswale	
490	Bioswale	
491	Bioswale	
492	Bioswale	
493	Bioswale	
494	Bioswale	
495	Bioswale	
496	Bioswale	
497	Bioswale	
498	Bioswale	
499	Bioswale	
500	Bioswale	
501	Bioswale	
502	Bioswale	
503	Bioswale	
504	Bioswale	
505	Bioswale	
506	Bioswale	
507	Bioswale	
508	Bioswale	
509	Bioswale	
510	Bioswale	
511	Bioswale	

TOTAL COMPLETED 20

OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structure 3200804071311737
Outfall to BMP 241
Route 7 Bear



MEMORANDUM

TO: Randy Cole
Marianne Walsh, PhD
DelDOT Stormwater Quality Program

FROM: Ryan Coleman

DATE: January 25, 2010

SUBJECT: **Potential Illicit Discharge**
Outfall # 320080407131737 into BMP 241
DelDOT Agreement 1495
KCI Project 0203019G

The purpose of this Memo is to summarize the most recent investigation of a Potential Illicit Discharge (PID) at an outfall flowing into BMP 241 along Route 7 near Bear (**Figure 1**). This same outfall had been previously investigated for a PID in 2007. No sign of discharge was observed at that time.

During the 2009 Annual BMP Inspections, Agreement 1354 KCI field crew observed signs of illicit discharge at BMP 241 and reported such to the Agreement 1495 KCI field crew for further investigation. Upon inspection of the BMP and outfall on January 18, 2010, the Agreement 1495 field crew determined that there were indications of a PID. There was a dark green stain on the outfall pipe that dumps into the pond (**Figure 2**). There was active dry weather flow from the outfall, which was clear in color. The field crew also noticed a large amount of dead fish directly in front of the outfall pipe (**Figures 3 & 4**).

The drainage to the pond is believed to originate from a nearby, fenced-off, secure facility that is owned by First USA Bank. Further investigation is required to determine whether the facility property is responsible for all drainage to the pond, or if some drainage is from DelDOT-owned property.

A grab sample was collected from the outfall and analyzed by the field crew. The sample did not test above acceptable parameter levels. There is a possibility that the fish kill was a result of extremely cold temperatures and frozen water. KCI will revisit the site in March to test the outfall discharge.

The outfall was re-investigated on March 2, 2010 and a grab sample was collected for analysis. There were no more dead fish around the outfall as in the early investigation. The field crew noticed foam in front of the outfall (**Figure 5**) and the water sample tested high for detergents at **0.7 mg/L**. The outfall will be monitored in April at which point a determination will be made on whether further investigation is needed at this site.

No action take as per discussion with DelDOT.



Figure 1. Location Map

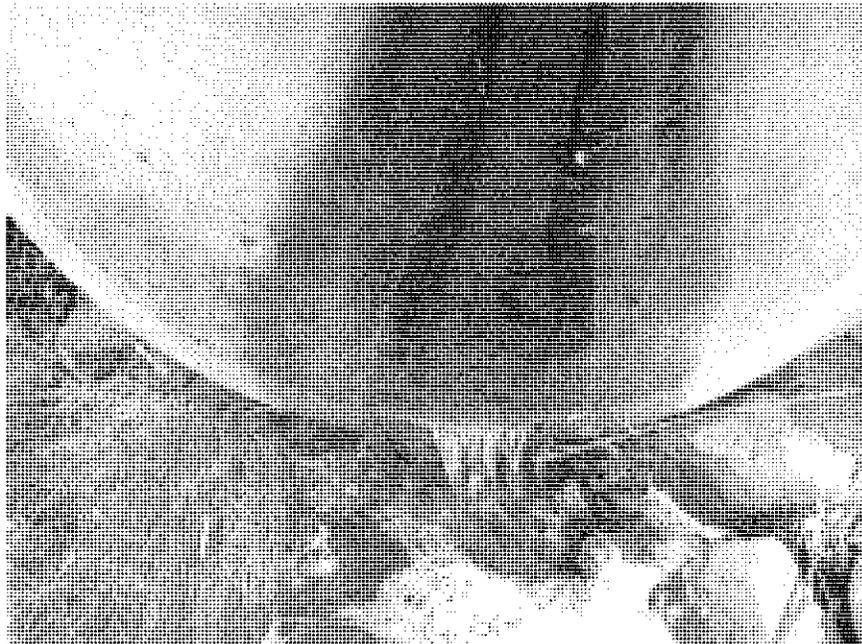


Figure 2. Stained Outfall Pipe



Figure 3. Fish Kill 1

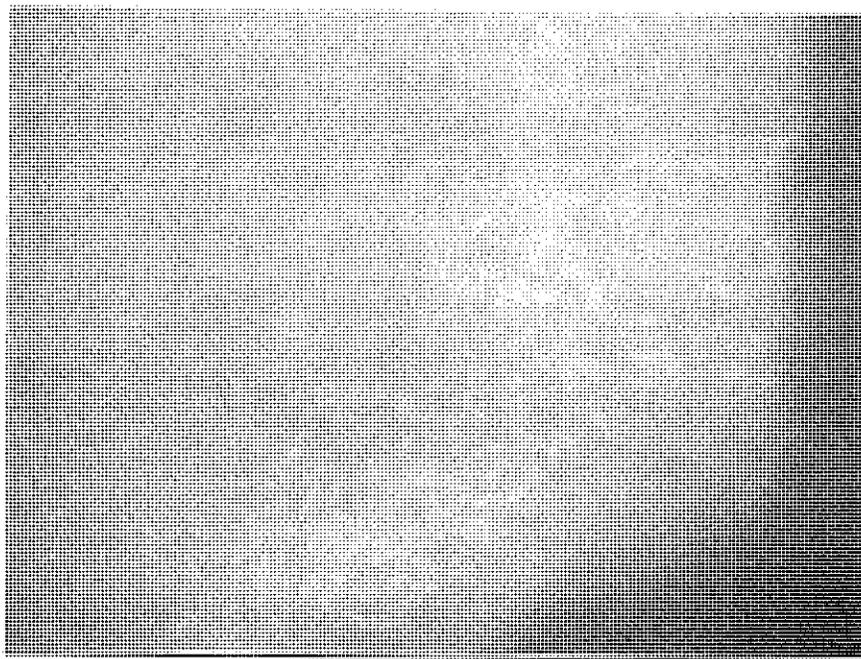


Figure 4. Fish Kill 2

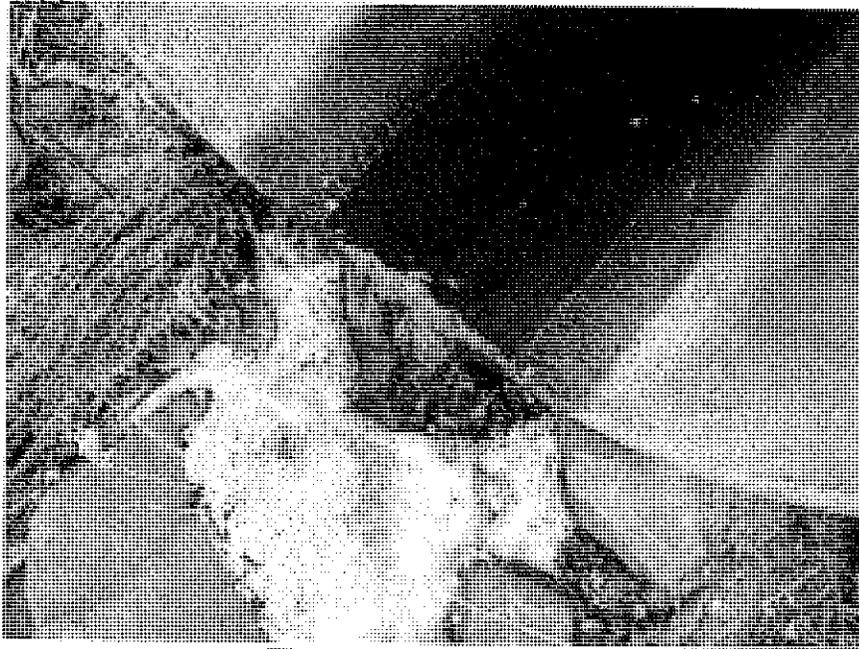
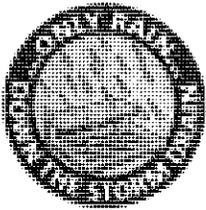


Figure 5. Foam at Outfall



**DELDOT AGREEMENT 1495
POTENTIAL ILLICIT DISCHARGE FIELD DATA SHEET**



Structure/Outfall ID Number: RJ 7 Fish Kill

Address/Location Description: _____

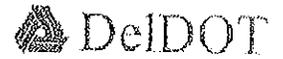
Outfall Data	
Digital picture? (Y/N):	Y
Camera Number:	ES-1
Picture Number:	
Personnel:	RC / JN
Date (MM/DD/YY):	6/25/10
Time:	11:30 a.m.
Date of Last Rain >0.10" (MM/DD/YY):	
Follow Up Screen Date (MM/DD/YY):	
Follow Up Field Screen Time:	
Outfall Dimensions (in):	
Outfall Shape: Round (R), Oval (O), Box (B), V-Ditch (VD), Trap Ditch (TD), Other Ditch (OD)	
Outfall Type (CMP, RCP, PVC, Other):	
Flow Observed? (Y/N):	
Follow Up Flow Observed? (Y/N):	
Flow Source	
Structural Condition: Normal (N), Concrete Spauling (SP), Peeling Paint (PP), Concrete Cracking (CC), Outfall Damaged (OD), Submerged (S), Metal Corrosion (MC), Other (O-explain)	
Erosion (Outfall Area): None (N), Moderate (M), Severe (S)	N
Odor: None (N)=0, Rancid-Sour (RS)=4, Gas (G)=4, Sewage (S)=4, Oil (O)=4, Sulfur (S)=4, Other (Other-explain)	N
Deposits / Stains: None (N)=0, Sediment (S)=2, Oil (OY)=3, Other (O-explain)	
Algae Growth? (Y/N):	Y
Vegetative Condition (Outfall Area): Normal (N), Inhibited Growth (IG), Excessive Growth (EG), Other (O-explain)	N
Land Use: Industrial (I), Commercial (C), Residential (R), Other (O-explain)	C
Specific Land Use:	

		Result 1	Val.	Result 2	Val. 2
Flow Rate (cfs):	<0.022 cfs=0; ≥0.022 cfs=4				
Water Temperature (Fahrenheit):		70.0			
pH:	<4.5=4; >8.5=4; change ≥ 2 units=1	7.42			
Phenol (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0.05			
Chlorine (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0			
Detergents (mg/L):	<0.2=0; 0.2 - 0.4=1; ≥0.5 mg/L=4	>1.0			
Copper (mg/L):	<0.01 mg/L=0; ≥0.01 mg/L=4	0			
Ammonia (mg/L):	<0.05-0.1 mg/L=0; 0.1-1.0 mg/L=1; 1.0-2.99 mg/L=2; ≥3.0 mg/L=4	> 3.0			
Turbidity:	0-10 ntu=0; 11-40=1; 41-150=3; >150=4	12.22			
Color:	Clear (C)=0, Gray (G)=1, Red (R)=1, Yellow (Y)=1, Brown (B)=1, Green (GR=1), Other (O-explain)	B			
Floatables:	None (N)=0, Oil Sheen (OS)=4, Sewage (S)=4, Trash (T)=2, Other (O-explain)	N			

FIELD SKETCH



DELDOT NPDES FY 08 AGREEMENT 1351 – TASK 11.OS
RE-VISIT DUFFIELD OUTFALLS FIELD DATA SHEET



Duffield Outfall ID Number: R111P 191

Outfall Data	
Digital picture? (Y/N):	Yes
Camera Number:	ES-1
Picture Number:	
Personnel:	PC/1/E
Date (MM/DD/YY):	11/1/09
Time:	1:30 pm
Date of Last Rain >0.10" (MM/DD/YY):	11/1/09
Follow Up Screen Date (MM/DD/YY):	3/2/10
Follow Up Field Screen Time:	pm
Outfall Dimensions (in):	
Outfall Shape: Round (R), Oval (O), Box (B), V-Ditch (VD), Trap Ditch (TD), Other Ditch (OD)	Round
Outfall Type (CMP, RCP, PVC, Other):	RCP
Flow Observed? (Y/N):	Y
Follow Up Flow Observed? (Y/N):	Y
Flow Source	
Structural Condition: Normal (N), Concrete Spauling (SP), Peeling Paint (PP), Concrete Cracking (CC), Outfall Damaged (OD), Submerged (S), Metal Corrosion (MC), Other (O-explain)	Normal
Erosion (Outfall Area): None (N), Moderate (M), Severe (S)	None
Odor: None (N)=0, Rancid-Sour (RS)=4, Gas (G)=4, Sewage (S)=4, Oil (O)=4, Sulfur (S)=4, Other (Other-explain)	None
Deposits / Stains: None (N)=0, Sediment (S)=2, Oil (OY)=3, Other (O-explain)	Other: green lumps in pipe
Algae Growth? (Y/N):	None / Yes 2nd visit in 09
Vegetative Condition (Outfall Area): Normal (N), Inhibited Growth (IG), Excessive Growth (EG), Other (O-explain)	None
Land Use: Industrial (I), Commercial (C), Residential (R), Other (O-explain)	CIP
Specific Land Use:	

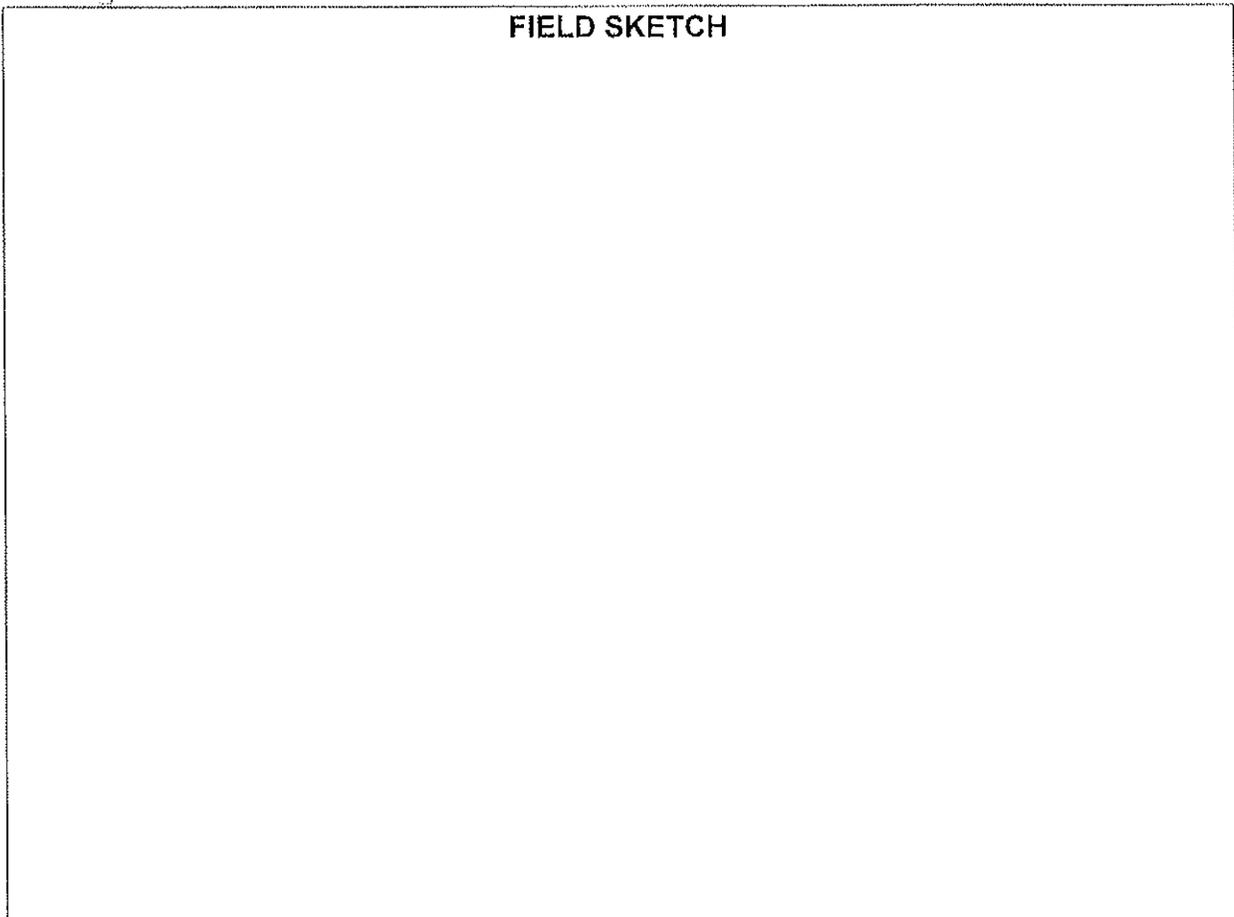
R111P
4/1/10
3:30pm

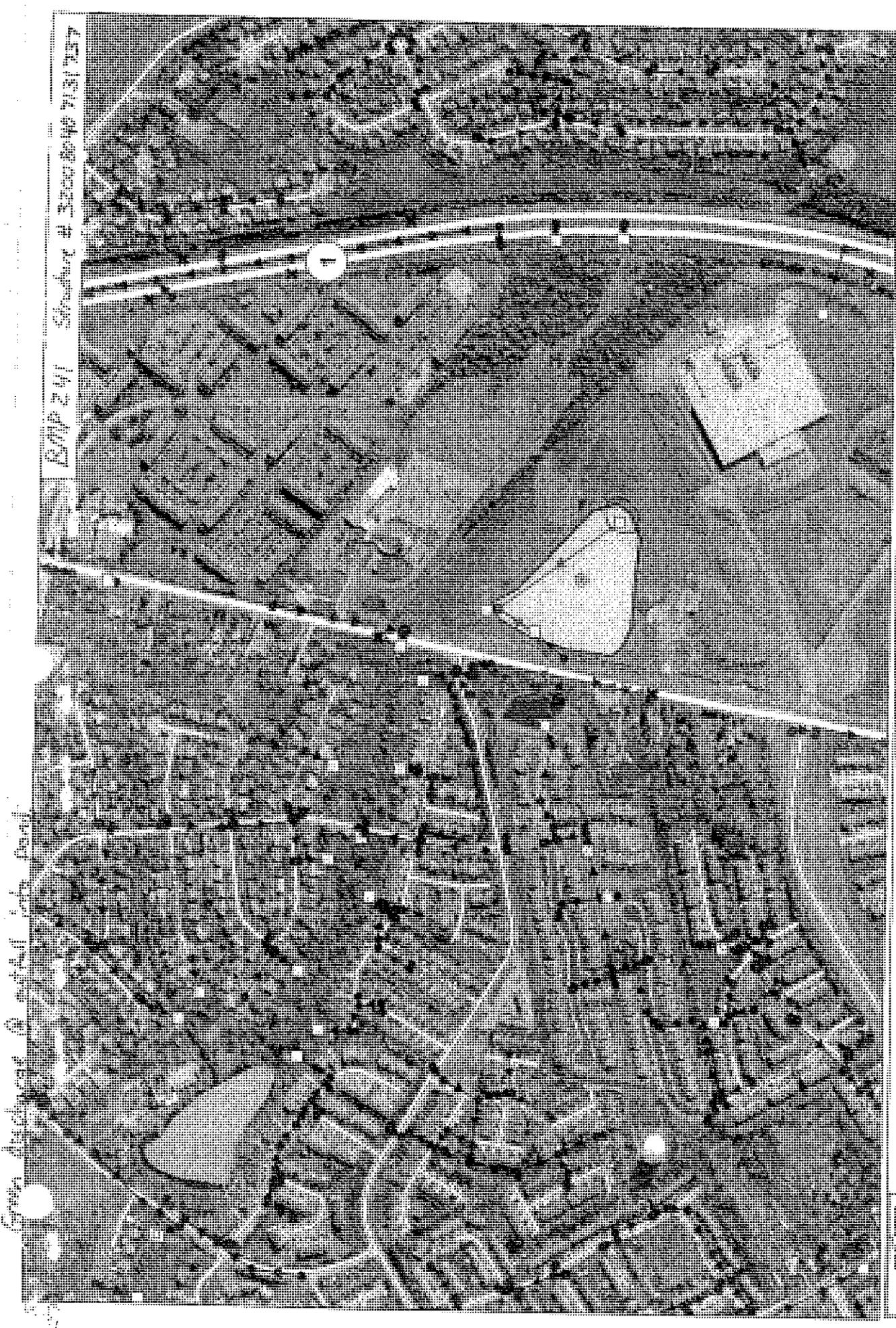
No Actin, See Memo

		Result 1	Val.	Result 2	Val. 2	
Flow Rate (cfs):	<0.022 cfs=0; ≥0.022 cfs=4					
Water Temperature (Farenheit):		51		47.7		49.1
pH:	<4.5=4; >8.5=4; change ≥ 2 units=1	7.27		7.27		7.27
Phenol (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0		0		0
Chlorine (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0		0		0
Detergents (mg/L):	<0.2=0; 0.2 - 0.4=1; ≥0.5 mg/L=4	0.1		0.7		0.35
Copper (mg/L):	<0.01 mg/L=0; ≥0.01 mg/L=4	0		0		0
Ammonia (mg/L):	<0.05-0.1 mg/L=0; 0.1-1.0 mg/L=1; 1.0-2.99 mg/L=2; >3.0 mg/L=4	0.4		0.6		0.4
Turbidity:	0-10 ntu=0; 11-40=1; 41-150=3; >150=4	5.88		3.73		0.79
Color:	Clear (C)=0, Gray (G)=1, Red (R)=1, Yellow (Y)=1, Brown (B)=1, Green (GR)=1, Other (O-explain)	Clear		C		Clear
Floatables:	None (N)=0, Oil Sheen (OS)=4, Sewage (S)=4, Trash (T)=2, Other (O-explain)	None		0 Foam @ outfall		None

* Large number of dead fish seen around outfall 1st time on 7-1.

FIELD SKETCH





Sewer System # 33008040 7/31/2017
 BMP 2-VI



**NPDES
Inventory Map**




<p>Inlet </p> <p>Manhole </p> <p>Outfall </p> <p>Swale End </p> <p>Swale Vertex </p>	<p>Dummy Node </p> <p>Riser </p> <p>Junction Box </p> <p>Culvert </p> <p>Revised Work Order </p>	<p>Pipe </p> <p>Ditch </p> <p>Hydraulic Connection </p>	<p>Say Saver </p> <p>Siftation </p> <p>Biofiltration & Bioretention </p> <p>Bioretention </p> <p>Dry Pond </p>	<p>Filter Strip </p> <p>Infiltration Basin / Trench </p> <p>Sand Filter </p> <p>Sediment Forebay </p> <p>Storm Filter </p>	<p>Wet Pond / Wetland </p>
--	--	---	--	---	--



OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structure 71506
42 Lynchfarm Drive
Todd Estates

Illicit Discharge Incident Tracking Sheet

Date: 3/2/10 **Logged by:** **Contact #:** **Incident ID:** 010 00

Caller contact information: 1354 Field Crew	Subdivision: Todd Estates
	County: New Castle
	ADC Map No./Grid: 11-B10

Incident Location

Primary Location Description

<input checked="" type="checkbox"/> Storm drain	<input type="checkbox"/> Outfall	<input type="checkbox"/> Other _____
<input type="checkbox"/> In stream	<input type="checkbox"/> Along bank	
<input type="checkbox"/> Stormwater pond	<input type="checkbox"/> Upland	

Outfall / inlet ID#: 71506

Closest street address: 42 Lynchfarm Drive

Watershed name: Christina River Impacted Stream name:

Nearby landmark: George V. Kirk Middle School

Narrative description of location

Catch basin is located on the side of street at 42 Lynchfarm Drive

Description of problem

Visual

<input type="checkbox"/> Oil / Oil sheen	<input type="checkbox"/> Soap
<input type="checkbox"/> Paint	<input type="checkbox"/> Flotables (toilet paper, etc.)
<input type="checkbox"/> Algae	<input type="checkbox"/> Dead fish
<input type="checkbox"/> Cloudy	<input type="checkbox"/> Flow -----> Precipitation in last 48-hours? Yes / No
<input type="checkbox"/> Anti-freeze	<input checked="" type="checkbox"/> Other <u>Pet Waste</u>
<input type="checkbox"/> Yard waste	

Odor

<input type="checkbox"/> Sewage	<input type="checkbox"/> Sulfide ("rotten egg")	<input type="checkbox"/> Gas/oil
<input type="checkbox"/> None	<input checked="" type="checkbox"/> Other (describe) <u>pet waste</u>	

Narrative description/comments of problem

During 1354 re-inspections the crew noticed pet waste that was placed in the catch basin. Signs saying "beware of dog" were seen on the property at 42 Lynchfarm Drive, which is the closest property to the catch basin.

Plan of Action (check all that apply)

<input type="checkbox"/> Sample	<input type="checkbox"/> Contact DNREC	<input checked="" type="checkbox"/> Contact NPDES Manager
<input checked="" type="checkbox"/> Photos	<input checked="" type="checkbox"/> Door hangers	<input type="checkbox"/> GPS Coordinates
<input type="checkbox"/> Other (describe)		

Follow-up Action

25 OXMA 12/11/10

Conduct a follow-up inspection to ensure no more pet waste is being dumped in the basin.



MEMORANDUM

TO: KCI Files

FROM: Ryan Coleman

DATE: March 8, 2010

SUBJECT: Todd Estates PID, 42 Lynchfarm Drive
Catch Basin No. 71506
Agreement 1495 / KCI Project 0203019G

The purpose of this Memo is to summarize the investigation of an illicit discharge in Todd Estates at 42 Lynchfarm Drive.

While performing Agreement 1354 Re-inspections, a KCI field crew came across a potential illicit discharge (PID) in a catch basin located at 42 Lynchfarm Drive in Todd Estates. While performing inspections the crew noticed what appeared to be pet waste dumped in a catch basin. The PID was reported to the Agreement 1495 KCI field crew responsible for investigating PIDs.

Upon inspection of the catch basin on March 2, 2010 it was noted that the structure had pet waste on the grate and in the basin. The pet waste appeared to be purposely placed in the basin. The closest house to the catch basin, 42 Lynchfarm Drive, had signs on the fence warning of a dog on the property. Pictures were taken of the PID and other catch basins in the area were inspected. The other basins in the immediate area appear to be clear of pet waste.

On March 11, 2010 KCI distributed 25 door hangers to the residents in the immediate vicinity of the PID on Lynchfarm Drive.

KCI plans to do a follow up investigation of the site to verify all dumping of pollutants has ceased.



Figure 1. Landscape

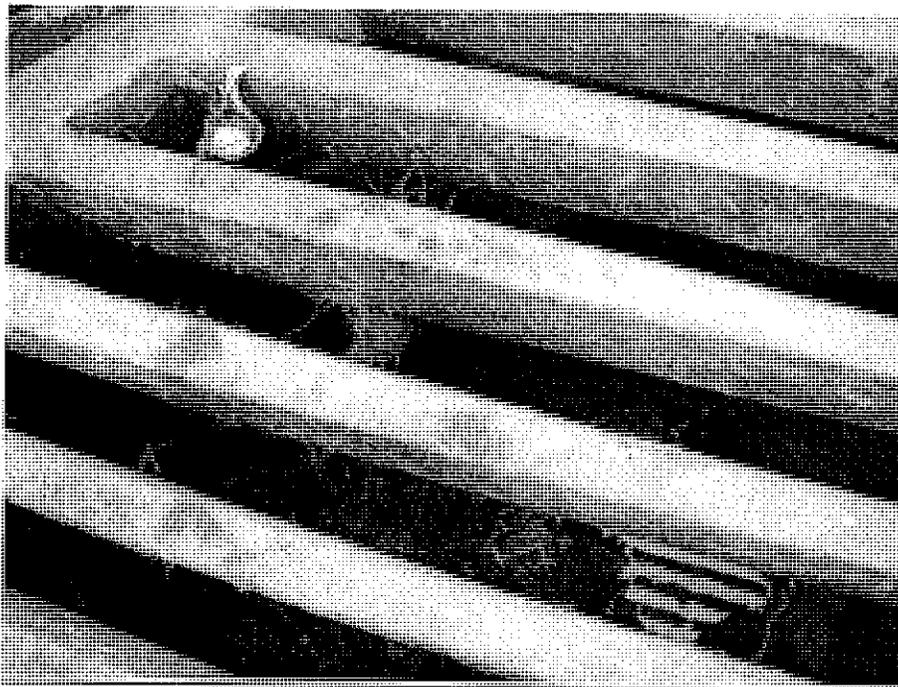
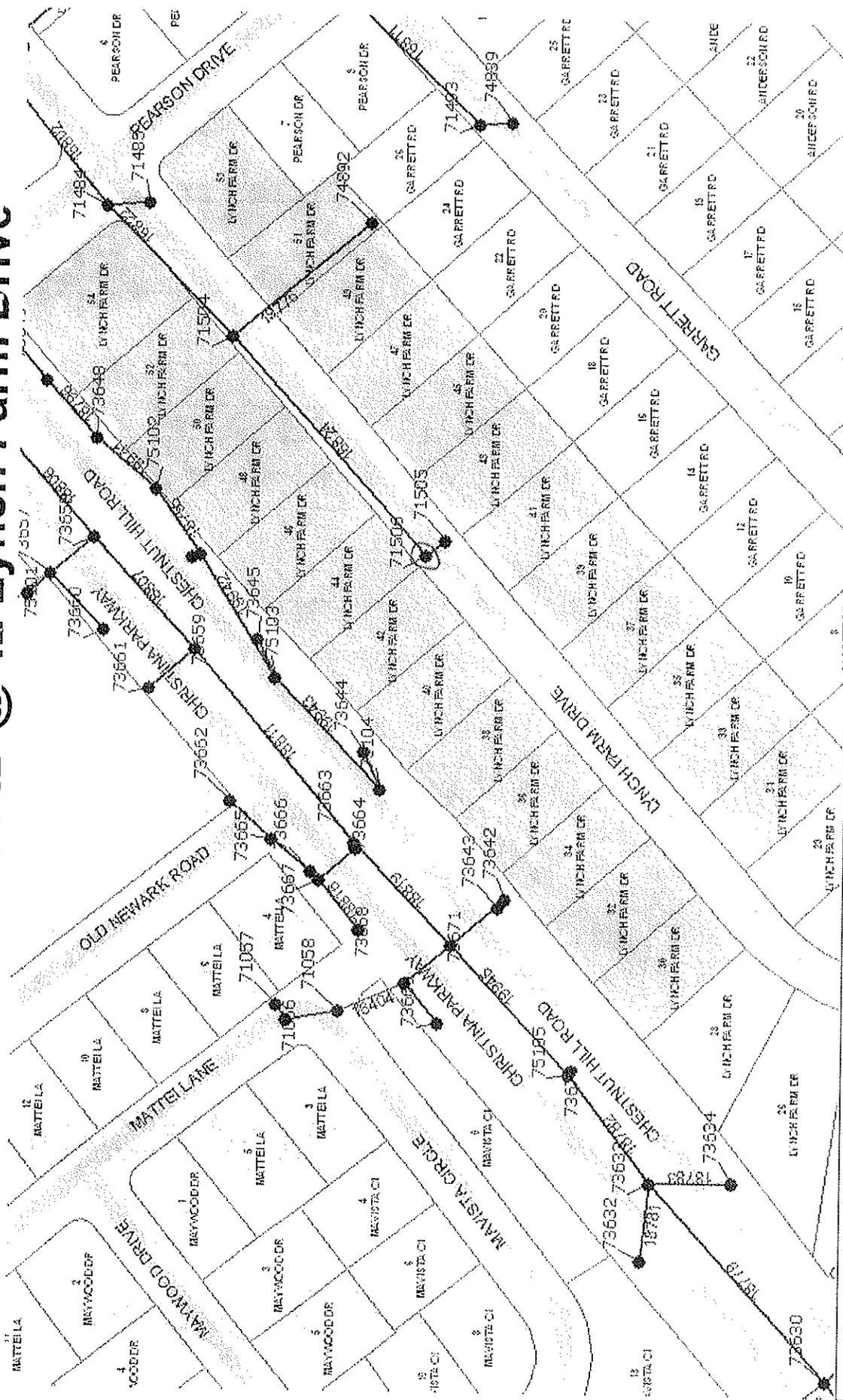


Figure 2. Structure View

Odd Estates PID @ 42 Lynch Farm Drive





NPDES
Inventory Map



<ul style="list-style-type: none"> INLET MANHOLE OUTFALL RISER 	<ul style="list-style-type: none"> CULVERT SWALE END JUNCTION BOX DUMMY NODE 	<ul style="list-style-type: none"> SWALE VERTEX Ditch Pipe Hydraulic Connection 	<ul style="list-style-type: none"> Bay Saver Biofiltration Biofiltration & Bioretention Bioretention Dry Pond 	<ul style="list-style-type: none"> Filter Strip Infiltration Basin / Trench Sand Filter Sediment Forebay Storm Filter 	<ul style="list-style-type: none"> Wet Pond / Wetland
--	--	---	---	---	---

OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structure 74702
30 McCord Drive
Brookside Park

Illicit Discharge Incident Tracking Sheet

Date: 3/2/2010 Logged by: Matt Ortynsky Contact #: 302-731-9176 Incident ID:

Caller contact information: 1354 Field Crew
Subdivision: Brookside Park
County: New Castle
ADC Map No./Grid: 11-A9

Incident Location

Primary Location Description

- Storm drain
- In Stream
- Stormwater Pond
- Outfall
- Along bank
- Upland
- Other Manhole

Outfall / inlet ID# : 74702

Closest street address: 30 McCord Drive

Watershed name: White Clay Creek Impacted Stream name:

Nearby landmark:

Narrative description of location

Manhole is located in the sidewalk in front of house.

Description of problem

Visual

- Oil / Oil sheen
- Paint
- Algae
- Cloudy
- Anti-freeze
- Yard waste
- Soap
- Flotables (toilet paper, etc.)
- Dead fish
- Flow -----> Precipitation in last 48-hours? Yes / No
- Other _____

Odor

- Sewage
- None
- Sulfide ("rotten egg")
- Gas/oil
- Other (describe) _____

Narrative description/comments of problem

Dry Weather Flow was observed.

Plan of Action (check all that apply)

- Sample
- Contact DNREC
- Contact NPDES Manager
- Photos
- Door hangers
- GPS Coordinates
- Other (describe)

Follow-up Action

Samples tested within acceptable parameter levels. No further action needed.



DELDOT NPDES FY 08 AGREEMENT 1351 – TASK 11.05
 RE-VISIT DUFFIELD OUTFALLS FIELD DATA SHEET



Duffield Outfall ID Number: 50 McLeod rd + RD 74702

Outfall Data	
Digital picture? (Y/N):	Y
Camera Number:	
Picture Number:	
Personnel:	Chris/Ryan C.
Date (MM/DD/YY):	3/2/10
Time:	10:00am
Date of Last Rain >0.10" (MM/DD/YY):	
Follow Up Screen Date (MM/DD/YY):	3/2/10
Follow Up Field Screen Time:	9:00am
Outfall Dimensions (in):	Manhole
Outfall Shape: Round (R), Oval (O), Box (B), V-Ditch (VD), Trap Ditch (TD), Other Ditch (OD)	N/A
Outfall Type (CMP, RCP, PVC, Other):	N/A
Flow Observed? (Y/N):	Y
Follow Up Flow Observed? (Y/N):	Y
Flow Source	
Structural Condition: Normal (N), Concrete Spauling (SP), Peeling Paint (PP), Concrete Cracking (CC), Outfall Damaged (OD), Submerged (S), Metal Corrosion (MC), Other (O-explain)	N
Erosion (Outfall Area): None (N), Moderate (M), Severe (S)	N
Odor: None (N)=0, Rancid-Sour (RS)=4, Gas (G)=4, Sewage (S)=4, Oil (O)=4, Sulfur (S)=4, Other (Other-explain)	G (petroleum)
Deposits / Stains: None (N)=0, Sediment (S)=2, Oil (OY)=3, Other (O-explain)	N
Algae Growth? (Y/N):	N
Vegetative Condition (Outfall Area): Normal (N), Inhibited Growth (IG), Excessive Growth (EG), Other (O-explain)	N/A
Land Use: Industrial (I), Commercial (C), Residential (R), Other (O-explain)	Res.
Specific Land Use:	Neighborhood

		Result 1	Val.	Result 2	Val. 2
Flow Rate (cfs):	<0.022 cfs=0; ≥0.022 cfs=4				
Water Temperature (Fahrenheit):		45.8°		47	
pH:	<4.5=4; >8.5=4; change ≥ 2 units=1	8.34		8.34	
Phenol (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0		0	
Chlorine (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0.1		0.1	
Detergents (mg/L):	<0.2=0; 0.2 - 0.4=1; ≥0.5 mg/L=4	0.35		0.35	
Copper (mg/L):	<0.01 mg/L=0; ≥0.01 mg/L=4	0		0	
Ammonia (mg/L):	<0.05-0.1 mg/L=0; 0.1-1.0 mg/L=1; 1.0-2.99 mg/L=2; >3.0 mg/L=4	0.15		0.15	
Turbidity:	0-10 ntu=0; 11-40=1; 41-150=3; >150=4	7.3		7.3	
Color:	Clear (C)=0, Gray (G)=1, Red (R)=1, Yellow (Y)=1, Brown (B)=1, Green (GR)=1, Other (O-explain)	C		C	
Floatables:	None (N)=0, Oil Sheen (OS)=4, Sewage (S)=4, Trash (T)=2, Other (O-explain)	N		N	

FIELD SKETCH

OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structure 71075
Intersection of Matthews Road & McCord Drive
Brookside Park



DELDOT NPDES FY 08 AGREEMENT 1351 – TASK 11.OS
 RE-VISIT DUFFIELD OUTFALLS FIELD DATA SHEET



Duffield Outfall ID Number: *Intersection of Matthews & McLeod*

Outfall Data	
Digital picture? (Y/N):	Y
Camera Number:	ES-1
Picture Number:	
Personnel:	RC CB
Date (MM/DD/YY):	3/2/10
Time:	11 am
Date of Last Rain >0.10" (MM/DD/YY):	
Follow Up Screen Date (MM/DD/YY):	
Follow Up Field Screen Time:	
Outfall Dimensions (in):	
Outfall Shape: Round (R), Oval (O), Box (B), V-Ditch (VD), Trap Ditch (TD), Other Ditch (OD)	R
Outfall Type (CMP, RCP, PVC, Other):	RCP
Flow Observed? (Y/N):	Y
Follow Up Flow Observed? (Y/N):	
Flow Source	
Structural Condition: Normal (N), Concrete Spauling (SP), Peeling Paint (PP), Concrete Cracking (CC), Outfall Damaged (OD), Submerged (S), Metal Corrosion (MC), Other (O-explain)	N
Erosion (Outfall Area): None (N), Moderate (M), Severe (S)	N
Odor: None (N)=0, Rancid-Sour (RS)=4, Gas (G)=4, Sewage (S)=4, Oil (O)=4, Sulfur (S)=4, Other (Other-explain)	N
Deposits / Stains: None (N)=0, Sediment (S)=2, Oil (OY)=3, Other (O-explain)	N
Algae Growth? (Y/N):	N
Vegetative Condition (Outfall Area): Normal (N), Inhibited Growth (IG), Excessive Growth (EG), Other (O-explain)	N
Land Use: Industrial (I), Commercial (C), Residential (R), Other (O-explain)	Res. Industrial
Specific Land Use:	Neighboring lot

		Result 1	Val.	Result 2	Val. 2
Flow Rate (cfs):	<0.022 cfs=0; ≥0.022 cfs=4				
Water Temperature (Fahrenheit):		42°			
pH:	<4.5=4; >8.5=4; change ≥ 2 units=1	7.16			
Phenol (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0			
Chlorine (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4				
Detergents (mg/L):	<0.2=0; 0.2 - 0.4=1; ≥0.5 mg/L=4	0.43			
Copper (mg/L):	<0.01 mg/L=0; ≥0.01 mg/L=4	0			
Ammonia (mg/L):	<0.05-0.1 mg/L=0; 0.1-1.0 mg/L=1; 1.0-2.99 mg/L=2; ≥3.0 mg/L=4	0			
Turbidity:	0-10 ntu=0; 11-40=1; 41-150=3; >150=4	4.24			
Color:	Clear (C)=0, Gray (G)=1, Red (R)=1, Yellow (Y)=1, Brown (B)=1, Green (GR)=1, Other (O-explain)	6			
Floatables:	None (N)=0, Oil Sheen (OS)=4, Sewage (S)=4, Trash (T)=2, Other (O-explain)	N			

FIELD SKETCH

OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structure 74839
23 Garrett Road
Todd Estates

Illicit Discharge Incident Tracking Sheet

Date: 3/8/16 **Logged by:** **Contact #:** **Incident ID:** 2010-01

Caller contact information: 1354 Field Crew
 Subdivision: Todd Estates
 County: New Castle
 ADC Map No./Grid: 11-B10

Incident Location

Primary Location Description
 Storm drain Outfall Other _____
 In stream Along bank
 Stormwater pond Upland

Outfall / inlet ID#: 74839

Closest street address: 23 Garrett Road

Watershed name: Christina River Impacted Stream name:

Nearby landmark: George V. Kirk Middle School

Narrative description of location

Catch basin is located on the side of street at 23 Garrett Road

Description of problem

Visual
 Oil / Oil sheen Soap
 Paint Flotables (toilet paper, etc.)
 Algae Dead fish
 Cloudy Flow -----> Precipitation in
 Anti-freeze last 48-hours? Yes / No
 Yard waste Other _____

Odor
 Sewage Sulfide ("rotten egg") Gas/oil
 None Other (describe) _____

Narrative description/comments of problem

During 1354 re-inspections a resident of the neighborhood told the crew that his neighbor at 23 Garrett Road was placing leaves in the storm drain. Upon inspection it was noted that the catch basin was full of leaves and the pipe in the basin could not be seen.

Plan of Action (check all that apply)

Sample Contact DNREC Contact NPDES Manager
 Photos Door hangers GPS Coordinates
 Other (describe)

Follow-up Action

16 DOOR HANGERS

Conduct a follow-up inspection in the fall to assure no more yard waste has been deposited in the catch basin.



MEMORANDUM

TO: KCI Files

FROM: Ryan Coleman

DATE: March 8, 2010

SUBJECT: Todd Estates PID, 23 Garrett Road
Catch Basin No. 74839
Agreement 1495 / KCI Project 0203019G

The purpose of this Memo is to summarize the investigation of an illicit discharge in Todd Estates at 23 Garrett Road.

While performing Agreement 1354 Re-inspections, a KCI field crew came across a potential illicit discharge (PID) in a catch basin located at 23 Garrett Road in Todd Estates. While performing inspections the crew was approached by a resident of the neighborhood who stated that his neighbor was dumping leaves in the catch basin. The PID was reported to the Agreement 1495 KCI field crew responsible for investigating PIDs.

Upon inspection of the catch basin on March 2, 2010 it was noted that the basin was 75 percent full of leaves. The leaves appear to be blocking flow in the catch basin since the pipe is not visible. Pictures were taken of the PID and other catch basins in the area were inspected. The other basins in the immediate area appear to be clear of leaves and debris.

On March 11, 2010 KCI distributed door hangers to 16 houses in the immediate vicinity of the PID.

KCI plans to do a follow up investigation of the site to verify all dumping of pollutants has ceased.

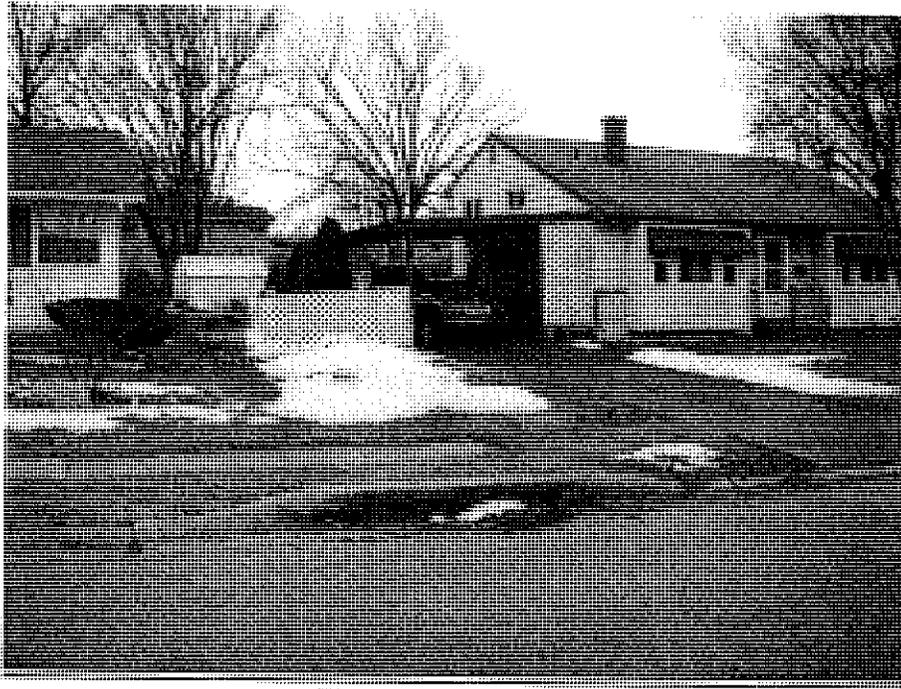


Figure 1. Landscape

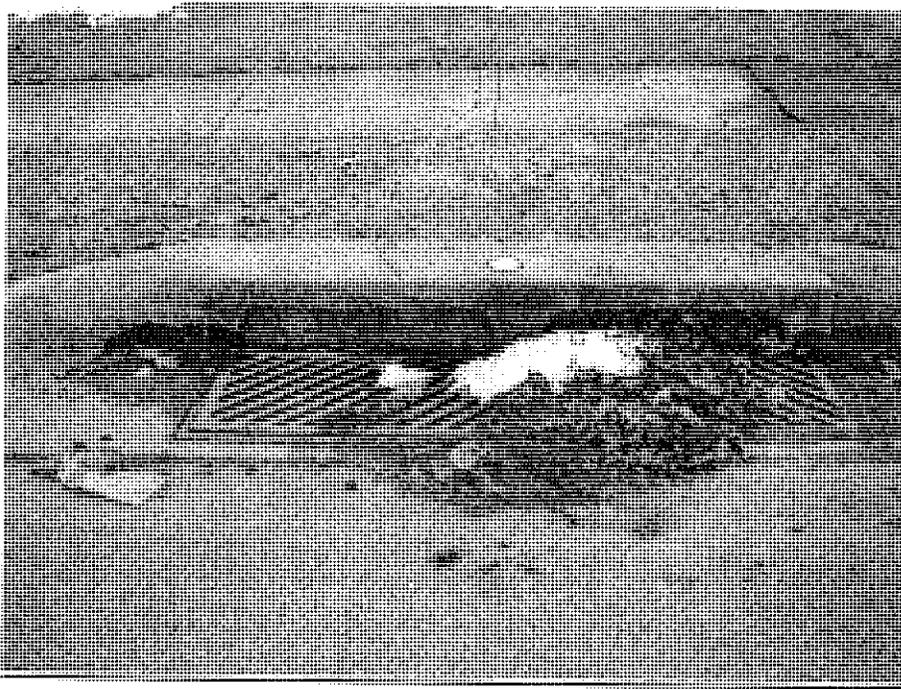
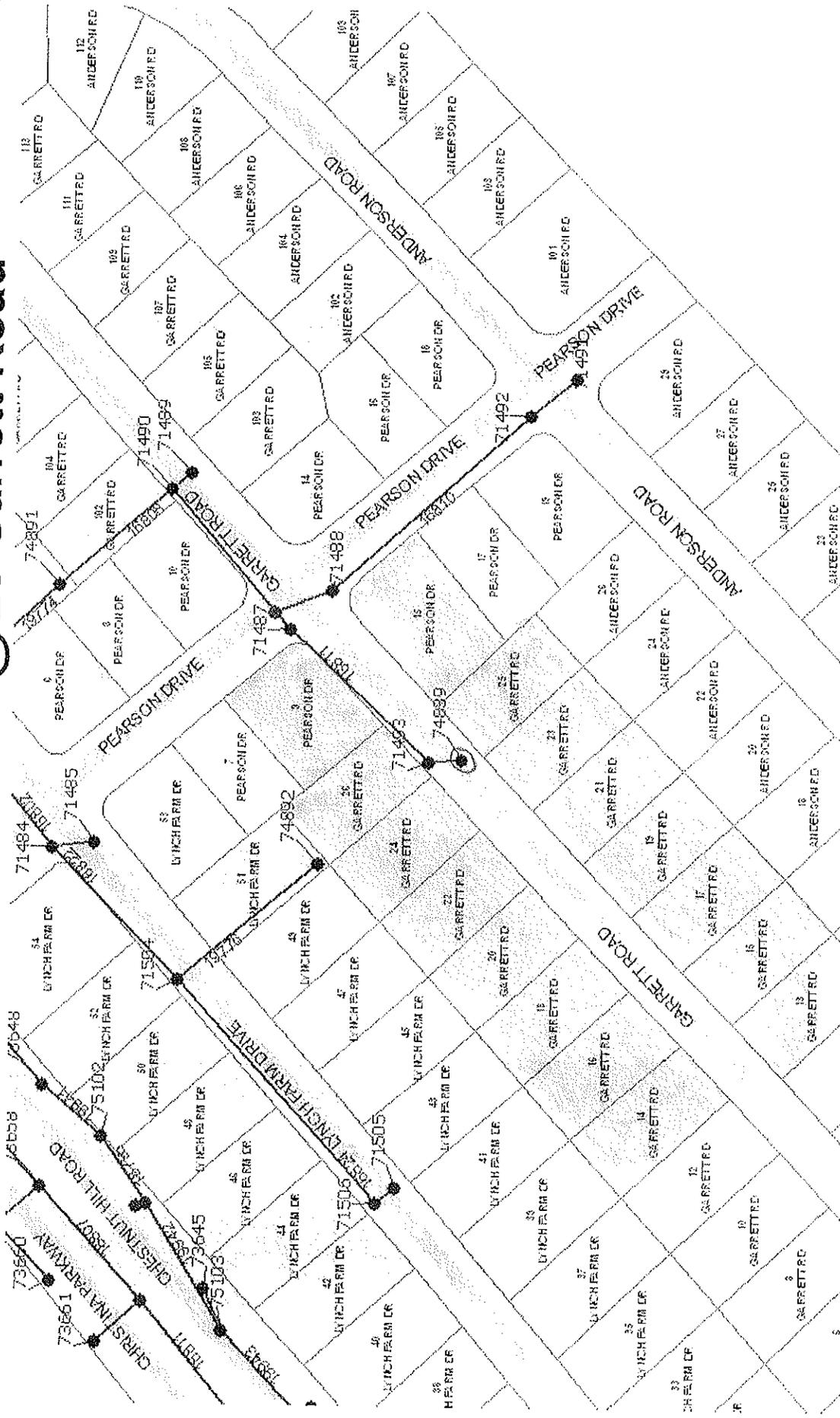


Figure 2. Structure View

Todd Estates PID @ 23 Garrett Road





**NPDES
Inventory Map**



<ul style="list-style-type: none">  INLET  MANHOLE  OUTFALL  RISER  CULVERT  SWALE END  JUNCTION BOX  DUMMY NODE 	<ul style="list-style-type: none">  Bay Saver  Biofiltration  Biofiltration & Bioretention  Bioretention  Dry Pond  SWALE VERTEX  Ditch  Pipe  Hydraulic Connection 	<ul style="list-style-type: none">  Filter Strip  Infiltration Basin / Trench  Sand Filter  Sediment Forebay  Storm Filter  Wet Pond / Wetland 	<ul style="list-style-type: none">  Wet Pond / Wetland
--	--	--	--

Stormwater Pollution Found in Your Area!

This is not a citation.

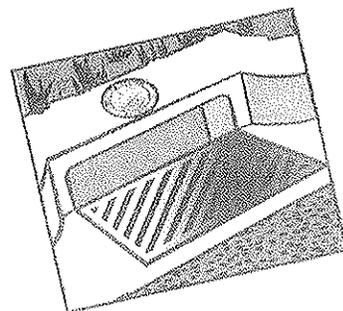
Date: _____

This is to inform you that our staff found the following illegal pollutants in the storm sewer system in your neighborhood.



It is illegal to put any of these items in the storm drain, punishable by a minimum \$1000 fine:

- Motor oil/filters
- Antifreeze/transmission fluid
- Paint
- Solvent/degreaser
- Cooking grease
- Detergent
- Home improvement waste (concrete, mortar)
- Pet waste
- Yard waste (leaves, grass, mulch)
- Excessive dirt and gravel
- Trash
- Pesticides and fertilizers
- Other _____



The pollutants were found at:
23 Garrett Rd. Todd Estates

This storm sewer leads directly to:
Christina River



Delaware Department
of Transportation

If you have any information regarding this or any other illegal discharge of pollutants, please call:
1-800-652-5600
dotpr@state.de.us

OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structure 520100301153011
15667 Walker Drive
East Side Village

Illicit Discharge Incident Tracking Sheet

Date: 3/11/2010 Logged by: J. Littlejohn Contact #: 302-462-1074 Incident ID: 2010-03

Caller contact information:
 Logged during routine drainage inventory

Subdivision: East Side Village
 County: Sussex
 ADC Map No./Grid: 16 F5

Incident Location:

Primary Location Description

- | | | |
|--|-------------------------------------|--|
| <input type="checkbox"/> Storm drain | <input type="checkbox"/> Outfall | <input checked="" type="checkbox"/> Other <u>In roadside swale</u> |
| <input type="checkbox"/> In stream | <input type="checkbox"/> Along bank | |
| <input type="checkbox"/> Stormwater pond | <input type="checkbox"/> Upland | |

Outfall / inlet ID# :

Closest street address: 15667 Walker Drive
 Milton, DE 19968

Watershed name: Broadkill River Impacted Stream name: Broadkill River

Nearby landmark: Septic sand mound on swale.

Narrative description of location

In swale that runs along north property line of 15667 Walker Drive. Swale runs from along Walker Drive into woods behind property.

Description of problem

Visual

- | | |
|--|---|
| <input type="checkbox"/> Oil / Oil sheen | <input type="checkbox"/> Soap |
| <input type="checkbox"/> Paint | <input checked="" type="checkbox"/> Flotables (toilet paper, etc.) |
| <input checked="" type="checkbox"/> Algae | <input type="checkbox"/> Dead fish |
| <input checked="" type="checkbox"/> Cloudy | <input checked="" type="checkbox"/> Flow -----> Precipitation in last 48-hours? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| <input type="checkbox"/> Anti-freeze | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Yard waste | |

Odor

- | | | |
|--|---|----------------------------------|
| <input checked="" type="checkbox"/> Sewage | <input type="checkbox"/> Sulfide ("rotten egg") | <input type="checkbox"/> Gas/oil |
| <input type="checkbox"/> None | <input type="checkbox"/> Other (describe) _____ | |

Narrative description/comments of problem

Strong sewage odor and visual waste observed. Septic mound directly upstream. No direct connection between septic and swale observed, however effluent appears to be leaching into swale from septic mound.

Plan of Action (check all that apply)

- | | | |
|---|---|---|
| <input checked="" type="checkbox"/> Sample | <input checked="" type="checkbox"/> Contact DNREC | <input checked="" type="checkbox"/> Contact NPDES Manager |
| <input checked="" type="checkbox"/> Photos | <input type="checkbox"/> Door hangers | <input checked="" type="checkbox"/> GPS Coordinates |
| <input type="checkbox"/> Other (describe) _____ | | |

Follow-up Action

Photos and GPS coordinates taken. Suggest notification of NPDES manager, sampling to determine nature of effluent, and possible notification of DNREC to address potentially failing septic system.



MEMORANDUM

TO: Randy Cole
Marianne Walch, PhD
DelDOT Stormwater Quality Program

FROM: Ryan Coleman

DATE: April 7, 2010

SUBJECT: Agreement 1495 / KCI Project 0203019G
East Side Village PID - 15667 Walker Drive
Structure ID # 520100301153011

The purpose of this Memorandum is to summarize the investigation of a potential illicit discharge (PID) in the community of East Side Village, at 15667 Walker Drive, located in Sussex County.

While performing Agreement 1354 Inspections, a CEI field crew came across a PID in a swale located behind 15667 Walker Drive in East Side Village. The crew noticed a strong odor of sewage coming from a swale, which contained a cloudy discharge with algae and visible waste. The PID was reported to the Agreement 1495 KCI field crew responsible for investigating PIDs.

The Agreement 1495 KCI field crew inspected the swale on April 1, 2010, and noticed a strong odor of sewage coming from the swale. There was no evidence of active flow in the swale, although there were areas of ponding water in the swale and at the outfall (see attached photographs). The septic mound near the swale was inspected and showed no signs of seepage. The discharge appears to be coming from the residence beside the property that contains the septic mound. The illicit discharge seems to originate near the top of the swale, although no evidence of the source was found. This appears to be a septic issue because no evidence of direct connections or dumping was found in the swale.

A sample was collected from the swale outfall and tested on-site. Parameter levels were above detectable limits for detergents and ammonia. Because of the supporting evidence of an illicit discharge with no obvious source, KCI will discuss the next step(s) to be taken with DelDOT at the April 15, 2010 Project Status Meeting.



Figure 1. Landscape



Figure 2. Swale Discharge



DELDOT NPDES FY 08 AGREEMENT 1351 – TASK 11.OS
 RE-VISIT DUFFIELD OUTFALLS FIELD DATA SHEET

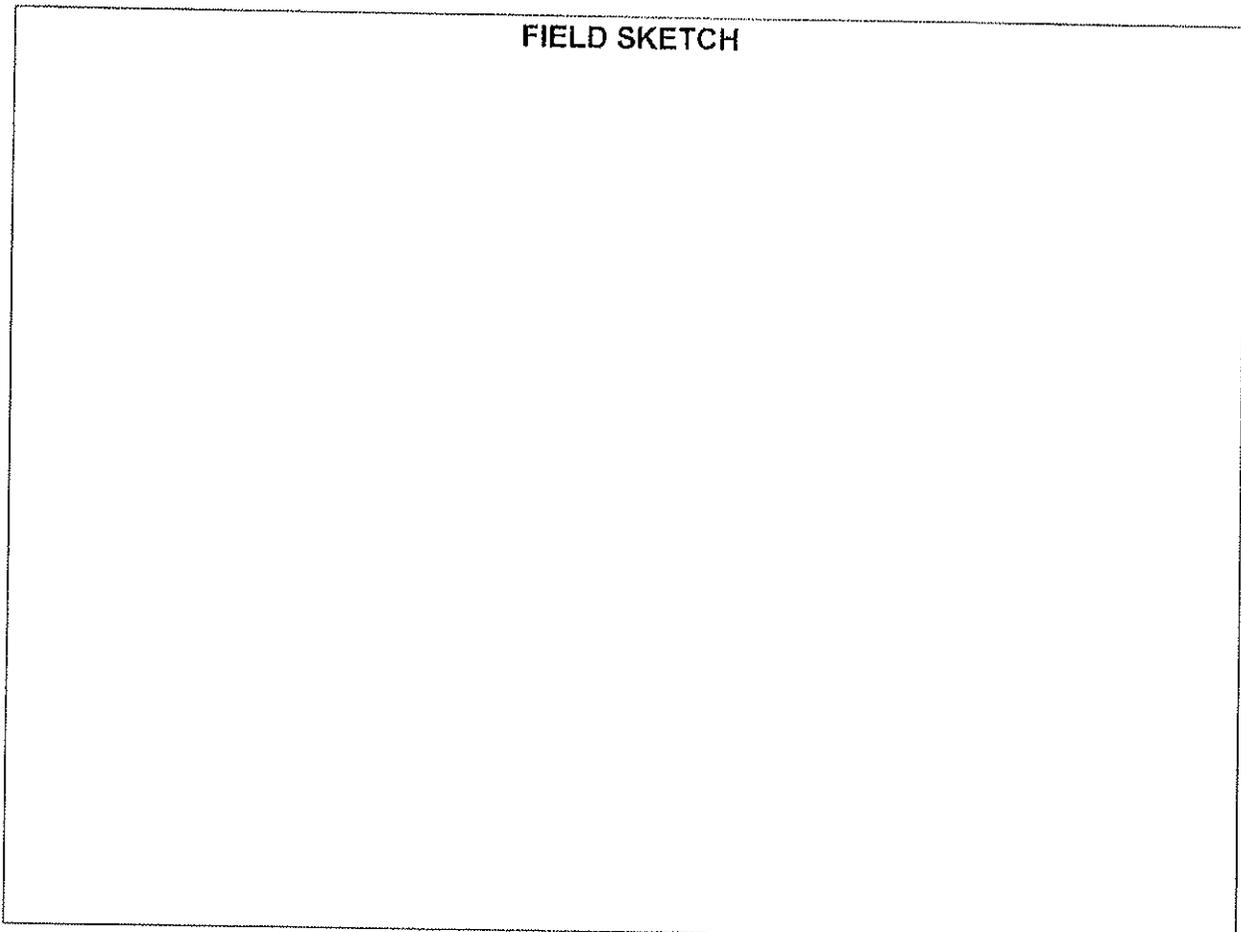


Duffield Outfall ID Number: Eastside Village 15637 Walker Dr Kent
Map 16 F3 Sussex

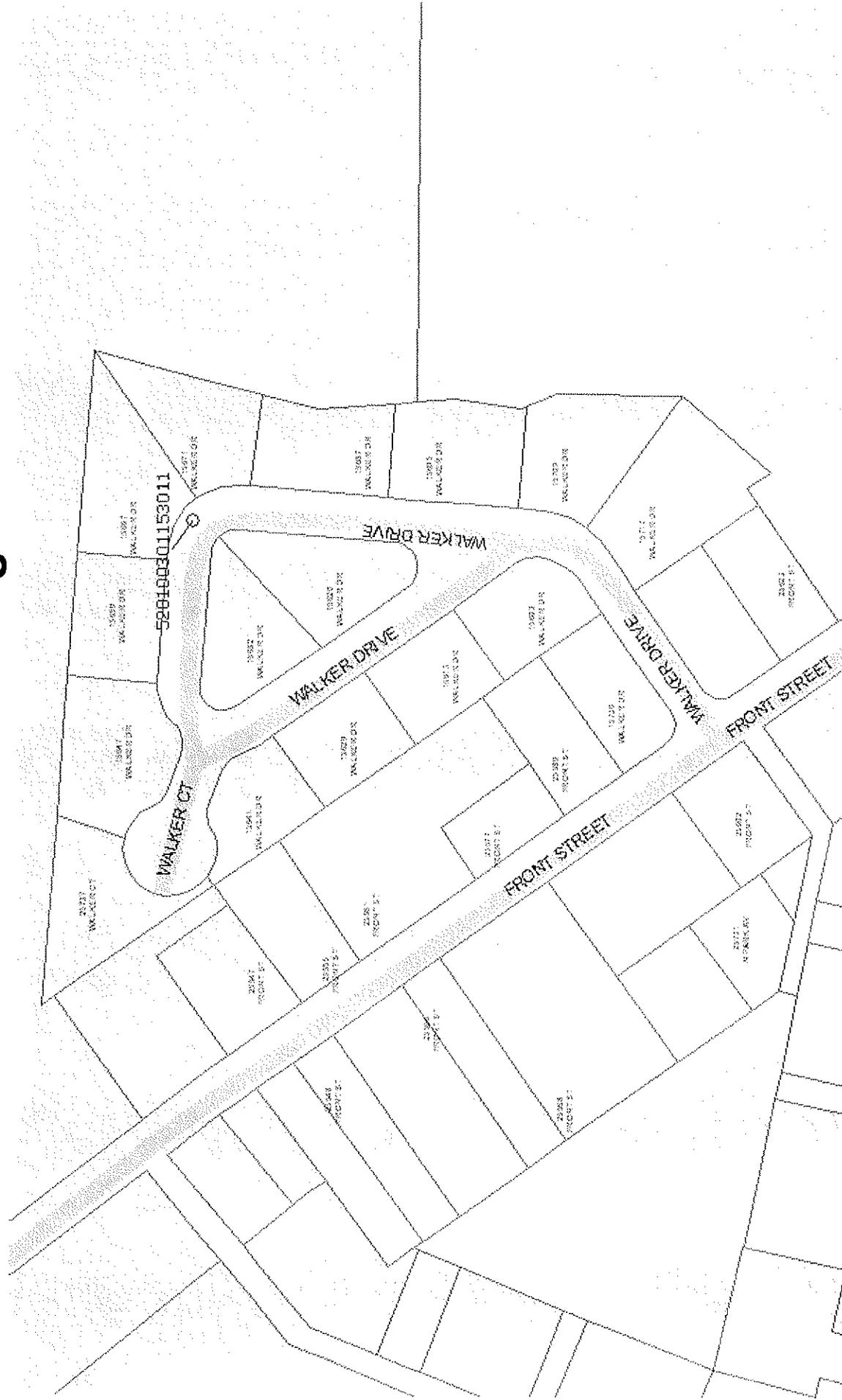
Outfall Data	
Digital picture? (Y/N):	Yes
Camera Number:	ES-1
Picture Number:	-
Personnel:	RC, CB
Date (MM/DD/YY):	4/1/10
Time:	12:30 pm
Date of Last Rain >0.10" (MM/DD/YY):	3/20/2010
Follow Up Screen Date (MM/DD/YY):	
Follow Up Field Screen Time:	
Outfall Dimensions (in):	-
Outfall Shape: Round (R), Oval (O), Box (B), V-Ditch (VD), Trap Ditch (TD), Other Ditch (OD)	Swale
Outfall Type (CMP, RCP, PVC, Other):	Swale
Flow Observed? (Y/N):	N, Pooled water
Follow Up Flow Observed? (Y/N):	
Flow Source	Unknown
Structural Condition: Normal (N), Concrete Spauling (SP), Peeling Paint (PP), Concrete Cracking (CC), Outfall Damaged (OD), Submerged (S), Metal Corrosion (MC), Other (O-explain)	NA
Erosion (Outfall Area): None (N), Moderate (M), Severe (S)	N
Odor: None (N)=0, Rancid-Sour (RS)=4, Gas (G)=4, Sewage (S)=4, Oil (O)=4, Sulfur (S)=4, Other (Other-explain)	S
Deposits / Stains: None (N)=0, Sediment (S)=2, Oil (OY)=3, Other (O-explain)	N
Algae Growth? (Y/N):	Y
Vegetative Condition (Outfall Area): Normal (N), Inhibited Growth (IG), Excessive Growth (EG), Other (O-explain)	N
Land Use: Industrial (I), Commercial (C), Residential (R), Other (O-explain)	R
Specific Land Use:	Neighbor hood

		Result 1	Val.	Result 2	Val. 2
Flow Rate (cfs):	<0.022 cfs=0; ≥0.022 cfs=4	N/A	-		
Water Temperature (Fahrenheit):		56.8	-		
pH:	<4.5=4; >8.5=4; change ≥ 2 units=1	7.34			
Phenol (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0			
Chlorine (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0			
Detergents (mg/L):	<0.2=0; 0.2 - 0.4=1; ≥0.5 mg/L=4	>1.3	4		
Copper (mg/L):	<0.01 mg/L=0; ≥0.01 mg/L=4	0	-		
Ammonia (mg/L):	<0.05-0.1 mg/L=0; 0.1-1.0 mg/L=1; 1.0-2.99 mg/L=2; ≥3.0 mg/L=4	73	4		
Turbidity:	0-10 ntu=0; 11-40=1; 41-150=3; >150=4	4.45	0		
Color: Clear (C)=0, Gray (G)=1, Red (R)=1, Yellow (Y)=1, Brown (B)=1, Green (GR)=1, Other (O-explain)		G	1		
Floatables: None (N)=0, Oil Sheen (OS)=4, Sewage (S)=4, Trash (T)=2, Other (O-explain)		S	4		

FIELD SKETCH



East Side Village PID





**NPDES
Inventory Map
1:1773**



<ul style="list-style-type: none"> ● INLET ● MANHOLE ○ OUTFALL ■ RISER 	<ul style="list-style-type: none"> □ CULVERT ◇ SWALE END ■ JUNCTION BOX ■ DUMMY NODE 	<ul style="list-style-type: none"> ◇ SWALE VERTEX — Ditch — Pipe — Hydraulic Connection 	<ul style="list-style-type: none"> ■ Bay Saver ■ Biofiltration ■ Biofiltration & Bioretention ■ Bioretention ■ Dry Pond 	<ul style="list-style-type: none"> ■ Filter Strip ■ Infiltration Basin / Trench ■ Sand Filter ■ Sediment Forebay ■ Storm Filter 	<ul style="list-style-type: none"> ■ Wet Pond ■ Wet Pond / Wetland
--	--	---	--	--	--

OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structure 16374
920 Hazeldell Avenue
Minquadale East

Illicit Discharge Incident Tracking Sheet

Date: 4/7/2010 Logged by: Matt Ortynsky Contact #: 302-731-9176 Incident ID:

Caller contact information: 1354 Field Crew Subdivision: Minquadales East
County: New Castle
ADC Map No./Grid: 13-D5

Incident Location

Primary Location Description
 Storm drain Outfall Other
 In Stream Along bank
 Stormwater Pond Upland

Outfall / inlet ID# : 16374

Closest street address: 920 Hazeldell Avenue

Watershed name: Delaware River Impacted Stream name:

Nearby landmark:

Narrative description of location

Description of problem

Visual

- Oil / Oil sheen Soap
- Paint Flotables (toilet paper, etc.)
- Algae Dead fish
- Cloudy Flow -----> Precipitation in
- Anti-freeze last 48-hours? Yes / No
- Yard waste Other _____

Odor

- Sewage Sulfide ("rotten egg") Gas/oil
- None Other (describe) _____

Narrative description/comments of problem

KCI field crews observed no evidence of trash dumped into structure 16374. KCI did observe trash along the curb throughout the neighborhood.

Plan of Action (check all that apply)

- Sample Contact DNREC Contact NPDES Manager
- Photos Door hangers GPS Coordinates
- Other (describe)

Follow-up Action

No further action required.



MEMORANDUM

TO: Randy Cole
Marianne Walch, PhD
DelDOT Stormwater Quality Program

FROM: Ryan Coleman

DATE: April 12, 2010

SUBJECT: Agreement 1495 / KCI Project 0203019G
Minquadale East PID – 920 Hazeldell Avenue
Structure ID #16374

The purpose of this Memorandum is to summarize the investigation of a potential illicit discharge (PID) in the community of Minquadale East, located at 920 Hazeldell Avenue.

The DelDOT Stormwater Quality Program contacted KCI to investigate a possible PID at 920 Hazeldell Avenue in Minquadale East. The complaint was made by the resident at 927 Hazeldell Avenue, who reported that the neighbor was dumping trash into a catch basin.

The Agreement 1495 KCI field crew inspected the area on Wednesday April 7, 2010 and noticed trash lying along the curb (**Photo 1**). There was no evidence of trash being dumped in any of the catch basins near 920 Hazeldell Avenue (**Photo 2**). The catch basins appeared to be particularly clean for the amount of trash lying along the street.

Given that there are no signs of trash being dumped into the drainage system, KCI recommends that no further action be taken with this PID. It is recommended that this location is periodically checked to ensure that illicit dumping has not taken place.



Photo 1
Curb

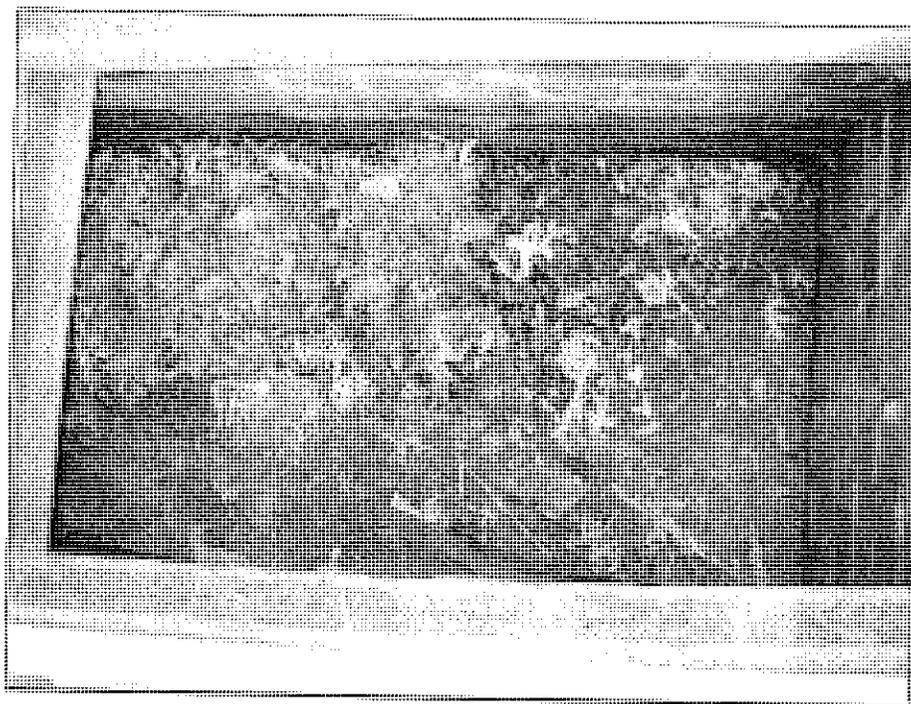


Photo 2
Catch Basin

Minquadale East PID





**NPDES
Inventory Map**
1:1,500

<ul style="list-style-type: none"> ● INLET ○ MANHOLE ○ OUTFALL ■ RISER 	<ul style="list-style-type: none"> □ CULVERT ◇ SWALE END ■ JUNCTION BOX ■ DUMMY NODE 	<ul style="list-style-type: none"> ◇ SWALE VERTEX — Ditch — Pipe — Hydraulic Connection 	<ul style="list-style-type: none"> ■ Bay Sever ■ Biofiltration ■ Biofiltration & Biotretention ■ Biotretention ■ Dry Pond 	<ul style="list-style-type: none"> ■ Filter Strip ■ Infiltration Basin / Trench ■ Sand Filter ■ Sediment Forebay ■ Storm Filter 	<ul style="list-style-type: none"> ■ Wet Pond / Wetland
--	--	---	--	--	--

No action required

OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structure 71994
2004 Carol Drive
East Burn Acres

Illicit Discharge Incident Tracking Sheet

Date: 4/6/10 **Logged by:** 1354 Crew **Contact #:** KCI **Incident ID:** 2-010-047

Caller contact information: 1354 Inspection Crew Subdivision: East Burn Acres
 County: New Castle
 ADC Map No./Grid: 11 G3

Incident Location

Primary Location Description

- | | | |
|--|-------------------------------------|--|
| <input type="checkbox"/> Storm drain | <input type="checkbox"/> Outfall | <input checked="" type="checkbox"/> Other <u>Roadway, leading to catch basin</u> |
| <input type="checkbox"/> In stream | <input type="checkbox"/> Along bank | |
| <input type="checkbox"/> Stormwater pond | <input type="checkbox"/> Upland | |

Outfall / inlet ID# : 71994
 Closest street address: 2004 Carol Drive

Watershed name: White Clay Creek Impacted Stream name: White Clay Creek
 Nearby landmark: Intersection of Meadowood Drive and Kirkwood HWY

Narrative description of location

This PID is located in East Burn Acres off of Kirkwood Highway. The oil stains are located in front of the residence located at 2004 Carol Drive. There is a second stain, which is not as major, located up the street at 2010 Carol Drive.

Description of problem

Visual

- | | |
|---|---|
| <input checked="" type="checkbox"/> Oil / Oil sheen | <input type="checkbox"/> Soap |
| <input type="checkbox"/> Paint | <input type="checkbox"/> Flotables (toilet paper, etc.) |
| <input type="checkbox"/> Algae | <input type="checkbox"/> Dead fish |
| <input type="checkbox"/> Cloudy | <input type="checkbox"/> Flow -----> Precipitation in last 48-hours? Yes / No |
| <input type="checkbox"/> Anti-freeze | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Yard waste | |

Odor

- | | | |
|--|---|----------------------------------|
| <input type="checkbox"/> Sewage | <input type="checkbox"/> Sulfide ("rotten egg") | <input type="checkbox"/> Gas/oil |
| <input checked="" type="checkbox"/> None | <input type="checkbox"/> Other (describe) _____ | |

Narrative description/comments of problem

During 1354 Re-inspections the crew noticed motor oil on the roadway near a catch basin. The stain was large and had different degrees of drying, pointing out that this was not a one time accident, but a persistent problem. A vehicle parked near the stains appeared to be leaking oil.

Plan of Action (check all that apply)

- | | | |
|--|--|---|
| <input type="checkbox"/> Sample | <input type="checkbox"/> Contact DNREC | <input checked="" type="checkbox"/> Contact NPDES Manager |
| <input checked="" type="checkbox"/> Photos | <input checked="" type="checkbox"/> Door hangers | <input checked="" type="checkbox"/> GPS Coordinates |
| <input type="checkbox"/> Other (describe) | | |

Follow-up Action

KCI plans to distribute doorhangers, then conduct a follow-up visit to the site in the future to ensure there is no fresh signs of oil.



MEMORANDUM

TO: KCI Files

FROM: Ryan Coleman

DATE: April 9, 2010

SUBJECT: East Burn Acres, 2004 Carol Drive
Catch Basin No. 71994
Agreement 1495 / KCI Project 0203019G

The purpose of this Memo is to summarize the investigation of an illicit discharge in East Burn Acres at 2004 Carol Drive.

While performing Agreement 1354 Re-inspections, a KCI field crew came across a potential illicit discharge (PID) on the roadway at 2004 Carol Drive in East Burn Acres. The crew noticed a large amount of motor oil on the roadway that appeared to be leaking from a parked car. The PID was reported to the Agreement 1495 KCI field crew responsible for investigating PIDs.

Upon inspection of the PID on April 7, 2010 it was confirmed that there was a vehicle parked along the street that was leaking a considerable amount of oil. Pictures were taken of the PID and the catch basins in the area were examined to insure no direct dumping of oil was taking place. The catch basins in the area of the oil patch appear to have no oil in them.

KCI plans to do a follow up investigation of the site to verify all dumping of pollutants has ceased.

No action was taken per DelDOT. It was determined during a regular status meeting that this PID could not be linked to a specific individual and was not considered to be direct dumping into the storm system.

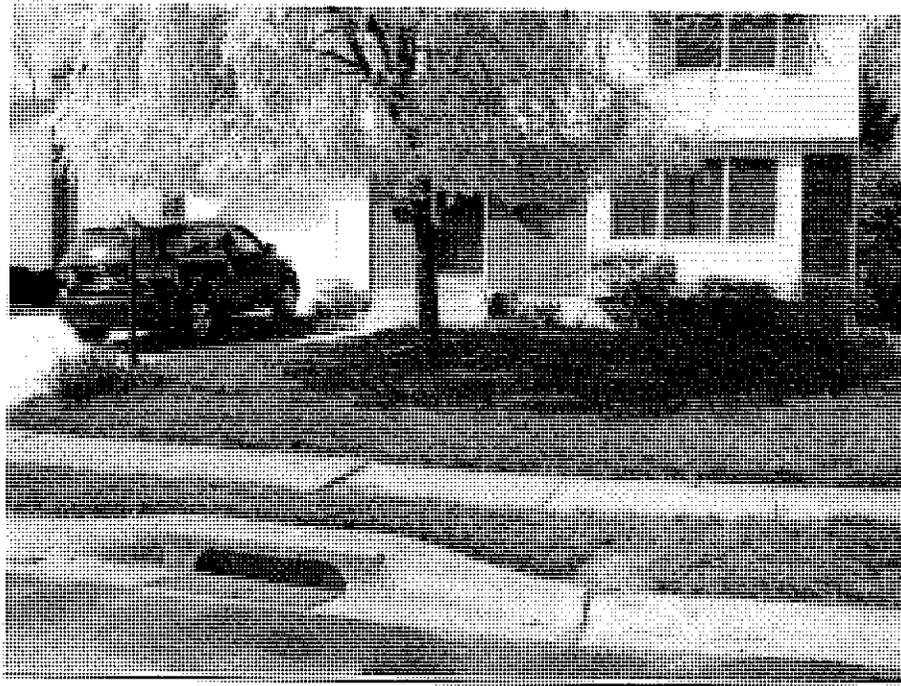
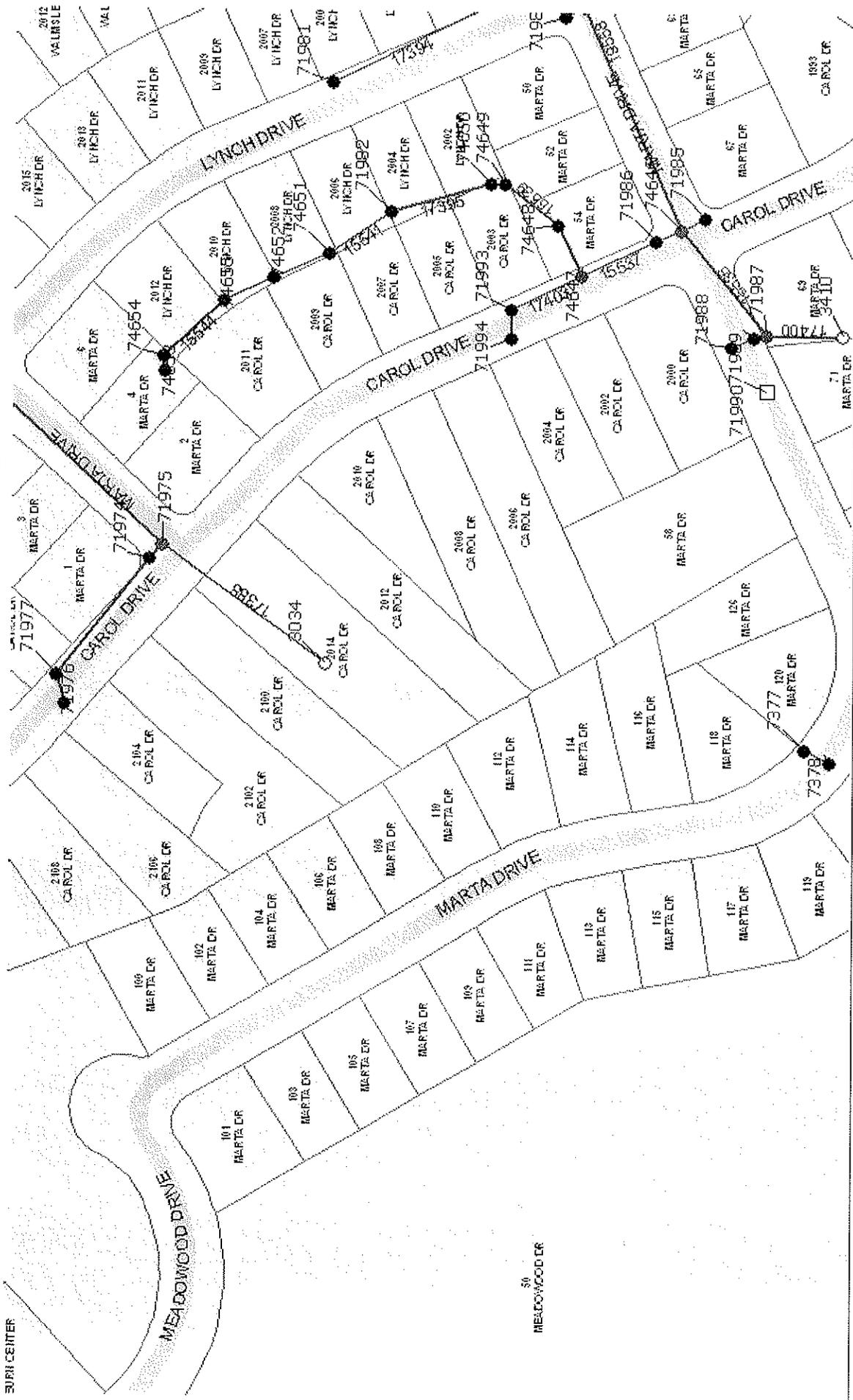


Figure 1. Landscape



Figure 2. Oil Stain

East Burn Acres PID





**NPDES
Inventory Map**
1:1,500

	INLET		SWALE VERTEX
	MANHOLE		Ditch
	OUTFALL		Pipe
	RISER		Hydraulic Connection
	CULVERT		Bay Saver
	SWALE END		Biofiltration
	JUNCTION BOX		Biofiltration & Bioretention
	DUMMY NODE		Bioretention
			Dry Pond
			Filter Strip
			Infiltration Basin / Trench
			Sand Filter
			Sediment Forebay
			Wet Pond / Wetland

Stormwater Pollution Found in Your Area!

This is not a citation.

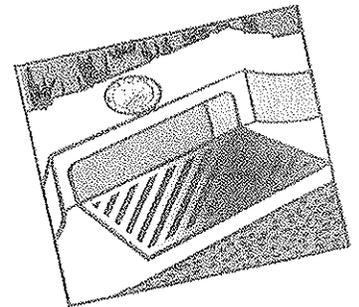
Date: _____

This is to inform you that our staff found the following illegal pollutants in the storm sewer system in your neighborhood.



It is illegal to put any of these items in the storm drain, punishable by a minimum \$1000 fine:

- Motor oil/filters
- Antifreeze/transmission fluid
- Paint
- Solvent/degreaser
- Cooking grease
- Detergent
- Home improvement waste (concrete, mortar)
- Pet waste
- Yard waste (leaves, grass, mulch)
- Excessive dirt and gravel
- Trash
- Pesticides and fertilizers
- Other _____



The pollutants were found at:
2000 Block Carol Drive
East Burn Acres

This storm sewer leads directly to:
White Clay Creek



Delaware Department
of Transportation

If you have any information regarding this or any other illegal discharge of pollutants, please call:
1-800-652-5600
dotpr@state.de.us

OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structure 2684
117 Phyllis Drive
Newkirk Estates

Illicit Discharge Incident Tracking Sheet

Date: 4/7/2010 Logged by: Matt Ortynsky Contact #: 302-731-9176 Incident ID:

Caller contact information: 1354 Field Crew Subdivision: Newkirk Estates
County: New Castle
ADC Map No./Grid: 11-D5

Incident Location

Primary Location Description
 Storm drain Outfall Other
 In Stream Along bank
 Stormwater Pond Upland

Outfall / inlet ID# : 2684

Closest street address: 117 Phyllis Drive

Watershed name: White Clay Creek Impacted Stream name:

Nearby landmark:

Narrative description of location

Description of problem

Visual

- Oil / Oil sheen Soap
- Paint Flotables (toilet paper, etc.)
- Algae Dead fish
- Cloudy Flow -----> Precipitation in
- Anti-freeze last 48-hours? Yes / No
- Yard waste Other _____

Odor

- Sewage Sulfide ("rotten egg") Gas/oil
- None Other (describe) _____

Narrative description/comments of problem

KCI field crews observed a drain hose in Structure 74285 upstream of outfall. No active flow was observed from the hose or at Structure 2684.

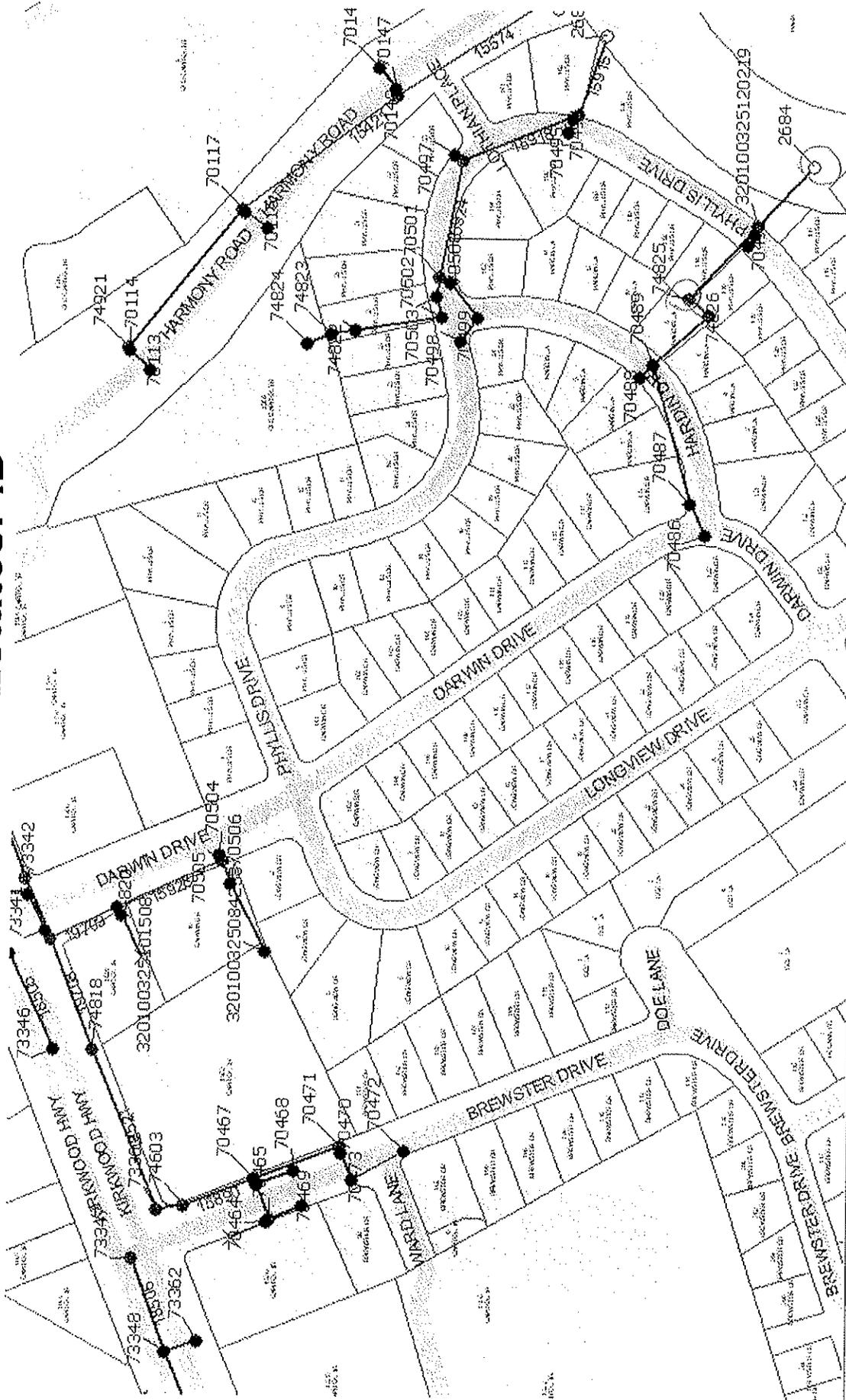
Plan of Action (check all that apply)

- Sample Contact DNREC Contact NPDES Manager
- Photos Door hangers GPS Coordinates
- Other (describe)

Follow-up Action

No further action required.

Newkirk EstatesPID





**NPDES
Inventory Map**
1:2,500



<ul style="list-style-type: none"> ● INLET ○ MANHOLE ○ OUTFALL ○ RISER □ CULVERT ◇ SWALE END ■ JUNCTION BOX ■ DUMMY NODE 	<ul style="list-style-type: none"> ◇ SWALE VERTEX — Ditch — Pipe — Hydraulic Connection 	<ul style="list-style-type: none"> ■ Bay Saver ■ Biofiltration ■ Biofiltration & Bioretention ■ Bioretention ■ Dry Pond 	<ul style="list-style-type: none"> ■ Filter Strip ■ Infiltration Basin / Trench ■ Sand Filter ■ Sediment Forebay ■ Storm Filter ■ Wet Pond / Wetland
--	---	--	--

Flow from Swimming Pool, No flow upon investigation

OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structure 1364
Old Ogletown Road
Chestnut Hill Estates

Illicit Discharge Incident Tracking Sheet

Date: 6/2/2010 Logged by: Matt Ortynsky Contact #: 302-731-9176 Incident ID:

Caller contact information: 1354 Field Crew
Subdivision: Chestnut Hill Estates
County: New Castle
ADC Map No./Grid: 11-C8

Incident Location

Primary Location Description
 Storm drain Outfall Other
 In Stream Along bank
 Stormwater Pond Upland

Outfall / inlet ID# : 1364

Closest street address: Old Ogletown Road

Watershed name: White Clay Creek Impacted Stream name:

Nearby landmark:

Narrative description of location

Roadway outfall along Old Ogletown Road by Chestnut Hill Estates.

Description of problem

Visual
 Oil / Oil sheen Soap
 Paint Flotables (toilet paper, etc.)
 Algae Dead fish
 Cloudy Flow -----> Precipitation in
 Anti-freeze last 48-hours? Yes / No
 Yard waste Other _____

Odor
 Sewage Sulfide ("rotten egg") Gas/oil
 None Other (describe) _____

Narrative description/comments of problem

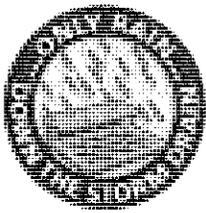
KCI field crews observed dry weather flow.

Plan of Action (check all that apply)

Sample Contact DNREC Contact NPDES Manager
 Photos Door hangers GPS Coordinates
 Other (describe)

Follow-up Action

Sample tested within acceptable parameter levels. No further action required.



**DELDOT AGREEMENT 1495
POTENTIAL ILLICIT DISCHARGE FIELD DATA SHEET**



Structure/Outfall ID Number: 1364

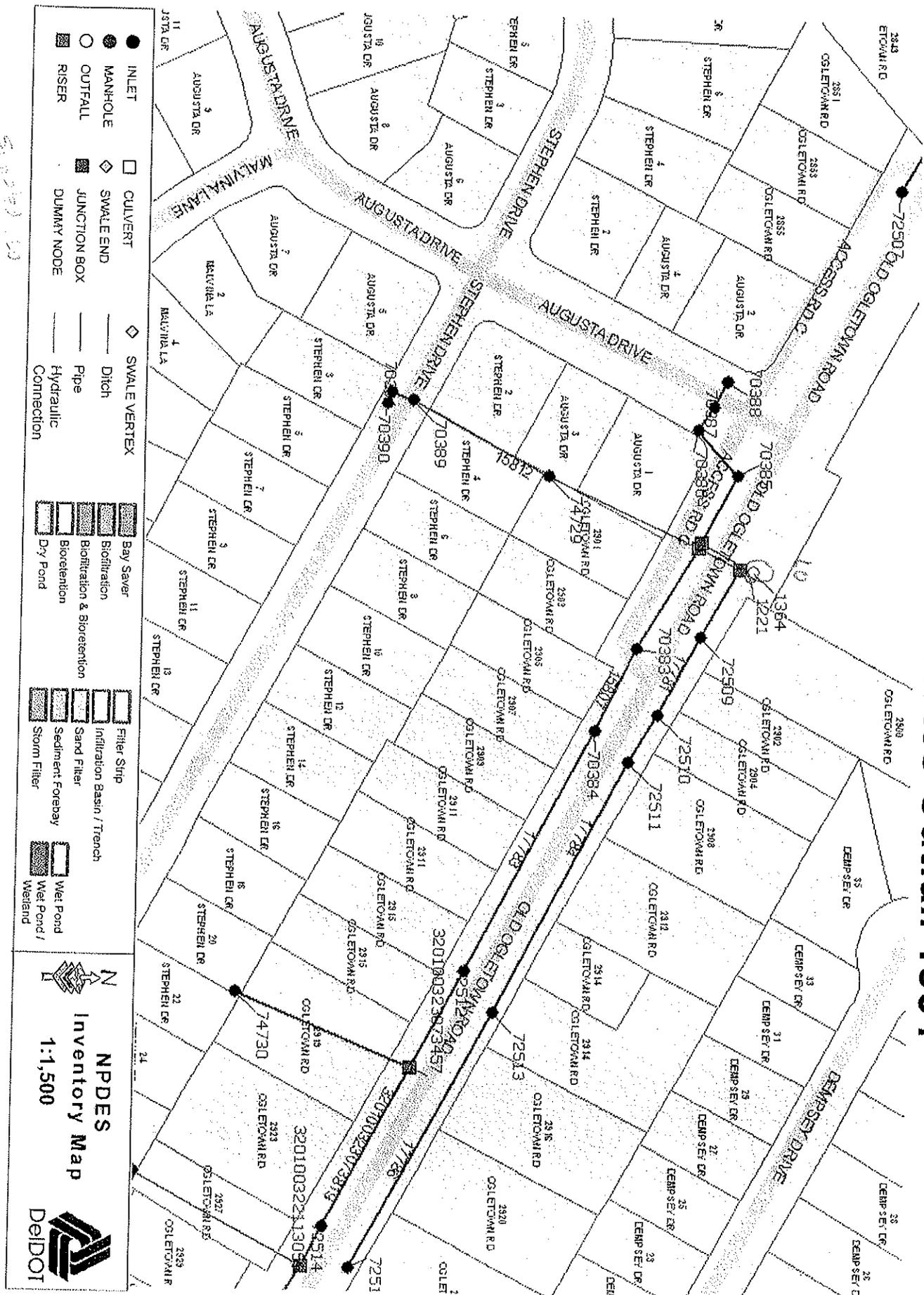
Address/Location Description: Chestnut Hill Estates Old Ogletown Rd.

Outfall Data	
Digital picture? (Y/N):	Y
Camera Number:	ES-1
Picture Number:	
Personnel:	RC, RB
Date (MM/DD/YY):	6/2/10
Time:	9 am
Date of Last Rain >0.10" (MM/DD/YY):	
Follow Up Screen Date (MM/DD/YY):	
Follow Up Field Screen Time:	
Outfall Dimensions (in):	
Outfall Shape: Round (R), Oval (O), Box (B), V-Ditch (VD), Trap Ditch (TD), Other Ditch (OD)	
Outfall Type (CMP, RCP, PVC, Other):	
Flow Observed? (Y/N):	
Follow Up Flow Observed? (Y/N):	
Flow Source	
Structural Condition: Normal (N), Concrete Spauling (SP), Peeling Paint (PP), Concrete Cracking (CC), Outfall Damaged (OD), Submerged (S), Metal Corrosion (MC), Other (O-explain)	N
Erosion (Outfall Area): None (N), Moderate (M), Severe (S)	N
Odor: None (N)=0, Rancid-Sour (RS)=4, Gas (G)=4, Sewage (S)=4, Oil (O)=4, Sulfur (S)=4, Other (Other-explain)	N
Deposits / Stains: None (N)=0, Sediment (S)=2, Oil (OY)=3, Other (O-explain)	N
Algae Growth? (Y/N):	N
Vegetative Condition (Outfall Area): Normal (N), Inhibited Growth (IG), Excessive Growth (EG), Other (O-explain)	N
Land Use: Industrial (I), Commercial (C), Residential (R), Other (O-explain)	R
Specific Land Use:	

		Result 1	Val.	Result 2	Val. 2
Flow Rate (cfs):	<0.022 cfs=0; ≥0.022 cfs=4				
Water Temperature (Fahrenheit):		75			
pH:	<4.5=4; >8.5=4; change ≥ 2 units=1	7.56			
Phenol (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0			
Chlorine (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0			
Detergents (mg/L):	<0.2=0; 0.2 - 0.4=1; ≥0.5 mg/L=4	0.3			
Copper (mg/L):	<0.01 mg/L=0; ≥0.01 mg/L=4	0			
Ammonia (mg/L):	<0.05-0.1 mg/L=0; 0.1-1.0 mg/L=1; 1.0-2.99 mg/L=2; >3.0 mg/L=4	0.5			
Turbidity:	0-10 ntu=0; 11-40=1; 41-150=3; >150=4	4.61			
Color:	Clear (C)=0, Gray (G)=1, Red (R)=1, Yellow (Y)=1, Brown (B)=1, Green (GR)=1, Other (O-explain)	C			
Floatables:	None (N)=0, Oil Sheen (OS)=4, Sewage (S)=4, Trash (T)=2, Other (O-explain)	N			

FIELD SKETCH

Chestnut Hill Estates Outfall 1364



OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structure 2256
715 Woodsdale Drive
Bellevue Manor

Illicit Discharge Incident Tracking Sheet

Date: 6/2/2010 Logged by: Matt Ortynsky Contact #: 302-731-9176 Incident ID:

Caller contact information: 1354 Field Crew
Subdivision: Bellevue Manor
County: New Castle
ADC Map No./Grid: 9-E4

Incident Location

Primary Location Description

- Storm drain Outfall Other
 In Stream Along bank
 Stormwater Pond Upland

Outfall / inlet ID#: 2256

Closest street address: 715 Woodsdale Drive

Watershed name: Naamans Creek Impacted Stream name:

Nearby landmark:

Narrative description of location

Description of problem

Visual

- Oil / Oil sheen Soap
 Paint Flotables (toilet paper, etc.)
 Algae Dead fish
 Cloudy Flow -----> Precipitation in
 Anti-freeze last 48-hours? Yes / No
 Yard waste Other _____

Odor

- Sewage Sulfide ("rotten egg") Gas/oil
 None Other (describe) _____

Narrative description/comments of problem

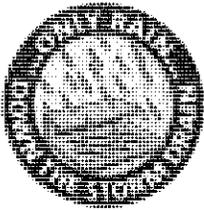
KCI field crews observed dry weather flow.

Plan of Action (check all that apply)

- Sample Contact DNREC Contact NPDES Manager
 Photos Door hangers GPS Coordinates
 Other (describe)

Follow-up Action

Sample tested within acceptable parameter levels. No further action required.



DELDOT AGREEMENT 1495
POTENTIAL ILLICIT DISCHARGE FIELD DATA SHEET



Structure/Outfall ID Number: 2256

Address/Location Description: Bellevue Manor, Woodsdale Dr 715

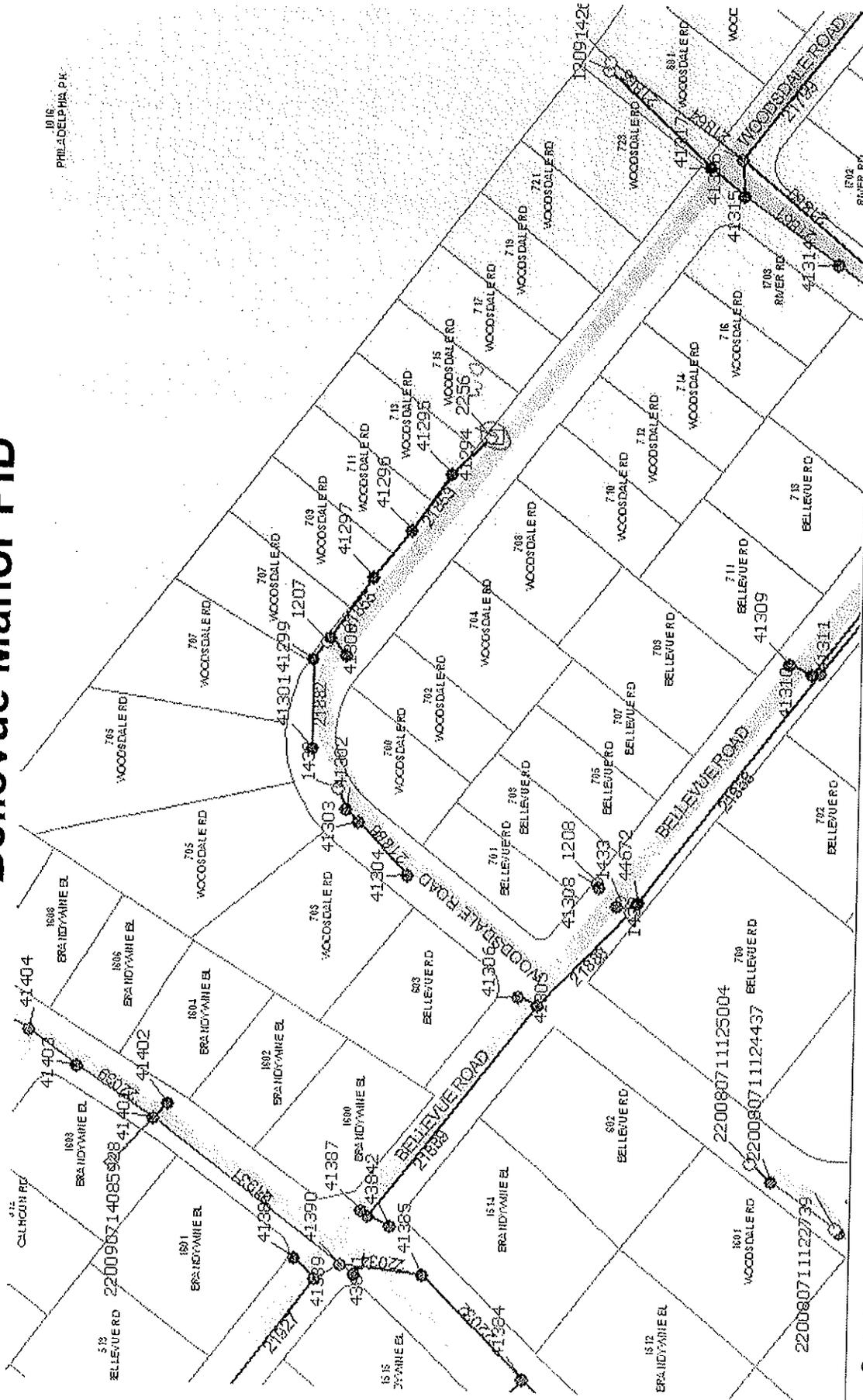
Outfall Data	
Digital picture? (Y/N):	Y
Camera Number:	ES-1
Picture Number:	
Personnel:	RC, BB
Date (MM/DD/YY):	6/2/10
Time:	9:30 am
Date of Last Rain >0.10" (MM/DD/YY):	
Follow Up Screen Date (MM/DD/YY):	
Follow Up Field Screen Time:	
Outfall Dimensions (in):	
Outfall Shape: Round (R), Oval (O), Box (B), V-Ditch (VD), Trap Ditch (TD), Other Ditch (OD)	
Outfall Type (CMP, RCP, PVC, Other):	
Flow Observed? (Y/N):	Y
Follow Up Flow Observed? (Y/N):	
Flow Source	
Structural Condition: Normal (N), Concrete Spauling (SP), Peeling Paint (PP), Concrete Cracking (CC), Outfall Damaged (OD), Submerged (S), Metal Corrosion (MC), Other (O-explain)	N
Erosion (Outfall Area): None (N), Moderate (M), Severe (S)	N
Odor: None (N)=0, Rancid-Sour (RS)=4, Gas (G)=4, Sewage (S)=4, Oil (O)=4, Sulfur (S)=4, Other (Other-explain)	N
Deposits / Stains: None (N)=0, Sediment (S)=2, Oil (OY)=3, Other (O-explain)	N
Algae Growth? (Y/N):	N
Vegetative Condition (Outfall Area): Normal (N), Inhibited Growth (IG), Excessive Growth (EG), Other (O-explain)	N
Land Use: Industrial (I), Commercial (C), Residential (R), Other (O-explain)	R
Specific Land Use:	

		Result 1	Val.	Result 2	Val. 2
Flow Rate (cfs):	<0.022 cfs=0; ≥0.022 cfs=4				
Water Temperature (Farenheit):		75			
pH:	<4.5=4; >8.5=4; change ≥ 2 units=1	7.86			
Phenol (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0			
Chlorine (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0			
Detergents (mg/L):	<0.2=0; 0.2 - 0.4=1; ≥0.5 mg/L=4	0.1			
Copper (mg/L):	<0.01 mg/L=0; ≥0.01 mg/L=4	0			
Ammonia (mg/L):	<0.05-0.1 mg/L=0; 0.1-1.0 mg/L=1; 1.0-2.99 mg/L=2; >3.0 mg/L=4	0.1			
Turbidity:	0-10 ntu=0; 11-40=1; 41-150=3; >150=4	6.5			
Color:	Clear (C)=0, Gray (G)=1, Red (R)=1, Yellow (Y)=1, Brown (B)=1, Green (GR)=1, Other (O-explain)				
Floatables:	None (N)=0, Oil Sheen (OS)=4, Sewage (S)=4, Trash (T)=2, Other (O-explain)				

FIELD SKETCH

Bellevue Manor PID

1016
PHILADELPHIA, PA.



NPDES
Inventory Map
1:1,500



	INLET		SWALE VERTEX
	MANHOLE		Ditch
	SWALE END		Pipe
	JUNCTION BOX		Hydraulic Connection
	RISER		Bay Saver
	DUMMY NODE		Biofiltration
	Infiltration Basin / Trench		Biofiltration & Bioretention
	Sand Filter		Bioretention
	Sediment Forebay		Dry Pond
	Storm Filter		Filter Strip
	Wet Pond		Wet Pond / Wetland

Dry Flow

OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structure 95458
2566 Red Lion Road

Illicit Discharge Incident Tracking Sheet

Date: 6/18/2010 **Logged by:** Matt Ortynsky **Contact #:** 302-731-9176 **Incident ID:**

Caller contact information:	Resident/DeIDOT	Subdivision: None
		County: New Castle
		ADC Map No./Grid: 18-D2

Incident Location

Primary Location Description

<input checked="" type="checkbox"/> Storm drain	<input type="checkbox"/> Outfall	<input type="checkbox"/> Other
<input type="checkbox"/> In Stream	<input type="checkbox"/> Along bank	
<input type="checkbox"/> Stormwater Pond	<input type="checkbox"/> Upland	

Outfall / inlet ID# : 95458

Closest street address: 2566 Red Lion Road

Watershed name: C & D Canal East Impacted Stream name:

Nearby landmark:

Narrative description of location

The storm drain is located in front of 2534 Red Lion Road.

Description of problem

Visual

- | | |
|--|---|
| <input type="checkbox"/> Oil / Oil sheen | <input type="checkbox"/> Soap |
| <input type="checkbox"/> Paint | <input checked="" type="checkbox"/> Flotables (toilet paper, etc.) |
| <input type="checkbox"/> Algae | <input type="checkbox"/> Dead fish |
| <input type="checkbox"/> Cloudy | <input checked="" type="checkbox"/> Flow -----> Precipitation in last 48-hours? Yes / No |
| <input type="checkbox"/> Anti-freeze | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Yard waste | |

Odor

- | | | |
|--|---|----------------------------------|
| <input checked="" type="checkbox"/> Sewage | <input type="checkbox"/> Sulfide ("rotten egg") | <input type="checkbox"/> Gas/oil |
| <input type="checkbox"/> None | <input type="checkbox"/> Other (describe) _____ | |

Narrative description/comments of problem

6/18/10 - KCI field crews observed active dry weather flow and took a sample to be tested. The sample tested above recordable limits for Detergents and only had moderate Ammonia levels. KCI field crews made plans to re-visit the location with the camera on a stick for further investigation. 6/23/10 - KCI
 field crews found no illicit connections however a 3" PVC pipe was noticed in the wall of the catch basin at the time of inspection which could be the source of the illicit flow. Prior inspection information from URS was checked and an illicit connection was noted during their inspection that showed obvious flow with soap suds. KCI is not certain which property the pipe connects to, but it is believed to be coming from the residence at 2572 Red Lion Road.

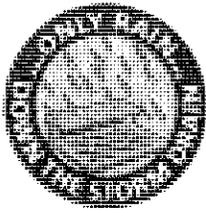
Plan of Action (check all that apply)

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> Sample | <input checked="" type="checkbox"/> Contact DNREC | <input checked="" type="checkbox"/> Contact NPDES Manager |
| <input checked="" type="checkbox"/> Photos | <input type="checkbox"/> Door hangers | <input type="checkbox"/> GPS Coordinates |

Other (describe) KCI notified Tom Wyatt of the KCI Newark office who has a contract with the New Castle County for eye testing sanitary flow. Tom will talk to the county about dye testing at this location.

Follow-up Action

Referred to DNREC by DeIDOT. DNREC capped illegal hook up after finding dye in pipe. Warrants pending for homeowners arrest.



**DELDOT AGREEMENT 1495
POTENTIAL ILLICIT DISCHARGE FIELD DATA SHEET**



Structure/Outfall ID Number: 95458

Address/Location Description: 2566 Red Lion Rd

Outfall Data	
Digital picture? (Y/N):	Yes
Camera Number:	ES1
Picture Number:	
Personnel:	RL, RT
Date (MM/DD/YY):	6/18/10
Time:	8:00 am
Date of Last Rain >0.10" (MM/DD/YY):	
Follow Up Screen Date (MM/DD/YY):	
Follow Up Field Screen Time:	
Outfall Dimensions (in):	
Outfall Shape: Round (R), Oval (O), Box (B), V-Ditch (VD), Trap Ditch (TD), Other Ditch (OD)	
Outfall Type (CMP, RCP, PVC, Other):	
Flow Observed? (Y/N):	
Follow Up Flow Observed? (Y/N):	
Flow Source	
Structural Condition: Normal (N), Concrete Spauling (SP), Peeling Paint (PP), Concrete Cracking (CC), Outfall Damaged (OD), Submerged (S), Metal Corrosion (MC), Other (O-explain)	N
Erosion (Outfall Area): None (N), Moderate (M), Severe (S)	N
Odor: None (N)=0, Rancid-Sour (RS)=4, Gas (G)=4, Sewage (S)=4, Oil (O)=4, Sulfur (S)=4, Other (Other-explain)	Sewage
Deposits / Stains: None (N)=0, Sediment (S)=2, Oil (OY)=3, Other (O-explain)	N
Algae Growth? (Y/N):	N
Vegetative Condition (Outfall Area): Normal (N), Inhibited Growth (IG), Excessive Growth (EG), Other (O-explain)	N
Land Use: Industrial (I), Commercial (C), Residential (R), Other (O-explain)	R
Specific Land Use:	

		Result 1	Val.	Result 2	Val. 2
Flow Rate (cfs):	<0.022 cfs=0; ≥0.022 cfs=4	—	—		
Water Temperature (Fahrenheit):		72.6			
pH:	<4.5=4; >8.5=4; change ≥ 2 units=1	6.98			
Phenol (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0			
Chlorine (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4				
Detergents (mg/L):	<0.2=0; 0.2 - 0.4=1; ≥0.5 mg/L=4	71.3	4		
Copper (mg/L):	<0.01 mg/L=0; ≥0.01 mg/L=4	0			
Ammonia (mg/L):	<0.05-0.1 mg/L=0; 0.1-1.0 mg/L=1; 1.0-2.99 mg/L=2; ≥3.0 mg/L=4	1.0	1		
Turbidity:	0-10 ntu=0; 11-40=1; 41-150=3; >150=4	24.71	1		
Color:	Clear (C)=0, Gray (G)=1, Red (R)=1, Yellow (Y)=1, Brown (B)=1, Green (GR)=1, Other (O-explain)	C	0		
Floatables:	None (N)=0, Oil Sheen (OS)=4, Sewage (S)=4, Trash (T)=2, Other (O-explain)	S Toilet Paper	4		

FIELD SKETCH

Upon arrival on site the catch basin had significant flow. The flow quickly stopped making it impossible to trace origin. Sample was collected along with site.



MEMORANDUM

TO: Randy Cole
Marianne Walch, PhD
DelDOT Stormwater Quality Program

FROM: Ryan Coleman

DATE: June 23, 2010

SUBJECT: Agreement 1495 / KCI Project 0203019G
Red Lion Road PID
Structure ID # 95458

The purpose of this Memorandum is to summarize the investigation of a potential illicit discharge (PID) along Red Lion Road, at catch basin #95458 in New Castle County.

KCI Technologies was contacted by Randy Cole with a complaint he received about a possible illegal sewage connection to the storm drain system along Red Lion Road. KCI field personnel visited the site on Friday June 18, 2010 to investigate the complaint. Upon arrival on site the crew was met by the resident who made the complaint. He pointed out active flow in the catch basin in front of his property at 2534 Red Lion Road and stated that he has seen fecal matter floating in the catch basin. It was noticed that the flow quickly diminished pointing out that it was not a continuous flow source.

The field crew noticed an odor that could have possibly been sewage related and saw what appeared to be toilet paper in the catch basin. The KCI crew inspected the outfall (#3658) and the catch basins leading to that outfall. A sample of the flow was collected from catch basin #95454 to be tested and plans were made to re-visit the site with the camera-on-a-stick to check the pipes for illicit connections. The sample tested above recordable limits for Detergents and only had moderate Ammonia levels that did not test above limits.

KCI field personnel re-visited the PID on Wednesday June 23, 2010 to inspect the pipes for illicit connections. No illicit connections were found in the pipes during the inspection. A 3 inch PVC pipe was noticed in the wall of catch basin #95458 (**Figure 1**) which could be the source of the illicit flow. Prior inspection information from URS was checked on the DelDOT NPDES Viewer and this illicit connection was noted during their inspection. The pictures from the inspection showed obvious flow with soap suds (**Figure 2**). KCI is not certain which property the pipe connects to, but it is believed to be coming from the residence at 2572 Red Lion Road.

KCI believes that this is an illegal connection because of the evidence found. It is unclear whether sewage is being discharged because of low Ammonia levels but there is a possibility because of the smell and what appeared to be toilet paper in the catch basin. KCI notified Tom Wyatt of KCI Newark office who has contract with the New Castle County for dye testing sanitary flow. Tom will talk to the county about dye testing at this location.



Figure 1. Illicit Connection

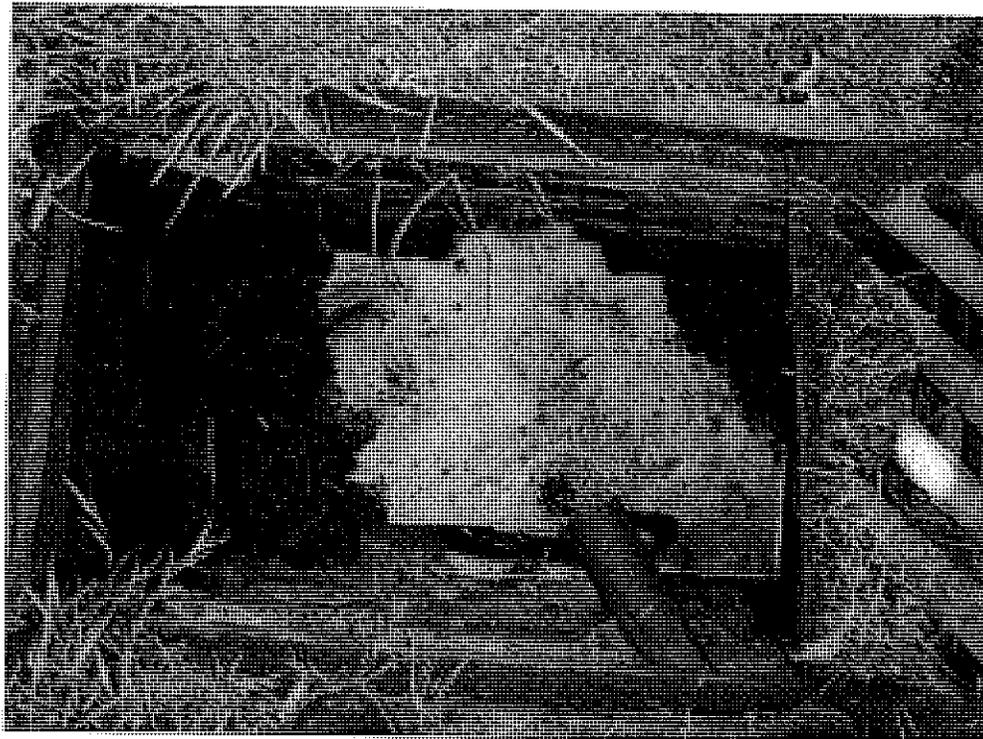


Figure 2. Illicit Flow

OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structures 77010, 77011
Casho Mill Road/Julie Lane

Illicit Discharge Incident Tracking Sheet

Date: 8/3/2010 Logged by: Matt Ortynsky Contact #: 302-731-9176 Incident ID:

Caller contact information: City of Newark/DeIDOT
Subdivision: None
County: New Castle
ADC Map No./Grid: 10-C9

Incident Location

Primary Location Description

- | | | |
|---|-------------------------------------|--------------------------------|
| <input checked="" type="checkbox"/> Storm drain | <input type="checkbox"/> Outfall | <input type="checkbox"/> Other |
| <input type="checkbox"/> In Stream | <input type="checkbox"/> Along bank | |
| <input type="checkbox"/> Stormwater Pond | <input type="checkbox"/> Upland | |

Outfall / inlet ID# : 77010 & 77011

Closest street address: 1118 & 1100 Blair Court

Watershed name: Christina River Impacted Stream name:

Nearby landmark:

Narrative description of location

The two catch basins are located at the intersection of Julie Lane and Casho Mill Road.

Description of problem

Visual

- | | |
|--|--|
| <input type="checkbox"/> Oil / Oil sheen | <input type="checkbox"/> Soap |
| <input type="checkbox"/> Paint | <input type="checkbox"/> Flotables (toilet paper, etc.) |
| <input type="checkbox"/> Algae | <input type="checkbox"/> Dead fish |
| <input type="checkbox"/> Cloudy | <input type="checkbox"/> Flow -----> Precipitation in |
| <input type="checkbox"/> Anti-freeze | last 48-hours? Yes / No |
| <input type="checkbox"/> Yard waste | <input checked="" type="checkbox"/> Other <u>Hot Mix</u> |

Odor

- | | | |
|--|---|----------------------------------|
| <input type="checkbox"/> Sewage | <input type="checkbox"/> Sulfide ("rotten egg") | <input type="checkbox"/> Gas/oil |
| <input checked="" type="checkbox"/> None | <input type="checkbox"/> Other (describe) _____ | |

Narrative description/comments of problem

The City of Newark notified DeIDOT of a potential storm sewer blockage due to the placement of leftover hot mix into two catch basins along Casho Mill Road in Newark. KCI field crews observed that catch basin 77010 was filled with hot mix to the point that the catch basin outflow pipe was completely blocked. KCI field crews inspected catch basin 77011 but did not observe any hot mix or pipe blockage in this catch basin.

Plan of Action (check all that apply)

- | | | |
|--|--|--|
| <input type="checkbox"/> Sample | <input type="checkbox"/> Contact DNREC | <input type="checkbox"/> Contact NPDES Manager |
| <input checked="" type="checkbox"/> Photos | <input type="checkbox"/> Door hangers | <input type="checkbox"/> GPS Coordinates |
| <input type="checkbox"/> Other (describe) | | |

Follow-up Action

KCI field crews removed enough hot mix to allow positive flow. No further action required.



MEMORANDUM

TO: Marianne Walch, PhD
DeIDOT NPDES
Stormwater Quality Program

FROM: Bruce Thompson, KCI
Chris Bolton, KCI

DATE: August 5, 2010

SUBJECT: DeIDOT Agr. 1495 / KCI Project No. 0203019H
Casho Mill Road Catch Basins 77010 & 77011
Hot Mix Blockage Inspection
New Castle County

The purpose of this Memo is to summarize the field observations and corrective action that occurred during the inspection of catch basins 77010 and 77011 along Casho Mill Road in New Castle County on August 3, 2010.

The City of Newark notified DeIDOT of a potential storm sewer blockage due to the placement of leftover hot mix into two catch basins along Casho Mill Road in Newark. The two catch basins, numbers 77010 and 77011, are located at the intersection of Julie Lane and Casho Mill Road.

On August 3, 2010, a KCI field crew inspected the two catch basins. Upon inspection, it was observed that catch basin 77010 was filled with hot mix to the point that the catch basin outflow pipe was completely blocked. **See Figure 1.** Catch basin 77011 was also inspected, but KCI did not observe any hot mix or pipe blockage in this catch basin.

KCI removed enough hot mix material from catch basin 77010 to allow positive flow in the storm sewer system, which should alleviate any potential future storm event flooding. However, KCI was not able to remove all the material due to the hot mix compacting and hardening. **See Figure 2.**



Figure 1 – Hot Mix Pipe Blockage CB 77010 (08/03/10)



Figure 2 – Removed Hot Mix Pipe Blockage (08/03/10)

OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structure 13
404 Wesley Circle
Lambeth Riding

Illicit Discharge Incident Tracking Sheet

Date: 8/31/2010 Logged by: Matt Ortynsky Contact #: 302-731-9176 Incident ID:

Caller contact information: 1354 Field Crew
Subdivision: Lambeth Riding
County: New Castle
ADC Map No./Grid: 6-A6

Incident Location

Primary Location Description
 Storm drain Outfall Other
 In Stream Along bank
 Stormwater Pond Upland

Outfall / inlet ID# : 13

Closest street address: 404 Wesley Circle

Watershed name: White Clay Creek Impacted Stream name:

Nearby landmark:

Narrative description of location

Structure 13 is an outfall that is located behind 404 Wesley Circle.

Description of problem

Visual

- | | |
|--|---|
| <input type="checkbox"/> Oil / Oil sheen | <input type="checkbox"/> Soap |
| <input type="checkbox"/> Paint | <input type="checkbox"/> Flotables (toilet paper, etc.) |
| <input type="checkbox"/> Algae | <input type="checkbox"/> Dead fish |
| <input type="checkbox"/> Cloudy | <input checked="" type="checkbox"/> Flow -----> Precipitation in
last 48-hours? Yes / No |
| <input type="checkbox"/> Anti-freeze | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Yard waste | |

Odor

- | | | |
|--|---|----------------------------------|
| <input type="checkbox"/> Sewage | <input type="checkbox"/> Sulfide ("rotten egg") | <input type="checkbox"/> Gas/oil |
| <input checked="" type="checkbox"/> None | <input type="checkbox"/> Other (describe) _____ | |

Narrative description/comments of problem

Dry weather flow was observed. KCI field crews investigated this issue and found the flow was due to an underground stream outfalling into a creek bed. KCI does not consider this to be a PID and no sample was tested.

Plan of Action (check all that apply)

- | | | |
|--|--|--|
| <input type="checkbox"/> Sample | <input type="checkbox"/> Contact DNREC | <input type="checkbox"/> Contact NPDES Manager |
| <input checked="" type="checkbox"/> Photos | <input type="checkbox"/> Door hangers | <input type="checkbox"/> GPS Coordinates |
| <input type="checkbox"/> Other (describe) | | |

Follow-up Action

No further action required.



**DELDOT AGREEMENT 1495
POTENTIAL ILLICIT DISCHARGE FIELD DATA SHEET**



Structure/Outfall ID Number: 13

Address/Location Description: Behind 404 Wedgway Cir.

Outfall Data	
Digital picture? (Y/N):	
Camera Number:	4
Picture Number:	
Personnel:	
Date (MM/DD/YY):	08/31/10
Time:	10:00
Date of Last Rain >0.10" (MM/DD/YY):	
Follow Up Screen Date (MM/DD/YY):	
Follow Up Field Screen Time:	
Outfall Dimensions (in):	24"
Outfall Shape: Round (R), Oval (O), Box (B), V-Ditch (VD), Trap Ditch (TD), Other Ditch (OD)	R
Outfall Type (CMP, RCP, PVC, Other):	RCP
Flow Observed? (Y/N):	Y
Follow Up Flow Observed? (Y/N):	Y
Flow Source	groundwater
Structural Condition: Normal (N), Concrete Spauling (SP), Peeling Paint (PP), Concrete Cracking (CC), Outfall Damaged (OD), Submerged (S), Metal Corrosion (MC), Other (O-explain)	
Erosion (Outfall Area): None (N), Moderate (M), Severe (S)	N
Odor: None (N)=0, Rancid-Sour (RS)=4, Gas (G)=4, Sewage (S)=4, Oil (O)=4, Sulfur (S)=4, Other (Other-explain)	N
Deposits / Stains: None (N)=0, Sediment (S)=2, Oil (OY)=3, Other (O-explain)	N
Algae Growth? (Y/N):	Y
Vegetative Condition (Outfall Area): Normal (N), Inhibited Growth (IG), Excessive Growth (EG), Other (O-explain)	N
Land Use: Industrial (I), Commercial (C), Residential (R), Other (O-explain)	R
Specific Land Use:	Neighborhood

		Result 1	Val.	Result 2	Val. 2
Flow Rate (cfs):	<0.022 cfs=0; ≥0.022 cfs=4	~			
Water Temperature (Fahrenheit):		~			
pH:	<4.5=4; >8.5=4; change ≥ 2 units=1	~			
Phenol (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	~			
Chlorine (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	~			
Detergents (mg/L):	<0.2=0; 0.2 - 0.4=1; ≥0.5 mg/L=4	~			
Copper (mg/L):	<0.01 mg/L=0; ≥0.01 mg/L=4	~			
Ammonia (mg/L):	<0.05-0.1 mg/L=0; 0.1-1.0 mg/L=1; 1.0-2.99 mg/L=2; ≥3.0 mg/L=4	~			
Turbidity:	0-10 ntu=0; 11-40=1; 41-150=3; >150=4	~			
Color:	Clear (C)=0, Gray (G)=1, Red (R)=1, Yellow (Y)=1, Brown (B)=1, Green (GR)=1, Other (O-explain)	C			
Floatables:	None (N)=0, Oil Sheen (OS)=4, Sewage (S)=4, Trash (T)=2, Other (O-explain)	N			

FIELD SKETCH

See Attached Map



MEMORANDUM

TO: KCI Files

FROM: Chris Bolton

DATE: September 1, 2010

SUBJECT: Agreement 1495 / KCI Project 0203019H
Lambeth Riding PID - 504 Lambeth Place - Structure 5143
Lambeth Riding PID - 404 Wesley Circle - Structure 13

The purpose of this Memo is to summarize the investigation of two Potential Illicit Discharges (PIDs) initially discovered by a KCI Agreement 1354 field crew in the Lambeth Riding community in New Castle County on August 31, 2010.

While performing Agreement 1354 Re-inspections, the KCI field crew came across two PIDs at Structure #13 (**Photos 1-2**) and Structure #5143 (**Photos 3-4**). Structure #13 is an outfall located behind a residence at 404 Wesley Circle and Structure #5143 is a catch basin located in front of residence 504 Lambeth Place. The PIDs were reported to the Agreement 1495 KCI field crew responsible for investigating PIDs.

Upon inspection of the Outfall Structure #13, it was determined that the flow was due to an underground stream outfalling into a creek bed, and was therefore not tested for an illicit discharge. KCI does not consider this to be a PID.

The KCI field crew also inspected Catch Basin Structure #5143 and found a small 4 inch PVC pipe protruding into the side wall of the concrete pipe connecting into the catch basin (**Photo 4**). Water was observed flowing from the small PVC pipe and collecting in the catch basin. Field crews could not immediately determine the source of flow. A water sample was obtained and tested. Results indicated that all parameters were within allowable limits.

KCI will periodically re-test this PID in an effort to determine its source prior to concluding that no further action is needed.



Photo 1
Outfall #13

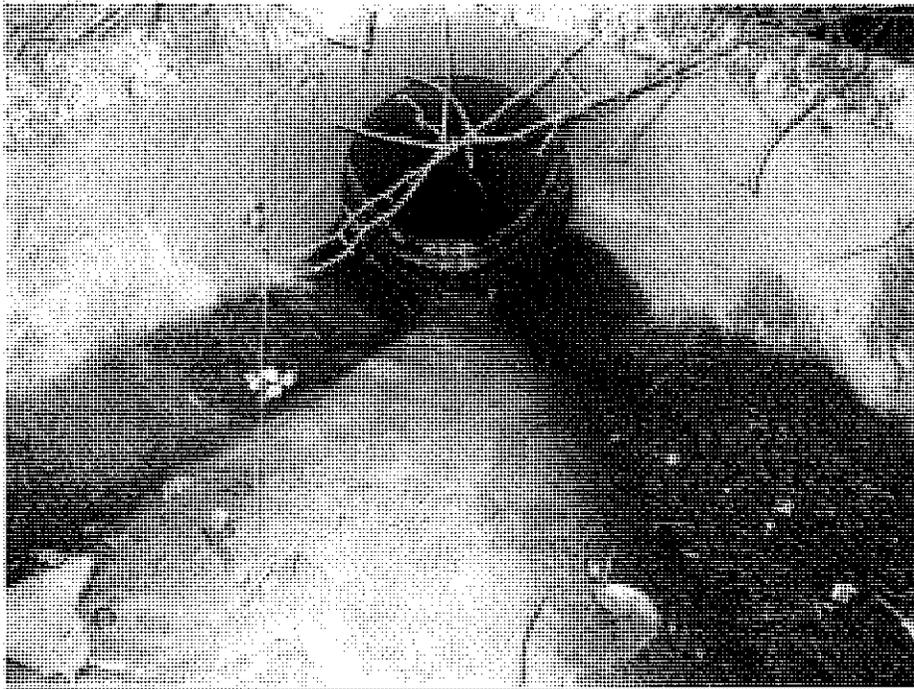


Photo 2
Outfall #13

OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structure 5143
504 Lambeth Place
Lambeth Riding

Illicit Discharge Incident Tracking Sheet

Date: 8/31/2010 **Logged by:** Matt Ortynsky **Contact #:** 302-731-9176 **Incident ID:**

Caller contact information: 1354 Field Crew	Subdivision: Lambeth Riding
	County: New Castle
	ADC Map No./Grid: 6-A6

Incident Location

Primary Location Description

<input checked="" type="checkbox"/> Storm drain	<input type="checkbox"/> Outfall	<input type="checkbox"/> Other
<input type="checkbox"/> In Stream	<input type="checkbox"/> Along bank	
<input type="checkbox"/> Stormwater Pond	<input type="checkbox"/> Upland	

Outfall / inlet ID#: 5143

Closest street address: 504 Lambeth Place

Watershed name: White Clay Creek Impacted Stream name:

Nearby landmark:

Narrative description of location

Structure 5143 is a catch basin that is located in front of 504 Lambeth Place.

Description of problem

Visual

- | | |
|--|--|
| <input type="checkbox"/> Oil / Oil sheen | <input type="checkbox"/> Soap |
| <input type="checkbox"/> Paint | <input type="checkbox"/> Flotables (toilet paper, etc.) |
| <input type="checkbox"/> Algae | <input type="checkbox"/> Dead fish |
| <input type="checkbox"/> Cloudy | <input checked="" type="checkbox"/> Flow -----> Precipitation in |
| <input type="checkbox"/> Anti-freeze | last 48-hours? Yes / No |
| <input type="checkbox"/> Yard waste | <input type="checkbox"/> Other _____ |

Odor

- | | | |
|--|---|----------------------------------|
| <input type="checkbox"/> Sewage | <input type="checkbox"/> Sulfide ("rotten egg") | <input type="checkbox"/> Gas/oil |
| <input checked="" type="checkbox"/> None | <input type="checkbox"/> Other (describe) _____ | |

Narrative description/comments of problem

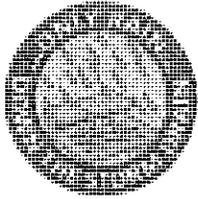
Dry weather flow was observed.

Plan of Action (check all that apply)

- | | | |
|--|--|--|
| <input checked="" type="checkbox"/> Sample | <input type="checkbox"/> Contact DNREC | <input type="checkbox"/> Contact NPDES Manager |
| <input checked="" type="checkbox"/> Photos | <input type="checkbox"/> Door hangers | <input type="checkbox"/> GPS Coordinates |
| <input type="checkbox"/> Other (describe) | | |

Follow-up Action

Samples tested within acceptable parameter levels. KCI will re-visit the site in an effort to determine the source prior to concluding no further action is needed.



**DELDOT AGREEMENT 1495
POTENTIAL ILLICIT DISCHARGE FIELD DATA SHEET**



Structure/Outfall ID Number: 5113

Address/Location Description: 504 Lamberth Pl

Outfall Data	
Digital picture? (Y/N):	Y
Camera Number:	
Picture Number:	
Personnel:	CB/R
Date (MM/DD/YY):	8/31/10
Time:	11:15
Date of Last Rain >0.10" (MM/DD/YY):	
Follow Up Screen Date (MM/DD/YY):	
Follow Up Field Screen Time:	
Outfall Dimensions (in):	Catch basin
Outfall Shape: Round (R), Oval (O), Box (B), V-Ditch (VD), Trap Ditch (TD), Other Ditch (OD)	
Outfall Type (CMP, RCP, PVC, Other):	
Flow Observed? (Y/N):	Standing water
Follow Up Flow Observed? (Y/N):	
Flow Source	possible sump pump
Structural Condition: Normal (N), Concrete Spauling (SP), Peeling Paint (PP), Concrete Cracking (CC), Outfall Damaged (OD), Submerged (S), Metal Corrosion (MC), Other (O-explain)	N
Erosion (Outfall Area): None (N), Moderate (M), Severe (S)	N
Odor: None (N)=0, Rancid-Sour (RS)=4, Gas (G)=4, Sewage (S)=4, Oil (O)=4, Sulfur (S)=4, Other (Other-explain)	N
Deposits / Stains: None (N)=0, Sediment (S)=2, Oil (OY)=3, Other (O-explain)	N
Algae Growth? (Y/N):	N
Vegetative Condition (Outfall Area): Normal (N), Inhibited Growth (IG), Excessive Growth (EG), Other (O-explain)	N/A
Land Use: Industrial (I), Commercial (C), Residential (R), Other (O-explain)	R
Specific Land Use:	Neighborhood

		Result 1	Val.	Result 2	Val. 2
Flow Rate (cfs):	<0.022 cfs=0; ≥0.022 cfs=4	0	0		
Water Temperature (Farenheit):		68.7°			
pH:	<4.5=4; >8.5=4; change ≥ 2 units=1	6.42			
Phenol (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0	0		
Chlorine (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0	0		
Detergents (mg/L):	<0.2=0; 0.2 - 0.4=1; ≥0.5 mg/L=4	0.4	1		
Copper (mg/L):	<0.01 mg/L=0; ≥0.01 mg/L=4	0	0		
Ammonia (mg/L):	<0.05-0.1 mg/L=0; 0.1-1.0 mg/L=1; 1.0-2.99 mg/L=2; ≥3.0 mg/L=4	0	0		
Turbidity:	0-10 ntu=0; 11-40=1; 41-150=3; >150=4	16	0		
Color:	Clear (C)=0, Gray (G)=1, Red (R)=1, Yellow (Y)=1, Brown (B)=1, Green (GR)=1, Other (O-explain)	C			
Floatables:	None (N)=0, Oil Sheen (OS)=4, Sewage (S)=4, Trash (T)=2, Other (O-explain)	N			

FIELD SKETCH

See attached Map

		Result 1	Val.	Result 2	Val. 2
Flow Rate (cfs):	<0.022 cfs=0; ≥0.022 cfs=4	0	0		
Water Temperature (Fahrenheit):		68.7°			
pH:	<4.5=4; >8.5=4; change ≥ 2 units=1	6.42			
Phenol (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0	0		
Chlorine (mg/L):	<0.3 mg/L=0; ≥0.3 mg/L=4	0	0		
Detergents (mg/L):	<0.2=0; 0.2 - 0.4=1; ≥0.5 mg/L=4	0.4	1		
Copper (mg/L):	<0.01 mg/L=0; ≥0.01 mg/L=4	0	0		
Ammonia (mg/L):	<0.05-0.1 mg/L=0; 0.1-1.0 mg/L=1; 1.0-2.99 mg/L=2; ≥3.0 mg/L=4	0	0		
Turbidity:	0-10 ntu=0; 11-40=1; 41-150=3; >150=4	16	0		
Color:	Clear (C)=0, Gray (G)=1, Red (R)=1, Yellow (Y)=1, Brown (B)=1, Green (GR)=1, Other (O-explain)	C			
Floatables:	None (N)=0, Oil Sheen (OS)=4, Sewage (S)=4, Trash (T)=2, Other (O-explain)	N			

FIELD SKETCH

See attached Map



MEMORANDUM

TO: KCI Files

FROM: Chris Bolton

DATE: September 1, 2010

SUBJECT: Agreement 1495 / KCI Project 0203019H
Lambeth Riding PID - 504 Lambeth Place - Structure 5143
Lambeth Riding PID - 404 Wesley Circle - Structure 13

The purpose of this Memo is to summarize the investigation of two Potential Illicit Discharges (PIDs) initially discovered by a KCI Agreement 1354 field crew in the Lambeth Riding community in New Castle County on August 31, 2010.

While performing Agreement 1354 Re-inspections, the KCI field crew came across two PIDs at Structure #13 (**Photos 1-2**) and Structure #5143 (**Photos 3-4**). Structure #13 is an outfall located behind a residence at 404 Wesley Circle and Structure #5143 is a catch basin located in front of residence 504 Lambeth Place. The PIDs were reported to the Agreement 1495 KCI field crew responsible for investigating PIDs.

Upon inspection of the Outfall Structure #13, it was determined that the flow was due to an underground stream outfalling into a creek bed, and was therefore not tested for an illicit discharge. KCI does not consider this to be a PID.

The KCI field crew also inspected Catch Basin Structure #5143 and found a small 4 inch PVC pipe protruding into the side wall of the concrete pipe connecting into the catch basin (**Photo 4**). Water was observed flowing from the small PVC pipe and collecting in the catch basin. Field crews could not immediately determine the source of flow. A water sample was obtained and tested. Results indicated that all parameters were within allowable limits.

KCI will periodically re-test this PID in an effort to determine its source prior to concluding that no further action is needed.



Photo 3
Catch Basin #5143



Photo 4
Catch Basin #5143

OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structures 11712 – 11721
 - Lamplighter Way
 - Mendenhall Village

Illicit Discharge Incident Tracking Sheet

Date: 11/1/2010 Logged by: Matt Ortynsky Contact #: 302-731-9176 Incident ID:

Caller contact information: 1354 Field Crew
Subdivision: Mendenhall Village
County: New Castle
ADC Map No./Grid: 6-D7, 6E7

Incident Location

Primary Location Description

- | | | |
|---|-------------------------------------|--------------------------------|
| <input checked="" type="checkbox"/> Storm drain | <input type="checkbox"/> Outfall | <input type="checkbox"/> Other |
| <input type="checkbox"/> In Stream | <input type="checkbox"/> Along bank | |
| <input type="checkbox"/> Stormwater Pond | <input type="checkbox"/> Upland | |

Outfall / inlet ID# : 11712 - 11721

Closest street address: Lamplighter Way

Watershed name: White Clay Creek Impacted Stream name:

Nearby landmark:

Narrative description of location

Various catch basins along Lamplighter Way.

Description of problem

Visual

- | | |
|--|---|
| <input type="checkbox"/> Oil / Oil sheen | <input type="checkbox"/> Soap |
| <input type="checkbox"/> Paint | <input type="checkbox"/> Flotables (toilet paper, etc.) |
| <input type="checkbox"/> Algae | <input type="checkbox"/> Dead fish |
| <input type="checkbox"/> Cloudy | <input type="checkbox"/> Flow -----> Precipitation in |
| <input type="checkbox"/> Anti-freeze | last 48-hours? Yes / No |
| <input type="checkbox"/> Yard waste | <input type="checkbox"/> Other _____ |

Odor

- | | | |
|---------------------------------|---|----------------------------------|
| <input type="checkbox"/> Sewage | <input type="checkbox"/> Sulfide ("rotten egg") | <input type="checkbox"/> Gas/oil |
| <input type="checkbox"/> None | <input type="checkbox"/> Other (describe) _____ | |

Narrative description/comments of problem

DeIDOT informed KCI that a resident of Mendenhall Village was possibly dumping grass clippings into a catch basin on Lamplighter Way.

Plan of Action (check all that apply)

- | | | |
|--|--|--|
| <input type="checkbox"/> Sample | <input type="checkbox"/> Contact DNREC | <input type="checkbox"/> Contact NPDES Manager |
| <input checked="" type="checkbox"/> Photos | <input type="checkbox"/> Door hangers | <input type="checkbox"/> GPS Coordinates |
| <input type="checkbox"/> Other (describe) | | |

Follow-up Action

No evidence of grass clippings were found in any catch basins along Lamplighter Way. KCI will periodically check the catch basins for any signs of grass clippings.



MEMORANDUM

TO: KCI Files

FROM: Chris Bolton

DATE: November 11, 2010

SUBJECT: Agreement 1495 / KCI Project 0203019H
Lamplighter Way PID – Mendenhall Village, NCCo
316 Pigeon Point Rd – Wilmington, NCCo

The purpose of this Memo is to summarize the investigation of two Potential Illicit Discharges (PIDs) that KCI was informed of by DelDOT on November 1, 2010.

On November 1, 2010 Randy Cole, DelDOT, informed KCI Technologies of two potential illicit discharges in New Castle County, one in Mendenhall Village on Lamplighter Way and another at 316 Pigeon Point Rd, both located in New Castle County.

DelDOT informed KCI that a resident of Mendenhall Village was possibly dumping grass clippings into a catch basin on Lamplighter Way. Upon further investigation by KCI field personnel of all the catch basins on Lamplighter way, no evidence was found of grass clippings in any catch basin. KCI will periodically check the catch basins for any signs of grass clippings.

The other PID DelDOT informed KCI about is a storm drainage inlet pipe located at 316 Pigeon Point Rd in a heavy industrialized section of Wilmington. Joe Ellis, DelDOT, noticed a greenish substance in and around the area of a new storm drainage inlet pipe. .

OUTFALL SCREENING

2010 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS

CORRESPONDENCE, FIELD INFORMATION AND DOCUMENTATION:

- Structure: Newly Constructed / Not Inventoried
316 Pigeon Point Road

Illicit Discharge Incident Tracking Sheet

Date: 11/1/2010 Logged by: Matt Ortynsky Contact #: 302-731-9176 Incident ID:

Caller contact information: 1354 Field Crew
Subdivision: None
County: New Castle
ADC Map No./Grid: 13-H2

Incident Location

Primary Location Description
 Storm drain
 In Stream
 Stormwater Pond
 Outfall
 Along bank
 Upland
 Other Inlet Pipe

Outfall / inlet ID# : Needs GPS Coordinates

Closest street address: 316 Pigeon Point Road

Watershed name: Christina River Impacted Stream name:

Nearby landmark:

Narrative description of location

Inlet pipe in front of 316 Pigeon Point Road.

Description of problem

Visual

- | | |
|--|--|
| <input type="checkbox"/> Oil / Oil sheen | <input type="checkbox"/> Soap |
| <input type="checkbox"/> Paint | <input type="checkbox"/> Flotables (toilet paper, etc.) |
| <input type="checkbox"/> Algae | <input type="checkbox"/> Dead fish |
| <input type="checkbox"/> Cloudy | <input type="checkbox"/> Flow -----> Precipitation in
last 48-hours? Yes / No |
| <input type="checkbox"/> Anti-freeze | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Yard waste | |

Odor

- | | | |
|---------------------------------|---|----------------------------------|
| <input type="checkbox"/> Sewage | <input type="checkbox"/> Sulfide ("rotten egg") | <input type="checkbox"/> Gas/oil |
| <input type="checkbox"/> None | <input type="checkbox"/> Other (describe) _____ | |

Narrative description/comments of problem

DeIDOT informed KCI about a storm drainage inlet pipe located at 316 Pigeon Point Road in a heavily industrialized section of Wilmington. Joe Ellis of DeIDOT noticed a greenish substance in and around the area of a new storm drainage inlet pipe.

Plan of Action (check all that apply)

- | | | |
|--|--|---|
| <input type="checkbox"/> Sample | <input type="checkbox"/> Contact DNREC | <input type="checkbox"/> Contact NPDES Manager |
| <input checked="" type="checkbox"/> Photos | <input type="checkbox"/> Door hangers | <input checked="" type="checkbox"/> GPS Coordinates |
| <input type="checkbox"/> Other (describe) | | |

Follow-up Action

KCI field crews found what appeared to be a dry white crystallized substance but no evidence of a greenish substance that was described. KCI will re-visit the site to check for signs of future signs of illicit discharge.



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