

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

PHASE I MS4 - NEW CASTLE COUNTY

PERMIT NO. DE 0051071

JOINT ANNUAL REPORT FOR 2015

Volume 2 of 2

DeIDOT Report & Appendices

JULY 1, 2016



Maintenance Facility Monitoring
Semi-Annual Wet Weather Monitoring



Illicit Discharge Detection &
Elimination Program

Principal Permittees:

New Castle County

Delaware Department of Transportation



Co-Permittees:

City of Delaware City

City of New Castle

Town of Bellefonte

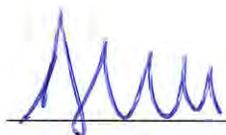
Town of Elsmere

Town of Newport



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.

 6/28/16

Brian Urbanek, Asst. Director, Statewide Support Services
Delaware Department of Transportation
800 Bay Road
Dover, DE 19903
(302) 760-2536

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A. Permittee Updates

1. Copy of Appendix C for All Permittees

Appendix C is attached at the end of this Section.

2. Status and Summary of Interjurisdictional Agreement and Associated Meetings

A draft interjurisdictional agreement (IA) has been completed and submitted to DNREC as part of the Stormwater Pollution Prevention and Management Program (SWPP&MP). The IA outlines coordination and cooperative activities by all Permittees as outlined in the SWPP&MP, the latter of which is contained in Appendix A. Based on the clarifying comments received from DNREC March 28, 2016, the Permittees are in the process of executing the agreement.

3. Summary of Activities Completed during the Reporting Period

See Table A-1.

4. Planned Activities and Changes

- Using consultant services, continue implementation of the MS4 Public Education and Outreach plan for the following campaigns:
 - Proper management and disposal of used motor vehicle fluids and household hazardous wastes;
 - Proper management and disposal of grass clippings, leaf litter and domestic animal wastes;
 - Proper use of water to limit excess pollutants from non-stormwater discharges from activities such as car washing and lawn irrigation;
 - Proper use, application and disposal of pesticides, herbicides and fertilizers by commercial and private applicators and distributors;
 - Public participation events to promote water quality awareness;

- Residential/private installation of Green Technology stormwater BMPs that reduce runoff.
- Continue implementation of an illicit discharge program:
 - Develop the 302 STOPPIT Water Pollution Website; and
 - Conduct outreach campaigns for the 302STOPPIT Website and Hotline.
- Using consultant services, continue writing two Water Quality Improvement Plans for Christina River and Dragon Run watersheds.
- Using consultant services, continue implementing PCB wet weather monitoring.
- Using consultant services, continue inventory and inspection of the MS4.
- Implement a new wet weather monitoring plan.
- Finalize review of draft MOA with DNREC for enforcement and submit for approval.
- Inspect maintenance facilities during wet and dry weather events.
- Conduct annual inspections of all maintenance facilities.
- Inspect all BMPs.
- Evaluate 20% of the MS4 system per the IDDE Program and conduct dry weather screening of targeted outfalls.
- Utilize the revised Street Sweeping Program.
- Provide training to appropriate personnel on permit responsibilities.

APPENDIX C

Delaware Department of Natural Resources and Environmental Control
National Pollutant Discharge Elimination System
MS4 Report Form (Phase I and II)

Information to be completed by permittees and other parties as identified in any existing memoranda of agreement as part of the most current permit.

MS4 Information

Delaware Department of Transportation

Name of MS4

Andrew

Whitman

Environmental Prog. Mgr.

Name of Contact Person (First)

(Last)

(Title)

302-760-2194

Andrew.Whitman@state.de.us

Telephone (including area code)

Email

800 Bay Road

Mailing Address

Dover

DE

19901

City

State

ZIP code

What size population does your MS4 serve? 538,479

What is the reporting period for this report? (mm/dd/yyyy) From Jan. 1, 2015 to Dec. 31, 2015

Federal NPDES Permit Number DE0051071

State NPDES Permit Number WPCC 3063/96 & WPCC 3063A/96

1. Public Education and Public Participation

A. Is your public education program targeting specific pollutants and sources of those pollutants? Yes No

B. If yes, what are the specific sources and/or pollutants addressed by your public education program?

TSS, N, P, bacteria, oils/grease, antifreeze, yard waste, detergent, trash, pesticides

C. Note specific successful outcome(s) (e.g., quantified reduction in fertilizer use; NOT tasks, events, publications) fully or partially attributable to your public education program during this reporting period.

N/A

D. Do you have an advisory committee or other body comprised of the public and other stakeholders that provides regular input on your stormwater program? Yes No

2. Illicit Discharge Detection and Elimination

- A. Identify the number of outfalls in your storm sewer system. 8,943
- B. Do you have documented procedures, including frequency, for screening outfalls? Yes No
- C. How many outfalls were screened for dry weather discharges during this reporting period? 1,007 screened, 3,539 evaluated & screened
- D. How many outfalls have been screened for dry weather discharges at any time since you obtained MS4 permit coverage? > 11,000 since 2001
- E. What is your frequency for screening outfalls for illicit discharges? Describe any variation based on size/type.
at least once per permit term
- F. Do you have an ordinance or other regulatory mechanism that effectively prohibits illicit discharges? Yes No
- G. Do you have an ordinance or other regulatory mechanism that provides authority for you to take enforcement action and/or recover costs for addressing illicit discharges? Yes No
- H. During this reporting period, how many illicit discharges/illegal connections have you discovered? 20
- I. Of those illicit discharges/illegal connections that have been discovered or reported, how many have been eliminated?
1. See table B.2.2, 17 were acute occurrences, 2 are active, 1 is a DNREC site
- J. How often do municipal employees receive training on the illicit discharge program? Annually

3. Stormwater Management During Construction

- A. Other than the state Sediment and Stormwater Regulations, do you have an ordinance or other regulatory mechanism stipulating:
 - Construction site stormwater requirements Yes No
 - Other construction waste control requirements Yes No
 - Requirement to submit construction plans (stormwater quality/quantity) for review Yes No
 - Re-development Yes No
 - Enforcement authority Yes No
- B. Do you have written procedures for:
 - Reviewing construction plans Yes No
 - Performing inspections Yes No
 - Responding to violations Yes No
- C. Identify the number of active construction sites \geq 1 acre in operation in your jurisdiction at any time during the reporting period. 39
- D. How many of the sites identified above did you inspect during this reporting period? 39
- E. Describe, on average, the frequency with which your program conducts construction site inspections on each site.
Once per week; after 1/2" rainfall event
- F. Describe, on average, the frequency with which Certified Construction Reviewers (CCRs) conduct construction site inspections.
Once per week
- G. Do you prioritize certain construction sites for more frequent inspections? Yes No

If Yes, based on what criteria? _____

H. Identify which of the following types of enforcement actions you used during the reporting period for construction activities, indicate the number of actions, or note those for which you do not have authority:

- | | | | |
|---|------------------------------------|------------|--|
| <input type="checkbox"/> Yes | Notice of violation | # <u>0</u> | No Authority <input checked="" type="checkbox"/> |
| <input type="checkbox"/> Yes | Administrative fines | # <u>0</u> | No Authority <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> Yes | Stop Work Orders | # <u>0</u> | No Authority <input checked="" type="checkbox"/> |
| <input type="checkbox"/> Yes | Civil penalties | # <u>0</u> | No Authority <input checked="" type="checkbox"/> |
| <input type="checkbox"/> Yes | Criminal actions | # <u>0</u> | No Authority <input checked="" type="checkbox"/> |
| <input type="checkbox"/> Yes | Administrative orders
Notice of | # <u>0</u> | No Authority <input checked="" type="checkbox"/> |
| <input type="checkbox"/> Yes | Other non-compliance | # <u>5</u> | |

I. Do you use an electronic tool (e.g., GIS, data base, spreadsheet) to track the locations, inspection results, and enforcement actions of active construction sites in your jurisdiction? Yes No

J. What are the 3 most common types of violations documented during this reporting period?
No Violations

K. What are your criteria for determining which new/re-development stormwater plans you will review (e.g., all projects, projects disturbing greater than one acre, etc.) Projects disturbing > 5,000 sq. ft.

L. Do you require water quality or quantity design standards or performance standards, either directly or by reference to a state or other standard, be met for new development and re-development? Yes No

- M. Do these performance or design standards require that pre-development hydrology be met for:
- | | | |
|----------------------|---|--|
| Flow volumes | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| Peak discharge rates | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| Discharge frequency | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| Flow duration | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

N. How many development and redevelopment project plans were reviewed during the reporting period to assess impacts to water quality and receiving stream protection? 239

O. How many of the plans identified were approved? All

P. How often do municipal employees receive training on the construction program? CCR renewal every 5 y ers. E & S project meetings

4. Post Construction Stormwater Management

- A. Other than the Delaware Sediment and Stormwater Regulations, do you have an ordinance or other regulatory mechanism for long-term operation and maintenance of stormwater management controls? Yes No
- B. Have you completed a GIS layer of all outfalls and receiving waters of your storm sewer system? Yes No
- C. Have you completed a GIS layer of all storm drain pipes and other conveyances in the storm sewer system? Yes No

- D. How many privately owned permanent stormwater practices/facilities exist within your jurisdiction? 478
- E. How many privately owned permanent stormwater management practices/facilities were inspected during the reporting period? All
- F. What percentage of the practices/facilities identified in were found to have inadequate maintenance? 26%
- G. How long do you give operators to remedy any operation and maintenance deficiencies identified during inspections?
Typically < 1 year; variable depending on ranking in Maximo work order system
- H. Do you have authority to take enforcement action for failure to properly operate and maintain stormwater practices/facilities? Yes No

5. Good Housekeeping

A. Please list facility types in which stormwater pollution prevention plans (or an equivalent plan) have been developed:

See Appendix E of this Report

- B. Are stormwater inspections conducted at these facilities? Yes
- C. If Yes, at what frequency are inspections conducted? quarterly wet and dry weather annual facility inspections
- D. List activities for which operating procedures or management practices specific to stormwater management have been developed (e.g., road repairs, catch basin cleaning).

<ul style="list-style-type: none"> • BMP Inspections • Storm System Inventory • Street Sweeping 	<ul style="list-style-type: none"> • Vehicle Washing • Standard Specifications • E & S 	<ul style="list-style-type: none"> • IDDE • Design Manual • Mowing
--	---	---
- E. Do you prioritize certain municipal activities and/or facilities for more frequent inspection? Yes No
- F. If Yes, which activities and/or facilities receive most frequent inspections? Bear maintenance facility
- G. Do all municipal employees and contractors overseeing planning and implementation of stormwater-related activities receive comprehensive training on stormwater management? Yes
- H. If yes, do you also provide regular updates and refreshers? Yes No
- I. If so, how frequently and/or under what circumstances? Annually

Certification Statement and Signature

I certify that all information provided in this report is, to the best of my knowledge and belief, true, accurate and complete. Yes No

Federal regulations require this application to be signed as follows: **For a municipal, State, Federal, or other public facility:** by either a principal executive or ranking elected official.

Name of Certifying Official, Title

Date (mm/dd/yyyy)

Table A-1. Summary of Activities in 2015 for DeIDOT Phase I NPDES.

Program Description	Measurable Goal	Status of Implementation
1. Public Education / Public Involvement		
A. Door hanger campaign	Distribute door hangers in subdivision where illicit discharges are found	217 door hangers distributed in NCC in 2015.
B. Stormwater Website	Stormwater quality website with "Report a Problem" hotline; track visits	5,650 Total Page Views.
C. Storm Drain Marking	Install water quality message markers on storm drains	Installed 22,677 markers.
D. Kid's Activity Booklet distribution	Distribute at public events or upon teacher request	Distributed approximately 150 booklets.
E. Technologies Students Association	Judge TSA competition for middle and high school students statewide	Annually.
F. Public Event Participation/Display	Participate in public events; develop display and interactive stormwater game for use at public events	Make-a-Splash; Delaware State Fair.
G. Promotional giveaways	Purchase items that display a water quality message for prizes and giveaways at public events	Distributed approximately 250 prizes/year with water quality message.
H. Delaware Livable Lawns	Promote program, launch website, develop brochures, certify qualified companies	There were 6,244 website sessions in 2015.
I. Pet Waste campaign	Distribute Bags-on-Board pet waste bag dispensers to educational groups and at public events	Distributed 1,422 Bags-on-Board.
J. Chesapeake Bay WIP	Contribute to the activities of DNREC's Chesapeake Bay WIP Communications & Outreach Committee	Environmental Scientist served as committee member.
K. 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.	926 Adopt-a-Highway volunteers.
"Imagine a Litter Free Delaware" cleanup day.	Statewide public event for clean up along roads, highways and community areas.	Annually.
M. Illicit Discharge campaign	Develop education campaign, hotline, statistically valid surveys	302STOPPIT Campaign (hotline and website) was developed in 2015.
2. Illicit Discharge Detection and Elimination		
A. Storm sewer system inventory and inspection	Inventory and inspect DeIDOT portions of the MS4	Inventoried/Inspected 355 BMPs and 1,979 structures in New Castle County in 2015.
Database and viewer application	Maintain and update storm sewer system system inventory and inspection database application and GIS mapping viewer application	Weekly updates.
Inventory and inspection	Complete initial inventory and inspection of all storm sewer system components in Kent and Sussex Counties	Inventoried 123 BMPs and 6,611 structures in Kent & Sussex Counties in 2015.
B. Dry Weather Outfall Screening	Evaluate 20% of DeIDOT system in the permitted area per year	Completed annually.
Ongoing IDDE Program	Inventory and screen new outfalls; screen outfalls as part of MS4 reinspections; investigate reported PIDs	Evaluated/screened 2,532 outfalls in 2015.
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.	302 STOPPIT Campaign and http://www.deldot.gov/stormwater/index.shtml .
	Distribute educational door hangers to homes in all neighborhoods in which illicit dumping activities have been reported, found or suspected.	217 door hangers distributed in NCC in 2015.

Table A-1. Summary of Activities in 2015 for DeIDOT Phase I NPDES.

Program Description	Measurable Goal	Status of Implementation
3. Stormwater Management during Construction		
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.	DeIDOT delegation valid through June 30, 2018.
B. Third party CCR inspectors	Use third party consultant services to conduct erosion and sediment control inspections on DeIDOT projects	Two consulting firms manage E & S inspections .
4. Post Construction Stormwater Management		
A. Operations and Maintenance of BMPs	Annually inspect stormwater BMPs statewide.	Inspected 478 BMPs Statewide in 2015.
B. BMP maintenance contract	Maintain stormwater ponds in need of major repairs that are functioning below design standard for quantity and quality.	Maintained 17 BMPs Statewide in 2015.
5. Good Housekeeping		
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.	Adopt-a-Highway currently has 926 volunteers.
"Imagine a Litter Free Delaware"	DeIDOT will continue the program and solicit new volunteers through newspaper ads and DeIDOT website	Annually.
Inmate Crews	DeIDOT will continue to utilize the inmate crew to assist current staff levels to reduce the floatables entering the storm sewer system.	Annually.
B. Storm Water Pollution Prevention Plans		
Quarterly Inspections	DeIDOT maintenance facility staff will complete a Dry and Wet Weather inspection each quarter.	All inspections complete.
Annual Inspections	DeIDOT NPDES staff will conduct annual compliance inspections at each maintenance facility	All inspections complete.
Outfall water quality monitoring	The Pollution Prevention Plans currently require wet weather stormwater monitoring at all maintenance facilities	Semi-annual monitoring began in August 2013 and continued through 2015.
C. Statewide Vehicle Wash Water Practices for Maintenance Yards		
Treat wash water through a treatment train prior to leaving the site.	Treat wash water through a treatment train prior to leaving the site.	Vehicle wash plan completed in 2005; Updated in May 2015.
D. Statewide Salt Best Management Practices for Maintenance Yards		
DeIDOT developed a report that documents operational practices and strategies for salt delivery, stockpiling, and mixing.	DeIDOT developed a report that documents operational practices and strategies for salt delivery, stockpiling, and mixing.	Salt Plan completed in 2004.
E. Spill Prevention and Response		
Spill Kits for Vehicles	Vehicle spill kits for use on the roadway	Completed in 2007.
Spill Prevention, Control and Countermeasures Plans (SPCC)	a. DeIDOT developed a SPCC plan for each maintenance facility. These plans include proper procedures for spill response. b. Update as necessary.	Cheswold, Harrington, and Magnolia completed; the remaining facilities to be completed in 2016.
Drainage Maintenance	DeIDOT will maintain the system as issues are discovered through inspections and complaints.	On going.
Storm System Inventory and Inspection	DeIDOT will perform a detailed inventory and inspection of the MS4 system.	On going.
Inspection and Preventative Maintenance Program	DeIDOT continues to implement an inspection and re-inspection program for the stormwater system.	On going.

Table A-1. Summary of Activities in 2015 for DeIDOT Phase I NPDES.

Program Description	Measurable Goal	Status of Implementation
F. Sweeping Program	Developed scientific-based street sweeping program	Completed in 2013; implemented in 2014; continued in 2015.
G. Training	Develop a training program for DeIDOT staff to educate staff on ways to prevent and reduce storm water pollution from their daily activities.	Webinars, Certified Construction Reviewer Course, videos.
PPP training videos	Staff annually view 3 videos entitled (1) Facility and Vehicle Maintenance, (2) Stormwater Contamination and Spill Prevention, (3) Vegetative Control and Pollution Prevention on Public Roads.	Annually.
Maintenance Bulletins	Develop informative bulletins for District staff to educate them on stormwater management and pollution prevention BMPs	Annually.
Spill Prevention and Response Videos	Staff annually view SPCC videos	Annually.
6. Industrial Stormwater		
Not applicable to DeIDOT		N/A.
7. Watershed Priority List		
Due with SWPP&MP submittal on August 7, 2014	Select two watersheds to develop Water Quality Improvement Plans	Submitted with SWPP&MP May 2014; selected Christina River and Dragon Run watersheds.
8. Mapping		
	Annual updates to mapping	Annually
9. Wet Weather Monitoring		
Wet weather outfall monitoring	Collect wet weather samples from various land use types 4X/year.	Outfalls are currently being evaluated based on various land use types. Awaiting SWPP&MP approval.
Monitoring of outfalls at maintenance facilities	Semi-annually	Semi-annual monitoring began in August 2013 and continued through 2015.

B. SWPP&MP Category-Specific Content

B.1. Public Education and Involvement

a. Status of Public Outreach Strategy and Outreach Activities

- **Door Hanger Campaign:**

Campaign to residents in subdivisions where an illicit discharge or illegal dumping activity was discovered or reported. In 2015, we distributed 217 door hangers in NCC in response to illegal trash, ashes and pet waste into the storm sewer.

- **Website:**

DelDOT developed a stormwater quality 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. In 2015, Google Analytics reported a total of 5,650 page views (Table B.1-1).

Table B.1-1. DelDOT Website – Google Analytics Page Views

Calendar Year	Total Page Views
2014	4,555
2015	5,650
2016	

- **Storm Drain Labeling:**

As part of the storm drain inventory and inspection (Section B.5-c.), KCI Technologies is continuing to label each inlet with a storm drain marker that carries a water quality message. There are approximately 22,640 storm drain markers in subdivisions and other locations visible to the public.

- **Activity Booklet Distribution:**

DelDOT distributed several hundred activity booklets to schools and at public events that highlight stormwater pollution, the water cycle and watersheds.

- An estimated 150 booklets were distributed to schools and the Delaware State Fair.
- Educational materials including bookmarks, brochures, calendars and promotional giveaways, which carry a water quality message were provided during the Make a Splash festival held on March 31, 2015. More than 750 fourth grade students from ten elementary schools participated.

- **Delaware Livable Lawns:**

Improper fertilization of lawns and open spaces is a huge problem throughout Delaware. DNREC, DeIDOT NPDES Section and the Delaware Nursery and Landscape Association continued the Delaware Livable Lawns Program in 2015. The program’s goal is to recognize those registered commercial applicators that are environmentally friendly.

Phase I of the Delaware Livable Lawns program targets commercial lawn care companies, recognizing them for environmentally friendly lawn care plans (e.g. soil tests, organic products, low/no nitrogen fertilizers, only fall applications, annual reporting, distribution of educational materials, etc.), while also meeting homeowners’ needs and educating them on best practices. The goal of the program is to reduce fertilizer runoff from residential lawns by changing watershed residents’ lawn care practices. To date, six companies have applied for certification and have been accepted.

Phase II of the campaign is the homeowner education portion, which includes advertising, outreach materials and events. Continuation occurred of the homeowner incentive program to encourage those who apply their own fertilizer to do it the Livable Lawns way. In 2015, 162 people signed up to agree to fertilize their lawns according to the Livable Lawns recommendations and in turn received a free soil test kit. Table B.1-2 lists the distribution by basin where the participants reside.

Table B.1-2. Delaware Liveable Lawns – Participants by Location

Basin	Livable Lawn Participants (No.)
Piedmont	102
Delaware Bay	37
Inland Bays	15
Chesapeake Bay	8
TOTAL	162

Of those 162 people, 16 completed Phase II of the homeowner incentive program in 2015 by providing information on their actual fertilizer applications (Table B.1-3). These individuals were awarded a \$50 voucher for free native plants at local nurseries.

Table B.1-3. Delaware Liveable Lawns – Phase II Completion

Calendar Year	Homeowner Sign-ups	Homeowners Submission of Fertilizer Use / Soil Kits	Total Vouchers (\$50 each)
2014	71	9	450
2015	162	16	800

2015 Livable Lawn Presentations / Outreach

- 11/18/15 – Hockessin, DE – DNLA Ornamental & Turf Workshop – 228 attendees.
- 01/29/15 – Dover, DE – Horticulture Industry Expo – 354 people.

Public Outreach:

- 7/29/15 – Harrington, DE – Livable Lawns at UD Extension Booth, State Fair
- 5/22/15 – Wilmington, DE – WHYV TV segment featuring Bob Finocchiaro & Dr. Susan Barton.
- 4/25/15 – Center for the Inland Bays Native Plant Sale.

Promotional Materials:

- Lawn marker flags – 06/15.
- Soil test kits purchased (150) – 5/145 & 6/15.
- Signage space on two lifeguard stands at DE Seashore State Park – Summer 2015.
- Livable Lawns business cards developed and printed – 4/15.

Website:

- Updates and enhancements with additional fields and styling for online healthy lawn submissions, addition of rack cards, homeowner incentive program – 6/15.

Certified Companies:

- 6 companies re-certified.

- **Nutrient Management Training:**

Historically, Nutrient Management training has been offered in the winter as a six week series. Participants are required to attend all classes to be eligible to take the exam. Some landscapers fail to complete the course due to the necessity to plow snow in inclement weather. The potential for missing a class has impacted enrollment. In addition, the course is gauged to the overall agriculture community. DNLA worked with UD Cooperative Extension to offer nutrient management training in December (before most snow) and tailor it to landscapers. The six week half day segments were condensed into three full day classes. As a result, class size doubled to 40 companies.

Additionally, two certified suppliers were added to the Livable Lawns website. To become certified, suppliers need to have soil tests kits, appropriate products and information available to support the Livable Lawns guidelines.

Challenges:

- Nutrient management classes and exam are challenging. Many participants struggle to pass the exam. Nutrient management certification is a necessary component to be a Livable Lawns certified business. A fee is also associated with the certification.

Although certification is required of any business applying nutrients to 10 or more acres, it is not enforced. Therefore many companies opt to avoid certification and this reduces the number of potential Livable Lawns companies.

- Appropriate product availability can be a challenge for both homeowners and landscapers. Most homeowners purchase their fertilizer at big box stores and educational assistance and information is not always available.

- **Pet Waste Education:**

Alongside DeIDOT, DNREC continued an intensive pet waste education campaign throughout the state. In 2015, the Partnership for the Delaware Estuary provided 522 pet waste collection bag holders to pet owners in the Leatherman’s Run watershed and an additional 500 to local pet stores and shelters throughout the state. DeIDOT provided two boxes of 200 bags to the Firefox development in Newark for their existing Dogi-Pot station.

- **Litter Control Programs:**

Adopt-a-Highway: Adopt-a-Highway is a cooperative program between DeIDOT’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 DeIDOT’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. DeIDOT maintains an Adopt-a-Highway website (www.deldot.gov) and submits press releases to solicit volunteers. There are 926 volunteer groups statewide (387 groups in New Castle County) maintaining 1,698 lane miles.

Imagine a Litter Free Delaware Day: This event is a statewide clean-up day that everyone is invited to clean roads, highways, bike paths and community areas. DeIDOT has coordinated this event every October since 2005.

Table B.1-4 lists the total number of trash bags collected by volunteers in litter control programs in each County.

Table B.1-4. Litter Control Programs – Trash Bags Collected by County

Calendar Year	New Castle County	Kent County	Sussex County
2014	1,261	715	2,530
2015	1,300	999	2,298

- **Water Words that Work:**

DelDOT and New Castle County have implemented a variety of education and outreach activities to increase knowledge and change behavior regarding MS4s in target communities, with the goal of decreasing the discharge of pollutants to the MS4.

To satisfy this requirement, DelDOT and New Castle County have elected to conduct an education and outreach effort, using consultant services, aimed at four targeted communities: 1) used motor oil; 2) household hazardous waste; 3) residential car washing; and 4) public reporting of illicit discharges.

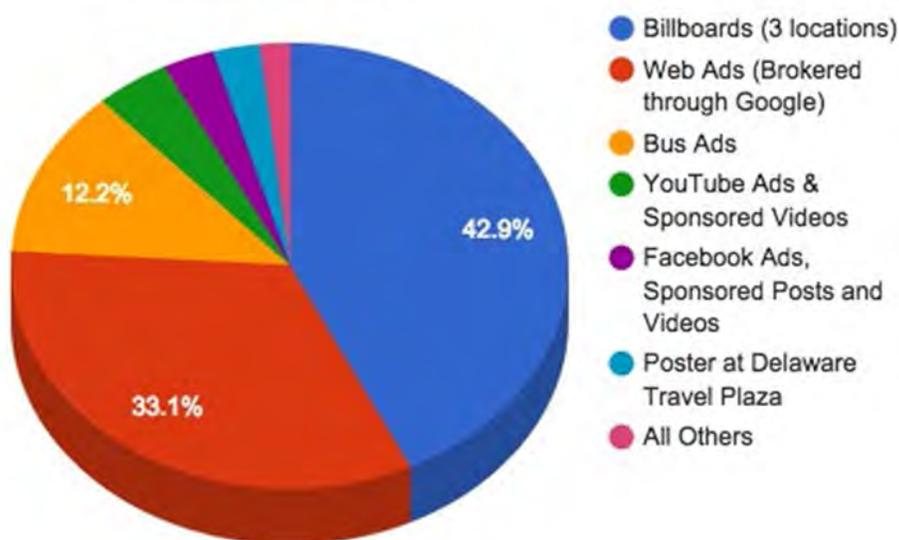
302 STOPPIT Campaign:

The New Castle Department of Special Services (NCCDE) and the City of Wilmington (COW) teamed up with the Delaware Department of Transportation, KCI Technologies, and Water Words that Work LLC to create the 302 STOPPIT Hotline campaign throughout the month of July 2015.

The campaign was the first effort of this kind to reach out to county residents about pollution in the storm drains, educate them about the steps they can take to keep the water clean, and by encouraging residents to report illicit stormwater discharges to the 302 STOPPIT water pollution hotline.

Water Words that Work estimated over 10 million impressions in the county during the month long effort through print, local TV access, radio, internet and other media. Additionally, residents submitted 42 reports of water pollution incidents through text, email voicemail, website, and the Report It/Resolve It smartphone app.

10 Million Impressions, By Source



Throughout the four weeks of the STOPPIT Campaign (July 1 -31, 2015), KCI Technologies received 36 reports that were submitted through text, e-mail, voicemail, and the website. The majority of reports (24) pertained to the presence of yard waste and grass clippings in the roadway and storm drain system. Reports of motor oil (4); pet waste (1); foam, stains, paint or other chemicals (2); and other issues (5) (e.g., trash, concrete, soap/detergents) were also received. Of the 36 received submissions, 26 were under the jurisdiction of DelDOT and NCC, and the rest were forwarded to the appropriate authority: City of Wilmington (6); City of Newark (1); City of Middletown (1); DNREC (1); and, DSWA (1).

- **Delaware Association for Environmental Education (DAEE):**

DelDOT staff were active participants in the founding and development of the Delaware Association for Environmental Education (DAEE). The DelDOT NPDES Environmental Scientist served on the Board of Directors, assisted the group with its communications and outreach, and served on the planning committee for DAEE's annual statewide conference.

- **University of Delaware Interactive Computer Games**

DelDOT partnered with the University of Delaware computer science lab and the art department in the development of interactive computer games. The computer science semester course consists of students working in teams to develop interactive touch screen games with the 'Delaware Livable Lawns' theme for use at the Delaware State Fair. An estimated 20,000 people visit the DNREC building during the 10-day event.

- **Impressions:**

The public education/outreach programs generated 10,056,473 impressions as described in Table B.1-5.

- **Partnership for the Delaware Estuary:**

We also executed an agreement with the Partnership for the Delaware Estuary to conduct several other education outreach programs per our SWPP&MP including: pesticide, fertilizer, and herbicide reduction, pet waste, motor oil, and residential car washing.

In addition to the pet waste educational efforts mentioned above, the PDE produced 6,000 brochures (2,000 for each DE County) regarding the importance of proper vehicle maintenance and local oil recycling/drop off facilities.

Approximately, \$22,000 was spent on TV, internet, and radio public service announcement to promote the Delaware Livable Lawn program. Timing near Earth Day was found to be especially helpful and overall resulted in 144 pledges to change lawn care practices.

Table B.1-5. Impressions for NPDES Public Education / Outreach Programs in 2015.

Public Outreach Effort	Method of Calculation	No. of Impressions
DelDOT NPDES Website	Google Analytics total page view by year	5,650
Door Hanger Campaign	IDDE annual report data	217
Storm Drain Labeling	Data query, map viewer database	22,640
Activity booklets	Box count for Delaware State Fair, school mailing	150
Delaware State Fair Public Event	Clicker counts	20,000
Promotional Items Give-away NCC Workshops: estimated give away items = 100	Purchased amount	1,000
Water Words that Work Pre and post surveys for the 302 STOPPIT campaign	Phone calls with interactive voice response	1,314
302STOPPIT campaign	Print ads & posters, local TV and radio ads, website and social media posts	10 million
Silent Oil Spills brochures & where to recycle oil in DE	Number of brochures created	6,000
TOTAL		10,050,971

b. Status of Public Education Surveys

DelDOT, New Castle County and its co-permittees elected to contract with Water Words that Work LLC to conduct a statistically valid public education survey to evaluate the general knowledge of target communities regards MS4, impacts of urban runoff and potential solutions. A baseline survey was conducted in May 2015 and revealed that residents report a high degree of concern about water pollution. However, while most panelists knew that chemicals and wastes enter waterways through the storm sewer system, very few were aware of existing tools (i.e., www.302STOPPIT.org) to report pollution.

The baseline survey secured 756 responses for a margin of error of 3.6%. The follow up survey was completed on August 3rd, 2015. This was immediately after our online and cable ads stopped running. We secured 558 responses for a margin of error of 4.1% (Table B.1-6).

The surveys found a statistically valid increase in awareness of the 302 STOPPIT Hotline and the activities that can be reported using the hotline.

Table B.1-6. Public Education Survey Summary.

Question	Pre Survey Result	Post Survey Result
Have you heard about the 302 STOPPIT Hotline?	1.3%: Yes	7.9%: Yes
Do you recall seeing or hearing messages about the City of Wilmington’s Report It/Resolve It website and app?	11.9%: Yes	15.0%: Yes
As best as you can remember, what is the purpose of the 302 STOPPIT Hotline?	11.5%: It’s for residents to report water pollution crimes	44.7%: It’s for residents to report water pollution crimes
Which of these following activities can you report using the 302 STOPPIT Hotline?	11.9%: Dumping used motor oil, paint or household chemicals onto a street or into a storm drain 28.9%: Tossing pet waste or trash onto a street or into a storm drain 17.6%: Dumping leaves or grass clippings onto the street or into a storm drain 15.4%: Oil slick, odd color or foam on the water near a storm drain or outfall	40.2%: Dumping used motor oil, paint or household chemicals onto a street or into a storm drain 45.4%: Tossing pet waste or trash onto a street or into a storm drain 42.6%: Dumping leaves or grass clippings onto the street or into a storm drain 39.0%: Oil slick, odd color or foam on the water near a storm drain or outfall

c. Summary of Public Involvement Activities

- Adopt-a-Highway
- Christina River Clean Up
- Imagine a Litter Free Day

d. Summary of Past Annual Meeting or Mandated Workshops

Two public workshops were held on November 19, 2015:

- *Stormwater Management Maintenance and Inspections Program of Commercial and Industrial Facilities:* Discussion topics were (1) Stormwater management facilities inspection and maintenance; (2) Annual inspection and maintenance logs for underground facilities; (3) Controlling and removing invasive vegetation.
- *Stormwater Management Maintenance and Inspections Program of Residential Facilities:* Discussion topics were (1) Stormwater management facilities maintenance; (2) Annual inspections; (3) Stormwater maintenance program (formerly the Amnesty Program); and (4) Controlling and removing invasive vegetation.

Also, on November 5, 2015 DeIDOT & KCI participated in the DNREC & DEAWRA Symposium: “MS4 Changes in Delaware: Will You Be Ready?”. Presentations and a panel discussion covered topics including MS4 101 & the General Permit Process, Minimum Control Measures, Current MS4 Programs in Delaware, and Innovative Funding & Resource Sharing. Shortly after this meeting a DE MS4 Consortium was initiated and DeIDOT is committed to participating in that group.

B.2. Illicit Discharge Detection and Elimination

DelDOT is responsible for the Illicit Discharge Detection and Elimination (IDDE) program within the state-maintained portion of the MS4. DelDOT's IDDE program is implemented with assistance from KCI Technologies under Agreement No. 1749.

a. *IDDE Protocol*

The IDDE screening protocol has two primary components: "evaluations," a desktop exercise, and "screening," which occurs in the field.

Approximately 20% of the outfalls in New Castle County are evaluated each year; therefore, all outfalls will be completed by the end of the five-year permit term. The outfalls to be targeted for subsequent field screening each year will be selected as follows:

- All outfalls encountered during routine MS4 inventory and inspection activities will be screened;
- All reports/complaints of spills or dumping will be investigated and the relevant portions of the MS4 screened; and
- On a watershed by watershed basis, the entire MS4 will be evaluated to target outfalls for field screening that have high potential for illicit discharges or connections. Following the methods recommended in the EPA's IDDE manual (*Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments, Brown et al., 2004*), all outfalls within a watershed will be assessed based on available GIS data, including:
 - Known past illicit discharges
 - History of dry weather flow and/or detected ammonia or detergents
 - Proximity to structures with environmental or pipe work orders
 - Structures found during inspections to have connections from unknown sources
 - Proximity to aging or abandoned sanitary sewer systems
 - Communities with no sanitary sewer systems
 - Proximity to potential discharge sources (e.g. industrial or commercial facilities)
 - Proximity of outfalls to streams
 - Proximity to previous known MS4 deficiencies
 - Age of MS4 (pre-1962)

All outfalls targeted through this assessment (and parts of their connecting conveyances) are screened in the field during dry weather. If evidence of illicit discharges or connections is found, then further investigations and follow-up actions are undertaken.

b. *Summary of IDDE Evaluations and Screening*

In 2015, 19,379 MS4 structures, including 2,429 outfalls, were evaluated in NCC using GIS and the criteria above in the Christina River. The desktop evaluation identified 1,523 outfalls for dry weather field screening. Non-targeted outfalls were field screened if contributing structures leading to that outfall were in targeted areas.

In addition to these, 102 outfalls were inspected and evaluated during dry weather as part of routine MS4 inventory and inspection activities in New Castle County. One outfall was also evaluated based on a report from the public of a potential illicit discharge. For this report, a field crew was sent to the location to conduct dry weather screening and investigate for other evidence of illicit discharges.

In 2015, a total of 2,532 DeIDOT-owned outfalls were evaluated in New Castle County, and 1,007 were screened for evidence of illicit discharge in the field during dry weather (Table B.2-1). 128 of these had dry weather flow, and 20 were determined after investigation to be illicit discharges. The illicit discharges are summarized in Table B.2-2.

The DeIDOT IDDE field screening website, which was created in 2013, continues to be an important step in DeIDOT’s IDDE program documentation process. This online database contains outfall screening data from 2007–2015.

All of DeIDOT’s IDDE activities are explained in more detail in KCI Technologies’ 2015 IDDE Program Annual Report (Appendix B).

Table B.2-1. Summary of Outfall Evaluation and Dry Weather Screening in NCC.

Total Outfalls Evaluated	2,532
Outfalls Evaluated through GIS	2,429
Outfalls Evaluated for Dry Weather Flow during MS4 Inventory	102
Outfalls Evaluated due to Miscellaneous Reports	1
Total Outfalls Screened	1,007
Outfalls Screened based on Targeted Evaluations	931
Outfalls Screened due to Reports of Dry Weather Flow during MS4 Inventory	22
Outfalls Screened due to Reports from Staff, Public, or STOPPIT Hotline	34
Outfalls Screened as Potential Illicit Discharges	20
TOTAL NCC OUTFALLS EVALUATED AND/OR SCREENED IN 2015	3,539

Table B.2-2. Summary of Illicit Discharges in NCC.

Incident ID No.	County	Reported By	Source	Comment
2015-137-DN	New Castle	Targeted	Washwater Entering MS4	ACTIVE: Business owner sent NOV; waiting for response
2015-190-DN	New Castle	BMP Inspection	High Detergents Level	ACTIVE: NCC to investigate the source of elevated detergents
2015-1-D	Sussex	MS4 Inspection	Non-DeIDOT Connection	Homeowner contacted; connection was legal sump pump
2015-53-D	New Castle	MS4 Inspection	Dumping: Pet Waste	Confirmed pet waste in MS4; door hangers distributed
2015-75-D	New Castle	Miscellaneous	Dumping: Cement	Confirmed cement in MS4; door hangers distributed
2015-76-D	New Castle	Targeted	Dumping: Oil	Confirmed oil in MS4; door hangers distributed
2015-80-D	New Castle	302 STOPPIT Hotline	Dumping: Trash	Confirmed trash in MS4; door hangers distributed
2015-81-D	New Castle	MS4 Inspection	Dumping: Pet Waste	Confirmed pet waste in MS4; door hangers distributed
2015-82-DN	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste	Confirmed yard waste in MS4; door hangers distributed
2015-88-D	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste	Confirmed yard waste in MS4; door hangers distributed
2015-89-D	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste	Confirmed yard waste in MS4; door hangers distributed
2015-92-D	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste	Confirmed yard waste in MS4; door hangers distributed
2015-93-D	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste	Confirmed yard waste in MS4; door hangers distributed
2015-97-D	New Castle	302 STOPPIT Hotline	Dumping: Oil	Confirmed oil in MS4; door hangers distributed
2015-114-D	New Castle	Targeted	Dumping: Kitchen Grease	Confirmed kitchen grease in MS4; door hangers distributed
2015-115-D	New Castle	Targeted	Dumping: Cigarette Butts	Confirmed cigarette butts in MS4; door hangers distributed
2015-117-D	New Castle	Targeted	High Ammonia Level	Known DNREC remediation site
2015-156-D	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste/Leaves	Confirmed yard waste/leaves in MS4; door hangers distributed
2015-159-D	New Castle	Targeted	Dumping: Cigarette Butts	Confirmed cigarette butts in MS4; door hangers distributed
2015-185-D	New Castle	Targeted	Dumping: Diapers & Trash	Confirmed diapers and trash in MS4; door hangers distributed
2015-186-D	New Castle	MS4 Inventory	Dumping: Pet Waste	Confirmed pet waste in MS4; door hangers distributed

c. Summary of IDDE Public Information or other Measures Taken

In an effort to encourage Delaware citizens to dispose of hazardous household materials properly, the DelDOT NPDES Section helps publicize Delaware Solid Waste Authority (DSWA)'s Household Hazardous Waste (HHW) Collection Program. A link to the DSWA's HHW collection events is posted on the DelDOT Stormwater website, and information about the dates and locations of collections is distributed at public events.

Other public outreach programs aimed at eliminating illegal dumping of trash, debris and hazardous wastes along the state's highways is the 302 STOPPIT Campaign and DNREC's "TrashStoppers" Program.

- 302 STOPPIT Campaign: Throughout the four weeks of the STOPPIT campaign (July 1 - 31, 2015), KCI Technologies received 36 reports that were submitted through text, e-mail, voicemail, and the website. The majority of reports (24) pertained to the presence of yard waste and grass clippings in the roadway and storm drain system. Reports of motor oil (4); pet waste (1); foam, stains, paint or other chemicals (2); and other issues (5) (e.g., trash, concrete, soap/detergents) were also received. Of the 36 received submissions, 26 were under the jurisdiction of DelDOT and NCC, and the rest were forwarded to the appropriate authority: City of Wilmington (6); City of Newark (1); City of Middletown (1); DNREC (1); and, DSWA (1).
- DNREC's "TrashStoppers" Program (<http://www.awm.delaware.gov/Enforcement/Pages/TrashStoppers.aspx>). The public is asked to notify DNREC about any roadways or streets used for illegal dumping so the sites can be put under surveillance by digital cameras to aid in identifying trash dumpers. The public is also asked to identify the trash dumpers who are caught in the act in photos posted on the DNREC web site as part of the TrashStoppers campaign. In addition to publicizing the program, DelDOT staff forward reports of illegal dumping along state roads to DNREC.

DelDOT also works closely with New Castle County, the co-permittees, and other municipalities on any illicit discharge reports involving sections of the MS4 that cross jurisdictional boundaries.

Hotline numbers for reporting illegal discharges or dumping into the MS4 are posted on DelDOT's stormwater website (http://www.deldot.gov/stormwater/report_a_problem.shtml), as required by the permit. In addition, these numbers are included in other stormwater educational materials that are distributed.

In 2015, the door hanger campaign continued in subdivisions where an illicit discharge or illegal dumping activity was discovered or reported as part of our residential outreach program. The front side of the door hanger lists the date and type of pollutant found and water body affected. On the back, the door hanger describes stormwater pollution and

guidelines to reduce pollution at the home or workplace. In 2015, 217 door hangers were distributed in response to reports of dumping in New Castle County (Table B.2-3).

Table B.2-3. Door Hanger Distribution in NCC Neighborhoods.

Incident ID No.	Date	Neighborhood	County	Waste Reported	Water Body	Door Hangers Distributed
2015-53-D	05/01/15	Wood Creek	New Castle	Pet Waste	White Clay Creek	19
2015-75-D	07/21/15	Pigeon Run	New Castle	Concrete	Red Lion Creek	20
2015-76-D	07/21/15	Woodland Park	New Castle	Oil	Christina River	7
2015-80-D	07/14/15	Buena Vista Park	New Castle	Yard Waste/Trash	Army Creek	16
2015-81-D	08/26/15	Christiana Falls	New Castle	Pet Waste	Christina River	8
2015-82-DN	07/09/15	Bestfield	New Castle	Yard Waste	Christina River	21
2015-88-D	07/27/15	Jefferson Farms	New Castle	Yard Waste	Delaware River	6
2015-89-D	07/27/15	Elmhurst	New Castle	Yard Waste	Christina River	14
2015-92-D	07/20/15	Ridgewood	New Castle	Yard Waste	Shellpot Creek	8
2015-93-D	07/22/15	The Timbers	New Castle	Yard Waste	Naamans Creek	9
2015-97-D	08/04/15	Millrace	New Castle	Oil	White Clay Creek	15
2015-114-D	09/17/15	Bellemoor	New Castle	Kitchen Grease	Christina River	8
2015-115-D	09/17/15	Boxwood	New Castle	Cigarette Butts	Christina River	17
2015-156-D	12/03/15	Georgian Terrace	New Castle	Yard Waste/Leaves	Shellpot Creek	15
2015-159-D	12/03/15	Westhover at Taylortowne	New Castle	Cigarette Butts	Christina River	10
2015-185-D	12/31/15	Todd Estates	New Castle	Diapers/Trash	Christina River	8
2015-186-D	12/31/15	Stone Mill	New Castle	Pet Waste	Christina River	16
TOTAL DOOR HANGERS						217

B.3. Stormwater Management during Construction

a. Summary of Activities:

Number of plans reviewed:	239
Total number of sites:	39
Total number of inspections conducted:	178
Weekly inspections:	178
Rain event inspections:	N/A
Enforcement actions taken:	5 Notice of Non-Compliance Issued

b. NPDES General Permit Requirements

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

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. DelDOT's current delegation from DNREC extends through June 30, 2018. 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.

c. Performance and Measurable Goals

Enforcement of construction site erosion and sediment controls is accomplished through each construction contract. DelDOT Standard Specifications lay out a progressive step-wise approach to gaining compliance with approved plans, regulations, and laws. In 2007, this section was significantly rewritten to demonstrate positive movement toward improving the Erosion & Sediment Program. In 2015, we continued to use consultant services under agreement with two (2) firms, relieving the Contractor of CCR inspection duties.

1. Instead of the contractor providing the CCR, we executed agreements to hire two consulting firms to perform the weekly CCR inspections. This has improved compliance with the required weekly and rain event reporting. The consultant also has the authority to hire a third party contractor to correct E&S deficiencies if the prime contractor refuses.
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. Strengthened available actions to gain compliance.
5. Environmental Compliance Supervisor – This position at DeIDOT 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. The purpose of the 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 DeIDOT had 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 continued our agreement with two consulting firms to perform the weekly CCR inspections in lieu of contractor-provided CCRs as described in number 1 above. This has improved compliance with the required weekly and rain event reporting. The consultants 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. A monetary incentive is offered to contractors who score a 70 or greater on the CCR reporting form.

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

d. Design and Construction of BMPs

DNREC delegates to DeIDOT the initial plan review and approval of proposed designs for land disturbances greater than 5,000 square feet.

In 2015, the Stormwater Section conducted 381 plan reviews of 239 design plans for their adherence to the Delaware Sediment and Stormwater Regulations. About a third of those projects are residential subdivision and commercial plans. DeIDOT's subdivision manual regulates development in Delaware that will be turned over for State Maintenance. Before a subdivision street is accepted, DeIDOT conducts a final inspection to ensure the structural integrity of the stormwater system. A pipe video inspection using Closed Circuit Television (CCTV) is performed.

B.4. Post-construction Stormwater Management

a. Summary of Number of Maintenance Inspections Conducted

DelDOT has an annual requirement to inspect its constructed best management practice (BMP) devices, structures and stormwater management facilities (Appendix D). In 2015, 355 BMP inspections were completed in the Phase I Permit Area (North and Canal Districts).

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, infiltration 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. Please refer to Appendix D for a list of all DelDOT constructed facilities.

Overall performance and functionality are graded A-D. Table B.4-1 describes the 2015 rating summary by each maintenance district. 74% of the BMPs inspected in 2015 have an A or B rating, which is the rating that reflects that there are no issues that affect performance, and that maintenance above and beyond the routine mowing and trash removal is not necessary. We have also noticed that each year we have up to 10% of our BMPs fall from Good or Fair status to a status of contracted work needs.

BMPs that have a C rating are, to some degree, affecting performance. D rated BMPs are not functioning as designed and are evaluated for a retrofit. C rated BMPs are triaged and are typically contracted for maintenance as needed and as money permits. D rated BMPs need to be redesigned. Maintenance functions are performed either by the Districts or through general contractors, contractors specializing in noxious and invasive species control, or contractors specialized in specific manufactured BMP types.

Noxious and invasive species are managed either through Roadside Environmental or District staff, or placed under contract with a professional herbicide applicator. In 2015, a total of 58 BMPs were treated for invasive species in NCC.

In 2015, the following 17 BMPs were maintained:

- Area 2 – Seaford: BMPs 305, 306, 407, 408, 409, 410
- Area 7 – Magnolia: BMPs 204, 206*, 208, 209
- Area 8 – Magnolia: BMPs 5, 10, 17*, 18*, 77, 211, 212

* Maintenance of BMPs 17, 18, and 206 was completed in Winter/Spring of 2016.

The current standard for the Department is to use in-house staff for minor maintenance activities and annual preventative maintenance. For reconstruction of structural BMPs once they reach their expected life span, a maintenance contract will be developed to address these needs. The goal of the program is to improve the annual and preventative maintenance in order to prolong the period of time between initial construction and reconstruction.

Table B.4-1. 2015 BMP Inspection Ratings Summary ¹. – NCC

MAINTENANCE AREA	DISTRICT	COUNTY	BMP PERFORMANCE RATING				TOTAL
			A	B	C	D	
2 Seaford	South	Sussex	12	2	0	0	14
3 Ellendale	South	Sussex	16	3	0	0	19
4 Gravel Hill	South	Sussex	13	0	1	0	14
5 Dagsboro	South	Sussex	23	5	6	0	34
6 Harrington	Central	Kent	11	1	0	0	12
7 Magnolia	Central	Kent	7	4	0	0	11
8 Cheswold	Central	Kent	12	4	3	0	19
9 Middletown	Canal	NCC	50	31	48	0	129
10 Bear	Canal	NCC	8	27	22	0	57
11 Kiamensi	North	NCC	27	11	11	3	52
12 Talley	North	NCC	44	14	18	0	76
14 Expressways	North / Canal	NCC	14	14	13	0	41
TOTAL			237	116	122	3	478

¹ Table reflects annual routine inspections by KCI Technologies in 2015. BMPs with existing work orders or on contract for maintenance were inspected by DelDOT prior to contracted work.

b. Total number of BMPs

DelDOT owns and operates 353 BMPs in New Castle County (Appendix D). Since 2009, there has been a projected growth of 10% each year, if roadway project funding and construction remains consistent. Over the past five years, DelDOT has developed a BMP maintenance program focused on ensuring the facilities operate and perform as they were designed. Most of the BMP maintenance for the 15± year-old BMPs was contracted out to professional contractors.

B.5. Good Housekeeping

a. Updated Inventory of All MS4 facilities

DelDOT maintains an inventory of 17 MS4 maintenance facilities permitted under the State Industrial General Permit Program (Appendix E). DART, a division of DelDOT, operates the commuter transit system. DART maintains an inventory of 48 Park and Ride / Pool locations and three transit bus maintenance facilities, which carry permit coverage under the State of Delaware's Industrial General Permit Program, and four parking lot facilities. A summary table of DART facilities is detailed in Appendix F.

b. Inspection Schedule of MS4 facilities

Pollution Prevention Plan Team members are required to conduct quarterly inspections during dry and wet weather events to look for evidence of stormwater contamination. In addition, DelDOT NPDES Program staff annually conducts thorough SWPPP compliance inspections of each facility. Annual inspections were completed for all DelDOT maintenance facilities between June - December 2015.

c. Summary of Control Measures taken to Minimize the Impacts of Discharges from Various Sources as Listed in Permit

DelDOT operates and maintains the MS4 and any structural controls incorporated into the system to reduce the discharge of pollutants. The NPDES Section uses consultant services to inventory and inspect the entire DelDOT-owned system. From these inspections, work orders are generated for repair or maintenance. DelDOT uses in-house forces and contractors to maintain its stormwater conveyance system. A summary report is included in Appendix C.

d. Summary of All Street Sweeping Operations, as Specified in the SWPP&MP

In 2015, DelDOT began its new targeted sweeping program as described in DelDOT's 2013 NPDES Annual Report. This targeted approach has 5 roadway types: Interstates and Expressways (8X/year), Targeted Roadways (8X/year), Local Roadways (1X/year), Non-Targeted Arterial Roadways (3X/year), and Special Work Order roadways (swept as needed or complaint driven). Completion of roadway sweeping frequency and sweeper waste tonnage is tracked. DelDOT completed 98% of the roads and required frequency. It is important to note that while DelDOT's work order system was able to verify the 98%

completion of all sweeping, it did not include additional sweeping miles completed by contractors. Therefore, more than 100% of the targeted roads have been swept.

A total of 1,226 tons of street sweeping residuals were collected from New Castle County roadways in 2015. Estimates of the amount of nitrogen and phosphorus removed by this BMP were made and are as follows:

Table B.5-1. Estimates of Nitrogen and Phosphorus Removed from Roadways by Street Sweeping in New Castle County.

Tons	Total Nitrogen (lbs)	Total Phosphorus (lbs)
1,300	4,549	1,820

e. Summary of Program to Limit Infiltration from Sanitary Sewers into MS4

See Section B.2 for a complete description of DelDOT’s IDDE program.

f. Summary of Pesticide, Herbicide, and Fertilizer :Program

All herbicide applications 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 our rights-of-way.

We do not routinely fertilize our roadsides. The only nutrients “applied” to DelDOT’s rights-of-way include grass clippings left on the ground after mowing. Degradation of this vegetative material results in the slow release of organic constituents that are mineralized to plant nutrients by microorganisms and are subsequently available to turfgrasses. This natural process results in minimal leaching of nutrients. This practice also 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 turfgrasses 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 70 lb/ac. Phosphorous pentoxide is applied at 42 lb/ac of available P that is the sum of water soluble and citrate-soluble phosphate. Potassium oxide is applied at 28 lb/ac of water soluble potash. In all cases, areas that are seeded are covered with a recommended mulch.

Pesticides applied on our rights-of-way are done according to label recommendations and filed with EPA at the time of product registration. Pesticides applied on DelDOT's rights-of-way are done predominately by contractors that are certified Delaware pesticide applicators. DelDOT employees that apply pesticides to our 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. We 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.

We are implementing several programmatic initiatives as part of the NPDES pesticide reduction strategy:

1. 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 inventoried 310 guardrail miles and was completed in June 2009. Attributes collected included material under guardrail, guardrail type, surrounding environmental features and identification of sensitive/no spray zones. The inventory and attributes collected will be used in development of a pesticide reduction strategy to limit the use of herbicides, particularly around environmentally sensitive areas (e.g. streams, wetlands, drinking supply, etc.).

A GIS analysis was performed to identify sections of guardrail adjacent to environmentally sensitive areas as referenced above. The following GIS data was used for this analysis: Delaware Wetlands, Statewide Excellent Recharge Areas, Land Use, Statewide Wellhead Protection Areas, Delaware Streams, Delaware Waterbodies, and Delaware Protected Lands. As a starting point, a buffer was then applied to identify all sections of guardrail located within 100' of these environmentally sensitive areas. Upon further examination it was determined Land Use and Delaware Protected Lands were not applicable for this analysis. This study did not progress in 2015 due to staffing vacancies, but we anticipate re-initiating the study next year. Once our analysis has been completed we will then evaluate alternative methods of reducing herbicides on a case by

case basis. Treatment measures include weed control barriers, low growing vegetation, and hand cutting.

Since DelDOT is continually upgrading, replacing, or adding new guardrail, we executed a new agreement to update and maintain DelDOT's existing guardrail inventory database. The consultant will compile a field-verified inventory of the new and modified guardrail sections on all DelDOT-maintained roadways statewide, including GPS location data for the beginning and end of each section. At least twice per year, DelDOT's NPDES Section will provide information to the consultant on the locations of new guardrail installations. These will be integrated into the existing guardrail inventory database.

2. 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. Weed barrier material, asphalt, low-grow fescue, zoysia seed and sod, Flight Turf, and natural growth with periodic trimming is monitored against a control. 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 environmentally sensitive areas and drinking water supply reservoirs. We have extended this study through at least the next growing season to collect additional data on weed barrier materials and to test new plots of zoysia grass and Flight Turf. A detailed summary report is found in Section B.9 of this report.
3. Training – In addition to the required training for pesticide license renewal, DelDOT holds or attends periodic training to further educate staff. In 2015, DelDOT Roadside Environmental staff attended the following workshops:
 - Delaware Horticultural 2015 Industry/Pesticide Expo
 - 2015 Arborist and Tree Care Seminar
 - Delaware Nursery and Landscape Association (DNLA) - Summer Turf and Nursery Expo
 - Transportation Research Board AHD50 Subcommittee Meeting
 - 2015 Maryland Agriculture Pesticide Conference
 - DNLA 2015 Turf and Ornamental Workshop
 - International Society of Arboriculture – Tree Risk Assessment Qualification
 - Transportation Research Board Webinar: The Economic and Ecological Effects of Roadside Mowing
 - Transportation Leaders' Summit – Restoring the Nation's Pollinator Habitat
4. NPDES Aquatic Pesticide General Permit Program – DelDOT is required to comply with the NPDES Aquatic Pesticide General Permit Program. The Environmental Roadside Section has submitted a Pesticide Discharge Management Plan and annual report to DNREC.

5. Record keeping and pesticide usage – Contractors and DeIDOT applicators are required to submit records of spraying activities to DeIDOT’s Environmental Roadside Section. The NPDES Section tracks and reports herbicide quantities to establish baseline 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. Pesticide quantities are provided in Table B.5-2.

Table B.5-2. Total Pesticides Applied, Statewide 2015.

Product Name	EPA Reg. No.	App. Method	Quantity	Unit of Measure
41A	Exempt	Land-based Sprayer	46.000	lbs.
Accord	67219-324	Land-based Sprayer	3.850	gals.
Amine 4, 2,4-D	34704-120	Land-based Sprayer	0.050	gals.
Aquaneat	228-365	Land-based Sprayer	266.490	gals.
Arsenal	241-346	Land-based Sprayer	0.326	gals.
Basal Oil	Exempt	Land-based Sprayer	3.200	gals.
Bullseye	Exempt	Land-based Sprayer	3.790	gals.
Chemsurf	Exempt	Land-based Sprayer	2.864	gals.
Clean Slate	228-491	Land-based Sprayer	0.038	gals.
Clearcast	241-437	Land-based Sprayer	0.234	gals.
Crossbow	627819-260-5905	Land-based Sprayer	0.250	gals.
Diuron	34704-648	Land-based Sprayer	1044.170	lbs.
Escort XP	352-439	Land-based Sprayer	19.470	lbs.
Esplanade	432-1516	Land-based Sprayer	9.141	lbs.
Garlon 3A	67219-37	Land-based Sprayer	1.230	gals.
Garlon 4	62719-40	Land-based Sprayer	0.850	gals.
Hightlight	Exempt	Land-based Sprayer	1.761	gals.
Krenite	42750-247	Land-based Sprayer	350.000	gals.
Method 50SG	352-787	Land-based Sprayer	72.850	lbs.
Milestone VM	62719-537	Land-based Sprayer	1.146	gals.
MSO	Exempt	Land-based Sprayer	117.740	gals.
Nu-Film	Exempt	Land-based Sprayer	8.260	gals.
Oust XP	432-1552	Land-based Sprayer	0.013	lbs.
Oust Extra	432-1557	Land-based Sprayer	21.870	lbs.
Outrider	524-500	Land-based Sprayer	0.049	lbs.
Overdrive	7969-150	Land-based Sprayer	0.770	lbs.
Panoramic	66222-141-81927	Land-based Sprayer	23.380	gals.
Pathfinder	67219-176	Land-based Sprayer	3.000	gals.
Patriot	228-391	Land-based Sprayer	0.125	lbs.

Product Name	EPA Reg. No.	App. Method	Quantity	Unit of Measure
Pendulum	241-416	Land-based Sprayer	6.010	gals.
Polaris	228-534	Land-based Sprayer	27.050	gals.
Roundup Pro(41%)	524-475	Land-based Sprayer	0.750	gals.
Roundup Pro Max(47%)	524-579	Land-based Sprayer	5.970	gals.
Snapshot	62719-175	Land-based Sprayer	305.000	lbs.
Surface	2217-850	Land-based Sprayer	15.410	gals.
Tahoe	228-520	Land-based Sprayer	1.500	gals.
Thinvert	Exempt	Land-based Sprayer	275.000	gals.
Tordon	62719-17	Land-based Sprayer	3.750	gals.
Trooper P+D	228-530	Land-based Sprayer	44.220	gals.

g. Summary of Snow / Ice Program

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

DeIDOT has developed and instituted advanced snow fighting practices that began during the 2004-2005 winter season, including ground speed spreader controls, anti-icing, pre-wetting, and plow balance valves. These advanced techniques in snow and ice removal help DeIDOT meet its goal of improved service to customers, reduce the impact to the infrastructure, and conserve salt, which helps meet the goals of the NPDES Program by reducing the impact on the environment. These practices are described as follows:

- Ground speed spreader controls provide accurate control of material usage.
- 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 uses 6000 gallon tanker trucks and 1300- and 1800-gallon capacity units that slide into the bed of a dump truck.
- 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, thereby decreasing damage to the road surface.

Salt application rates can vary depending on storm conditions; the goal is 100 - 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 teaches proper salt application procedures and quantities balanced with safety and the environment.

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. DeIDOT 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).

h. Summary of Litter Control Program

DeIDOT Maintenance Staff and Department of Corrections Crews

DeIDOT's maintenance staff and Department of Correction crews help reduce the discharge of floatables to the MS4 through routine pick up of trash and debris from the roadways, medians and rights-of-way. DeIDOT staff is also responsible for removal of dead animals and cleanup of illegal dump sites from the roadside.

Adopt-a-Highway

Adopt-a-Highway is a cooperative program between DeIDOT'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 DeIDOT'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. DeIDOT maintains an Adopt-a-Highway website (www.deldot.gov) and submits press releases to solicit volunteers. There are currently 926 volunteer groups statewide (272 groups in New Castle County) maintaining 1,852 lane miles.

www.deldot.gov/information/community_programs_and_services/adopt_a_hwy/stats.shtml)

Roadside Clean-up

DeIDOT held its annual "Imagine a Litter Free Delaware" cleanup day along roads, highways and community areas in October 2015.

TrashStoppers

DNREC's campaign is an outward appeal to the public for help in stopping illegal dumping of garbage, debris, and hazardous wastes along Delaware roadways. The public is asked to notify DNREC about any roadways or streets used for illegal dumping so the sites can be put under surveillance by digital cameras to aid in identifying trash dumpers. The public is also asked to identify the trash dumpers who are caught in the act in photos posted on the DNREC web site as part of the TrashStoppers campaign. In addition to publicizing the program, DelDOT staff forward reports of illegal dumping along state roads to DNREC. <http://www.awm.delaware.gov/Enforcement/Pages/TrashStoppers.aspx>.

302 STOPPIT Campaign

DelDOT and New Castle County have implemented a variety of education and outreach activities to increase knowledge and change behavior regarding MS4s in target communities, with the goal of decreasing the discharge of pollutants to the MS4.

To satisfy this requirement, DelDOT and New Castle County have elected to conduct an education and outreach effort, using consultant services, aimed at four targeted communities: 1) used motor oil; 2) household hazardous waste; 3) residential car washing; and 4) public reporting of illicit discharges. DelDOT is partnering with New Castle County, who has hired a consultant (Water Words that Work) to conduct a campaign to educate residents about illicit discharges and introduce a hotline reporting number. A pre-survey was conducted in the spring of 2015 followed by an aggressive advertising campaign in July 2015.

Throughout the four weeks of the STOPPIT campaign (July 1 -31, 2015), KCI Technologies received 36 reports that were submitted through text, e-mail, voicemail, and the website. The majority of reports (24) pertained to the presence of yard waste and grass clippings in the roadway and storm drain system. Reports of motor oil (4); pet waste (1); foam, stains, paint or other chemicals (2); and other issues (5) (e.g., trash, concrete, soap/detergents) were also received. Of the 36 received submissions, 26 were under the jurisdiction of DelDOT and NCC, and the rest were forwarded to the appropriate authority: City of Wilmington (6); City of Newark (1); City of Middletown (1); DNREC (1); and, DSWA (1).

B.6. Industrial Stormwater

This section pertains to the entity of New Castle County only. See Section B.6 of the Annual Report prepared by the New Castle County Department of Special Services (Volume 1 of 2).

B.7. Mapping

a. Summary and Update of the Storm Sewer Map

DelDOT executed Agreement No.1728 with KCI Technologies in December 2014 for a three year term to continue the MS4 inventory and inspection program (Appendix C). Statewide crews continue to conduct re-inspection of existing systems and inventory of new storm drain systems associated with recently constructed roadway improvement projects. The MS4 inventory and inspection data is uploaded in a comprehensive GIS database that was custom designed for DelDOT. A map viewer was developed that enables users to view the entire stormwater system, plans, and corresponding inspection data / photos. This database and map viewer are continually updated by KCI Technologies, and DelDOT staff are trained on their use.

In 2013, KCI developed a mobile application for the web-based map Viewer. The DelDOT NPDES mobile application is compatible with Android/iOS mobile browsers and with Google Chrome on desktops/laptops (<http://deldot.kci.com/mobile/>). The mobile application assists DelDOT maintenance staff by allowing use of the phone's GPS function to view their location in relation to the MS4 or BMP structure.

b. Submission of Updated BMP / Outfall Maps

Included on the DVD with this report is an updated set of maps (in Adobe pdf-format) for all DelDOT outfalls and BMPs in New Castle County. An index map is included.

B.8. Progress on Pollutant Minimization Plan and Implementation

a. Project Purpose and Background

The May 2014 Pollution Minimization Plan (PMP) for Polychlorinated Biphenyls (PCBs) was submitted to DNREC in August 2014 along with the Stormwater Pollution Prevention and Management Program (SWPP & MP), dated August 1, 2014.

The purpose of the PMP for PCBs is to address the potential conveyance of PCBs in the Delaware River Watershed from the MS4 in New Castle County. Although overland transport of PCBs into the MS4 following a significant storm event is possible (assuming the presence of PCB source(s) within the watershed), the magnitude and extent of that transport is not well characterized. The PMP is intended to gather data and information leading to a better understanding of the situation. It is understood that the scope of the PMP is limited to the following:

- Geographic boundaries/areas covered under the permit;
- PCB sources that have the potential to discharge from the MS4; and
- Waters listed in Section 303(d) of the Federal Clean Water Act that are within New Castle County/the jurisdiction of the permit, drain to the Delaware River and Bay, and have been indicated by DNREC to be impacted by PCBs.

The PMP was designed to not only meet the requirements of the permit, but to also provide high quality supplemental PCB analytic data to DNREC as part of the Watershed Approach to Toxics Assessment and Restoration (WATAR). In order to measure and demonstrate progress towards PCB load reduction (assuming PCB conveyance from the MS4), the PMP described a phased approach to track and document PCB pollution minimization over time. In addition, the PMP is intended to be implemented in conjunction with DNREC's WATAR sampling schedule, which typically included two specific areas/watersheds per year. The following sections summarize the progress that has been made on furthering and implementing the PMP.

b. PCB Source Identification and Prioritization

Potential PCB sources previously identified in part by DNREC were done so with respect to the identified impaired waterbody segments listed in the DNREC WATAR. As an initial step in the implementation of the PMP, PCB sources identified within the area/watershed to be targeted during 2014 (based on the PMP schedule adapted from the WATAR) were reviewed and updated as necessary. Further, the potential PCB sources were prioritized based on the general location relative to the MS4.

The sampling analytic approach included two initial, iterative phases: the first being a desktop review phase and the second being a focused, sampling and analysis phase. The first phase of the approach, “Outfall Selection/Prioritization”, was intended to select and/or prioritize MS4 outfalls to be targeted for sampling and analysis during the second phase.

In conjunction with DNREC’s WATAR schedule, two watersheds were targeted during 2014 – Army Creek and Appoquinimink River. The following tasks relative to each of these watersheds were completed:

- Review of known and probable PCB sources located within the area applicable to the permit and relevant to the DNREC WATAR-listed impaired waterbody segments;
- Review of relevant regulatory databases [e.g., DNREC Delaware Environmental Navigator (DEN)] for updates to known and/or recently identified PCB sources located within the area applicable to the permit;
- Mapping and review of MS4 outfalls as defined in the PMP; and
- Compilation of PCB sources, MS4 outfall locations, and DNREC WATAR-listed impaired waterbody segments into a GIS file and overlain for data management and spatial analysis purposes.

c. Potential Sampling Locations

Once the spatially-referenced GIS file was created for each target watershed, the MS4 outfall locations potentially targeted for sampling and analysis were initially evaluated and discussed during a desktop review process. Potential sampling locations were tentatively selected based on the physical layout of the stormwater conveyance system, land use/land cover upstream of stormwater inlets, and the desire to complement DNREC’s WATAR sampling schedule. Upstream land use/land cover that included known or potential sources of PCBs (e.g., industrial areas, waste sites, transformer substations, railroad lines) were of particular interest.

The desktop review process significantly narrowed down the potential MS4 outfall locations to only those that appeared suitable for sampling. Within the Army Creek and Appoquinimink River watersheds, 15 and 22 tentative outfall locations, respectively, were identified during the desktop review. In order to further assess those potential locations, a field reconnaissance of the 37 potential outfall locations within each watershed was performed. The objective of the field reconnaissance was to visually review each potential outfall location and determine from which locations a representative stormwater sample could logistically be obtained and be formally proposed/targeted for sampling and analysis.

Generally, the outfall locations were evaluated for the following during the field reconnaissance:

- Accessibility of the outfall;
- Safety of accessing the outfall;
- Presence of flow during a wet weather event (specifically, outfalls that had the highest potential to convey large PCB mass loads were focused upon more so than those with a lower potential). This considered the number and source strength within the MS4 drainage area as well as the expected stormwater flows (understanding that both concentration and flow are important to consider in determining mass load);
- Positioning of the outfall relative to the impaired waterbody segment (i.e., submerged or back-flushed by the receiving water body (tributary to the Army Creek or Appoquinimink River); and,
- Anticipated turbidity level of stormwater exiting the outfall pipe.

d. Field Reconnaissance Results

The results of the field reconnaissance resulted in eight outfall locations within each watershed being selected for sampling and analysis. Following selection of the MS4 outfall sampling locations, a Sampling and Analysis Plan (SAP) was prepared as required by and in accordance with both the permit and the PMP and subsequently submitted to DNREC for review and approval. DNREC did not feel the number of selected outfall locations was commensurate with the size of the watershed. New Castle County, DelDOT and KCI then decided to break the Christina Basin watershed into two areas (north and south) and selected an additional 4 outfalls, and removed 4 outfall locations from Shellpot Creek.

In January 2016, KCI produced new maps for a second reconnaissance of the Christina Basin focused on the Old Baltimore Pike industrial park (Albe Drive) and the Amtrak Bear Shops. The team reviewed the locations on the maps, selected a targeted group of outfall locations for field assessment. In March, the team conducted the reconnaissance of the targets and then selected four locations (two at Albe Drive and two from tributaries to Becks Pond) to add to the Christina Basin watershed investigation, for a total of 16 sampling locations.

The revised version of the Sampling Analysis Plan (following incorporation of DNREC comments), was submitted to DNREC via electronic mail in June 2016.

B.9. Wet Weather Monitoring Plan

During calendar year 2015, DelDOT's monitoring activities included the following components:

- Planning for wet weather outfall monitoring required as part of the SWPP&MP for the new Phase I permit;
- Wet weather monitoring of outfalls at DelDOT maintenance facilities; and,
- BMP performance monitoring and research.

Each of these components is described in more detail below.

a. Wet weather MS4 outfall monitoring

A new wet weather monitoring plan was submitted to DNREC with the new SWPP&MP in August 2014. DelDOT has been working with the consulting firm of Versar to develop this plan. It includes establishment of regular monitoring stations to estimate event mean concentrations and seasonal pollutants in discharges from major outfalls. Implementation will begin upon approval of the plan by DNREC. Comments related to the SWPP&MP were received from DNREC on March 28, 2016. DelDOT and NCC issued a response letter June 28, 2016. To date the SWPP&MP has not been approved. There were two comments related to the Wet Weather Monitoring Program: "Comments #17 – In order to capture the seasonal variability of pollutant levels in storm events, the Department requires WWM samples from at least 4 storms per year"; and "Comment #18 – For EMC and load calculations, in addition to the parameters listed, the Department requires monitoring to be performed for nitrate, total nitrogen, and enterococcus bacteria".

b. Monitoring of outfalls at DelDOT maintenance facilities

DelDOT performs semi-annual wet weather monitoring at maintenance yard outfalls in compliance with the state industrial general permit.

In prior years, the Pollution Prevention Plans required BMP outfall monitoring at only four maintenance facilities (Kiamensi, Bear, Cheswold, and Harrington). In August 2013, DNREC required monitoring to begin at all permitted facility outfalls that discharge stormwater and conduct vehicle maintenance. In addition, DNREC requested that oil and grease (O&G) replace total petroleum hydrocarbons in the list of monitoring parameters.

Table B.9-1 lists the New Castle County maintenance yard outfalls that DelDOT monitored in 2015, along with sample collection dates. Odessa yard was excluded because no vehicle maintenance is conducted there. Gravel Hill and Laurel do not have any outfalls and all drainage remains on-site. The analytical data from first flush grab samples is located in Appendix G.

In Appendix G, data values that exceed water quality benchmarks are highlighted in yellow. In each case that a benchmark was exceeded, DeIDOT NPDES staff followed up with the area supervisor and district maintenance engineer to investigate the source of the contaminant(s) and to correct the problem(s). Spot inspections were conducted afterward to confirm that the issues had been addressed.

Because so many facilities are monitored statewide, in 2015 we continued our system implemented in 2014 to report monitoring results to district management and to document follow-up corrective actions. When the laboratory results have been analyzed (by KCI Technologies), if there are any exceedances of the water quality parameter benchmark values, a Maintenance Facility Wet Weather Benchmark Monitoring Follow-up Form (Appendix H) is submitted to the DeIDOT Pollution Plan Team Leader. This form provides the laboratory monitoring results and identifies those parameters in exceedance of the water quality benchmark. The Pollution Plan Team Leader identifies the potential source(s) of contaminant(s) and provides follow-up actions to be implemented.

Table B.9-1. Outfall Samples Collected at New Castle County Maintenance Facilities in 2015.

Yard		Type/ Material	Drainage Area	Sampling Requirement	2015 Sample Dates
BEAR	BEAR01	CMP	Pond; Majority of Maintenance Yard	Sample	05-18-15 07-30-15
	BEAR02	CMP	Storage Areas	Sample	
CHAPMAN	CHA01	RCP	Pond; Vehicle Maintenance; Equipment Storage	Sample	06-08-15 08-11-15
	CHA02	Pipe	Storage Areas and Salt Shed	No Sample Required	
	CHA03	RCP	Vehicle Wash Area	Sample	
	CHA04	RCP	Vehicle Fueling Station	Sample	
	CHA05	Swale	Storage Areas	No Sample Required	
KIAMENSI	KIA01	CMP	Pond; Majority of Maintenance Yard	Sample	02-02-15 07-27-15
MIDDLETOWN	MID01	RCP	Vehicle Wash Area	Sample – Low Flow Potential; Verify No Flow	06-14-15 10-28-15
	MID02	Swale	Salt Shed	Sample	
	MID03	Swale	Scrap Metals	Sample – Low Flow Potential; Verify No Flow	
	MID04	Swale	Topsoil	No Sample Required	
SOD FARM	SOD01	Swale	Vehicle Storage Area; Salt Barn	Sample	06-08-15 12-14-15
	SOD02	Swale	Material Storage	Sample - Low Flow Potential; Verify No Flow	
TALLEY	TAL01	RCP	Vehicle Wash Area	Sample	04-14-15
	TAL02	Swale	Vehicle Storage Area	Sample	08-11-15

c. BMP performance monitoring and research

The current SWPP&MP requires DelDOT to monitor the performance of existing stormwater structural controls and BMPs. During calendar year 2015, DelDOT's BMP monitoring and research program included the following projects:

- 1) Implementation of the revised street sweeping plan
- 2) Study of guardrail vegetation control alternatives
- 3) Study of new bioretention technologies to remove nutrients

Project 1 was initiated with assistance from KCI Technologies under Agreement No. 1613. Projects 2 and 3 were performed by the University of Delaware using DelDOT funding. Each of the different BMP monitoring/research projects is described below in greater detail.

1) Implementation of Revised Street Sweeping Plan and Monitoring

The Phase I permit issued on May 7, 2013 required DelDOT to develop a numeric, measurable street sweeping regime as part of the new SWPP&MP that was due on August 7, 2014. The Department must demonstrate by research, modeling, or otherwise appropriate scientific literature that substantiates the adequacy for pollutant removal and improved water quality.

In anticipation of this permit requirement, DelDOT worked with KCI Technologies to develop an efficient, cost-effective Street Sweeper Plan to remove as many pollutants as feasible and to develop methods for monitoring the effectiveness of the program and calculating pollutant load reductions attributable to this BMP.

The study was designed to do the following:

- Identify the highest priority roads to be swept;
- Determine the equipment to be used; and,
- Develop a method of scenario modeling to forecast results.

The street sweeping plan developed from the study focused the most sweeping effort on expressways, higher traffic roads, and curbed, closed-drainage roadways in commercial and industrial areas. The predicted pollutant load reductions exceed those of the Department's current 4:2:1 plan, with relatively small increases in total cost.

This proposed plan was piloted in 2013 in the Talley Maintenance Area to test its feasibility. The pilot test demonstrated that the plan could be completed successfully, but both staff and equipment were stretched.

In 2015, DelDOT continued its new targeted sweeping program as described in DelDOT's 2014 NPDES Annual Report. This targeted approach has 5 roadway types: Interstates and Expressways (8X/year), Targeted Roadways (8X/year), Local Roadways (1X/year), Non-Targeted Arterial Roadways (3X/year), and Special Work Order roadways (swept as needed or

complaint driven). Completion of roadway sweeping frequency and sweeper waste tonnage is tracked. DelDOT completed 100% of the roads and required frequency.

To calculate pollutant removal rates from roadways, DelDOT weighs sweeping material. 1,518 tons of street sweeping residuals were collected from New Castle County roadways in 2015. Using the formulas recommended by the Chesapeake Urban Stormwater Group memo, *Street Sweeping/BMP Era Recommendations* (03/01/11), the estimated pounds of nutrients removed from runoff in 2015 by DelDOT’s street sweeping program was calculated and presented in Table B.9-2. The weights reflect tons of material delivered to the DSWA landfill. A factor of 0.7 was used to calculate dry weight.

Table B.9-2. Estimates of Nitrogen and Phosphorus Removed from New Castle County Roadways in North and Canal Districts by Street Sweeping in 2015.

Area	Waste Collected (tons)	Total Nitrogen Removed (lbs)	Total Phosphorus Removed (lbs)
North District	1,081	3785	1,514
Canal District	218	764	306
Total for NCC	1,300	4,549	1,820

The Delaware Solid Waste Authority considers street sweeping residuals a Special Solid Waste and requires that chemical analyses of the material be submitted before approval is granted to deliver the wastes to DSWA landfills. DelDOT collects and analyzes representative samples of sweeper waste stockpiles on an annual basis and submits the data to DSWA. A copy of the 2015 data and the DSWA approval letters are provided in Appendix I.

2) Study of Alternatives for Managing Vegetation Under Guardrails

In calendar year 2015, all plots were visited monthly during the growing season. Data on weed presence and acceptability for vegetation under guardrail was collected at each visit and a photograph of each plot was taken.

Calendar year 2015 was the fourth year of evaluation for zoysia plots. In zoysia sod plots established in 2012, zoysia was an effective competitor and there was very little weed encroachment. By the end of 2015, zoysia in those sod plots had started to spread into adjacent turf in the median. Three zoysia sod plots established in spring 2013 along Route 13 near the airport are still infested with foxtail, nutsedge, crabgrass, melilotis and other weeds. Plot 16b was the worst of the three. It appeared that the sod was poor quality with weeds present in the sod. These plots did not improve throughout 2015. They are currently planned for replanting to test zoysia in those locations from a new supplier with higher quality sod. Zoysia sod plots installed in Milford were initially infested with clover, but a broadleaf herbicide was used to control the clover. Zoysia grew successfully in 2015 and dominates the plots with a few broadleaved weeds mixed in. Zoysia planted in Odessa was variable in its success. The zoysia that was planted in small pieces did not establish well. All plots north of Odessa have the problem of soil sterilant applied by the contractor prior to planting that is affecting root growth and thus zoysia establishment. One of the zoysia plots (5a) at St. Georges was mistakenly treated with herbicide by the guardrail contractor and is completely dead.



Zoysia that is well established and starting to spread into median.



Zoysia in Milford after clover was controlled.



Zoysia establishing poorly at Odessa, probably due to herbicide residue in soil.

Flight turf seeded in late fall 2012 continued to grow and formed a fairly solid ground cover. A broadleaved herbicide was not used on the FlightTurf plots during 2015 until late in the season. The late application did control weed competition, but an earlier treatment is planned for 2016. Bermudagrass and a mix of broadleaf weeds are the major competitors in the FlightTurf plots. Low fescue plots are variable in their ability to compete with encroaching weeds. None of the low fescue plots have established thickly enough to avoid the use of herbicides or hand trimming periodically. We intended to install more FlightTurf plots in Fall 2015, but the areas had been previously treated with a soil sterilant by the guard rail contractor and there is no vegetation growing in the plots. We can't seed FlightTurf until fall 2016.

FlightTurf seeded in a large area around the St. Georges plots established well in 2015. It is thick throughout most of the area and has few weeds. FlightTurf was also planted in a larger site near Love of Christ Church close to the St. Georges plots. It was planted in late fall (November) but came up and started to establish at the end of 2015.



FlightTurf establishing well near High Point development at St. Georges.

Weed barriers have performed differently based on their composition, location, installation and exposure. U-Teck custom installations and Traffix rubber mat installations have held up best since their installation in 2011. Weed barriers must be installed flush with the road surface in order to be effective.



TrafFix Weed Barrier is sturdiest and most successful.

For calendar year 2016, there is value in determining the long-term durability of weed barriers, so we will continue to monitor barriers as part of this project. We will continue to visit zoysia sod plots to monitor survival in different locations throughout the state. We will also track the extent to which zoysia spreads into the adjacent turfgrass in the medians where it has been planted. FlightTurf plots seeded in 2014/2015 will be monitored to assess their establishment success. New plots in Odessa will be established in 2016 if the soil has been sufficiently flushed of the herbicide. We plan to plant zoysia sod in three plots where poor quality sod was previously planted.

Plots will continue to be visited in 2016 on a monthly basis during the growing season with data collected and photographs taken. Particular attention will be paid to zoysia and FlightTurf plots to assess their success.

3) Study of New Bioretention Technologies to Remove Nutrients

Since late 2011, DelDOT has funded a proposal from Dr. Daniel Cha and Dr. Paul Imhoff (University of Delaware, Department of Civil and Environmental Engineering) to evaluate two promising technologies involving the addition of biochar (generated from pyrolysis of poultry litter) and/or zero-valent iron (ZVI) to existing and new stormwater facilities. The hypothesis is that incorporation of these materials into soil or media used in bioretention cells, sand filters or bioswales will significantly enhance removal of nitrogen from stormwater runoff. If successful, these technologies could allow DelDOT to meet TMDL reduction requirements using fewer or smaller BMPs.

In 2015 extensive testing was conducted of a pilot-scale system to evaluate the combination of zero valent iron (ZVI) and biochar as soil amendments for bioinfiltration on the University of Delaware campus. This system collects and “treats” runoff from a University of Delaware parking lot. The system includes a treatment cell with the new media containing biochar and ZVI and a control cell with a standard soil mix. Field testing using this well-instrumented system shows that biochar increases the pollutant residence time by ~ 11% while simultaneously *increasing* stormwater infiltration rate by 50%, and biochar/ZVI increases nitrate removal by between 50% and 470% over the standard soil mix, depending on the season. Concurrent laboratory experiments elucidated the mechanisms by which biochar/ZVI enhance nitrate removal.

These results were presented at the Fall Meeting of the American Geophysical Union and a portion of them were recently published in the *Journal of Environmental Quality and Science of the Total Environment*. In May 2016 this work was presented at the Chesapeake Bay Day on Capitol Hill (March 2016), where PI Imhoff met with congressional staff and discussed the utility of biochar amended bioretention media to reduce the cost of stormwater BMPs for treating nutrient runoff from transportation systems. Finally, some of this research will be presented in a webinar entitled "Simultaneous Removal of Nitrogen and Phosphorus from Stormwater by Zero-Valent Iron and Biochar in Bioretention Cells" hosted by the Mid-Atlantic Transportation Sustainability Center – Region 3 University Transportation Center.

B.10. Watershed Priority List

The Watershed Priority List was included as part of the SWPP&MP and is awaiting DNREC and EPA's approval. The 21 watersheds in New Castle County were categorized into restoration or preservation watersheds. DeIDOT and New Castle County selected two watersheds using a multi-parameter weighted matrix. The process of selecting the restoration watershed, Christina River, and the preservation watershed, Dragon Run, is described in Program Element #7 of the SWPP&MP. DNREC has given verbal assurance that the top two watersheds on the list, the Christina and Dragon Run, are acceptable and that we may begin work on developing WQIPs for these areas.

A professional services agreement was executed in December 2014 to assist DeIDOT and New Castle County in the development of both plans. A kick-off meeting with Century Engineering was held on December 16, 2014. The WQIPs for the Christina River and Dragon Run watersheds will be prepared and submitted by the end of year 4 of the Permit term.

Implementation will begin six months following approval by DNREC; however, during duration of this report, we still did not have DNREC comments back. DeIDOT and NCC plan to submit grant proposals for both watersheds to develop a plan that will specify projects that will reduce pollutant loads within the watersheds consisting of information gathering and review of prior efforts along with preliminary project identification.

Grants were awarded for both watersheds. Preparation of the WQIPs for the Christina River and Dragon Run watersheds are progressing. Regular project status meetings are being held and periodic updates, progress reviews, and requests for information from DNREC are occurring and will continue throughout the project.

B.11. Summary of Annual Employee Training

a. Workshops, webinars, other training

The following is a summary of annual employee training workshops and conferences attended by DelDOT staff and training materials produced in calendar year 2015:

Videos:

- All statewide district maintenance staff are 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 are 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.

The following workshops and training were attended by NPDES or other DelDOT staff:

Workshops / Training:

- EPA Watershed Academy: Watershed Approach Handbook: Improving Outcomes and increasing benefits associated with wetland and stream restoration and protection projects; March 18, 2015.
- California Industrial Stormwater Permit; March 24, 2015.
- Storm Water Solutions Virtual Expo; Navigating Muddy Waters: Understanding the proposed USEPA and Corps of Engineers Revised Definition of Waters of the United States; April 1, 2015.
- DelDOT Winter Workshop – included training on Water Quality Improvement Program
- DNREC and Delaware Section of the American Water Resources Association (DEAWRA) Symposium – “MS4 Permit Changes in Delaware: Will You Be Ready?”
- DNREC – Sediment / Stormwater Designer Training
- DNREC – Checking in on Post-Construction Stormwater Management Training
- New Castle County – Stormwater Management Maintenance & Inspections Program of Commercial and Industrial Facilities Workshop
- New Castle County – Stormwater Management Maintenance & Inspections Program of Residential Facilities

Webinars:

- ELI/TNC Watershed Approach Handbook: Improving Outcomes and Increasing Benefits Associated with Wetland and Stream Restoration and Protection Projects, EPA Webcast, March 18, 2015.
- Water Quality Models 101 - What Are These Things? EPA Webinar, March 26, 2015.
- Advanced Stormwater Treatment: Dissolved Pollutants.
- Potential Impacts of the Proposed Phase II MS4 General Permit Remand Rule.

CCR Training:

In 2015, twenty DelDOT staff attended the Certified Construction Reviewer (CCR) course and three took the CCR recertification course (Blue Card).

DelDOT Sediment and Stormwater Training:

DelDOT holds E & S pre-construction meetings for the following projects: 1) bridges, 2) major, 3) medium, and 4) minor if they have a BMP installed. Discussion topics include:

- Responsibilities of DelDOT
- Responsibilities of the contractor
- Design changes and approvals
- Following original approved plans/specs and non-compliance
- Project status and schedule
- Permits and permit requirements
- Restrictions

Roadside Environmental Section Staff:

Roadside Environmental Section staff attended various courses/workshops for re-certification, pesticide credits, and International Society of Arboriculture credits, including:

- Delaware Horticultural 2015 Industry / Pesticide Expo
- 2015 Arborist and Tree Care Seminar
- Delaware Nursery and Landscape Association (DNLA) – Summer Turf and Nursery Expo
- Transportation Research Board AHD50 Subcommittee Meeting
- 2015 Maryland Agriculture Pesticide Conference
- DNLA 2015 Ornamentals and Turf Workshop
- International Society of Arboriculture – Tree Risk Assessment Qualification
- Transportation Research Board Webinar: The Economic and Ecological Effects of Roadside Mowing
- Transportation Leaders' Summit – Restoring the Nation's Pollinator Habitat

C. Water Quality Improvement Plans

1. Status of Watershed Prioritization

The proposed Watershed Priority List was submitted to DNREC with the final SWPP&MP in August of 2014. The permittees did not receive final comments on our plan in calendar year 2015.

2. Status of Plan Development

The permittees have moved forward with the first two proposed WQIPs, the Christina River and Dragon Run. A contract has been initiated with Century Engineering to start the plans. A summary is provided below.

- **Christina River WQIP**

Initial planning and coordination work for the Christina River WQIP was completed in calendar year 2015. This work included acquiring, organizing, and verifying approximately one dozen GIS datasets containing varying information for use in creating the WQIP. Analysis protocols were developed for the data and the datasets were combined into a screening tool for future identification of BMP prioritization sites. The Project Team also prepared a draft template for the WQIP narrative; performed preliminary BMP analysis for retrofit suitability, including delineation of drainage areas; and performed preliminary analysis of streams to determine restoration suitability.

Other work performed in 2015 included development of the methodology for several key areas of the WQIP. This included: determining whether a water quality based approach or runoff reduction approach is most applicable for calculating treatment of Effective Impervious Area (EIA); developing a correlation between stream restoration and EIA treatment; determining a baseline date for establishing EIA; and determining the best method to quantify EIA. A presentation was prepared for DNREC to present and discuss each of these items. The project Team also held three team meetings to discuss project status and goals.

- **Dragon Run WQIP**

Development of the Dragon Run WQIP is slated to occur after the Christina River WQIP has been developed. The logic for this approach is that any concerns or issues with the overall development of the WQIP will be identified with the Christina River WQIP, and then accounted for as part of the Dragon Run WQIP development.

In 2015, the Project Team identified and proposed solutions to multiple concerns on the Christina River WQIP that are applicable to the Dragon Run WQIP. Three team meetings were held to discuss the status and goals of the WQIPs, including Dragon Run.

3. Status of Implementation of Plan (if applicable)

N/A

4. Reporting on Additional (non-mandated) Retrofit Projects (if implemented)

N/A

D. Fiscal Resources

The FY 2016 budget is listed in Table D-1.

TABLE D-1

FY 2016 NPDES Operating Budget		
VENDOR	DESCRIPTION	
NPDES FY 16 Budget	Services 93050	2,060,000.00
	Supplies 93060	10,000.00
Total Available		2,070,000.00
1. Phase I NPDES		
KCI	Agreement 1728, Task 2 Inventory / Inspection / Database	849,712.63
Subtotal		849,712.63
2. New Permit Plan Development		
New Castle County_Duffield	SWPP&MP development; cost share with NCCo.	0.00
Subtotal		0.00
3. Monitoring		
KCI	Agr. 1613, Task 5, FY16 Q1	149,894.13
KCI	Agr. 1749, Task 1 FY16 Q2-4	450,101.59
Duffield / Environmental Standards / Cape Fear lab	NCC MOA, Task: PCBs - plan development, monitoring, lab costs, data evaluation; Finalize SWPP&MP	68,300.00
Subtotal		668,295.72
4. Industrial Compliance and Permitting		
DNREC	NOIs for maintenance yards (Industrial Permit)	3,200.00
PIG	Spill kits and decks (Supplies 060)	5,000.00
Suntree	Kiamensi catch basin inserts (Supplies 060)	12,500.00
Tetra Tech	Agr. 1641, Task 23 Update SPCC plans (20 maintenance/satellite yards)	9,971.97
Subtotal		30,671.97
5. Public Education		
DNLA	Agr. 1736, Task 2 Delaware Livable Lawns; 3 year agr. \$48K	16,000.00
Partnership F/T DE Estuary	Agr. 1712, Task 2; pet waste, oil, yard waste portion of Plan; surveys	50,508.07
WWTW	IDDE portion of Plan; Public Education survey #1	0.00
OMB Graphics & Printing (Supplies 060)	For the following activities:	800.00
	activity booklets	
	door hangers	
	Delaware Livable Lawns	
	Fair game/pledge cards	

2015 Harrington Fair		
Fair stuff	Supplies	0.00
DIB	Public outreach giveaways	0.00
DRWA	Annual dues	250.00
Partnership	Printing costs for Wilmington Earth Day	0.00
Subtotal		67,558.07
6. Staff Training		
Subtotal		0.00
7. Equipment		
	Soil compaction meter	
Subtotal		0.00
8. Retrofits		
Parsons Brinckerhoff	Agr. 1666, Task 1A Leathermans Run Stream Restoration	43,865.70
	Agr. 1666, Task 2A Varlano Outfall Retrofit	123,804.79
	Agr. 1666, Task 3A Jenny Run Stream Restoration	71,130.70
Subtotal		238,801.19
9. Stormwater Ponds		
Weeds, Inc.	Spring 2016 Noxious/Invasive Roadside contract to treat stormwater BMPs - Canada thistle	20,000.00
	Fall 2015 Noxious/Invasive Roadside contract to treat stormwater BMPs - Phragmites/Cattail	0.00
Subtotal		20,000.00
10. IRVM/Pesticide/Fertilizer		
U of D	Agr. 1717, Task 22 Guardrail Study	38,787.83
Wallace/Montgomery	Agr. 1713, Task 3 - Guardrail inventory	10,099.00
Subtotal		48,886.83
	Total expenses for Operational Money	1,923,926.41
	Difference	146,073.59

E. SWPP&MP Evaluation and Update

1. Status of Program Evaluation to be Conducted by Year Four

Not applicable in 2015.

2. Status of Program Modifications or Updates

The Final SWPP&MP was submitted in August 2014; comments were not received in calendar year 2015.

While the permittees wait for SWPP&MP comments from DNREC and EPA, as well as DNREC answers regarding outstanding issues described on Page ii – iv of the SWPP&MP, we have begun implementing the SWPP&MP program strategies under the assumption that comments will not have a major impact on the permittees' programs.

Appendix A. Final SWPP& MP (08/01/14)

APPENDIX A

STORM WATER POLLUTION PREVENTION AND MANAGEMENT PROGRAM REPORT

The Storm Water Pollution Prevention and Management Program (SWPP&MP) Report (August 1, 2014) can be found online at <https://www.deldot.gov/stormwater/permit.shtml>.

Appendix B. KCI Technologies IDDE Program Annual Report



DELDOT AGREEMENT 1749

ENVIRONMENTAL & WATER QUALITY MONITORING

2015 ANNUAL REPORT

ILLICIT DISCHARGE DETECTION & ELIMINATION PROGRAM

Prepared For

Delaware Department of Transportation
National Pollutant Discharge Elimination System
Stormwater Quality Program



Prepared By

KCI Technologies, Inc.
KCI Project 17151749A

March 2016



DELDOT AGREEMENT 1749

ENVIRONMENTAL AND WATER QUALITY MONITORING



ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
2015 ANNUAL REPORT

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DELDOT AGREEMENT 1749



ENVIRONMENTAL AND WATER QUALITY MONITORING ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM 2015 ANNUAL REPORT

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APPENDICES

The 2015 IDDE Program documentation has been organized into the following Appendices:

APPENDIX A 2015 Potential Illicit Discharge Investigations – Summary Table

- ❖ Summary Table for all 2015 PID Investigations

APPENDIX B Potential Illicit Discharge Investigations with Ongoing Issues

- ❖ Documentation for Illicit Discharges with Ongoing Issues

APPENDIX C 2015 Outfalls with Flow

- ❖ Via Compact Disc
- ❖ **Tabs 1-190:** Field screening results for all structures with dry weather flow and miscellaneous reports of dumping. An Incident ID No. was assigned according to the order in which the incident was reported to the IDDE Field Crew (i.e., 2015-1-D to 2015-190-DN). Documentation included for each Incident ID includes a Tracking Form, Map, Field Sheet and the original QC Laboratories Analytical Reports and Chain of Custody, if applicable. This information was also uploaded to the DelDOT NPDES SharePoint Website.

APPENDIX D 2015 Outfalls with No Flow, Streams, and CA/CL

- ❖ Via Compact Disc
- ❖ Outfalls with no flow during the IDDE Field Crew inspection. Also, outfalls that were not accessible or able to be located, and outfalls that carry a stream. These outfalls were not given an Incident ID No., and are organized electronically by County and Structure No. on the attached CD.

APPENDIX E 2015 302 STOPPIT HOTLINE

- ❖ Summary Table of all 302 STOPPIT Reports Received and Actions Taken



**DELDOT AGREEMENT NO. 1749
ENVIRONMENTAL & WATER QUALITY MONITORING**



**ILLICIT DISCHARGE DETECTION & ELIMINATION PROGRAM
2015 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. (KCI) was contracted to conduct work in support of DelDOT's Illicit Discharge Detection and Elimination (IDDE) Program. Responsibilities included DelDOT-owned municipal separate storm sewer system (MS4) outfall evaluation; dry weather outfall field screening; potential illicit discharge (PID) investigations, NPDES door hanger distribution, data input to DelDOT's NPDES IDDE field screening website; and, STOPPIT hotline field investigations. DelDOT's IDDE Program consists of two major components:

- **IDDE Evaluation**
 - Targeted Desktop Evaluation
 - Statewide MS4 Field Evaluation
 - Miscellaneous PID Reports

- **IDDE Dry Weather Field Screening**
 - Field Screening (confirm flow/no flow, sample collection)
 - Follow Up and Elimination of Potential Illicit Discharge

Phase I of the NPDES Permit requires that 20% of all DelDOT-owned outfalls are evaluated annually. To meet this requirement, in 2013, KCI created a revised IDDE Plan that included Targeted Desktop Evaluation to detect potential illicit discharges in DelDOT's Storm Water Pollution Prevention and Management Plan (SWPP&MP).

A. IDDE EVALUATION

1. Targeted Desktop Evaluation

In 2012, KCI developed an IDDE Targeted Desktop Evaluation for the Pike Creek Watershed (PCW) in New Castle County. This process followed the Center for Watershed Protection's 2004 guidance manual, *Illicit Discharge Detection and Elimination, Chapter 5: Desktop Assessment of Illicit Discharge Potential*. The purpose of the desktop evaluation was to use available mapping

and data to determine the potential for illicit discharges within a watershed. Using DelDOT’s MS4 / BMP database and other available data, KCI used GIS software to target outfalls in the PCW for field screening based on the following targeted evaluation factors:

- **Past Discharges:** Outfalls with Previous Ammonia/Detergents.
- **Proximity to Sanitary Sewer:** Outfalls Close to Sanitary Sewer Lines.
- **Proximity to Potential Discharges:** Outfalls Intersecting Commercial/Industrial Land Use and Private Sanitary Sewer.
- **Proximity to Previous MS4 Deficiencies:** Outfalls within 100 feet of DelDOT MS4 Environmental Work Orders.
- **Age of MS4:** Outfalls in Subdivisions Built Prior to 1962.

In 2015, KCI continued the targeted evaluation for the Christina River Watershed (CRW). KCI customized the targeted evaluation factors (i.e., criteria) used in the initial PCW analysis for the characteristics of the watershed based on location, development, etc. KCI also continued to evaluate contributing structures in addition to outfalls in order to maximize the detection of potential illicit discharges. **Table 1** summarizes the number of contributing structures and outfalls targeted in the Christina River Watershed. Many of these structures were targeted by multiple criteria.

TABLE 1
2015 WATERSHED TARGETED EVALUATION RESULTS

Watershed	Total Structures	Total Targeted Structures	Total Outfalls/ Swale Ends	Total Targeted Outfalls/ Swale Ends
Christina River	19,379	12,542	2,429	1,523

Overall, KCI evaluated all 19,379 MS4 structures in the CRW, including 2,429 outfalls. The evaluation targeted 12,542 of the MS4 structures, including 1,523 outfalls/ swale ends, for field screening. Non-targeted outfalls/ swale ends were field screened if contributing structures leading to that outfall were targeted. A summary of the field screening results based on the targeted desktop evaluation is located in **Section B.2**.

2. Statewide MS4 Field Evaluation

In 2015, 1,276 outfalls and swale ends (102 in New Castle County and 1,174 in Sussex County) were evaluated through inventory, inspection, and re-inspection tasks as part of DelDOT's MS4 Statewide Inventory and Inspection Program. Three full-time field crews inventoried and inspected DelDOT's MS4 statewide. The 1,276 outfalls/swale ends represent structures that these field crews inventoried/inspected and noted if flow was present (yes/no). If flow was present and appeared to be illicit (e.g., strong odor, odd color, etc.), the KCI inventory/inspection crew immediately contacted the KCI IDDE field screening crew, the latter of which mobilized to conduct a thorough screening analysis and discharge sourcing.

If the flow did not appear to be illicit, the outfall was added to a dry weather flow list, which was provided weekly to the IDDE field screening crew. These outfalls were re-visited after a 72-hour dry period to confirm dry weather flow and to conduct dry weather field screening. In 2015, dry weather field screening was conducted in New Castle County only, except in cases of potential illicit discharge.

Table 2 lists the number of outfalls and swale ends that were field-evaluated by the MS4 crews each month in the three counties. A summary of the field screening results based on the statewide MS4 field evaluation is contained in **Section B.2**.

TABLE 2
MS4 OUTFALL FIELD EVALUATION BY COUNTY

Month	New Castle County	Kent County	Sussex County
January	6	0	221
February	0	0	178
March	0	0	151
April	2	0	107
May	35	0	141
June	22	0	118
July	18	0	42
August	0	0	73
September	0	0	61
October	0	0	42
November	0	0	32
December	19	0	8
2015 TOTAL	102	0	1,174

3. Miscellaneous PID Reports

In 2015, KCI received one report of dumping from the public, which was followed-up by an IDDE evaluation and field screening for dry weather flow and other traces of illicit discharge. A summary of the field screening results based on Miscellaneous PID Reports is contained in **Section B.2.**

4. 2015 IDDE Program Evaluation Summary

Table 3 summarizes the IDDE Evaluation Program for 2015. Targeted desktop evaluation numbers include the evaluation of all outfalls and swale ends, including those that end a system and those that are located within a system. MS4 field crew evaluation numbers include only end of system outfalls and swale ends. Miscellaneous reports may include any type of structure (outfall, inlet, swale end, etc.)

**TABLE 3
 2015 IDDE PROGRAM EVALUATION SUMMARY**

IDDE EVALUATION TYPE	COUNTY			TOTAL
	New Castle	Kent	Sussex	
Targeted Desktop Evaluation	2,429	0	0	2,429
MS4 Evaluation	102	0	1,174	1,276
Miscellaneous Reporting	1	0	0	1
2015 TOTAL EVALUATED	2,532	0	1,174	3,706



B. IDDE DRY WEATHER FIELD SCREENING

1. 2015 IDDE Sampling Protocol

In 2015, KCI continued to perform chemical field testing for ammonia and detergents (surfactants). Field testing alleviates the need to wait for lab results prior to further investigation. Lab results were returned with an average wait time of two weeks, whereas field testing allows for field-determined potential illicit discharges and immediate sourcing.

The flow chart for Residential or Light Commercial Land Uses (**Figure 1**) was used to categorize discharges. Detergents were used to distinguish between no evidence of illicit discharge and likely sanitary wastewater or graywater/washwater source. Ammonia was field-tested as an early indicator of possible sewage discharge. If an outfall field-tested high for detergents or ammonia, field crews traced the flow to its origin and a second sample was collected and brought to the lab for follow-up analysis, potassium testing, and confirmation of field results.



Christina River Watershed

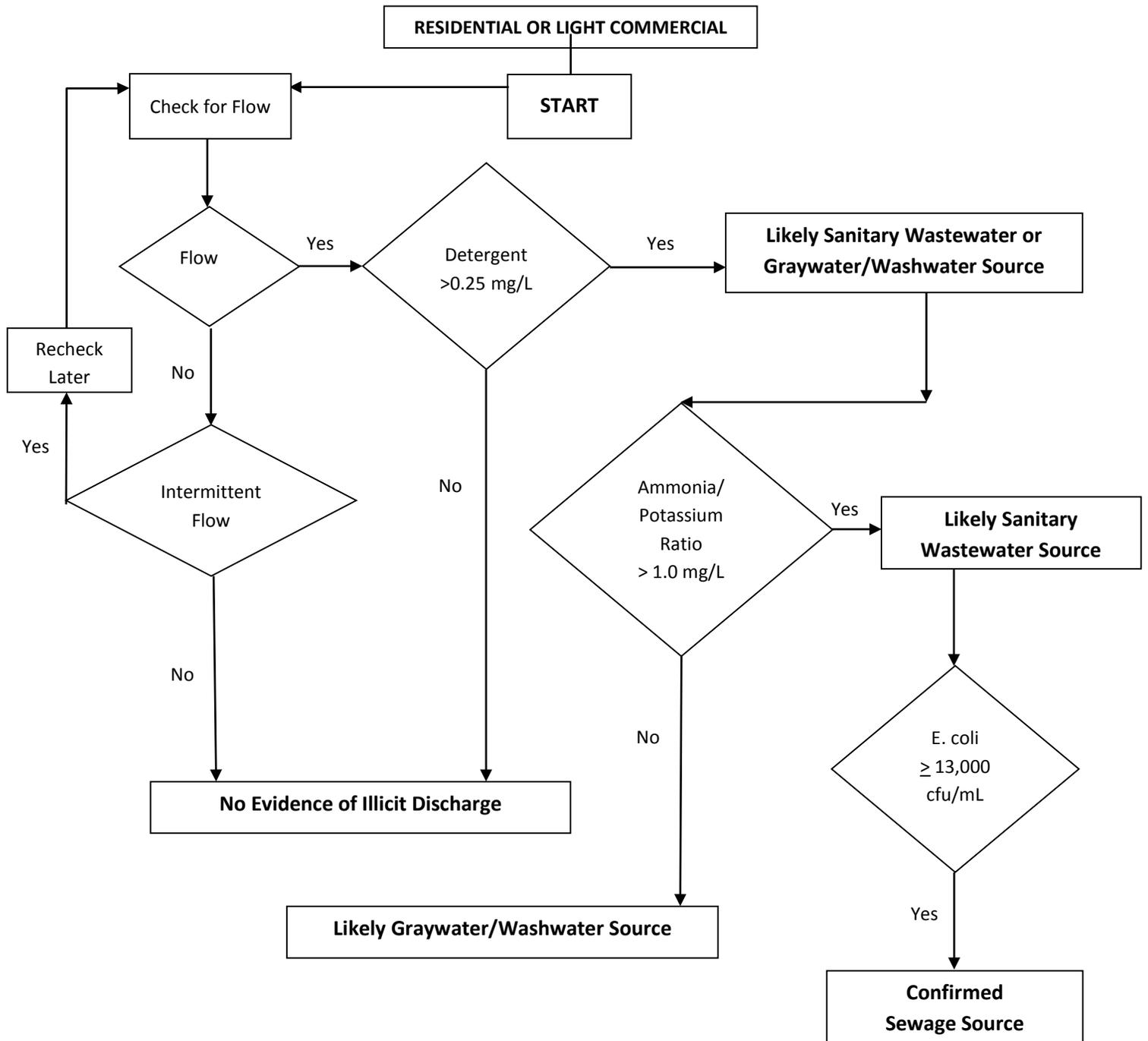
2. 2015 Field Screening Results

Dry weather field screening was conducted by the KCI IDDE field crew as a result of the IDDE Evaluation process (i.e., targeted desktop evaluation, MS4 field inventory/inspection, and miscellaneous reports). **Table 4** lists the 2015 field screening results organized by county.

In 2014 and 2015, KCI began outfall screening for the Co-permittees New Castle County (NCC) and the Town of Elsmere, respectively. NCC and Elsmere structures and outfalls were also assigned incident numbers. In order to distinguish the entity responsible for each incident, incident IDs began to include a “D” for DeIDOT, an “N” for New Castle, or an “E” for Elsmere. Illicit discharges that required two parties would include both suffixes (e.g., “DN”).

Between all co-permittees, there were 190 structures that were either investigated as potential illicit discharges, or were field tested as a result of dry weather flow; therefore, incident ID numbers range from 2015-1-D to 2015-190-DN. Incident IDs that were only the responsibility of NCC or Elsmere are not included in the yearly field screening numbers and will be missing in electronic and hard copy documentation.

FIGURE 1
FLOW SOURCE DETERMINATION:
RESIDENTIAL OR LIGHT COMMERCIAL



Robert Pitt, et al., *Source Verification of Inappropriate Discharges to Storm Drainage Systems*, Water Environmental Federation Technical Exhibition and Conference, September 2004.

TABLE 4
FIELD SCREENING RESULTS BY COUNTY

County	Total Field Screened	Illicit Discharge	No Evidence of Illicit Discharge			Stream/Tax Ditch	Could Not Access/Could Not Locate (CA/CL)
			Flow	No Flow	302 STOPPIT Hotline		
New Castle	1,007	20	128	713	32	24	90
Kent	0	0	0	0	0	0	0
Sussex	2	1	1	0	0	0	0
TOTAL	1,009	21	129	713	32	24	90

There were 21 confirmed illicit discharges in 2015, which are summarized in **Table 5** and described in more detail in **Appendices A, B and C**. The contents of the **Appendices** are described in more detail on **Page 10**.

In addition, there are two PIDs that were evaluated prior to 2015 that are still active, as listed below. The field screening documentation for these PIDs and the PIDs identified in yellow in **Table 5** are located via CD in **Appendix B**.

- Incident ID 2013-70-D Webbs Road
- Incident ID 2014-19-DN Odessa State Police



**Incident ID 2013-70-D Webbs Road
 Non DeDOT Pipe Connection**



**Incident ID 2014-19-DN Odessa State Police
 Non DeDOT Pipe Connection**

TABLE 5
2015 ILLICIT DISCHARGES SUMMARY

Incident ID No.	County	Reported By	Source	Comment
2015-137-DN	New Castle	Targeted	Washwater Entering MS4	ACTIVE: Business owner sent NOV; waiting for response
2015-190-DN	New Castle	BMP Inspection	High Detergents Level	ACTIVE: NCC to investigate the source of elevated detergents
2015-1-D	Sussex	MS4 Inspection	Non-DelDOT Connection	Homeowner contacted; connection was legal sump pump
2015-53-D	New Castle	MS4 Inspection	Dumping: Pet Waste	Confirmed pet waste in MS4; door hangers distributed
2015-75-D	New Castle	Miscellaneous	Dumping: Cement	Confirmed cement in MS4; door hangers distributed
2015-76-D	New Castle	Targeted	Dumping: Oil	Confirmed oil in MS4; door hangers distributed
2015-80-D	New Castle	302 STOPPIT Hotline	Dumping: Trash	Confirmed trash in MS4; door hangers distributed
2015-81-D	New Castle	MS4 Inspection	Dumping: Pet Waste	Confirmed pet waste in MS4; door hangers distributed
2015-82-DN	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste	Confirmed yard waste in MS4; door hangers distributed
2015-88-D	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste	Confirmed yard waste in MS4; door hangers distributed
2015-89-D	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste	Confirmed yard waste in MS4; door hangers distributed
2015-92-D	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste	Confirmed yard waste in MS4; door hangers distributed
2015-93-D	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste	Confirmed yard waste in MS4; door hangers distributed
2015-97-D	New Castle	302 STOPPIT Hotline	Dumping: Oil	Confirmed oil in MS4; door hangers distributed
2015-114-D	New Castle	Targeted	Dumping: Kitchen Grease	Confirmed kitchen grease in MS4; door hangers distributed
2015-115-D	New Castle	Targeted	Dumping: Cigarette Butts	Confirmed cigarette butts in MS4; door hangers distributed
2015-117-D	New Castle	Targeted	High Ammonia Level	Known DNREC remediation site
2015-156-D	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste/Leaves	Confirmed yard waste/leaves in MS4; door hangers distributed
2015-159-D	New Castle	Targeted	Dumping: Cigarette Butts	Confirmed cigarette butts in MS4; door hangers distributed
2015-185-D	New Castle	Targeted	Dumping: Diapers & Trash	Confirmed diapers and trash in MS4; door hangers distributed
2015-186-D	New Castle	MS4 Inventory	Dumping: Pet Waste	Confirmed pet waste in MS4; door hangers distributed

C. NPDES FLYER AWARENESS

The distribution of NPDES flyers (door hangers) is an important component of DelDOT's education outreach campaign to remind the public about the importance of proper pollutant disposal. The front of a typical door hanger identifies the type of pollutant found, the door hanger distribution date, and the body of water potentially affected. The back of the door hanger describes stormwater pollution and guidelines to reduce pollution at home or at work.



**Pigeon Run Subdivision
Concrete 07/21/15**

In 2015, reports of illegal dumping originated from the public, KCI MS4 Inventory/Inspection field crews, and KCI IDDE field crews. Many of the public reports came through the 302 STOPPIT Hotline, which accepted citizen reports of stormwater pollution via telephone, text message, and website. The 302 STOPPIT Hotline is described in more detail in **Section E**.

Overall, there were 17 separate incidents requiring door hanger distribution. For each report received, a GIS map was created identifying the specific neighborhood or location, the structure where pollutants were found, and the houses selected for door hanger distribution. A total of 217 door hangers were distributed in New Castle County in 2015.

The majority of the incidents involved the dumping of yard waste, pet waste, or oil/grease into the MS4. Most of the door hangers distributed, based on tips from the 302 STOPPIT Hotline, were for yard waste dumped in the street that entered the storm drains. In the Georgian Terrace subdivision, 15 door hangers were distributed with an attached print-out of DNREC's yard waste drop-off sites, which provided residents with information on how to properly dispose of their waste and reduce stormwater pollution.

In 2014, 174 door hangers were distributed throughout the Wood Creek subdivision after an MS4 Inspection crew found pet waste in multiple catch basins. During a BMP inspection in 2015, it was discovered that more pet waste had been dumped into the MS4. Subsequently, 19 additional door hangers were distributed to a more specific portion of the neighborhood. **Table 6** summarizes the 2015 Door Hanger Distribution. **Appendix C** contains the door hanger distribution map and a copy of the door hanger for each of the 17 investigations.

TABLE 6
2015 DOOR HANGER DISTRIBUTION

Incident ID No.	Date	Neighborhood	County	Waste Reported	Water Body	Door Hangers Distributed
2015-53-D	05/01/15	Wood Creek	New Castle	Pet Waste	White Clay Creek	19
2015-75-D	07/21/15	Pigeon Run	New Castle	Concrete	Red Lion Creek	20
2015-76-D	07/21/15	Woodland Park	New Castle	Oil	Christina River	7
2015-80-D	07/14/15	Buena Vista Park	New Castle	Yard Waste/Trash	Army Creek	16
2015-81-D	08/26/15	Christiana Falls	New Castle	Pet Waste	Christina River	8
2015-82-DN	07/09/15	Bestfield	New Castle	Yard Waste	Christina River	21
2015-88-D	07/27/15	Jefferson Farms	New Castle	Yard Waste	Delaware River	6
2015-89-D	07/27/15	Elmhurst	New Castle	Yard Waste	Christina River	14
2015-92-D	07/20/15	Ridgewood	New Castle	Yard Waste	Shellpot Creek	8
2015-93-D	07/22/15	The Timbers	New Castle	Yard Waste	Naamans Creek	9
2015-97-D	08/04/15	Millrace	New Castle	Oil	White Clay Creek	15
2015-114-D	09/17/15	Bellemoor	New Castle	Kitchen Grease	Christina River	8
2015-115-D	09/17/15	Boxwood	New Castle	Cigarette Butts	Christina River	17
2015-156-D	12/03/15	Georgian Terrace	New Castle	Yard Waste/Leaves	Shellpot Creek	15
2015-159-D	12/03/15	Westhover at Taylortowne	New Castle	Cigarette Butts	Christina River	10
2015-185-D	12/31/15	Todd Estates	New Castle	Diapers/Trash	Christina River	8
2015-186-D	12/31/15	Stone Mill	New Castle	Pet Waste	Christina River	16
2015 TOTAL DOOR HANGERS						217

D. NPDES IDDE FIELD SCREENING WEBSITE

In 2013, the DeDOT NPDES IDDE Field Screening Website was created. It was designed to function as an online database for the IDDE Program, and contains outfall screening data from 2007–2015. The website is the final step in DeDOT’s IDDE Program documentation process.

The NPDES IDDE Field Screening Website contains the following documentation:

- Incident ID Numbers
- Location and Structure Information (from NPDES Map Viewer)
- Structural Condition
- Photos
- Field Testing and Laboratory Analysis Data
- Final Determination (e.g., Illicit Discharge, No Evidence of Illicit Discharge, etc.).

Outfalls can be searched or “filtered” by the following features:

- **Outfall Information**
 - Address/Location, Subdivision, Width, Height
 - County, District, Watershed, Type, Shape
- **Condition**
 - Flow Rate, Flow Source (if known)
 - Land Use, Erosion, Algae
- **Flow Characteristics**
 - Color, Floatables, Odor, Deposits/Stains
- **Testing Parameters (Historical and Current)**
 - Water Temp, pH
 - Chlorine, Copper, Turbidity, Potassium, Phenol, Detergent, Ammonia, Fluoride, Oil & Grease, Bacteria_Enterococci, Bacteria_Fecal

The screenshot displays the user interface of the NPDES IDDE Field Screening Website. At the top, there are navigation links: "Action", "Look up", "Filter", and "Log out". On the left side, there is a vertical sidebar with the "TEAM DeDOT" logo and several small images. The main content area is titled "Outfall Info" and contains two sections: "Outfall Info" and "Condition".

Outfall Info Section:

Address/Location	<input type="text"/>	County	Choose
Subdivision	<input type="text"/>	District	Choose
Width	<input type="text"/>	Watershed	Choose
Height	<input type="text"/>	Type	Choose
Comments	<input type="text"/>	Shape	Choose

Condition Section:

Date Inspected From	<input type="text"/>	To	<input type="text"/>
Last Rain From	<input type="text"/>	To	<input type="text"/>
Land Use	Choose	veg Condition	Choose
Inspectors	<input type="text"/>	Erosion	Choose
Condition	<input type="text"/>	Algae	Choose
Flow Source	<input type="text"/>	Comments	<input type="text"/>

E. 302 STOPPIT HOTLINE

1. Objectives

In 2015, DeIDOT teamed up with New Castle County and the City of Wilmington to create the 302 STOPPIT Hotline, which provided county residents with the ability to report instances of stormwater pollution via text, email, voicemail, and website. Between July 1 and July 31, 2015, the 302 STOPPIT Hotline was advertised and promoted through New Castle County on billboards, web ads, bus ads, YouTube ads, Facebook ads, and a poster at the Delaware Welcome Center. Emails were also sent to all cities and towns in New Castle County, environmental organizations, and homeowners associations. Overall, the 302 STOPPIT Campaign secured over 10 million impressions, surpassing the permit requirement of 250,000 impressions.

Additionally, pre- and post- campaign surveys were conducted to determine the effectiveness of the 302 STOPPIT Campaign on increasing public awareness of stormwater pollution. The survey found that prior to the 302 STOPPIT Campaign, just 1.3% of those surveyed had heard of the 302 STOPPIT Hotline, while after the promotion period 7.9% of those questioned were aware of the hotline.



2. Outcomes and Lessons Learned

When a report was received, KCI determined the responsible entity (i.e. DeIDOT, NCC, City of Wilmington, etc.) and investigated those reports that were within DeIDOT's jurisdiction. Of the 57 reports received, it was determined that 40 of them could possibly impact DeIDOT's MS4. A quick summary of the types of reports received through the hotline is located in **Table 7**. A

complete summary of all reports received and follow-up actions taken is located in **Appendix E**. During investigations, field staff cleared vegetation from catch basins, cleaned trash out of the storm drain system, and increased awareness of pollution issues by distributing door hangers. Between July 1 and December 31, 2015, KCI distributed 104 door hangers that provided information regarding stormwater and guidelines to help homeowners exercise good housekeeping practices. A few of the reports, which were determined to not be stormwater pollution issues, assisted in the detection of potential MS4 deficiencies. KCI was able to identify two situations in which the system was not performing correctly, and maintenance work orders were recorded.

Many lessons were learned during the campaign that could help make a subsequent campaign even more successful. Numerous reports contained vague location descriptions, resulting in significant time spent looking for the issues. Additionally, reports of air pollution, trash along highways, and neighbors allowing their lawns to grow too high were received from the hotline. Sorting through these reports took time away from focusing on the true stormwater pollution issues that were received. The website was the most utilized way of reporting, accounting for 35 of the 57 reports. Because of this, KCI recommends that future campaigns include more information on the website to educate users on the definition of stormwater and the ways in which different pollution types (i.e., grass clippings, yard waste, motor oil, pet waste, etc.) affect the waterways. Hopefully, this would result in more reports of stormwater pollution as compared to general pollution issues. If the campaign were to continue, it may be beneficial to decrease the time that callers had to wait in order to leave a voicemail. There were a lot of missed calls, which was probably due to a long ring time, in addition to callers being addressed by a recording rather than a live person.

TABLE 7
2015 STOPPIT HOTLINE REPORTS

Issue	Number of Reports Received
Motor Oil or Other Auto Chemicals	8
Bags of Pet Waste	2
Yard Waste, Grass Clippings, Debris	34
Foam, Stains, Paint, or Other Chemicals	4
Trash	2
Concrete	2
Cleaning Liquid/Soap	2
Food Waste	3
TOTAL	57

IDDE PROGRAM

2015 ANNUAL REPORT

APPENDIX A

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS SUMMARY TABLE

**APPENDIX A
POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS
2015 SUMMARY TABLE**

Field Visit Date	Reported By	Investigation Results	Determination	Action
Incident ID 2013-70 ACTIVE				
Structure 220131216135651				
16943 Webbs Road, Sussex County				
Gray Water in Catch Basin; Smells Like Fabric Softener				
12/16/13	1591 Field Crew	During routine 1591 inspections, KCI field crew noticed catch basin with a non DelDOT connection that smelled like fabric softener and had a gray coloring	KCI 1613 to investigate	KCI 1613 to investigate
12/17/13	1613 Field Crew	A sample was collected and brought to QC Laboratories to be tested for ammonia, potassium and surfactants	--	Waiting for lab results
12/31/13	Lab Results	Lab results = 17.7 mg/L surfactants; .340 mg/L ammonia; 2.26 mg/L potassium.	According to IDDE Flow Chart, water is likely from a graywater/washwater source	Structure will be re-sampled with 72 hour dry period
01/20/14	1591 Field Crew	1591 collected a follow up sample from standing water in catch basin. PVC pipe was not actively flowing. Sent to lab for Potassium, Ammonia, Surfactants analysis	--	Waiting for lab results
01/29/14	Lab Results	Lab results = 15.0 mg/L Surfactants; 3.65 mg/L Ammonia; 20.3 mg/L Potassium	According to IDDE Flow Chart, water is likely from a graywater/washwater source	Send homeowner illicit discharge notice
01/31/14	KCI	--	Certified illicit discharge notice mailed to homeowner	Notice was delivered 02/04/14 @ 1:55 p.m.
02/10/14	KCI	--	KCI received confirmation of receipt	--
05/05/14	KCI	--	KCI called homeowner (Judith Webb) inquiring about progress and requested a return call	Waiting for homeowner
07/16/14	KCI	--	KCI called homeowner (Judith Webb) inquiring about progress and requested a return call	Waiting for homeowner
07/23/14	KCI	KCI Sussex 1591 crew visited structure to document any changes	No changes were observed	TBD
05/19/15	KCI	KCI 1613 field crew visited the structure to document any changes	No changes were observed	TBD
08/13/15	KCI	KCI Sussex 1591 crew visited structure to document any changes	No changes were observed	Second NOV to be sent
08/20/15	KCI	KCI sent a second NOV to homeowner at 16943 Webbs Road by regular mail	--	Waiting for response from homeowner
09/01/15	KCI	KCI called Judith Webb inquiring about second NOV	Ms. Webb stated that she no longer resides at the residence	TBD
10/15/15	KCI	KCI sent an NOV to Jeffrey Reed, the homeowner for the parcel in question	The NOV included the notice of violation letter, location map, and photos of the connection	TBD
10/29/15	KCI	Bruce Thompson, KCI, spoke to Jeff Reed	KCI to set-up a time for dye testing to determine source of connection into MS4	KCI to coordinate dye testing

**APPENDIX A
POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS
2015 SUMMARY TABLE**

Field Visit Date	Reported By	Investigation Results	Determination	Action
Incident ID 2014-19-DN ACTIVE				
Structure 82836				
414 Main Street Odessa, New Castle County				
Soapy Dry Weather Flow & Elevated Detergents Level				
03/10/14	KCI	During Appoquinimink targeted screening, KCI field crew evaluated a catch basin that had evidence of an illicit discharge (sweet smell, soapy discharge)	Sample Sent to QC Laboratories for analysis of surfactants, ammonia, and potassium	Pending laboratory analysis
03/26/14	Lab Results	Lab results = 88.4 mg/L Surfactants; 0.419 mg/L Ammonia; 6.72 mg/L Potassium	According to IDDE flow chart water is likely from a graywater/washwater source	KCI to try to source discharge pipe
04/16/14	KCI	--	Certified illicit discharge notice mailed to homeowner requesting access to property to confirm location of illicit connection	Awaiting delivery
05/06/14	KCI	KCI received confirmation of receipt and spoke to homeowner (Paul Mooney)	KCI and Mr. Mooney scheduled a time to inspect plumbing and confirm location of illicit connection	Meeting date May 30, 2014
05/30/14	KCI	KCI met with Mr. Mooney and confirmed his washer was legally hooked up to sanitary sewer. After further investigation, KCI traced flow to wash bay of the State Police at 414 Main Street	KCI spoke to officers on duty, who gave contact information for the Captain. KCI plans on dye testing to confirm the connection	A message was left for Capt. Sapp to schedule a date for dye testing
06/10/14	KCI	KCI spoke to Capt. Sapp and scheduled a meeting for June 16th to perform dye testing	--	KCI to perform dye testing on Monday, June 16th
06/16/14	KCI	KCI performed dye testing at structure 82836	KCI confirmed that discharge is coming from State Police Troop 9 wash bay	KCI to notify DeIDOT/NCC
06/24/14	KCI/NCC	KCI informed Mike Harris (NCC) of issue	Bill Braswell, maintenance manager for State Police will work with NCC to resolve issue	Referred to NCC
12/09/14	KCI	KCI visited structure to check for resolution	The pipe was not actively flowing but It appeared that the pipe was still connected into the MS4	--
03/06/15	NCC	Bill Braswell stated by e-mail that they are putting the project out for bid and he hopes to meet with the engineer within the next two weeks	--	Awaiting response from Bill Braswell
05/11/15	KCI	KCI visited the site to take note of any progress	Catch basin still had illegal connection and was full of suds	Awaiting response from Bill Braswell
10/21/15	NCC	Mike Harris was contacted by Ring Lardner from Davis Bowen and Friedel	Ring Lardner was hired by the Delaware State Police to disconnect wash bay and vehicle maintenance shop from MS4. Disconnection is set for March 2016	Disconnection set for March 2016

**APPENDIX A
POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS
2015 SUMMARY TABLE**

Field Visit Date	Reported By	Investigation Results	Determination	Action
Incident ID 2015-137-DN ACTIVE				
Structure 92214				
1921 Pulaski Highway, New Castle County				
Washwater Entering MS4				
10/08/15	KCI	During targeted outfall screening KCI screened contributing structure 92214 for dry weather flow	Flow was observed and KCI traced the source of the flow to 1921 Pulaski Highway (Shorty's Detailing). Employees were detailing vehicles on the pavement and had an outdoor hose hooked up. Discharge water smelled sweet and looked soapy	Sample collected and taken to the lab
10/20/15	Eurofin QC Lab Results	Lab results = 64.9 mg/L Surfactants; ND Ammonia; 6.30 mg/L Oil and Grease; 0.180 mg/L Potassium	Flow chart determination = graywater/washwater	NCC to send NOV
10/23/15	NCC	NCC sent NOV to Rt. 40 Bear Wash LLC	Within 10 days of receipt, property owner must immediately stop discharging waste into MS4, investigate and determine source of discharge, and develop and submit a plan showing how the source of the illicit discharge was disconnected, how the property owner will clean up the site, and the name and address of contractor who will perform the cleaning, to NCC	Waiting for response from property owner
Incident ID 2015-190-DN ACTIVE				
Structure 320080407131737				
Bear Christiana Road, New Castle County				
Soapy Dry Weather Flow/Elevated Detergents				
12/22/15	KCI	A KCI team member was performing DelDOT BMP inspections and observed a flowing outfall with evidence of a potential illicit discharge	--	KCI IDDE crew to investigate
12/22/15	KCI	A KCI IDDE field crew took a sample for field analysis. Field testing results = 0.35 mg/L Detergents; 0.40 mg/L Ammonia	Sample to be collected for laboratory analysis	Sample to be collected for laboratory analysis
Incident ID 2015-1-D				
Structure 120141104080455				
26196 Deep Branch Road, Sussex County				
Non DelDOT Connection with Gray Water in Catch Basin				
12/23/14	Century 1591	During routine 1591 inspections, a KCI field crew noticed a catch basin with a non DelDOT pipe connection. The catch basin had gray standing water and a strong stagnant smell	KCI to investigate & sample	KCI 1613 to investigate
01/03/15	KCI 1613	KCI visited the structure to confirm potential illicit discharge	No flow was observed when KCI visited the structure, so no sample was collected. There was gray debris at the bottom of the catch basin and a small amount of cloudy water in the pipe leaving the basin	KCI 1613 to re-visit
01/11/15	KCI 1613	KCI visited the structure to confirm potential illicit discharge	No flow was observed. Field crew believes the connection is a sump pump. Will re-visit structure	KCI to re-visit structure
06/22/15	KCI 1728	A KCI 1728 field crew re-visited the structure	No flow was observed and there was no odor or other signs of illicit discharge	No further action required

**APPENDIX A
POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS
2015 SUMMARY TABLE**

Field Visit Date	Reported By	Investigation Results	Determination	Action
Incident ID 2015-37-DN				
Top of the Wedge Subdivision Wallace Drive, New Castle County				
03/24/15	NCC	NCC contacted Randy Cole, DeIDOT about a subdivision with residents who are backwashing their water softeners into the roadway, which connects to the MS4	The water softener pipes being so close to the property line is a code violation, and NCC submitted a complaint	TBD
10/14/15	NCC	NCC confirmed that Code Enforcement visited the homes and that the pipes are now in compliance with code	No evidence of illicit discharge	No further action required
Incident ID 2015-53-D				
Wood Creek Subdivision 208 Barberry Drive, New Castle County Pet Waste Dumped into MS4				
05/17/15	KCI	During BMP inspections KCI noticed multiple bags of pet waste in the swales coming from the neighborhood and near BMP riser	Door hangers to be distributed	Door hangers to be distributed
05/01/15	KCI	KCI distributed 19 door hangers to surrounding homes		No further action required
Incident ID 2015-74-D				
Structure 120150324142537 34112 DuPont Avenue, Sussex County Hose Connection in Catch Basin				
06/11/15	Century 1591	Century Engineering notified KCI of a catch basin with an environmental pipe connection	KCI to investigate	KCI 1613 to investigate
06/16/15	KCI 1613	KCI visited structure to confirm connection & potential illicit discharge	After speaking with employee, KCI traced the hose connection to a basement sump pump	No evidence of illicit discharge. No further action required
Incident ID 2015-75-D				
Structure 19127 35 Rawlings Drive, New Castle County Concrete Dumped into MS4				
06/15/15	Citizen Report	KCI received a report of white staining/residue on a catch basin and surrounding curbs	KCI to investigate	KCI to investigate
06/17/15	KCI	KCI visited structure to investigate	It was determined that concrete had been dumped into catch basin	Door hangers to be distributed
07/21/15	KCI	KCI distributed 20 door hangers to surrounding homes		No further action required
Incident ID 2015-76-D				
Structure 21846 2113 Faulkland Road, New Castle County Oil Dumped into MS4				
07/07/15	KCI	During targeted outfall screening, KCI noticed an oil stain on a catch basin as well as oil sheen in the basin	Door hangers to be distributed	Door hangers to be distributed
07/21/15	KCI	KCI distributed 7 door hangers to surrounding homes		No further action required
Incident ID 2015-80-D				
Structures 16723 & 16724 Palmetto Drive, New Castle County Trash and Debris Dumped into MS4				
07/07/15	STOPPIT Hotline	A citizen reported yard waste and debris entering storm drains along Palmetto Drive	KCI confirmed the presence of yard waste and trash in catch basins on Palmetto Drive	Door hangers to be distributed
07/21/15	KCI	KCI distributed 16 door hangers to surrounding homes		No further action required

**APPENDIX A
POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS
2015 SUMMARY TABLE**

Field Visit Date	Reported By	Investigation Results	Determination	Action
Incident ID 2015-81-D				
Structure 90654				
30 Verdi Circle, New Castle County				
Pet Waste Dumped into MS4				
07/22/15	KCI	During routine MS4 inspections, KCI came across a structure with dry weather flow and a sewage odor	KCI IDDE field crew took sample for lab analysis of surfactants, ammonia, potassium, enterococcus, and fecal coliform	Sample collected and taken to the lab
08/03/15	Eurofins QC Lab Results	Lab results = ND Surfactants; ND Ammonia; 2.51 mg/L Potassium; 16.1 MPN/100ml Enterococcus; 540 MPN/100ml Fecal Coliform	KCI plans to trace the source of the dry weather flow and high level of fecal coliform	KCI to investigate
08/06/15	KCI	KCI re-visited structure to trace the source	KCI could not confirm the source of the dry weather flow, but found a contributing structure containing used hamster/gerbil bedding, which could be the source of the elevated bacteria levels	Door hangers to be distributed
08/26/15	KCI	KCI distributed 8 door hangers to surrounding homes		No further action required
Incident ID 2015-82-DN				
Bestfield Subdivision				
810 Augustine Street, New Castle County				
Yard Waste Dumped into BMP				
07/09/15	STOPPIT Hotline	A citizen reported that yard waste and debris were entering the storm drains along Augustine Street	KCI investigated and found a large amount of yard waste in nearby BMP	Door hangers to be distributed
07/21/15	KCI	KCI distributed 21 door hangers to surrounding homes		No further action required
Incident ID 2015-88-D				
Structure 87171				
1 Montpelier Boulevard, New Castle County				
Yard Waste Dumped into MS4				
07/16/15	STOPPIT Hotline	A citizen reported that yard waste and debris were entering a storm drain	KCI to investigate	KCI to investigate
07/20/15	KCI	KCI confirmed the presence of yard waste in the MS4	KCI will distribute door hangers	Door hangers to be distributed
08/26/15	KCI	KCI distributed 6 door hangers to surrounding homes		No further action required
Incident ID 2015-89-D				
Structure 15909				
101 Matthes Place, New Castle County				
Yard Waste Dumped into MS4				
07/20/15	STOPPIT Hotline	A citizen reported a large pile of yard waste on top of a storm drain	KCI to investigate	KCI to investigate
07/22/15	KCI	KCI confirmed the presence of yard waste in the MS4	KCI will distribute door hangers	Door hangers to be distributed
08/26/15	KCI	KCI distributed 14 door hangers to surrounding homes		No further action required
Incident ID 2015-92-D				
Ridgewood Subdivision				
18 Ridgewood Circle, New Castle County				
Yard Waste Dumped into MS4				
07/20/15	STOPPIT Hotline	A citizen reported that grass clippings and yard waste were entering the roadway and storm drains	KCI to investigate	KCI to investigate
07/20/15	KCI	KCI confirmed the presence of yard waste in the MS4	KCI will distribute door hangers	Door hangers to be distributed
08/26/15	KCI	KCI distributed 8 door hangers to surrounding homes		No further action required

**APPENDIX A
POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS
2015 SUMMARY TABLE**

Field Visit Date	Reported By	Investigation Results	Determination	Action
Incident ID 2015-93-D				
Conveyance 7264				
2508 Pin Oak Drive, New Castle County				
Yard Waste Dumped into MS4				
07/22/15	STOPPIT Hotline	A citizen reported grass clippings, yard waste, and excessive dirt and rocks were clogging a storm drain	KCI to investigate	KCI to investigate
07/28/15	KCI	KCI confirmed the presence of yard waste in a backyard concrete swale	KCI will distribute door hangers	Door hangers to be distributed
08/26/15	KCI	KCI distributed 9 door hangers to surrounding homes		No further action required
Incident ID 2015-97-D				
Millrace Subdivision				
16 Elizabeth Court, New Castle County				
Oil Dumped into MS4				
08/04/15	STOPPIT Hotline	A citizen reported that someone had drained the oil from their car into the street	KCI to investigate	KCI to investigate
08/05/15	KCI	KCI visited the area to confirm the presence of an illicit discharge	The oil had already been cleaned up with oil absorbant; KCI plans to distribute door hangers	Door hangers to be distributed
08/26/15	KCI	KCI distributed 15 door hangers to surrounding homes		No further action required
Incident ID 2015-114-D				
Structure 15845				
117 Champlain Avenue, New Castle County				
Oil Dumped into MS4				
08/26/15	KCI	During targeted outfall screening, KCI came across a catch basin with what appeared to be kitchen grease on the grate/dumped inside.	--	KCI to send out door hangers.
09/17/15	KCI	KCI distributed 8 door hangers to surrounding homes		No further action required
Incident ID 2015-115-D				
Structure 15750				
12 Main Avenue, New Castle County				
Cigarette Butts Dumped into MS4				
08/27/15	KCI	During targeted outfall screening, KCI came across a catch basin with cigarettes dumped inside.	--	KCI to send out door hangers.
09/24/15	KCI	KCI distributed 17 door hangers to surrounding homes		No further action required
Incident ID 2015-117-DN				
Structure 4415				
408 Meco Drive, New Castle County				
High Ammonia Level				
08/31/15	KCI	During targeted outfall screening KCI screened outfall 4415 for dry weather flow. The outfall was originally targeted for multiple reasons including a previous ammonia/detergent hit	The field results came back with an ammonia result > 3.0 mg/L	Sample collected and taken to the lab
09/09/15	Eurofins QC, Inc.	Lab results = 0.107 mg/L Surfactants; 6.80 mg/L Ammonia; 19.2 mg/L Potassium	Flow chart determination = no evidence of illicit discharge. Higher than usual Ammonia levels	KCI to investigate high Ammonia test results
10/15/15	Mike Harris, NCC	Mike Harris contacted DNREC SIRS	408 Meco Drive is a known DNREC remediation site	No further action required

**APPENDIX A
POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS
2015 SUMMARY TABLE**

Field Visit Date	Reported By	Investigation Results	Determination	Action
Incident ID 2015-156-D				
Georgian Terrace Subdivision 506 Ruxton Drive, New Castle County Yard Waste Dumped into MS4				
11/09/15	STOPPIT	KCI received a report from the STOPPIT hotline	The report stated that the homeowner at 506 Ruxton Drive was blowing leaves from the yard into the street	KCI to investigate
11/11/15	KCI	KCI visited 506 Ruxton Drive	The field crew found leaving covering the roadway along Ruxton Drive. It appears that mutiple homes are blowing their leaves into the roadway	Door hangers to be distributed
12/03/15	KCI	KCI distributed 15 door hanger and locations of yard waste drop-off sites to surrounding homes		No further action required
Incident ID 2015-159-D				
Structure 90624 1 Goya Place, New Castle County Cigarette Butts Dumped into MS4				
11/09/15	KCI	During targeted outfall screening in the Christina River watershed, KCI screened a contributing structure with a large amount of cigarette butts	--	Door hangers to be distributed
12/03/15	KCI	KCI distributed 10 door hangers to surrounding houses		No further action required
Incident ID 2015-185-D				
Structure 71488 15 Pearson Drive, New Castle County Trash Dumped into MS4				
12/11/15	KCI	During targeted outfall screening in the Christina River watershed, KCI screened contributing structure 71488	The catch basin contained a large amount of trash including used diapers	Door hangers to be distributed
12/31/15	KCI	KCI distributed 8 door hangers to surrounding homes		No further action required
Incident ID 2015-186-D				
12/14/15	KCI	During routine Agr 1728 MS4 re-inspections, KCI inspected structure 90681 and noticed bags of pet waste in catch basin	--	KCI IDDE crew to investigate
12/15/15	KCI	A KCI IDDE field crew visited the structure and confirmed the presence of pet waste in the MS4		Door hangers to be distributed
12/31/15	KCI	KCI distributed 16 door hangers to surrounding homes		No further action required

IDDE PROGRAM

2015 ANNUAL REPORT

APPENDIX B

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS WITH ONGOING ISSUES

- ❖ 2013-70-D Webbs Road
 - ❖ 2014-19-DN 82836 Appo DE State Police
 - ❖ 2015-137-DN 1921 Pulaski Highway
 - ❖ 2015-190-DN Bear Christiana Road
-

IDDE PROGRAM

2015 ANNUAL REPORT

APPENDIX B

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS WITH ONGOING ISSUES

❖ 2013-70-D Webbs Road

IDDE INVESTIGATION TRACKING SHEET

Incident ID No. 2013-70

Date: 12/16/13

Structure No. 220131216135651

EVIDENCE OF ILLICIT DISCHARGE: YES NO TBD

LOCATION:

County: Sussex

House No: 16943

Stream: Beaver Dam Branch

ADC: 7G-12

Street: Webbs Road

Watershed: Gravelly Branch

Subdivision: N/A

City: Ellendale

Zip Code: 19941

SETTING:

- | | | |
|---|-------------------------------------|---|
| <input checked="" type="checkbox"/> Storm Drain | <input type="checkbox"/> Outfall | <input type="checkbox"/> Other (specify): |
| <input type="checkbox"/> In Stream | <input type="checkbox"/> Along Bank | |
| <input type="checkbox"/> Stormwater Pond | <input type="checkbox"/> Upland | |

VISUAL:

- | | | |
|--|---|---|
| <input type="checkbox"/> Flow | <input checked="" type="checkbox"/> Soap | <input checked="" type="checkbox"/> Cloudy |
| <input type="checkbox"/> Staining | <input type="checkbox"/> Floatables (toilet paper, etc) | <input type="checkbox"/> Algae |
| <input type="checkbox"/> Oil / Oil Sheen | <input type="checkbox"/> Dead Fish | <input type="checkbox"/> Precip w/in 72 hrs |
| <input type="checkbox"/> Antifreeze | <input type="checkbox"/> Yard Waste | <input type="checkbox"/> Other (specify): |

ODOR:

- | | | |
|---------------------------------|--|----------------------------------|
| <input type="checkbox"/> None | <input type="checkbox"/> Sulfide ("rotten egg") | <input type="checkbox"/> Gas/Oil |
| <input type="checkbox"/> Sewage | <input checked="" type="checkbox"/> Other (specify): Sweet/Fabric softener | |

IDDE INVESTIGATION SUMMARY:

Referred By: KCI Agreement 1591 Field Crew

Issue: Standing water in catch basin that smells of laundry detergent/fabric softener

Determination: Likely Graywater/Washwater Source; A follow up sample will be taken after a 72-hour dry period.



DOCUMENTATION:

- Location Map from NPDES Map Viewer
- Summary Memorandum with Photographs
- Field Data Sheet
- QCL Laboratory Data
- Door Hanger
- Notice of Potential Illicit Discharge
- Other:





Legend

- | | | | | |
|---------|--------------|--------------|----------------------|------------|
| INLET | RISER | SWALE END | DITCH | BMP |
| MANHOLE | JUNCTION BOX | SWALE VERTEX | PIPE | WORK ORDER |
| OUTFALL | CULVERT | DUMMY NODE | HYDRAULIC CONNECTION | |

NPDES Inventory Map

12 Feb, 2014

0 10 20 40 Feet



MEMORANDUM

TO: Marianne Walch, DelDOT

FROM: Katherine Adami, KCI

DATE: December 16, 2013 – January 31, 2013

SUBJECT: **Potential Illicit Discharge**
Webbs Road PID
Structure 220131216135651
Incident ID No. 2013-70
Agreement 1613/KCI Project 17121613B

The purpose of this Memo is to summarize the field investigations regarding a Potential Illicit Discharge (PID) at Structure 220131216135651 on Webbs Road in Sussex County.

December 16, 2013: A KCI 1591 field crew conducting routine MS4 inspections noticed outfall 320131216135806 had flow. The flow was traced to a yard catch basin with standing water and a 4" non-DelDOT pipe connection. The non-DelDOT pipe was not actively flowing. The standing water had a gray tint and smelled sweet like fabric softener.

December 17, 2013: A KCI 1613 field crew returned to 16943 Webbs Road to collect a sample for laboratory analysis. There was no flow from the 4" pipe, so the sample was taken from the standing water in the catch basin. It was brought to the lab to be tested for ammonia, potassium, and surfactants. The last rain was December 14, 2013, making the 72 hour dry period invalid. However, due to of the water's odor and color, the sample was collected outside of the 72 hour dry period.

December 31, 2013: Lab results were returned:

Surfactants = 17.7 mg/L
Ammonia = .340 mg/L
Potassium = 2.26 mg/L

According to flow chart, water is likely from a graywater/washwater source. A follow-up sample will be collected after 72 hours of dry weather.

January 20, 2014: The KCI 1591 field crew re-visited the yard catch basin on Webbs road to check for flow and to take a follow-up sample. The 4" pvc pipe was not flowing, but was wet and there was standing water. A sample was collected from the standing water and sent to QC Labs for analysis of surfactants, ammonia, and potassium.

January 28, 2014: Lab results were returned:

Surfactants = 15.0 mg/L
Ammonia = 3.65 mg/L
Potassium = 20.3

According to flow chart & prior laboratory results, water is confirmed graywater/washwater.

January 31, 2014: A certified Notice of Potential Illicit Discharge was sent to the homeowner at 16943 Webbs Road via USPS. The letter states that the discharge/connection must be ceased or removed within 30 days. Estimated delivery date is February 1, 2014.

February 10, 2014: KCI received confirmation of receipt of the Notice of Potential Illicit Discharge.

May 5, 2014: KCI left a message for homeowner (Judith Webb) inquiring about progress and requesting a return call.

July 16, 2014: KCI left a message for homeowner (Judith Webb) inquiring about progress and requesting a return call.

July 23, 2014: KCI Sussex 1591 crew visited the structure to document any changes. No changes were observed.



Landscape



Structure 220131216135651 – December 17, 2013



Non Del-DOT Pipe Connection – December 17, 2013



Structure 220131216135651 – January 20, 2014



Non-DelDOT Pipe Connection – January 20, 2014



Outfall 320131216135806 – January 20, 2014



**DELDOT AGREEMENT 1613
ILLICIT DISCHARGE DETECTION & ELIMINATION
FIELD SHEET**



Structure Number: 220131216135651
 Incident ID #: 2013-70
 County: Sussex
 Subdivision: N/A
 Address/Location: Webbs Road

Personnel		KA/DG/JL
Date		12/17/2013
Time		9:55 a.m.
Air Temperature (F)		40°
Photograph	Yes(Y), No(N)	Y
Date Last Rain		12/14/13
Outfall Dimensions	(inches)	4
Outfall Shape	Round(R), Oval(O), Box(B), V-Ditch(VD), Trap Ditch(TD)	R
Outfall Type	Corrugated Metal Pipe(CMP), Reinforced Concrete Pipe(RCP) Polyvinyl Chloride Pipe(PVC), Other(O-explain)	CMP
Flow Observed	Yes(Y), No(N)	N - sample taken from
Land Use	Industrial(I), Commercial(C), Residential(R), Other(O-explain)	R standing water
Structural Condition	Normal(N), Concrete Spalling(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
Algae Growth	Yes(Y), No(N)	N
Vegetative Condition (Outfall Area)	Normal(N), Inhibited Growth(IG) Excessive Growth(EG), Other(O-explain)	N
Flow Rate (cfs)		-
Water Temperature (F)		50.2
pH (units)		6.7
Turbidity (ntu)		41.77
QC Laboratories:		
Surfactants (mg/L)		17.7
Ammonia (mg/L)		.340
Potassium (mg/L)		2.26
Bacteria (mpn)	As needed if Suspect Sewage	-
Odor	None(N), Rancid-Sour(RS), Gas(G), Sewage(S), Oil(O), Sulfur(S), Other(O-explain)	0 - sweet/soapy
Deposits/Stains	None(N), Sediment(S), Oil(OY), Other(O-explain)	Iron flocculent
Color	Clear(C), Gray(G), Red(R), Yellow(Y), Brown(B), Green(GR), Other(O-explain)	G, blue-ish
Floatables	None(N), Trash(T), Oil Sheen(OS), Sewage(S), Other(O-explain)	soapy, bubbly
DETERMINATION (FROM IDDE FLOWCHART)		Likely graywater/ washwater source



Analytical Report

Serialized: 12/31/2013 02:07pm

BRUCE THOMPSON
KCI TECHNOLOGIES
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES
1352 MARROWS ROAD, SUITE 100
KCI SCREENING
NEWARK, DE 19711

PROJECT ID:

AL0120 KCI SCREENING

LABORATORY REPORT NUMBER:

L4865397



Authorized by: Oommen V. Kappil, QA Director

QCL Accreditations: Southampton Div: EPA PA00018 NELAP's: PA900131NJ PA166, NM223
State ID's CT PH0768, DE PA18, MD206, S 8902100 FDA Reg: 255238
Delaware Division: State ID's: DE0011, M 138
Vineland Division: State ID NJ 06005; Reading Div: State ID: PA 003543
Wind Gap Division: State ID's: PA01334, NPA001
E. Rutherford Division: State ID: N02015

Printed 12/31/13 14:07

KCI TECHNOLOGIES, INC.
AL0120 KCI SCREENING
KCI OUTFALL SCREENING PROJECT
P.O. No:
Inv. No: 1575770 PAPERLESS
PWSID:

BRUCE THOMPSON
KCI TECHNOLOGIES
1352 MARROWS ROAD, SUITE 100
KCI SCREENING
NEWARK, DE 19711

Regarding:
BRUCE THOMPSON
KCI TECHNOLOGIES
1352 MARROWS ROAD, SUITE 100
KCI SCREENING
NEWARK, DE 19711

SAMPLE SUMMARY

Lab ID	Collected	Received	Matrix	Client ID
L4865397-1	12/17/13 09:55	12/17/13	WASTEWATER	220131216135651

Sample Description: 220131216135651
Sample Number: L4865397-1
Matrix: WASTEWATER
Received Temp: 4.1 C

Samp. Date/Time/Temp: 12/17/13 09:55am NA C
Sampled by: Customer
Iced (Y/N): Y

GENERAL CHEMISTRY

Analytical Method: SM 5540C **Run Date:** 12/18/13 02:00PM **Workgroup:** 121813AMBS
Dilution: 50 **Analyst:** EGL **File ID:** d1-mbas_121813AMBS.csv
Units: mg/l **Instrument:** D1-MBAS **Basis:**

Parameter	CAS	Result	MDL*	RL
Detergents, MBAS (Delaware)	N/A	17.7	1.00	1.00

Analytical Method: SM 4500NH3-G **Run Date:** 12/18/13 03:09PM **Workgroup:** 121713ANH3
Dilution: 1 **Analyst:** SLD **File ID:** 121713ANH3.csv
Units: mg/l **Instrument:** Lachat Quickchem 800 **Basis:**

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	0.340	0.0990	0.200

METALS

Analytical Method: EPA 200.8 Rev 5.4 **Run Date:** 12/30/13 12:58PM **Workgroup:** WG60672
Dilution: 1 **Analyst:** GJH **File ID:** 12-30-13ww.rep
Units: mg/l **Instrument:** PE Elan 9000 ICP-MS **Basis:**

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	2.26	0.0310	0.500

MBAS is reported as LAS, molecular weight; 340.



*=This limit was used in the evaluation of the final result.

DEFINITIONS

The following terms or abbreviations are used in this report:

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor
POS	Positive	Q	Qualifier
NEG	Negative	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The concentration was not detected at or above RL / MDL.
J	Estimated value \geq MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

Data Qualifiers (EPA CLP Convention)

<u>Organics</u>		<u>Metals</u>	
B	Analyte was detected in the method blank	B	Value is \geq MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

Warranties, Terms, and Conditions

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the QCL Southampton Division (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the QCL facility in Horsham (702 Electronics Drive, Horsham, PA 19044).
- The test results meet all requirements of TNI or other regulatory agencies, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. QCL is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- QCL is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. QCL's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by QCL: Nicki Smith (Environmental & Food Chemistry), Amanda Lukaszewski (Pharmaceutical), Ryan Baker (Dairy), Renata Paskevicius (Food Micro), Sue Abbott (QCL Delaware).

QCL Accreditations

Southampton Division	EPA ID:	PA00018			
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223			
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware Division	State IDs:	DE 00011; MD 138	Reading Division	State ID:	PA 06-03543
Wind Gap Division	State IDs:	PA 48-01334; NJ PA001	Vineland Division	State ID:	NJ 06005
East Rutherford Division	State ID:	NJ 02015			



1205 Industrial Blvd.
Southampton, PA 18966-0514

Phone: 215-355-3900
Fax: 215-355-7231

CHAIN OF CUSTODY

Page _____ of _____

Bill to/Report to: (if different)

Lab LIMS No: **L48 65397**

MATRIX CODES

LAB USE ONLY:

___ Ascorbic/HCl Vials # ___ HCl Vials
 # ___ Na₂S₂O₃
 # ___ Na OH/Zn acetate pH
 # 1 HNO₃ pH 6.212 P11
 # ___ H₂SO₄ pH
 # ___ NaOH pH
 # ___ Unpreserved
 # ___ Hcl pH
 # 4 Temp control ID# 1000000000

DW: DRINKING WATER
 GW: GROUND WATER
 WW: WASTEWATER
 SO: SOIL
 SL: SLUDGE
 OIL: OIL
 SOL: NON SOIL SOLID
 MI: MISCELLANEOUS
 X: OTHER

Field pH, Temp (C or F),
DO, Cl₂, S. Cond. etc.

Client/Acct. No. **KCI Technologies**

Address **1352 Marrows Rd**

Sampling Site Address: (if different)

City/State/Zip **Newark, DE 19711**

Phone/Fax

P.O. No.

Client Contact

QC Contact

PROJECT

Collection

G
R
A
B

C
O
M
P

Matrix
Code

Number of Containers

FIELD ID

Date

Military Time

Total

H₂O₂

HCl

Y

H₂O

N

Z

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C

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D

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E

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220131216135651

12/17/13 9:55

N

ANALYSIS REQUESTED

Surfactants, potassium, ammonia

SAMPLED BY: (Name/Company)

KCI Technologies

Verbal/fax data due: _____ / _____ / _____

Hardcopy due: _____ / _____ / _____

Report Format: Standard Forms

Standard + QC NJ Reduced Disk

Field Parameters Analyzed By:

Sig:

Date/Time:

Please call for pricing and availability on rush (<14-21 day) turnaround and on all but standard format.

SAMPLE CUSTODY EXCHANGES MUST BE DOCUMENTED BELOW. USE FULL LEGAL SIGNATURE, DATE AND MILITARY TIME (24 HOUR CLOCK, I.E. 8AM IS 0800, 4 PM IS 1600)

RELINQUISHED BY SAMPLER	DATE	TIME	RECEIVED BY	DATE	TIME	DELIVERY METHOD: <input type="checkbox"/> QC COURIER <input type="checkbox"/> CLIENT <input type="checkbox"/> UPS <input type="checkbox"/> FEDEX <input type="checkbox"/> OTHER	Custody Seal Number
1 <i>[Signature]</i>	12/17/13	13:25	<i>[Signature]</i>	12/17/13	13:25		
2 <i>[Signature]</i>	12/17/13	13:45	2 <i>[Signature]</i> # 831 (retals)				
3 <i>[Signature]</i>	12/17/13	15:50	<i>[Signature]</i>	12/17/13	15:50		
4			4				
5			5				

Hazardous: yes / no

For example to aid completion, see reverse side.

FINAL REPORT



**DELDOT AGREEMENT 1613
ILLICIT DISCHARGE DETECTION & ELIMINATION
FIELD SHEET**



Structure Number: 220131216135651
 Incident ID #: 2013-70
 County: Sussex County
 Subdivision: —
 Address/Location: Webbs Road

Personnel	CS + NS
Date	1/20/2014
Time	8:30am
Air Temperature (F)	37°
Photograph Yes(Y), No(N)	Y
Date Last Rain	1/14/14
Outfall Dimensions (inches)	4
Outfall Shape Round(R), Oval(O), Box(B), V-Ditch(VD), Trap Ditch(TD)	R
Outfall Type Corrugated Metal Pipe(CMP), Reinforced Concrete Pipe(RCP) Polyvinyl Chloride Pipe(PVC), Other(O-explain)	PVC - in catch basin
Flow Observed Yes(Y), No(N)	N
Land Use Industrial(I), Commercial(C), Residential(R), Other(O-explain)	R
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
Algae Growth Yes(Y), No(N)	N
Vegetative Condition (Outfall Area) Normal(N), Inhibited Growth(IG) Excessive Growth(EG), Other(O-explain)	N
Flow Rate (cfs)	~0.022
Water Temperature (F)	43.2
pH (units)	7.1
Turbidity (ntu)	1100 (over range)
QC Laboratories:	
Surfactants (mg/L)	15.0
Ammonia (mg/L)	3.65
Potassium (mg/L)	20.3
Bacteria (mpn) As needed if Suspect Sewage	
Odor None(N), Rancid-Sour(RS), Gas(G), Sewage(S), Oil(O), Sulfur(S), Other(O-explain)	O - Detergent
Deposits/Stains None(N), Sediment(S), Oil(OY), Other(O-explain)	N
Color Clear(C), Gray(G), Red(R), Yellow(Y), Brown(B), Green(GR), Other(O-explain)	O - cloudy
Floatables None(N), Trash(T), Oil Sheen(OS), Sewage(S), Other(O-explain)	N
DETERMINATION (FROM IDDE FLOWCHART)	Likely Graywater/ Washwater Source

* Sample taken at the catch basin before the outfall



Analytical Report

Serialized: 01/28/2014 04:24pm

BRUCE THOMPSON
KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

PROJECT ID:

AL0120

LABORATORY REPORT NUMBER:

L4904534

PO NUMBER:

17121613



Authorized by: Oommen V. Kappil, QA Director

QCL Accreditations: Southampton Div: EPA PA00018 NELAP's: PA900131NJ PA166, NM223
State ID's CT PH0768, DE PA018, MD206, S 8902100 FDA Reg: 255238
Delaware Division: State ID's: DE0011, M 138
Vineland Division: State ID NJ 06005; Pending Di State ID: PA 003543
Wind Gap Division: State ID's: PA01334, NPA001
E. Rutherford Division: State ID: N02015

BRUCE THOMPSON
KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Regarding:
BRUCE THOMPSON
KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Account No:AL0120, KCI TECHNOLOGIES, INC.
Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1581275 PAPERLESS
PWSID No:

Sample ID	Sample Description	Samp. Date/Time/Temp	Sampled by
L4904534-1	22013121635651	01/20/14 08:30am NA C	Customer
	Received Date/Time/Temp 01/21/14 08:20am 6.1 C	Iced (Y/N): Y	
	Satellite Received Temp 7.1C	Iced (Y/N): Y	

Parameter	Result	RL	Units	Method	DF	Q	Test Date, Time, Analyst
-----------	--------	----	-------	--------	----	---	--------------------------

GENERAL CHEMISTRY

Ammonia, as N (Delaware)	3.65	0.200	mg/l	SM 4500NH3-G	1		01/22/14 04:33PM ALW
Detergents, MBAS (Delaware)	15.0	2.00	mg/l	SM 5540C	100		01/21/14 12:30PM EGL

METALS

Potassium	20.3	5.00	mg/l	EPA 200.8 Rev 5.4	10		01/28/14 09:14AM GJH
-----------	------	------	------	-------------------	----	--	----------------------

Sample ID	Sample Description	Samp. Date/Time/Temp	Sampled by
L4904534-2	97819	01/20/14 01:12pm NA C	Customer
	Received Date/Time/Temp 01/21/14 08:20am 6.1 C	Iced (Y/N): Y	

Parameter	Result	RL	Units	Method	DF	Q	Test Date, Time, Analyst
-----------	--------	----	-------	--------	----	---	--------------------------

GENERAL CHEMISTRY

Ammonia, as N (Delaware)	ND	0.200	mg/l	SM 4500NH3-G	1		01/22/14 04:33PM ALW
Detergents, MBAS (Delaware)	ND	0.0200	mg/l	SM 5540C	1		01/21/14 12:30PM EGL

METALS

Potassium	2.93	0.500	mg/l	EPA 200.8 Rev 5.4	1		01/28/14 09:33AM GJH
-----------	------	-------	------	-------------------	---	--	----------------------

MBAS is reported as LAS, molecular weight; 340.



DEFINITIONS

The following terms or abbreviations are used in this report:

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor
POS	Positive	Q	Qualifier
NEG	Negative	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The concentration was not detected at or above RL / MDL.
J	Estimated value \geq MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

Data Qualifiers (EPA CLP Convention)

<u>Organics</u>		<u>Metals</u>	
B	Analyte was detected in the method blank	B	Value is \geq MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

Warranties, Terms, and Conditions

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the QCL Southampton Division (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the QCL facility in Horsham (702 Electronics Drive, Horsham, PA 19044).
- The test results meet all requirements of TNI or other regulatory agencies, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. QCL is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- QCL is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. QCL's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by QCL: Nicki Smith (Environmental & Food Chemistry), Amanda Lukaszewski (Pharmaceutical), Ryan Baker (Dairy), Renata Paskevicius (Food Micro), Sue Abbott (QCL Delaware).

QCL Accreditations

Southampton Division	EPA ID:	PA00018			
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223			
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware Division	State IDs:	DE 00011; MD 138	Reading Division	State ID:	PA 06-03543
Wind Gap Division	State IDs:	PA 48-01334; NJ PA001	Vineland Division	State ID:	NJ 06005
East Rutherford Division	State ID:	NJ 02015			



1205 Industrial Blvd.
Southampton, PA 18966-0514

Phone: 215-355-3900
Fax: 215-355-7231

CHAIN OF CUSTODY

Page _____ of _____

Bill to/Report to: (if different)

Lab LIMS No: LY904534

MATRIX CODES

LAB USE ONLY:

___ Ascorbic/HCl Vials # ___ HCl Vials
 # ___ Na₂S₂O₃
 # ___ Na OH/Zn acetate pH
 # 2 HNO₃ pH L2 H2P1P1
 # ___ H₂SO₄ pH
 # ___ NaOH pH
 # ___ Unpreserved
 # ___ Hcl pH
 # 0.1 Temp control OK ID# CM10

- DW: DRINKING WATER
- GW: GROUND WATER
- WW: WASTEWATER
- SO: SOIL
- SL: SLUDGE
- OIL: OIL
- SOL: NON SOIL SOLID
- MI: MISCELLANEOUS
- X: OTHER

Client/Acct. No. KCI Technologies
 Address 1352 Mammus Rd
 City/State/Zip Newark, DE 19711
 Phone/Fax _____
 Client Contact _____

Sampling Site Address: (if different) _____
 P.O. No. _____
 QC Contact _____

PROJECT	Collection		G R A B	C O M P	Matrix Code	Number of Containers															
	Date	Military Time				Total	H	C	Y	N	Z	U	B	S	P						
FIELD ID																					
<u>220131216135651</u>	<u>1/20/14</u>	<u>8:30</u>	<input checked="" type="checkbox"/>																		
<u>97819</u>	<u>1/20/14</u>	<u>13:12</u>	<input checked="" type="checkbox"/>																		

ANALYSIS REQUESTED

Surfactants, Ammonia, Potassium
 " " "

Field pH, Temp (C or F),
DO, Cl₂, S. Cond. etc.

SAMPLED BY: (Name/Company)
KCI Technologies

Verbal/fax data due: _____
 Hardcopy due: _____
 Please call for pricing and availability on rush (<14-21 day) turnaround and on all but standard format.

Report Format: Standard Forms
 Standard + QC NJ Reduced Disk

Field Parameters Analyzed By: _____
 Sig: _____ Date/Time: _____

SAMPLE CUSTODY EXCHANGES MUST BE DOCUMENTED BELOW. USE FULL LEGAL SIGNATURE, DATE AND MILITARY TIME (24 HOUR CLOCK, I.E. 8AM IS 0800, 4 PM IS 1600)

RELINQUISHED BY SAMPLER	DATE	TIME	RECEIVED BY	DATE	TIME	DELIVERY METHOD: <input type="checkbox"/> QC COURIER <input type="checkbox"/> CLIENT <input type="checkbox"/> UPS <input type="checkbox"/> FEDEX <input type="checkbox"/> OTHER	Custody Seal Number
<u>1</u> <u>[Signature]</u>	<u>1/20/14</u>	<u>8:20</u>	<u>1</u> <u>[Signature]</u>	<u>1/20/14</u>	<u>8:20</u>		
<u>2</u> <u>[Signature]</u>	<u>1/21/14</u>	<u>10:45</u>	<u>2</u> <u>[Signature]</u>	<u>1/21/14</u>	<u>10:45</u>	COMMENTS: <u>7.1</u>	
<u>3</u> <u>[Signature]</u>	<u>1/22/14</u>	<u>18:50</u>	<u>3</u> <u>[Signature]</u>	<u>1/22/14</u>	<u>18:50</u>		
<u>4</u>			<u>4</u>				
<u>5</u>			<u>5</u>				

Hazardous: yes / no

For example to aid completion, see reverse side.

FINAL REPORT



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

CAROLANN WICKS, P.E.
SECRETARY

NOTICE OF POTENTIAL ILLEGAL DISCHARGE

The Delaware Department of Transportation (DelDOT) is responsible for maintaining not only roadways, but also the extensive storm drain and pipe networks located within State rights-of-way. The Federal National Pollutant Discharge Elimination System (NPDES) Program, which is a component of the Clean Water Act of 1972, requires DelDOT to control the amount of pollutants entering the drainage system. Part of this charge is the detection and elimination of *illegal discharges* or connections to the system that may contain pollutants or are otherwise not allowed. Left uncorrected, any pollutants entering the system will ultimately impact nearby streams, as storm drainage is not treated at any sort of treatment facility.

DelDOT has contracted with the engineering firm KCI Technologies, Inc. to survey and inspect the drainage system and to check for illegal discharges or connections. Please review the following checked items that pertain to you:

- You are receiving this notice because a potential illegal discharge or connection from your property was detected during a recent investigation. Please see details below.*

Date: 01/29/14 Outfall #: 320131216135806 Address: 16943 Webbs Rd, Ellendale, DE 19941

Indicators or Source: 4" PVC connection; soapy/sweet smelling discharge; sample tested high for turbidity, surfactants, ammonia and potassium.

- This discharge or connection must be ceased or removed within 30 days. A follow up investigation will be conducted after that time to ensure compliance.*
- We are requesting access to your property to assist in our determination. Within seven days, please contact KCI Technologies, Inc. as shown below to make the appropriate arrangements.*

Bruce Thompson
KCI Technologies, Inc.
1352 Marrows Road, Suite 100
Newark, DE 19711
(302) 731-9176 ext. 3312
Bruce.Thompson@kci.com

If the illegal discharge or connection cannot be removed within 30 days, you do not understand this notice, or you disagree that an illegal discharge or connection exists at your property, please contact KCI Technologies, Inc. with further details or explanation.

Program information can be obtained by contacting DelDOT's Project Manager, Randy Cole, by calling (302) 760-2194, or by email at randy.cole@state.de.us.

Thank you for helping us preserve Delaware's environment.





STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

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- You are receiving this notice because a potential illegal discharge or connection from your property was detected during a recent investigation. Please see details below.***

Date: 08/13/15 Outfall #: 320131216135806 Address: 16943 Webbs Rd, Ellendale, DE 19941

Indicators or Source: 4" PVC connection; soapy/sweet smelling discharge; sample tested high for turbidity, surfactants, ammonia and potassium.

- This discharge or connection must be ceased or removed within 30 days. A follow up investigation will be conducted after that time to ensure compliance. Failure to comply within 30 days gives DelDOT the right to remove/cease the connection and/or contact Delaware Department of Natural Resources and Environmental Control for enforcement action. Any damage resulting from a plugged connection is the homeowner's responsibility. Please Contact Bruce Thompson when the connection has been removed or with any questions regarding this matter.***
- We are requesting access to your property to assist in our determination. Within seven days, please contact KCI Technologies, Inc. as shown below to make the appropriate arrangements.***

Bruce Thompson
KCI Technologies, Inc.
1352 Marrows Road, Suite 100
Newark, DE 19711
(302) 318-1068

If the illegal discharge or connection cannot be removed within 30 days, you do not understand this notice, or you disagree that an illegal discharge or connection exists at your property, please contact KCI Technologies, Inc. with further details or explanation.

Program information can be obtained by contacting DelDOT's Project Manager, Brian Urbanek, by calling (302) 760-2201, or by email at brian.urbanek@state.de.us.





STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

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- You are receiving this notice because a potential illegal discharge or connection from your property was detected during a recent investigation. Please see details below.***

Date: 10/15/15 Outfall #: 320131216135806

Address: Corner of Webbs Rd & North Union Church Rd, Ellendale, DE 19941 (Please See Map)

Indicators or Source: 4" PVC connection; soapy/sweet smelling discharge; sample tested high for turbidity, surfactants, ammonia and potassium.

- This discharge or connection must be ceased or removed within 30 days. A follow up investigation will be conducted after that time to ensure compliance. Failure to comply within 30 days gives DelDOT the right to remove/cease the connection and/or contact Delaware Department of Natural Resources and Environmental Control for enforcement action. Any damage resulting from a plugged connection is the homeowner's responsibility. Please Contact Bruce Thompson when the connection has been removed or with any questions regarding this matter.***
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IDDE PROGRAM

2015 ANNUAL REPORT

APPENDIX B

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS WITH ONGOING ISSUES

❖ 2014-19-DN 82836 Appo DE State Police

IDDE INVESTIGATION TRACKING FORM

Incident ID No. 2014-19

Date: 03/10/14

Structure No. 82836

EVIDENCE OF ILLICIT DISCHARGE: YES NO TBD

LOCATION:

County: New Castle

House No: 410

Stream: Appoquinimink River

ADC: 22K-10

Street: Main Street

Watershed: Appoquinimink River

Subdivision: N/A

City: Odessa

Zip Code: 19730

SETTING:

- | | | |
|---|-------------------------------------|---|
| <input checked="" type="checkbox"/> Storm Drain | <input type="checkbox"/> Outfall | <input type="checkbox"/> Other (Specify): |
| <input type="checkbox"/> In Stream | <input type="checkbox"/> Along Bank | |
| <input type="checkbox"/> Stormwater Pond | <input type="checkbox"/> Upland | |

VISUAL:

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> Flow | <input checked="" type="checkbox"/> Soap | <input type="checkbox"/> Cloudy |
| <input type="checkbox"/> Staining | <input type="checkbox"/> Floatables (toilet paper, etc) | <input type="checkbox"/> Algae |
| <input type="checkbox"/> Oil / Oil Sheen | <input type="checkbox"/> Dead Fish | <input type="checkbox"/> Precip w/in 72 hrs |
| <input type="checkbox"/> Antifreeze | <input type="checkbox"/> Yard Waste | <input type="checkbox"/> Other (specify): |

ODOR:

- | | | |
|---------------------------------|--|----------------------------------|
| <input type="checkbox"/> None | <input type="checkbox"/> Sulfide ("rotten egg") | <input type="checkbox"/> Gas/Oil |
| <input type="checkbox"/> Sewage | <input checked="" type="checkbox"/> Other (specify): Sweet/soapy | |

IDDE INVESTIGATION SUMMARY:

Referred By: 1613 Desktop Targeted

Issue: Within 100' SS ≤ 1990 AND within 300' commercial/industrial land use

Determination: Likely graywater/washwater source; pipe sourced to Odessa Police wash bay. Maintenance manager is working with NCC to re-route pipe to sanitary system; referred to NCC.



DOCUMENTATION:

- Location Map from NPDES Map Viewer
- Summary Memorandum with Photographs
- Field Data Sheet
- QCL Laboratory Data
- Door Hanger
- Notice of Potential Illicit Discharge
- Other:





Legend

- | | | | | |
|---------|--------------|--------------|----------------------|------------|
| INLET | RISER | SWALE END | DITCH | BMP |
| MANHOLE | JUNCTION BOX | SWALE VERTEX | PIPE | WORK ORDER |
| OUTFALL | CULVERT | DUMMY NODE | HYDRAULIC CONNECTION | |



NPDES
Inventory Map

14 Mar, 2014





MEMORANDUM

TO: Brian Urbanek, DeIDOT
Carol Cain, DeIDOT
Mark Harbeson, DeIDOT
Mike Harris, NCCo

FROM: Katherine Adami, KCI

DATE: June 3, 2014 – October 20, 2015

SUBJECT: Potential Illicit Discharge Investigation
Incident ID No. 2014-19 / Structure 82836
Odessa State Police / Main Street, Odessa
Appoquinimink Watershed / New Castle County
KCI Project 17141613N3 / 17151749A

The purpose of this Memo is to summarize the field investigations regarding a Potential Illicit Discharge (PID) at Structure 82836 on Main Street, Odessa in the Appoquinimink Watershed in New Castle County.

March 10, 2014

During 1613 targeted field screening, a KCI field crew screened a catch basin in front of 414 Main Street, Odessa.

- The catch basin had a 4 inch non-DeIDOT connection that was flowing.
- The catch basin had suds at the bottom and smelled soapy.
- There was no flow observed at the outfall of the system.
- A sample was collected directly from the non-DeIDOT pipe and sent to QC Laboratories to be analyzed for surfactants, ammonia, and potassium.

March 26, 2014

QC Lab results were returned:

- Surfactants = 88.4 mg/L
- Ammonia = 0.419 mg/L
- Potassium = 6.72 mg/L

Flow Chart Determination:

- The discharge is likely a graywater/washwater source.

April 16, 2014

KCI mailed a Notice of Illegal Discharge letter via USPS to the homeowners at 410 Main Street requesting access to confirm that the non-DelDOT connection was from their washer.

May 6, 2014

KCI received confirmation of delivery for the Notice of Illegal Discharge letter and also spoke to the homeowner at 410 Main Street.

- The homeowner, Mr. Mooney, agreed to meet with KCI at 2:30 pm on 05/30/14.

May 30, 2014

KCI met with the homeowner at 410 Main Street in Odessa.

- The field crew verified that the PVC pipe in the catch basin was still flowing.
- While meeting with Mr. Mooney, the field crew confirmed that the house plumbing was all connected to the sanitary sewer line.
- Mr. Mooney's washing machine was tied into a wash sink, which he turned on, and could be seen through the sanitary clean-out in the yard.
- No increase in flow was observed during this time.
- KCI returned to the catch basin with the camera on a stick to try and determine the curve of the connection. It appeared to curve towards the State Police station located at 414 Main Street. Structure 82836 is located in the State Police parking lot.
- During this inspection, more soapy water entered into the structure.
- KCI asked the police officers on duty if they were aware of any connections into the storm sewer system.
- The officers stated that they had just washed one of their vehicles, which could be contributing to the flow.
- KCI went back to the wash bay where the State Police wash all of their vehicles.
- There were two floor drains (a sediment chamber that flowed to another inlet). There was soapy water standing in the inlet.
- When water was poured into the inlet, the connection in the storm drain sewer showed an increased flow.

- The field crew was unable to trace the pipe directly into the catch basin but they spoke to the officers who provided contact information for Captain Sapp (302-378-5218) and said to contact him to schedule further investigations.
- KCI intends to dye test to confirm that the wash water is coming from the State Police.

June 2, 2014

KCI contacted Randy Cole, DeIDOT, to confirm that dye testing should be conducted.

- Randy stated that he would contact Mike Harris (NCCo) and let him know that the State Police may need to tie their drainage into the NCCo Sewer System.
- KCI left a message for Capt. Sapp requesting a return phone call.

June 10, 2014

KCI spoke to Capt. Sapp from State Police Troop 9.

- KCI to perform dye testing on Monday, June 16th at 9 a.m.
- Captain Sapp will be present.

June 16, 2014

KCI performed dye testing at the State Police Troop 9 wash bay.

- Upon arrival, KCI checked structure 82836 and noted that it did not have any flow and there was no evidence of any soapy water.
- A KCI crew filled a 55 gallon drum with water and tracing dye and poured it into the inlet inside the State Police wash bay.
- The inlet inside the wash bay had sediment and standing water, so the field crew was unable to use the dye color to confirm the connection.
- About 10-15 seconds after the water was poured into the inlet, the connection in the catch basin had a heavy flow consistent with the amount of water poured into the basin.

June 24, 2014

KCI informed DeIDOT/New Castle County of the issue and findings.

- New Castle County will work with Bill Braswell, Delaware State Police Construction Maintenance Manager, to re-route the illicit connection.

October 23, 2014

Mike Harris e-mailed Bill Braswell requesting an update on re-routing the illegal connection.

March 6, 2015

Mike Harris e-mailed Bill Braswell requesting an update on re-routing the illegal connection.

- Bill Braswell stated that there is funding in place and they are working on lining up an engineering firm to start the project.
- He stated that he is hoping to meet with the engineer within 2 weeks' time.

October 20, 2015

Mike Harris was contacted by Ring Lardner from David Bowen and Friedel.

- Mr. Lardner was hired by the Delaware State Police to draw up plans to disconnect the wash bay and vehicle maintenance shop from the MS4.
- Construction and disconnection is set to occur in March 2016.



Soapy Discharge in Structure 82836



Non Del-DOT Connection



Structure 82836 Landscape



Plumbing in 410 Main Street



Washing Machine tied into Wash Sink at 410 Main St.



New Castle County State Police Wash Bay



Soapy Water in Wash Bay Inlet



Discharge During Dye Testing



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. Box 778
DOVER, DELAWARE 19903

CAROLANN WICKS, P.E.
SECRETARY

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- You are receiving this notice because a potential illegal discharge or connection from your property was detected during a recent investigation. Please see details below.***

Date: 04/16/14 Structure #: 82836 Address: 410 Main Street, Odessa, DE 19730

Indicators or Source: 4" PVC possible washer pipe connection; soapy/sweet smelling discharge; sample tested high for detergents. Please see attached map for location.

- This discharge or connection must be ceased or removed within 30 days. A follow up investigation will be conducted after that time to ensure compliance.***
- We are requesting access to your property to assist in our determination. Within seven days, please contact KCI Technologies, Inc. as shown below to make the appropriate arrangements.***

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Newark, DE 19711
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Thank you for helping us preserve Delaware's environment.





**DELDOT AGREEMENT 1613
ILLICIT DISCHARGE DETECTION & ELIMINATION
FIELD SHEET**



Structure Number: 82836
 Incident ID #: 2014-19
 County: New Castle
 Subdivision: N/A
 Address/Location: 410 Main Street

Personnel		KA/MJ
Date		03-10-14
Time		10:20 am
Air Temperature (F)		
Photograph	Yes(Y), No(N)	Y
Date Last Rain		03-03-14
Outfall Dimensions	(inches)	Pipe in Catch Basin
Outfall Shape	Round(R), Oval(O), Box(B), V-Ditch(VD), Trap Ditch(TD)	CATCH BASIN
Outfall Type	Corrugated Metal Pipe(CMP), Reinforced Concrete Pipe(RCP) Polyvinyl Chloride Pipe(PVC), Other(O-explain)	PVC
Flow Observed	Yes(Y), No(N)	Y
Land Use	Industrial(I), Commercial(C), Residential(R), Other(O-explain)	C
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
Algae Growth	Yes(Y), No(N)	N
Vegetative Condition (Outfall Area)	Normal(N), Inhibited Growth(IG) Excessive Growth(EG), Other(O-explain)	N
Flow Rate (cfs)		20.022 cfs
Water Temperature (F)		45.4
pH (units)		8.4
Turbidity (ntu)		55.68
QC Laboratories:		-
Surfactants (mg/L)		88.4
Ammonia (mg/L)		0.419
Potassium (mg/L)		6.72
Bacteria (mpn)	As needed if Suspect Sewage	-
Odor	None(N), Rancid-Sour(RS), Gas(G), Sewage(S), Oil(O), Sulfur(S), Other(O-explain)	0-Sweet/soap-y
Deposits/Stains	None(N), Sediment(S), Oil(OY), Other(O-explain)	0-Suds
Color	Clear(C), Gray(G), Red(R), Yellow(Y), Brown(B), Green(GR), Other(O-explain)	G
Floatables	None(N), Trash(T), Oil Sheen(OS), Sewage(S), Other(O-explain)	N
DETERMINATION (FROM IDDE FLOWCHART)		Likely Graywater/ Washwater Source



Analytical Report

Serialized: 03/25/2014 04:51pm QC21

BRUCE THOMPSON
KCI TECHNOLOGIES
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES
1352 MARROWS ROAD, SUITE 100
KCI SCREENING
NEWARK, DE 19711

PROJECT ID:

AL0120 KCI SCREENING

LABORATORY REPORT NUMBER:

L4972877



Authorized by: Oommen V. Kappil, QA Director

QCL Accreditations: Southampton Div: EPA ID PA000181 NELAP's: PA900131 NJ PA166, NM223
State ID's CT PH0768, DE PA018, MD206, S: 8902100 FDA Reg#: 255238
Delaware Division: State ID's: DE0011, M 138
Vineland Division: State ID NJ 06005; Reading Div: State ID: PA 003543
Wind Gap Division: State ID's: PA01334, NPA001
E. Rutherford Division: State ID: N02015

KCI TECHNOLOGIES, INC.
AL0120 KCI SCREENING
KCI OUTFALL SCREENING PROJECT
P.O. No:
Inv. No: 1593357 PAPERLESS
PWSID:

BRUCE THOMPSON
KCI TECHNOLOGIES
1352 MARROWS ROAD, SUITE 100
KCI SCREENING
NEWARK, DE 19711

Regarding:
BRUCE THOMPSON
KCI TECHNOLOGIES
1352 MARROWS ROAD, SUITE 100
KCI SCREENING
NEWARK, DE 19711

SAMPLE SUMMARY

Lab ID	Collected	Received	Matrix	Client ID
L4972877-1	03/10/14 09:40	03/11/14 09:45	WASTEWATER	3279
L4972877-2	03/10/14 11:00	03/11/14 09:45	WASTEWATER	2794
L4972877-3	03/10/14 11:30	03/11/14 09:45	WASTEWATER	3285
L4972877-4	03/10/14 10:20	03/11/14 09:45	WASTEWATER	82836
L4972877-5	03/10/14 11:05	03/11/14 09:45	WASTEWATER	2909
L4972877-6	03/10/14 13:15	03/11/14 09:45	WASTEWATER	105058

Sample Description:	3279	Samp. Date/Time/Temp:	03/10/14 09:40am NA C
Sample Number:	L4972877-1	Sampled by:	Customer
Matrix:	WASTEWATER	Iced (Y/N):	Y
Received Temp:	1.6 C		

GENERAL CHEMISTRY

Analytical Method:	SM 5540C	Run Date:	03/11/14 12:15PM	Workgroup:	031114AMBS
Dilution:	1	Analyst:	EGL	File ID:	d1-mbas_031114AMBS.csv
Units:	mg/l	Instrument:	D1-MBAS	Basis:	

Parameter	CAS	Result	MDL*	RL
Detergents, MBAS (Delaware)	N/A	0.0210	0.0200	0.0200

Analytical Method:	SM 4500NH3-G	Run Date:	03/12/14 05:19PM	Workgroup:	031114ANH3
Dilution:	1	Analyst:	ALW	File ID:	031114ANH3.csv
Units:	mg/l	Instrument:	Lachat Quickchem 800	Basis:	

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	ND	0.0990	0.200

METALS

Analytical Method:	EPA 200.7 Rev 4.4	Run Date:	03/24/14 11:38AM	Workgroup:	MA032414W1
Dilution:	1	Analyst:	B B	File ID:	3-24.txt
Units:	mg/l	Instrument:	Optima ICP 7300	Basis:	

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	3.70	0.100	0.500

Sample Comments:
MBAS is reported as LAS, molecular weight; 340.

*=This limit was used in the evaluation of the final result.

Sample Description: 2794
Sample Number: L4972877-2
Matrix: WASTEWATER
Received Temp: 1.6 C
Samp. Date/Time/Temp: 03/10/14 11:00am NA C
Sampled by: Customer
Iced (Y/N): Y

GENERAL CHEMISTRY

Analytical Method: SM 5540C
Dilution: 1
Units: mg/l
Run Date: 03/11/14 12:15PM
Analyst: EGL
Instrument: D1-MBAS
Workgroup: 031114AMBS
File ID: d1-mbas_031114AMBS.csv
Basis:

Parameter	CAS	Result	MDL*	RL
Detergents, MBAS (Delaware)	N/A	ND	0.0200	0.0200

Analytical Method: SM 4500NH3-G
Dilution: 1
Units: mg/l
Run Date: 03/12/14 05:20PM
Analyst: ALW
Instrument: Lachat Quickchem 800
Workgroup: 031114ANH3
File ID: 031114ANH3.csv
Basis:

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	ND	0.0990	0.200

METALS

Analytical Method: EPA 200.7 Rev 4.4
Dilution: 1
Units: mg/l
Run Date: 03/24/14 11:40AM
Analyst: B B
Instrument: Optima ICP 7300
Workgroup: MA032414W1
File ID: 3-24.txt
Basis:

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	3.03	0.100	0.500

Sample Comments:
 MBAS is reported as LAS, molecular weight; 340.

*=This limit was used in the evaluation of the final result.

Sample Description: 3285
Sample Number: L4972877-3
Matrix: WASTEWATER
Received Temp: 1.6 C
Samp. Date/Time/Temp: 03/10/14 11:30am NA C
Sampled by: Customer
Iced (Y/N): Y

GENERAL CHEMISTRY

Analytical Method: SM 5540C
Dilution: 1
Units: mg/l
Run Date: 03/11/14 12:15PM
Analyst: EGL
Instrument: D1-MBAS
Workgroup: 031114AMBS
File ID: d1-mbas_031114AMBS.csv
Basis:

Parameter	CAS	Result	MDL*	RL
Detergents, MBAS (Delaware)	N/A	ND	0.0200	0.0200

Analytical Method: SM 4500NH3-G
Dilution: 1
Units: mg/l
Run Date: 03/12/14 05:25PM
Analyst: ALW
Instrument: Lachat Quickchem 800
Workgroup: 031114ANH3
File ID: 031114ANH3.csv
Basis:

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	ND	0.0990	0.200

METALS

Analytical Method: EPA 200.7 Rev 4.4
Dilution: 1
Units: mg/l
Run Date: 03/24/14 11:46AM
Analyst: B B
Instrument: Optima ICP 7300
Workgroup: MA032414W1
File ID: 3-24.txt
Basis:

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	3.42	0.100	0.500

Sample Comments:
 MBAS is reported as LAS, molecular weight; 340.

*=This limit was used in the evaluation of the final result.

Sample Description: 82836
Sample Number: L4972877-4
Matrix: WASTEWATER
Received Temp: 1.6 C
Samp. Date/Time/Temp: 03/10/14 10:20am NA C
Sampled by: Customer
Iced (Y/N): Y

GENERAL CHEMISTRY

Analytical Method: SM 5540C
Dilution: 400
Units: mg/l
Run Date: 03/11/14 12:15PM
Analyst: EGL
Instrument: D1-MBAS
Workgroup: 031114AMBS
File ID: d1-mbas_031114AMBS.csv
Basis:

Parameter	CAS	Result	MDL*	RL
Detergents, MBAS (Delaware)	N/A	88.4	8.00	8.00

Analytical Method: SM 4500NH3-G
Dilution: 1
Units: mg/l
Run Date: 03/12/14 05:30PM
Analyst: ALW
Instrument: Lachat Quickchem 800
Workgroup: 031114ANH3
File ID: 031114ANH3.csv
Basis:

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	0.419	0.0990	0.200

METALS

Analytical Method: EPA 200.7 Rev 4.4
Dilution: 1
Units: mg/l
Run Date: 03/24/14 11:54AM
Analyst: B B
Instrument: Optima ICP 7300
Workgroup: MA032414W1
File ID: 3-24.txt
Basis:

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	6.72	0.100	0.500

Sample Comments:
 MBAS is reported as LAS, molecular weight; 340.

*=This limit was used in the evaluation of the final result.

Sample Description: 2909
Sample Number: L4972877-5
Matrix: WASTEWATER
Received Temp: 1.6 C
Samp. Date/Time/Temp: 03/10/14 11:05am NA C
Sampled by: Customer
Iced (Y/N): Y

GENERAL CHEMISTRY

Analytical Method: SM 5540C
Dilution: 1
Units: mg/l
Run Date: 03/11/14 12:15PM
Analyst: EGL
Instrument: D1-MBAS
Workgroup: 031114AMBS
File ID: d1-mbas_031114AMBS.csv
Basis:

Parameter	CAS	Result	MDL*	RL
Detergents, MBAS (Delaware)	N/A	ND	0.0200	0.0200

Analytical Method: SM 4500NH3-G
Dilution: 1
Units: mg/l
Run Date: 03/12/14 05:27PM
Analyst: ALW
Instrument: Lachat Quickchem 800
Workgroup: 031114ANH3
File ID: 031114ANH3.csv
Basis:

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	0.445	0.0990	0.200

METALS

Analytical Method: EPA 200.7 Rev 4.4
Dilution: 1
Units: mg/l
Run Date: 03/24/14 11:56AM
Analyst: B B
Instrument: Optima ICP 7300
Workgroup: MA032414W1
File ID: 3-24.txt
Basis:

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	2.92	0.100	0.500

Sample Comments:
 MBAS is reported as LAS, molecular weight; 340.

*=This limit was used in the evaluation of the final result.

Sample Description: 105058
Sample Number: L4972877-6
Matrix: WASTEWATER
Received Temp: 1.6 C

Samp. Date/Time/Temp: 03/10/14 01:15pm NA C
Sampled by: Customer
Iced (Y/N): Y

GENERAL CHEMISTRY

Analytical Method: SM 5540C
Dilution: 1
Units: mg/l

Run Date: 03/11/14 12:15PM
Analyst: EGL
Instrument: D1-MBAS

Workgroup: 031114AMBS
File ID: d1-mbas_031114AMBS.csv
Basis:

Parameter	CAS	Result	MDL*	RL
Detergents, MBAS (Delaware)	N/A	ND	0.0200	0.0200

Analytical Method: SM 4500NH3-G
Dilution: 1
Units: mg/l

Run Date: 03/12/14 05:30PM
Analyst: ALW
Instrument: Lachat Quickchem 800

Workgroup: 031114ANH3
File ID: 031114ANH3.csv
Basis:

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	ND	0.0990	0.200

METALS

Analytical Method: EPA 200.7 Rev 4.4
Dilution: 1
Units: mg/l

Run Date: 03/24/14 11:57AM
Analyst: B B
Instrument: Optima ICP 7300

Workgroup: MA032414W1
File ID: 3-24.txt
Basis:

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	1.69	0.100	0.500

Sample Comments:

MBAS is reported as LAS, molecular weight; 340.



*=This limit was used in the evaluation of the final result.

DEFINITIONS

The following terms or abbreviations are used in this report:

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor
POS	Positive	Q	Qualifier
NEG	Negative	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The concentration was not detected at or above RL / MDL.
J	Estimated value \geq MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

Data Qualifiers (EPA CLP Convention)

<u>Organics</u>		<u>Metals</u>	
B	Analyte was detected in the method blank	B	Value is \geq MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

Warranties, Terms, and Conditions

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the QCL Southampton Division (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the QCL facility in Horsham (702 Electronics Drive, Horsham, PA 19044).
- The test results meet all requirements of TNI or other regulatory agencies, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. QCL is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- QCL is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. QCL's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by QCL: Nicki Smith (Environmental & Food Chemistry), Amanda Lukaszewski (Pharmaceutical), Ryan Baker (Dairy), Renata Paskevicius (Food Micro), Sue Abbott (QCL Delaware).

QCL Accreditations

Southampton Division	EPA ID:	PA00018			
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223			
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware Division	State IDs:	DE 00011; MD 138	Reading Division	State ID:	PA 06-03543
Wind Gap Division	State IDs:	PA 48-01334; NJ PA001	Vineland Division	State ID:	NJ 06005
East Rutherford Division	State ID:	NJ 02015			

QC Laboratories
 1205 Industrial Blvd.
 Southampton, PA 18966-0514
 Phone: 215-355-3900
 Fax: 215-355-7231

CHAIN OF CUSTODY

Page _____ of _____

Bill to/Report to: (if different)

Lab LIMS No: L4972877

MATRIX CODES

LAB USE ONLY:

_____ Ascorbic/HCl Vials # _____ HCl Vials

_____ Na₂S₂O₃

_____ Na OH/Zn acetate pH

6 HNO₃ pH 2.21 ZPTA

_____ H₂SO₄ pH

_____ NaOH pH

_____ Unpreserved

_____ Hcl pH

11 Temp control QC ID# enr100

- DW: DRINKING WATER
- GW: GROUND WATER
- WW: WASTEWATER
- SO: SOIL
- SL: SLUDGE
- OIL: OIL
- SOL: NON SOIL SOLID
- MI: MISCELLANEOUS
- X: OTHER

Client/Acct. No. KCI Technologies

Address 1352 Marrows Rd

City/State/Zip Newark DE 19711

Phone/Fax _____

Client Contact _____

Sampling Site Address: (if different)

P.O. No. _____

QC Contact _____

PROJECT FIELD ID	Collection		G R A B	C O M P	Matrix Code	Number of Containers											
	Date	Military Time				Total	H S	C I	Y T S	H N Q	H D H	Z A C	U P E	B A C T			
<u>3279</u>	<u>3/10/14</u>	<u>9:40</u>	<input checked="" type="checkbox"/>														
<u>2794</u>	<u>3/10/14</u>	<u>11:00</u>	<input checked="" type="checkbox"/>														
<u>3285</u>	<u>3/10/14</u>	<u>11:30</u>	<input checked="" type="checkbox"/>														
<u>82836</u>	<u>3/10/14</u>	<u>10:20</u>	<input checked="" type="checkbox"/>														
<u>2909</u>	<u>3/10/14</u>	<u>11:05</u>	<input checked="" type="checkbox"/>														
<u>105058</u>	<u>3/10/14</u>	<u>13:15</u>	<input checked="" type="checkbox"/>														

ANALYSIS REQUESTED

Surfactants, Ammonia, Potassium

↓

Field pH, Temp (C or F),
DO, Cl₂, S. Cond. etc.

SAMPLED BY: (Name/Company)
KCI Technologies

Verbal/fax data due: _____
 Handcopy due: _____
 Report Format: Standard Forms
 Standard + QC NJ Reduced Disk
 Please call for pricing and availability on rush (<14-21 day) turnaround and on all but standard format.

Field Parameters Analyzed By:
 Sig: _____ Date/Time: _____

SAMPLE CUSTODY EXCHANGES MUST BE DOCUMENTED BELOW. USE FULL LEGAL SIGNATURE, DATE AND MILITARY TIME (24 HOUR CLOCK, I.E. 8AM IS 0800, 4 PM IS 1600)

RELINQUISHED BY SAMPLER	DATE	TIME	RECEIVED BY	DATE	TIME	DELIVERY METHOD: <input type="checkbox"/> QC COURIER <input type="checkbox"/> CLIENT	Custody Seal Number
<u>1</u> <u>[Signature]</u>	<u>3/11/14</u>	<u>9:45</u>	<u>[Signature]</u>	<u>3/11/14</u>	<u>9:45</u>	<input type="checkbox"/> UPS <input type="checkbox"/> FEDEX <input type="checkbox"/> OTHER	
<u>2</u> <u>[Signature]</u>	<u>3/11/14</u>	<u>10:35</u>	<u>2 cooler # 5 Metals</u>			COMMENTS: <u>3.9</u>	
<u>3</u> <u>5</u>	<u>3/11/14</u>	<u>1905</u>	<u>[Signature]</u>	<u>3/11/14</u>	<u>1905</u>		
<u>4</u>			<u>4</u>				
<u>5</u>			<u>5</u>				

Hazardous: yes / no

For example to aid completion, see reverse side.

FINAL REPORT

Main Street Odessa PID

82836 ★

Legend

★ Potential Illegal Discharge

● Storm Drain

→ Pipes

▭ 410 Main Street



IDDE PROGRAM

2015 ANNUAL REPORT

APPENDIX B

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS WITH ONGOING ISSUES

❖ 2015-137-DN 1921 Pulaski Highway

IDDE INVESTIGATION TRACKING FORM

Incident ID No.

2015-137-DN

Date:

10/08/15

Structure No.

92214

EVIDENCE OF ILLICIT DISCHARGE:

YES

NO

TBD

LOCATION:

County: New Castle

House No: 1921

Stream: Belltown Run

ADC: 15B8

Street: Pulaski Highway

Watershed: Christina River

Subdivision: N/A

City: Bear

Zip Code: 19701

SETTING:

Storm Drain

Outfall

Other (specify): Parking Lot

In Stream

Along Bank

Stormwater Pond

Upland

VISUAL:

Flow

Soap

Cloudy

Staining

Floatables (toilet paper, etc)

Algae

Oil / Oil Sheen

Dead Fish

Precip w/in 72 hrs

Antifreeze

Yard Waste

Other (Specify):

ODOR:

None

Sulfide ("rotten egg")

Gas/Oil

Sewage

Other (specify): Sweet

IDDE INVESTIGATION SUMMARY:

Referred By: 1613 Targeted

Issue: Washwater flowing from car detailing property into DeIDOT MS4.

Determination: TBD

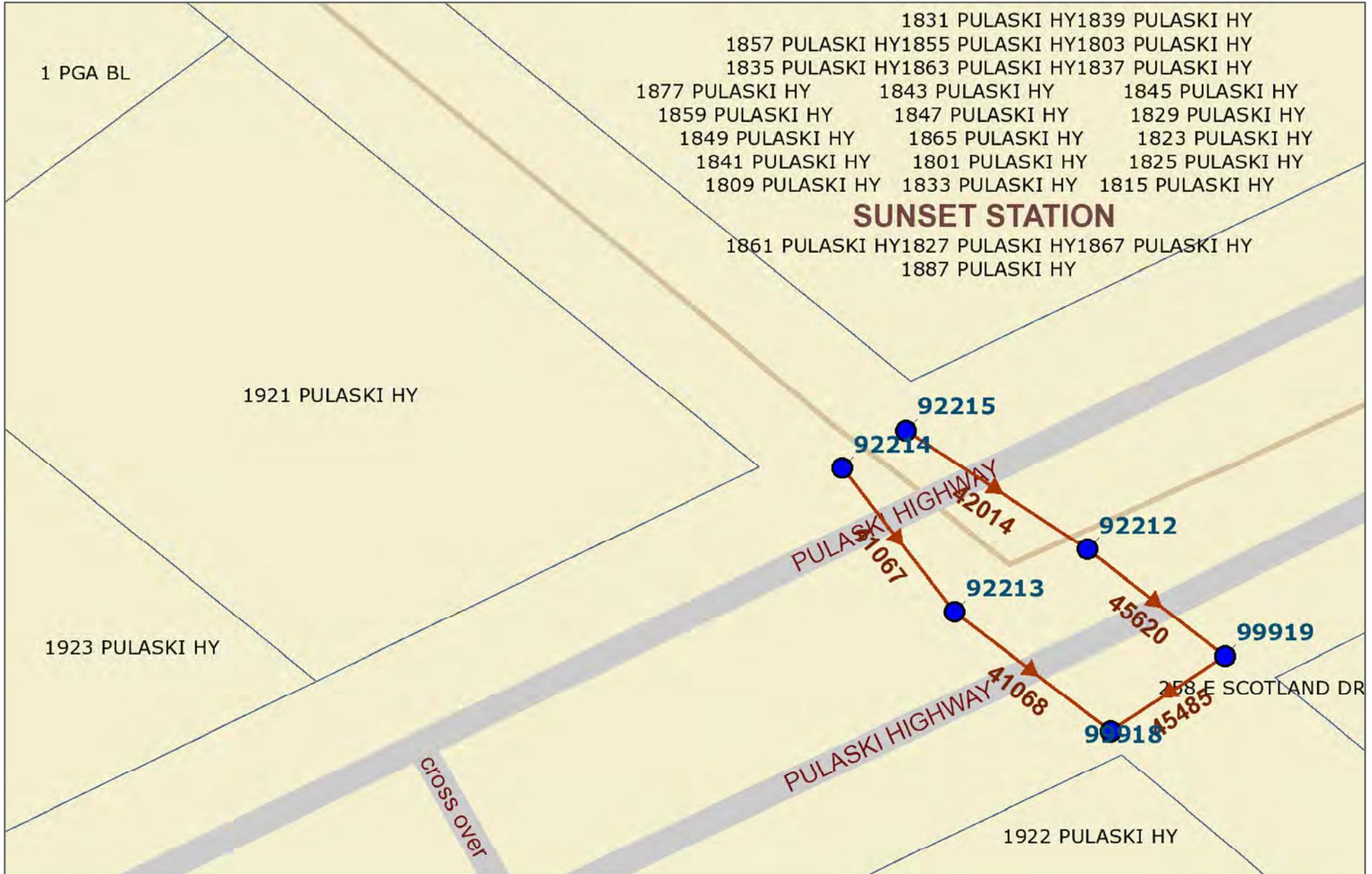


DOCUMENTATION:

- Location Map from NPDES Map Viewer
- Summary Memorandum with Photographs
- Field Data Sheet
- Laboratory Data
- Door Hanger
- Notice of Potential Illicit Discharge
- Other:



2015-137-DN 1921 Pulaski Highway



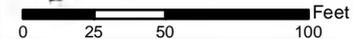
Legend

- | | | | | |
|---------|--------------|--------------|----------------------|------------|
| INLET | RISER | SWALE END | DITCH | BMP |
| MANHOLE | JUNCTION BOX | SWALE VERTEX | PIPE | WORK ORDER |
| OUTFALL | CULVERT | DUMMY NODE | HYDRAULIC CONNECTION | |



NPDES Inventory Map

14 Oct, 2015





MEMORANDUM

TO: Mike Harris, NCCo
Ellie Mortazavi, NCCo
Brian Urbanek, DeIDOT
Mark Harbeson, DeIDOT

FROM: Katherine Adami, KCI

DATE: October 8 – October 23, 2015

SUBJECT: Potential Illicit Discharge Investigation
Incident ID No. 2015-137-DN
Shorty's Detailing and Window Tinting / 1921 Pulaski Highway
Christina River Watershed / New Castle County
KCI Project 17141613N3 / 17151749A

The purpose of this Memo is to summarize the KCI field investigation regarding a Potential Illicit Discharge (PID) at Shorty's Detailing in the Christina River Watershed in New Castle County.

October 8, 2015

During DeIDOT targeted outfall screening, KCI screened contributing structure 92214. The field crew noted dry weather flow and traced the source to Shorty's Detailing and Window Tinting located at 1921 Pulaski Highway in Bear, DE.

- Water was flowing from the property into the gutter along Pulaski Highway and into the DeIDOT catch basin.
- The water smelled sweet and had evidence of cleaning solution/detergents (bubbles).
- Employees at the business were using tire shine and hosing off vehicles on the pavement with an outside hose.
- KCI field collected a sample and brought it to Eurofins QC Laboratory to be analyzed for ammonia, potassium, surfactants, and oil and grease.
- The system containing Structure 92214 does not have an outfall and the field crew was unable to determine the connectivity of the system.

October 20, 2015

Eurofins QC lab results were returned:

- Surfactants = 64.9 mg/L
- Ammonia = ND
- Oil & Grease = 6.30 mg/L

- Potassium = 0.180 mg/L
- According to the flowchart, the discharge is a graywater/washwater source.

October 23, 2015

NCCo sent a Notice of Violation Illicit Discharge (NOV) to Rt. 40 Bear Wash LLC, the property owner, for Shorty's Detailing and Window Tinting.

- Within 10 days of receipt of the notice, the property owner must do the following:
 - Stop immediately discharging/dumping industrial/other waste into the MS4 and surrounding area.
 - Investigate and determine the source of leakage.
 - Develop and submit to NCCo an outlined plan for cleaning and contractor information.
- The property owner should contact Ellie Mortazavi, NCCo, by Wednesday, November 4, 2015 to make arrangements to submit the plan.

Incident ID No. 2015-137-DN
Shorty's Detailing and Window Tinting / 1921 Pulaski Highway
Christina River Watershed / New Castle County



Structure 92214



Discharge Leaving Property onto Pulaski Highway

Incident ID No. 2015-137-DN
Shorty's Detailing and Window Tinting / 1921 Pulaski Highway
Christina River Watershed / New Castle County



Flow along Pulaski Highway



Flow into Structure 92214

Incident ID No. 2015-137-DN
Shorty's Detailing and Window Tinting / 1921 Pulaski Highway
Christina River Watershed / New Castle County



1921 Pulaski Highway Landscape



**DELDOT AGREEMENT 1749
ILLCIT DISCHARGE DETECTION & ELIMINATION
FIELD SHEET**



Structure Number: 92214
 Incident ID # 2015-137-DN
 County: New Castle
 Subdivision: NIA
 Address/Location 1921 Pulaski Highway

* LAB

Personnel		JS/KA
Date		10/8/15
Time		2:50 PM
Air Temperature (F)		72
Photograph	Yes(Y), No(N)	Y
Date Last Rain		10/3/15
Outfall Dimensions (inches)		Catch
Outfall Shape	Round(R), Oval(O), Box(B), V-Ditch(VD), Trap Ditch(TD)	basin
Outfall Type	Corrugated Metal Pipe(CMP), Reinforced Concrete Pipe(RCP) Polyvinyl Chloride Pipe(PVC), Other(O-explain)	↓
Flow Observed Yes(Y), No(N)		Y
Land Use Industrial(I), Commercial(C), Residential(R), Other(O-explain)		C
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
Algae Growth Yes(Y), No(N)		N
Vegetative Condition (Outfall Area) Normal(N), Inhibited Growth(IG) Excessive Growth(EG), Other(O-explain)		N
Flow Rate (cfs)		40.022 cfs
Water Temperature (F)		Not field tested
pH (units)		Not field tested
Turbidity (ntu)		Not field tested
Surfactants (mg/L)	Field Tested:	64.9
	QC Lab Tested:	-
	Follow Up QC Lab Tested:	-
Ammonia (mg/L)	Field Tested:	ND
	QC Lab Tested:	-
	Follow Up QC Lab Tested:	-
Potassium (mg/L)	QC Lab Tested:	4.04
	Follow Up QC Lab Tested:	-
Other Oil + Grease As applicable		6.30
Odor None(N), Rancid-Sour(RS), Gas(G), Sewage(S), Oil(O), Sulfur(S), Other(O-explain)		O-sweet
Deposits/Stains None(N), Sediment(S), Oil(OY), Other(O-explain)		N
Color Clear(C), Gray(G), Red(R), Yellow(Y), Brown(B), Green(GR), Other(O-explain)		C
Floatables None(N), Trash(T), Oil Sheen(OS), Sewage(S), Other(O-explain)		N
DETERMINATION (FROM IDDE FLOWCHART)		Likely Graywater/ Washwater Source

Serialized: 10/20/2015 11:45am QC21

BRUCE THOMPSON
KCI TECHNOLOGIES
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES
1352 MARROWS ROAD, SUITE 100
KCI SCREENING
NEWARK, DE 19711

PROJECT ID:

AL0120 KCI SCREENING

LABORATORY REPORT NUMBER:

L5855248



Authorized by: Oommen V. Kappil, QA Director

KCI TECHNOLOGIES, INC.
AL0120 KCI SCREENING
KCI OUTFALL SCREENING PROJECT
P.O. No:
Inv. No: 1743115 PI
PWSID:

BRUCE THOMPSON
KCI TECHNOLOGIES
1352 MARROWS ROAD, SUITE 100
KCI SCREENING
NEWARK, DE 19711

Regarding:
BRUCE THOMPSON
KCI TECHNOLOGIES
1352 MARROWS ROAD, SUITE 100
KCI SCREENING
NEWARK, DE 19711

SAMPLE SUMMARY

Lab ID	Collected	Received	Matrix	Client ID
L5855248-1	10/08/15 14:50	10/08/15 15:12	WASTEWATER	92214

Sample Description: 92214
Sample Number: L5855248-1
Matrix: WASTEWATER
Satellite Received Temp: 12.3 C
Exceeds recommended temperature for chemical testing.
Received Temp: 3.3 C
Samp. Date/Time/Temp: 10/08/15 02:50pm NA C
Sampled by: Customer
Iced (Y/N): Y
Iced (Y/N): Y

GENERAL CHEMISTRY

Analytical Method: SM 4500NH3-G
Dilution: 1
Units: mg/l
Run Date: 10/15/15 11:58AM
Analyst: ALW
Instrument: Lachat Quickchem 800
Workgroup: 101115ANH3
File ID: 101115ANH3.csv
Basis:

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	ND	0.0772	0.200

Analytical Method: 1664B HEM
Dilution: 1
Units: mg/l
Run Date: 10/15/15 05:18PM
Analyst: JEM
Instrument: x
Workgroup: 101515HEM2
File ID: hem_1015_2027.csv
Basis:

Parameter	CAS	Result	MDL*	RL
Hexane Ext. Material-HEM (oil+grease)	N/A	6.30	2.29	5.00

Analytical Method: SM5540C(MW340)
Dilution: 100
Units: mg/l
Run Date: 10/08/15 10:00PM
Analyst: SJW
Instrument: Genysis 20
Workgroup: 100815MBAS
File ID:
Basis:

Parameter	CAS	Result	MDL*	RL
Surfactants, MBAS	N/A	64.9	2.13	5.00

METALS

Analytical Method: EPA 200.7 Rev 4.4
Dilution: 1
Units: mg/l
Run Date: 10/19/15 09:48AM
Analyst: B B
Instrument: Optima ICP 7300
Workgroup: MA101915W1
File ID: 10-19-15.txt
Basis:

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	4.04	0.180	0.500

Sample Comments | Result Qualifiers:

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.



*=This limit was used in the evaluation of the final result.

DEFINITIONS

Eurofins OC, Inc. (EOC)

The following terms or abbreviations are used in this report:

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor (For Microbiology, DF = volume of sample tested)
POS	Positive / Present	QUAL	Qualifier
NEG	Negative / Absent	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The analyte was not detected at a concentration above the RL / MDL.
J	Estimated value \geq MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
Q	Indicates this analyte did not meet quality control requirements.
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

Data Qualifiers (EPA CLP Convention)

<u>Organics</u>		<u>Metals</u>	
B	Analyte was detected in the method blank	B	Value is \geq MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

Warranties, Terms, and Conditions

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the EQC Southampton facility (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the EQC facility in Horsham (702 Electronic Drive, Horsham, PA 19044).
- The test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. EQC is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- EQC is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. EQC's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by EQC: Nicki Smith (Environmental Chemistry), Amanda Berd (Pharmaceutical), Ryan Baker (Dairy), Ray Fratti (Food Chemistry), Sue Abbott (EQC Delaware).

EOC Accreditations

Southampton	EPA ID:	PA00018			
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223			
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware	State IDs:	DE 00011; MD 138	Reading	State ID:	PA 06-03543
Wind Gap	State IDs:	PA 48-01334; NJ PA001	Vineland	State ID:	NJ 06005
East Rutherford	State ID:	NJ 02015			

IDDE PROGRAM

2015 ANNUAL REPORT

APPENDIX B

POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS WITH ONGOING ISSUES

❖ 2015-190-DN Bear Christiana Road

IDDE INVESTIGATION TRACKING FORM

Incident ID No. 2015-190-DN
Structure No. 320080407131737

Date: 12/22/15 – 01/14/16

EVIDENCE OF ILLICIT DISCHARGE: YES NO TBD

LOCATION:

County: New Castle **House No:** N/A **Stream:** Christina River
ADC: 15K1 **Street:** Bear Christiana Road **Watershed:** Christina River
Subdivision: N/A **City:** Bear **Zip Code:** 19701

SETTING:

Storm Drain Outfall Other (Specify):
 In Stream Along Bank
 Stormwater Pond Upland

VISUAL:

Flow Soap Cloudy
 Staining Floatables (toilet paper, etc) Algae
 Oil / Oil Sheen Dead Fish Precip w/in 72 hrs
 Antifreeze Yard Waste Other (Specify):

ODOR:

None Sulfide ("rotten egg") Gas/Oil
 Sewage Other (Specify):

IDDE INVESTIGATION SUMMARY:

Referred By: Matthew Ortynsky, KCI
Issue: Dry weather flow with evidence of potential illicit discharge
Field Investigation: IDDE field crew observed soap suds and took a sample for field analysis. Field testing results: surfactants = 0.35 mg/L; ammonia = 0.40 mg/L. A second sample was collected for lab analysis due to the elevated surfactants level.
Determination: TBD



DOCUMENTATION:

- Location Map from NPDES Map Viewer
- Summary Memorandum with Photographs
- Field Data Sheet
- Laboratory Data
- Door Hanger and Distribution Map
- Notice of Potential Illicit Discharge
- Other:



2015-190-DN Bear Christiana Road



Legend

- | | | | | |
|---------|--------------|--------------|----------------------|------------|
| INLET | RISER | SWALE END | DITCH | BMP |
| MANHOLE | JUNCTION BOX | SWALE VERTEX | PIPE | WORK ORDER |
| OUTFALL | CULVERT | DUMMY NODE | HYDRAULIC CONNECTION | |



**NPDES
Inventory Map**

7 Jan, 2016

0 65 130 260 Feet





MEMORANDUM

TO: Mike Harris, New Castle County
Ellie Mortazavi, New Castle County
Brian Urbanek, DeIDOT
Mark Harbeson, DeIDOT
Carol Cain, DeIDOT

FROM: Julie Scheu, KCI

DATE: December 22, 2015 – January 14, 2016

SUBJECT: Potential Illicit Discharge Investigation
Incident ID No. 2015-190-DN
Structure 320080407131737
Bear Christiana Road / BMP 241
Christina River Watershed / New Castle County
DeIDOT Agr 1749A / KCI Project 17151749A

The purpose of this Memo is to summarize the KCI field investigation regarding a Potential Illicit Discharge (PID) at Structure 320080407131737 in New Castle County. Photos are attached on following pages.

December 22, 2015

A KCI team member was performing DeIDOT BMP inspections and observed a flowing outfall with evidence of a potential illicit discharge. A field crew visited the outfall to perform a field screening analysis.

- The outfall was flowing into BMP 241.
- The outfall is a private outfall, so the upstream system has not been inventoried.
- There were suds visible in the water pooling beneath the outfall.
- The water was clear and did not have any odor or discoloration.
- A sample was field tested for ammonia and detergents.
 - Ammonia = 0.40 mg/L
 - Detergents = 0.35 mg/L
- Based on an elevated detergents level, a sample should be collected and taken to the lab for ammonia, potassium, and detergents testing.
- KCI was unable to bring a sample to Eurofins QC Laboratories due to their holiday schedule.
- A field crew will return to the outfall when the lab resumes normal business hours.
- This outfall had previously been investigated for potential illicit discharge in 2009. A sample taken on January 18, 2010 tested within acceptable parameter levels but it was noted that

the outfall pipe had green staining and there was a large amount of dead fish in the pond near the outfall.

- A second sample was taken on March 2, 2010 which tested high for detergents (0.7 mg/L).

January 6, 2016

KCI returned to structure 320080407131737 to collect a sample for lab analysis of surfactants, ammonia, and potassium.

January 14, 2015

Eurofins QC lab results were returned:

- Surfactants = ND
- Ammonia = ND
- Potassium = 5.08 mg/L
- According to the flowchart, there is no evidence of illicit discharge. However, due to the history of high detergents, KCI plans to revisit this outfall in the future.

Incident ID No. 2015-190-DN
Structure 320080407131737
Bear Christiana Road / BMP 241
Christina River Watershed / New Castle County



Outfall 320080407131737



Suds beneath Outfall

Potential Illicit Discharge Investigation
Incident ID No. 2015-190-DN
Christina River Watershed / New Castle County
DelDOT Agr 1749A / KCI Project 17151749A
December 22, 2015 – January 14, 2016
Page 4

Incident ID No. 2015-190-DN
Structure 320080407131737
Bear Christiana Road / BMP 241
Christina River Watershed / New Castle County



Landscape of BMP 241



**DELDOT AGREEMENT 1749
ILLCIT DISCHARGE DETECTION & ELIMINATION
FIELD SHEET**



Structure Number: 320080407131737
 Incident ID #: 2015-190-DN
 County: New Castle
 Subdivision: N/A
 Address/Location: Bear-Christiana Rd (BMP 241)

* sent to lab
1/6/16

Personnel		KA DG
Date		12/22/15
Time		2:45 pm
Air Temperature (F)		
Photograph Yes(Y), No(N)		Y
Date Last Rain		12/17/15
Outfall Dimensions (inches)		42
Outfall Shape Round(R), Oval(O), Box(B), V-Ditch(VD), Trap Ditch(TD)		R
Outfall Type Corrugated Metal Pipe(CMP), Reinforced Concrete Pipe(RCP), Polyvinyl Chloride Pipe(PVC), Other(O-explain)		RCP
Flow Observed Yes(Y), No(N)		Y
Land Use Industrial(I), Commercial(C), Residential(R), Other(O-explain)		C
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
Algae Growth Yes(Y), No(N)		Y
Vegetative Condition (Outfall Area) Normal(N), Inhibited Growth(IG), Excessive Growth(EG), Other(O-explain)		N
Flow Rate (cfs)		< 0.022 cfs
Water Temperature (F)		-
pH (units)		-
Turbidity (ntu)		-
Surfactants (mg/L)	Field Tested:	.35
	Lab Tested:	ND
	Follow Up Lab Tested:	
Ammonia (mg/L)	Field Tested:	.40
	Lab Tested:	ND
	Follow Up Lab Tested:	
Potassium (mg/L)	Lab Tested:	5.08
	Follow Up Lab Tested:	
Other As applicable		N/A
Odor None(N), Rancid-Sour(RS), Gas(G), Sewage(S), Oil(O), Sulfur(S), Other(O-explain)		N
Deposits/Stains None(N), Sediment(S), Oil(OY), Other(O-explain)		N
Color Clear(C), Gray(G), Red(R), Yellow(Y), Brown(B), Green(GR), Other(O-explain)		C
Floatables None(N), Trash(T), Oil Sheen(OS), Sewage(S), Other(O-explain)		N
DETERMINATION (FROM IDDE FLOWCHART)		Likely graywater/ washwater source

Serialized: 01/14/2016 02:41pm QC21

BRUCE THOMPSON
KCI TECHNOLOGIES
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES
1352 MARROWS ROAD, SUITE 100
KCI SCREENING
NEWARK, DE 19711

PROJECT ID:

AL0120 KCI SCREENING

LABORATORY REPORT NUMBER:

L6007596



Authorized by: Oommen V. Kappil, QA Director

**KCI TECHNOLOGIES, INC.
AL0120 KCI SCREENING
KCI OUTFALL SCREENING PROJECT
P.O. No:
Inv. No: 1760476 PI
PWSID:**

BRUCE THOMPSON
KCI TECHNOLOGIES
1352 MARROWS ROAD, SUITE 100
KCI SCREENING
NEWARK, DE 19711

Regarding:
BRUCE THOMPSON
KCI TECHNOLOGIES
1352 MARROWS ROAD, SUITE 100
KCI SCREENING
NEWARK, DE 19711

SAMPLE SUMMARY

Lab ID	Collected	Received	Matrix	Client ID
L6007596-1	01/06/16 13:36	01/06/16 14:45	WASTEWATER	10101763
L6007596-2	01/06/16 14:21	01/06/16 14:45	WASTEWATER	320080407131737

Sample Description:	10101763	Samp. Date/Time/Temp:	01/06/16 01:36pm NA C
Sample Number:	L6007596-1	Sampled by:	Customer
Matrix:	WASTEWATER	Iced (Y/N):	Y
Satellite Received Temp:	4.6 C	Iced (Y/N):	Y
Received Temp:	2.1 C		

GENERAL CHEMISTRY

Analytical Method:	SM 5540C	Run Date:	01/07/16 11:50AM	Workgroup:	010716AMBS
Dilution:	1	Analyst:	SRC	File ID:	d1-mbas_010716AMBS.csv
Units:	mg/l	Instrument:	D1-MBAS	Basis:	

Parameter	CAS	Result	MDL*	RL
Surfactants, MBAS (Delaware)	N/A	0.0450	0.0200	0.0200

Analytical Method:	SM 4500NH3-G	Run Date:	01/07/16 01:41PM	Workgroup:	010516ANH3
Dilution:	1	Analyst:	ALW	File ID:	010516ANH3.csv
Units:	mg/l	Instrument:	Lachat Quickchem 800	Basis:	

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	0.122 J	0.0772	0.200

METALS

Analytical Method:	EPA 200.7 Rev 4.4	Run Date:	01/14/16 09:30AM	Workgroup:	MA011416W1
Dilution:	1	Analyst:	B B	File ID:	1-14-16.txt
Units:	mg/l	Instrument:	Optima ICP 7300	Basis:	

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	4.07	0.0611	0.500

Sample Comments | Result Qualifiers:
 MBAS is reported as LAS, molecular weight; 340.

*=This limit was used in the evaluation of the final result.

Sample Description: 320080407131737
Sample Number: L6007596-2
Matrix: WASTEWATER
Satellite Received Temp: 4.6 C
Received Temp: 2.1 C
Samp. Date/Time/Temp: 01/06/16 02:21pm NA C
Sampled by: Customer
Iced (Y/N): Y
Iced (Y/N): Y

GENERAL CHEMISTRY

Analytical Method: SM 5540C
Dilution: 1
Units: mg/l
Run Date: 01/07/16 11:50AM
Analyst: SRC
Instrument: D1-MBAS
Workgroup: 010716AMBS
File ID: d1-mbas_010716AMBS.csv
Basis:

Parameter	CAS	Result	MDL*	RL
Surfactants, MBAS (Delaware)	N/A	ND	0.0200	0.0200

Analytical Method: SM 4500NH3-G
Dilution: 1
Units: mg/l
Run Date: 01/07/16 01:41PM
Analyst: ALW
Instrument: Lachat Quickchem 800
Workgroup: 010516ANH3
File ID: 010516ANH3.csv
Basis:

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	ND	0.0772	0.200

METALS

Analytical Method: EPA 200.7 Rev 4.4
Dilution: 1
Units: mg/l
Run Date: 01/14/16 09:33AM
Analyst: B B
Instrument: Optima ICP 7300
Workgroup: MA011416W1
File ID: 1-14-16.txt
Basis:

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	5.08	0.0611	0.500

Sample Comments | Result Qualifiers:
MBAS is reported as LAS, molecular weight; 340.



*=This limit was used in the evaluation of the final result.

DEFINITIONS

Eurofins OC, Inc. (EOC)

The following terms or abbreviations are used in this report:

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor (For Microbiology, DF = volume of sample tested)
POS	Positive / Present	QUAL	Qualifier
NEG	Negative / Absent	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The analyte was not detected at a concentration above the RL / MDL.
J	Estimated value \geq MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
Q	Indicates this analyte did not meet quality control requirements.
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

Data Qualifiers (EPA CLP Convention)

<u>Organics</u>		<u>Metals</u>	
B	Analyte was detected in the method blank	B	Value is \geq MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

Warranties, Terms, and Conditions

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the EQC Southampton facility (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the EQC facility in Horsham (702 Electronic Drive, Horsham, PA 19044).
- The test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. EQC is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- EQC is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. EQC's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by EQC: Nicki Smith (Environmental Chemistry), Amanda Berd (Pharmaceutical), Ryan Baker (Dairy), Ray Fratti (Food Chemistry), Sue Abbott (EQC Delaware).

EOC Accreditations

Southampton	EPA ID:	PA00018			
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223			
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware	State IDs:	DE 00011; MD 138	Reading	State ID:	PA 06-03543
Wind Gap	State IDs:	PA 48-01334; NJ PA001	Vineland	State ID:	NJ 06005
East Rutherford	State ID:	NJ 02015			

IDDE PROGRAM

2015 ANNUAL REPORT

APPENDIX C

2015 OUTFALLS WITH FLOW AND POTENTIAL ILLICIT DISCHARGES

❖ **Incident ID No. 2015-1-D to 2015-190-DN Documentation Via CD**

IDDE PROGRAM

2015 ANNUAL REPORT

APPENDIX D

2015 OUTFALLS WITH NO FLOW, STREAMS, AND CA/CL

❖ Field Screening Documentation Via CD

IDDE PROGRAM

2015 ANNUAL REPORT

APPENDIX E

302 STOPPIT CAMPAIGN SUMMARY TABLE

**302 STOPPIT HOTLINE
DELDOT / NCC
2015 FIELD INVESTIGATIONS**

Field Visit Date	Address/Location	Issue	Reported Through	DELDOT/NCC	Incident ID No.	Homeowner Contacted?	Investigation Results	Action Taken
07/07/15	17 Split Rail Lane, Newark DE	Yard Waste	Website	DeIDOT	NA	Anonymous tip	Leaves covering catch basin. Catch basin was inaccessible to KCI staff.	No action
07/07/15	Palmetto Drive before Cavellro Ct, New Castle DE	Yard Waste	Website	DeIDOT	2015-80-D	Yes; E-mail Sent	Structures 16723 and 16724 filled with trash; grass clippings on top of 16723	PID Door Hangers
NA	215 Rodman Street, Wilmington DE	Yard Waste	Website	--	--	--	Forwarded to COW	--
07/07/15	109 Landers Lane, New Castle DE	Yard Waste	Website	DeIDOT	NA	Anonymous tip	Pile of pine needles/dirt covering structure 19107; large amount water ponding at outfall 3711 (different system)	No action
07/09/15	406 King Rail Ct, Middletown DE	Yard Waste	Website	DeIDOT	NA	Anonymous tip	Some grass clippings on roadways and getting into structure 220080815103739	No action
NA	46 Ethan Allen Ct, Newark DE	Soap/Detergents drain to roadway	Website	--	--	--	Forwarded to City of Newark	--
07/07/15	Charles Dr & Springfield Blvd, New Castle DE	Clogged Catch Basins; Possible MS4 WO	Website	DeIDOT	NA	No	Structure 18356 has standing water.	Revisit
07/09/15	2 Tavernier Dr, New Castle DE	Yard Waste/Birds	Website	DeIDOT	NA	Anonymous tip	No evidence of excessive yard waste or dumping.	No action
07/09/15	211 Duncan Ave, Wilmington DE	Paint, Stains, Foam, Chemicals - Mold from improperly piped water	Website	DeIDOT	NA	Anonymous tip	Algae in gutters due to groundwater/sump pumps.	No action
07/09/15	14 Danville Ct, New Castle DE	Yard Waste	Website	NCC	NA	Yes; E-mail Sent	Grass clippings left on lawn, no evidence of dumping. NCC maintenance staff will ask contractor to direct grass clippings away from catch basin.	No action
07/09/15	810 Augustine St, Wilmington DE	Yard Waste	Website	DeIDOT/NCC	2015-82-DN	Yes; E-mail Sent	Piles of yard waste found in BMP near outfall structure.	PID Door Hangers
07/16/15	27 Ardmore Rd	Pet Waste	Website	DeIDOT	NA	Anonymous tip	No evidence of dumping or illicit discharge.	No action
NA	609 N. Franklin St, Wilmington DE	Oil	Website	--	--	--	Forwarded to COW	--
NA	609 N. Franklin St, Wilmington DE	Oil	Website	--	--	--	Forwarded to COW	--
07/16/15	15 Holly Drive, New Castle DE	Concrete	E-mail	DeIDOT	NA	Yes; E-mail Sent	No evidence of concrete dumping	No action
07/16/15	On Harrison Ave near corner of Smyrna Ave	Yard Waste	Website	DeIDOT	NA	Anonymous tip	No evidence of excessive yard waste or dumping. Small pile of yard waste beside a home on the corner.	No action
07/16/15	313 Forest Dr, Wilmington DE	Yard Waste	Text	DeIDOT	NA	Anonymous tip	Catch basin grate full of dirt. KCI cleaned off grate to prevent flooding. No evidence of dumping.	No action
07/16/15	Cooper Farm Subdivision	Trash/Sludge from Garbage Truck	Voicemail	DeIDOT	2015-91-N	Yes; Called	Forwarded to DSWA	--
07/20/15	1 Montpelier Blvd, New Castle DE	Yard Waste	Website	DeIDOT	2015-88-D	TBD	Large amounts of grass clippings covering structure 87171. KCI cleared basin of debris.	PID Door Hangers
NA	1280 Railcar Ave, Wilmington DE	Paint, Stains, Foam, Chemicals - Sewage overflow pumped into containers and into creek	Website	--	--	--	Forwarded to DNREC	--
07/20/15	Retention pond off Boulden Blvd behind Penske Trucking.	Oil on top of pond	Website	NCC	NA	Anonymous tip	KCI visited pond. Sheen on pond surface appeared to be a result of iron flocculation. Field crew did not see any signs of illicit discharge.	No action
NA	211 Maryland Ave, Wilmington DE	Trash in MS4	Website	--	--	--	Forwarded to COW	--
07/20/15	20 Ridgewood Circle, Wilmington DE	Yard Waste (Grass Clippings)	Website	DeIDOT	2015-92-D	TBD	KCI noticed large amounts of grass clippings in the street and gutters in front of 18 Ridgewood Circle.	PID Door Hangers
07/20/15	18 Ridgewood Circle, Wilmington DE	Yard Waste (Grass Clippings)	Website					
NA	615 West 38th St, Wilmington DE	Yard Waste/Trash/Neglected Rental Property	Text	--	--	--	Forwarded to COW	--
NA	101 Mallard Way, Middletown DE	Yard Waste	Website	--	--	--	Forwarded to City of Middletown	--

**302 STOPPIT HOTLINE
DELDOT / NCC
2015 FIELD INVESTIGATIONS**

Field Visit Date	Address/Location	Issue	Reported Through	DELDOT/NCC	Incident ID No.	Homeowner Contacted?	Investigation Results	Action Taken
07/22/15	Gender Drive, Breezewood Subdivision, Newark DE	Yard Waste	Website	NCC	NA	Anonymous tip	No evidence of excessive yard waste or dumping.	No action
07/22/15	Corner of Winston Ave and Matthes Place (Elmhurst)	Yard Waste	Voicemail	DeIDOT	2015-89-D	Tim	Yard waste and branches covering structure 15909. KCI removed branches and swept up yard waste.	PID Door Hangers
7/28/2015	46 Thorn Lane, New Castle DE	Motor Oil	Website	DeIDOT	NA	Anonymous tip	No evidence of motor oil in catch basin. No evidence of dumping on grate.	No action
7/28/2015	12 Edgebrooke Way, Newark DE	Yard Waste	Website	DeIDOT/NCC	NA	Anonymous tip	Not an MS4 issue. Yard waste pile on property. No nearby MS4.	No action
7/28/2015	109 East Van Buren Ave, New Castle DE (Wilmington Manor)	Yard Waste	Text	DeIDOT	NA	Anonymous tip	Small amount of grass clippings in roadway. Nearest catch basin did not show any signs of dumping or clogging from clippings.	No action
7/28/2015	11th St. and West Ave, New Castle DE (Holloway Terrace)	Yard Waste	Text	DeIDOT	NA	Anonymous tip	Structures 19582 and 19581 were covered in debris/dirt. KCI to clean off catch basin grates.	No action
7/28/2015	2508 Pin Oak Dr, Wilmington DE	Yard Waste	Text	DeIDOT	2015-93-D	Anonymous tip	No catch basin behind 2508 Pin Oak Drive. Field crew noticed large amounts of grass clippings dumped into concrete swale behind 2506 Pin Oak Dr.	PID Door Hangers
NA	11th St. and Jefferson	Food Waste	Text	--	--	--	Forwarded to COW	--
7/28/2015	Green Street in Claymont, DE	Yard Waste	Website	DeIDOT	NA	No; No issue	No evidence of excessive yard waste/grass clippings.	No action
7/28/2015	1 Delaware Ave, Claymont DE (Claymont Addition)	Yard Waste	Website	DeIDOT	NA	Anonymous tip	No evidence of yard waste dumping/excessive yard waste. Structure 31360 grate was covered by dirt. KCI to clean off basin.	No action
8/5/2015	Boxwood Rd & Augustine St, Augustine St & Walnut, Augustine and Dodson Ln towards Maryland Ave	Yard Waste	E-mail	DeIDOT	NA	Judy Dimichelle	No additional evidence of excessive yard waste in storm drains (same area/complaint as 2015-82-DN)	No action
8/5/2015	152 Olivine Circle, Stonefield Subdivision	Grass/Yard Waste in Street	Voicemail	DeIDOT	NA	Lonna Fry	No evidence of excessive yard waste/grass clippings.	No action
8/5/2015	76th St & Bunker Hill Ct, Newark DE	Yard Waste (plants growing out of drain)	Website	DeIDOT	NA	Louis Garcia	No evidence of illicit discharge; KCI to submit work order to clean out catch basin	Work Order
8/5/2015	Corner of 5 Fleming St, Newark, DE	Pet Waste (Years Ago)	Website	DeIDOT	NA	Anonymous tip	No evidence of pet waste in storm drains. There was, however, excessive yard waste/debris covering two catch basins which KCI cleaned off.	No action
8/5/2015	Collins Park, New Castle DE (South Pl by NCC Park)	Storm Drains Clogged w/Debris & Trash	Website	DeIDOT/NCC	NA	stwrtsr@yahoo.com	No evidence of excessive trash/debris in storm drains or near park	No action
8/5/2015	Mansion Farm Dr, Bear DE	Cement truck dumping residue into storm drain	Website	DeIDOT	TBD	Anonymous tip	Evidence concrete dumping in curb leading to storm drain	No action
8/5/2015	16 Elizabeth Ct, Newark DE	Motor Oil in Gutter	Voicemail	DeIDOT	2015-97-D	Scott Kirlin	Motor oil had already been cleaned up (DNREC Emergency Response?); KCI distributed door hangers to surrounding houses	PID Door Hangers
8/14/2015	2505 Woodview Dr, Wilmington DE	Yard Waste - Grass Clippings	Voicemail	DeIDOT	NA	Shirley Riley	No evidence of grass clippings in street/catch basins	No action
8/14/2015	105 E Van Buren Ave, New Castle DE	Yard Waste - Grass Clippings	Text	DeIDOT	NA	Anonymous tip	No evidence of grass clippings in street/catch basins	No action
8/14/2015	Bear Corbitt Rd & Garwood Dr	Tree limbs in swale	Voicemail	NCC	NA	Anonymous tip	Large amount of cut tree limbs in swale in NCC owned Garwood Park. Revisited 9/1; branches removed, no evidence of illicit discharge.	No action

**302 STOPPIT HOTLINE
DELDOT / NCC
2015 FIELD INVESTIGATIONS**

Field Visit Date	Address/Location	Issue	Reported Through	DELDOT/NCC	Incident ID No.	Homeowner Contacted?	Investigation Results	Action Taken
8/18/2015	17 Bradley Drive, Brookstone, Wilm DE	Drain connection into street	Text	DeIDOT	2015-98-D	Anonymous tip	Sump pump connection draining into curb and then into storm drain. Field testing results for detergents and ammonia were 0.0 and 0.1 mg/L respectively. Green/brown staining on ground likely caused by algae and iron flocculent.	No action
8/17/2015	Willow Run at Montgomery Road and Spruce Avenue	White powder that runs into street. Chemicals stored on roadway.	Voicemail	NCC	NA	Anonymous tip	No evidence of illicit discharge	No action
8/18/2015	Pencader Plaza near pet store.	Cleaning liquid dumped into storm drain.	Voicemail	NCC	NA	Hilda	No evidence of wash water dumped into storm drain	Revisit
8/18/2015	Harmony Road	Grass getting into storm drain from NCC cutters	Voicemail	DeIDOT/NCC?	NA	Ed	Large amount of grass clippings on top of storm drains along Harmony Rd	No action
8/28/2015	8 Wyndom Circle	Oil in pavement	Voicemail	DeIDOT	NA	Kenneth Griese	No evidence of dumping or illicit discharge. - Not an MS4 issue, sent to County for Code Enforcement	No action
11/2/2015	325 Robinson Lane	Food waste/grease dumped into parking lot & MS4	Voicemail	NCC	2015-153-N	Mike Miller	Field crew did not see any evidence of illicit discharge. Mr. Miller contacted DNREC and condo association. Will contact KCI if issue occurs again.	PID - No action
11/12/2015	1 Douglas Drive, Bear DE	Leaking Vehicle parked on manhole	Text	DeIDOT	NA	Anonymous tip	No evidence of oil leaking/sheen; vehicle parked over sanitary sewer.	No action
11/12/2015	68 Bay Blvd, Newark DE	Yard Waste - Grass Clippings	Website	DeIDOT	NA	Scott Strycharz	No evidence of grass clippings in street/catch basins	No action
11/12/2015	2505 Woodview Dr, Wilmington DE	Yard Waste - Leaves	Website	DeIDOT	NA	Shirley Riley	No evidence of leaves in street/catch basins	No action
11/12/2015	506 Ruxton Drive, Wilmington, DE	Yard Waste - Leaves	Website	DeIDOT	2015-156-D	Anonymous tip	Evidence of leaves being blown into street.	PID Door hangers
12/28/2015	401 Kirkwood Highway, Elsmere, DE	Automotive liquid (possibly antifreeze)	Website	DeIDOT	2016-2-D	Randall Hedrick	No evidence of dumping into catch basins in front of auto repair shop; revisited 1/19/16 to check for signs of illicit discharge	Re-visit quarterly in 2016

Appendix C. KCI Technologies Annual Statewide MS4/BMP Stormdrain Inventory and
Inspection Summary Report



AGREEMENT NO. 1728
STATEWIDE STORMDRAIN INVENTORY AND INSPECTION PROGRAM

2015 ANNUAL REPORT ANNUAL REPORT SUMMARY

Prepared For

Delaware Department of Transportation
National Pollutant Discharge Elimination System
Stormwater Quality Program



Area 5 Dagsboro - BMP 557

Prepared By

KCI Technologies, Inc.
KCI Project 17141728B

March 2016



Area 11 Kiamensi - BMP 298



**DELDOT AGREEMENT NO. 1728
STATEWIDE STORMDRAIN INVENTORY AND INSPECTION PROGRAM**



2015 ANNUAL REPORT SUMMARY

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DELDOT AGREEMENT NO. 1728
STATEWIDE STORMDRAIN INVENTORY AND INSPECTION PROGRAM



2015 ANNUAL REPORT SUMMARY

The following is a summary of work performed by KCI Technologies, Inc. (KCI) from January 1 to December 31, 2015 for Delaware Department of Transportation (DelDOT) Agreement 1728. The KCI Team was awarded Agreement 1728 in December 2014.

1.0 PROJECT MANAGEMENT

In 2015, KCI conducted project status meetings with DelDOT to discuss work completed and outstanding issues (**Table 1.1**). These meetings were highly effective in coordinating with DelDOT, identifying priority work, and resolving issues in a timely manner. KCI distributed an agenda at least two days prior to each meeting and prepared meeting minutes within 48 hours, including an Action Item List highlighting necessary actions, responsible parties, and target completion dates. Meetings were also conducted with DelDOT and NCC to discuss shared issues.

TABLE 1.1
2015 MEETINGS

Date	Meeting
01-16-15	DNREC BMP Delegation
01-21-15	Internal Database Redesign Meeting
01-26-15	Internal Status Meeting
02-05-15	Database Redesign Meeting #1
02-13-15	STOPPIT Hotline Meeting
02-13-15	Database Redesign Meeting #2
02-18-15	Database Redesign Workshop #1
02-20-15	Database Redesign Workshop #2
02-27-15	Database Redesign Workshop #3
02-27-15	STOPPIT Hotline Meeting
03-02-15	Internal Status Meeting
03-13-15	Database Redesign Meeting #3
03-20-15	Internal (Newark) Database Redesign Meeting
04-09-15	Internal (w/GSP) Database Redesign Meeting
04-10-15	Database Redesign Meeting #4
04-10-15	STOPPIT Hotline Meeting
05-19-15	Database Redesign Meeting #5
05-21-15	Internal Status Meeting
05-28-15	Database Redesign Workshop #3
06-17-15	Internal (w/GSP) Database Redesign Meeting

Date	Meeting
07-14-15	DeIDOT-NCC NPDES Meeting No. 1
07-23-15	Immediate Action Work Order: Woodland Trails Sinkhole
07-27-15	Internal KCI Status Meeting
07-30-15	Internal NPDES Database Redesign Meeting
08-07-15	DeIDOT NPDES Database Redesign Meeting #7
08-18-15	DeIDOT and KCI BMP Field Inspections
08-19-15	Internal NPDES Database Redesign Meeting
09-21-15	Internal NPDES Database Redesign Meeting
10-05-15	Internal NPDES Database Redesign Meeting
10-06-15	DeIDOT NPDES Database Redesign Meeting #8
10-14-15	DeIDOT-NCCo NPDES Meeting No. 2
12-01-15	Internal KCI Status Meeting
12-15-15	DeIDOT SWM Database Module Meeting #1

Table 1.2 lists the deliverables transmitted to DeIDOT in 2015. Deliverables pertinent to Agreement 1749 are included in the *Agreement No. 1749 2015 Annual Report Summary*, which includes outfall screening and illicit discharge investigations, some of which originated from Agreement No. 1728 inventory and inspection.

**TABLE 1.2
 DELIVERABLES**

Date	Deliverable
01/27/15	01/27/15 Map Viewer User List
02/04/15	List of Approved Work Orders for Submittal (through end 2013 with some February 2014)
02/13/15	South Herald Street Location Map.pdf
02-27-15	2014 Annual BMP Inspection Reports: Maintenance Areas 2-12, 14
03-02-15	Communities.gdb.zip
03-06-15	Database Mock Up-Combined; Database Mock Up Tables
03-11-15	January/February DeIDOT Asset Submission
03-16-15	02-24-15 BMP 248 Memo to DelTech regarding BMP Ownership and Maintenance
03-20-15	Revisions to the 2014 Annual BMP Report: 2014 BMP INVASIVE INVENTORY 12-TALLEY; 2014 BMP INVASIVE CUT 11-KIAMENSI
04-10-15	Database Reports 2015-04-10 Database Report.pdf
04-16-15	2015 BMP Invasive Species Spray Maps and Corresponding Reports
04-22-15	Agr 1591 2014 Annual Report Summary
04-28-15	January-March DeIDOT Asset Submission: (1) All newly collected structures; (2) All newly collected conveyances; (3) All deleted structures; and (4) All deleted conveyances.
05-07-15	05-07-15 Map Viewer User List
05-13-15	Transmittal of plans for DeIDOT review, which indicate that BMPs 440-448 were never constructed.
05-20-15	Immediate Action WOs: Quigley Blvd; Country Creek Subdivision: Grate in Bottom of Catch Basin

Date	Deliverable
05-20-15	NPDES Database Requirements Document DRAFT V2.3 for DelDOT review
05-22-15	Immediate Action WOs: Newtown Village - 3 Catch Basins
05-29-15	Immediate Action WOs: Piermont Woods - Grates in 2 Catch Basins: Structures 90228, 90229
06-11-15	Immediate Action WO: Pinewoods
06-16-15	Augustine Creek II - 3 Year Warranty Period and Work Order
06-24-15	06-24-15 Map Viewer User List
06-25-15	Immediate Action WO: Salem Woods_Canal District
06-26-15	Immediate Action WO: Beechers Lot
07-07-15	06-24-15 Map Viewer User List
07-07-15	Immediate Action Work Order: Treelane Terrace Subdivision
07-13-15	Immediate Action Work Order Faulkland Road
07-23-15	Immediate Action Work Order: Woodland Trails Sinkhole
07-31-15	Howell Road Sump Pump Discharge Permits: KCI Field Investigations - No PIDs
08-11-15	BMP Spray List: DelDOT-owned BMPs at Maintenance Yards - for DelDOT Review.
08-19-15	DelDOT Asset Submission April - June 2015
08-20-15	2015 BMP Spray List with Maintenance Yard Ponds
08-25-15	BMP 75 08-14-15 Inspection Photos
08-31-15	Immediate Action Work Order: Briars Lane - Need Clarification if DelDOT or NCCo-owned.
08-31-15	Immediate Action Work Order: Erosion at BMP 43 along SR 273
08-31-15	BMP Inspection Reports for 11 BMPs Scheduled for 2015 Maintenance
09-01-15	Maximo Supervisor's List for DelDOT (Valda Ritter) Review and Comment
09-01-15	Approved MS4 Maintenance Work Orders filename Work_Orders_Submitted_09_01_15.xlsx
09-18-15	BMP Inventory and Inspection Manual
09-22-15	Notification that 2085 Creek Road Cross Road Pipe Added to DelDOT MS4 Database - Visible on DelDOT Map Viewer after early October Monthly Data Push.
09-23-15	August 2015 Drainage Assets Summary for 2014 DelDOT Fact Book.
09-23-15	DelDOT NPDES Database Redesign Wireframe pdfs.
09-25-15	Immediate Action Work Order: 2431 Glasgow Ave grate collapse.
10-01-15	10-01-2015 Augustine Ridge Pipe Inspections Memo.pdf
10-05-15	2014 MS4/BMP Inspection Quantities Facts for Annual Report
10-08-15	10-08-15 Map Viewer User List
10-27-15	3206 Summerset Road, Talleyville, Ownership Investigation Findings
10-30-15	10-30-15 Map Viewer User List
11-04-15	Immediate Action Work Order: Rt 40 near Rosetree Lane
11-06-15	DelDOT_Chesapeake_Bay.gdb.zip
11-10-15	Instructions to Query Map Viewer by District
11-10-15	11-09-15 3206 Summerset Road Sinkhole Memo.pdf
11-10-15	11-09-15 Snuff Mill Road Memo.pdf
11-10-15	BMP Inventory Spreadsheet
11-11-15	2015 DSF Inspections Summary Memo_11-10-15.pdf

Date	Deliverable
11-13-15	2015 Chesapeake Bay Progress Submission to EPA: All DeIDOT BMP's (via email to Marcia Fox, DNREC).
11-13-15	Street Sweeper Waste Totals for Jan-Oct 2015; Estimated Pollutant Removal for Chesapeake (via email to Marcia Fox, DNREC).
11-13-15	Central_District_Pipes_Centerline_Intersect_Poor_Rating.xlsx
11-23-15	2015 Chesapeake Bay Progress Submission to EPA: Table in non-XML format submitted to DNREC for 2015 Annual BMP Submission. This table will be updated for 2016 submission.
11-25-15	11-25-15 Blue Rock Road Sinkhole Memo.pdf
12-11-15	12-11-15 Map Viewer User List
12-17-15	12-15-15 Beechwood Road - Edgemoore Apartments Drainage Issues Memo
12-17-15	Immediate Action Work Order: Stone Mill
12-17-15	Database Redesign Potential Map Viewer Training Schedule.
12-18-15	Initial MS4 inventory & Inspection of Farmington Subdivision (New Castle County): Potential defects and work orders.

2.0 NPDES DATABASE MANAGEMENT

In 2007, KCI's Technology Services division developed a field application using advanced hardware, redesigned the existing NPDES Database structure to allow for re-inspections, migrated all existing data into the new NPDES Database design, and began development of a new field application to fit the new NPDES 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 DeIDOT's existing Map Viewer. In 2009, DeIDOT 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 assisted DeIDOT in formal training sessions to educate DeIDOT design and maintenance staff on the use of the Map Viewer.

In 2011/2012, KCI updated the Map Viewer by migrating the ArcGIS Server 9.3.1 webADF codebase to ESRI's ArcGIS Server 10.0 SP2 Javascript API in preparation for the ESRI's webADF deprecation at ArcGIS Server 10.1. KCI and DeIDOT developed a method for conducting desktop inventory for new drainage structures along roadway improvement projects, by overlaying electronic construction plans on the DeIDOT NPDES Database.

In 2013, KCI developed a Mobile Application for the Web-based Map Viewer. The DeIDOT NPDES Mobile Application is compatible with Android/iOS mobile browsers and with Google Chrome on



desktops/laptops. <http://deldot.kci.com/mobile/>.

The Mobile Application assists DeIDOT Maintenance Staff by allowing use of the phone's GPS function to see their location in relation to the MS4 or BMP structure.

In 2014, DeIDOT and KCI discussed the need to upgrade the NPDES geodatabase using updated software and incorporating latest NPDES permit requirements. The geodatabase and associated components (field data collection application, map viewer, mobile application) had become difficult to manipulate because the development architecture software has become outdated.

In 2015, DeIDOT tasked KCI with redesigning the existing NPDES field application, geodatabase, and web viewer to better support DeIDOT's business processes associated with creating, viewing, and reporting of NPDES data within the context of DeIDOT's mandated NPDES permit requirements. The proposed solution will manage stormwater structures, conveyances, and BMP facilities and ancillary activities, including work orders, photos, attachments, and IDDE / Water Quality Investigations, within a single, centralized framework capable of supporting associated workflows across multiple users and user groups. The proposed solution is designed to become the core dataset within a modular, program-wide NPDES solution. The improved field application and geodatabase will be released in the first half of 2016, with the revised map viewer released in mid-2016. **Table 2.1** contains the DeIDOT Geodatabase Timeline.

**TABLE 2.1
 DELDOT GEODATABASE TIMELINE**

Date	Accomplishments
2007	Developed a field application using advanced hardware.
	Redesigned existing NPDES Database structure to allow for re-inspections.
	Migrated all existing data into new NPDES Database design.
	Began development of new field application to fit new NPDES Database design.
2008	Completed development of the Field Application, Version 2.
	Developed Web-based Map Viewer to replace and upgrade existing Map Viewer.
2009	DelDOT request for KCI to simplify Map Viewer, especially querying capabilities.
2010	Completed refinements to Map Viewer including simplifying querying and report creation for BMPs, conveyances and structures.
	Added drainage area layer for BMPs and Major Outfalls.
	Developed <i>Map Viewer User's Guide</i> to assist with viewer use.
2011/2012	Updated Map Viewer by migrating ArcGIS Server 9.3.1 webADF codebase to ESRI's ArcGIS Server 10.0 SP2 Javascript API in preparation for ESRI's webADF deprecation at ArcGIS Server 10.1.
	Developed method for conducting desktop inventory for new drainage structures along roadway improvement projects by overlaying electronic construction plans on DelDOT NPDES Database.
2013	Developed Mobile Application for the Web-based Map Viewer.
2014	Discussed need to upgrade NPDES geodatabase using updated software and incorporating latest NPDES permit requirements.
	Geodatabase/associated components (field data collection application, map viewer, mobile application) have become difficult to manipulate because development architecture software has become outdated.
2015	Redesign of field application, geodatabase and map viewer.
2016	Implement the redesigned database components and begin developing Database Modules for other DelDOT user groups having NPDES reporting requirements.

3.0 BEST MANAGEMENT PRACTICE (BMP) INVENTORY AND INSPECTION

In early 2015 under separate cover, KCI submitted the *2015 Annual BMP Inventory & Inspection Report*. The 2015 Annual BMP Report summarized the 2015 inspections for each BMP and provided recommended actions for BMPs in four categories:

- BMPs requiring MAINTENANCE by DelDOT maintenance staff (Maintenance Work Orders),
- BMPs requiring INVASIVE SPECIES to be treated 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 were assigned a summary rating based on the recommended actions identified during the inspections. These ratings are defined in **Table 3.1**. **Table 3.2** summarizes the BMP inspections conducted in 2015. The ratings shown in **Table 3.2** are preliminary, and will be reviewed and finalized during DelDOT’s review and finalization of the *2015 Annual BMP Inventory & Inspection Report*.

**TABLE 3.1
 OVERALL BMP RATING SYSTEM**

Rating	Description
A	NO PERFORMANCE ISSUES BMP with No Issues affecting performance. ≤ 2 Scoring Criteria
B	MINOR MAINTENANCE BMP with Minor Maintenance required; repaired by DelDOT Maintenance District or third party invasive spray contractor. ≤ 3 Scoring Criteria
C	MAJOR MAINTENANCE BMP with Major Maintenance required; repaired by third party contractor. ≤ 4 Scoring Criteria
D	RETROFIT BMP with Retrofit requirements; BMP is failing; needs to be redesigned or re-built with input from DelDOT Stormwater Quality Program. ≤ 5 Scoring Criteria

**TABLE 3.2
 2015 BMP INSPECTIONS RATING SUMMARY**

Maintenance Area	District	BMP Performance Rating				2015 Total
		A	B	C	D	
2 Seaford	South	12	2	0	0	14
3 Ellendale	South	16	3	0	0	19
4 Gravel Hill	South	13	0	1	0	14
5 Dagsboro	South	23	5	6	0	34
6 Harrington	Central	11	1	0	0	12
7 Magnolia	Central	7	4	0	0	11
8 Cheswold	Central	12	4	3	0	19
9 Middletown	Canal	50	31	48	0	129
10 Bear	Canal	8	27	22	0	57
11 Kiamensi	North	27	11	11	3	52
12 Talley	North	44	14	18	0	76
14 Expressways	North / Canal	14	14	13	0	41
2015 Total		237	116	122	3	478

4.0 NEW CASTLE COUNTY MS4 RE-INSPECTION

KCI began re-inspection of DeIDOT’s MS4 in New Castle County subdivisions in February 2008, based on KCI’s Subdivision Re-inspection Schedule. 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. In October 2010, DeIDOT requested that KCI dedicate both KCI field crews to Kent County Initial Inventory and Inspection work. In 2012, KCI assigned one field crew to New Castle County to continue re-inspecting the 1966-1980 subdivisions, which was completed in January 2013. KCI devoted one field crew to re-inspecting the 1981-1995 subdivisions in 2013 and 2014. In 2015, KCI concentrated on re-inspections in the Christina River Watershed to coincide with the Water Quality Improvement Plan being developed for this watershed. **Table 4.1** summarizes the re-inspection work performed by one KCI field crew in 2015.



TABLE 4.1
2015 NEW CASTLE COUNTY MS4 RE-INSPECTION TOTALS

Month (2015)	Subdivisions	Non-Subdivision Roadway Miles	Structures
January	1	0.0	77
February	0	0.0	0
March	0	0.0	0
April	0	0.0	0
May	12	0.0	355
June	5	0.0	408
July	7	0.0	297
August	0	0.0	0
September	0	0.0	0
October	0	0.0	0
November	0	0.0	0
December	3	0.0	270
2015 Total	28	0.0	1,407

5.0 NEW CASTLE COUNTY MS4 INITIAL INVENTORY AND INSPECTION

In 2015, KCI's performed field-level MS4 initial inventory and inspection work for recently accepted subdivisions and performed a desktop MS4 inventory on non-subdivision roads that were recently improved. **Table 5.1** summarizes the New Castle County initial inventory and inspection work in 2015.



TABLE 5.1
2015 NEW CASTLE COUNTY MS4 INITIAL INSPECTION TOTALS

Type	Subdivisions	Non-Subdivision Roadway Miles	Structures
Field Inventory/Inspection	8	0.0	243
Desktop Inventory	0	2.8	329
2015 Total	8	2.8	572

6.0 KENT / SUSSEX COUNTIES MS4 INITIAL INVENTORY AND INSPECTION

In 2015, KCI and CEI field crews focused on completing the initial inventory / inspection of Sussex County (**Table 6.1**). In November 2015, KCI completed the Sussex County MS4 inventory/inspection, except for several roads that under construction and/or needed MOT. It is anticipated that the remaining work would be completed using a desktop process.

TABLE 6.1
2015 KENT/SUSSEX COUNTIES MS4 INITIAL INVENTORY / INSPECTION TOTALS

Month	Non-Subdivision Roadway Miles	Structures
January	73.5	1,422
February	34.8	634
March	17.0	472
April	8.5	297
May	15.8	636
June	20.5	600
July	8.2	325
August	11.2	395
September	11.9	638
October	18.9	631
November	21.1	467
December	2.4	94
2015 Total	243.8	6,611

7.0 STATEWIDE INVENTORY SUMMARY

Tables 7.1, 7.2 and 7.3 summarize the number of Structures, linear feet of Conveyances and number of BMPs, respectively, contained in the DeLDOT NPDES Database.

**TABLE 7.1
 STATEWIDE STRUCTURES (NO.)**

Category	New Castle	Kent	Sussex	Statewide
Inlet	45,348	19,533	15,846	80,747
Outfall	8,943	11,448	12,526	32,917
Manhole	4,734	789	254	5,777
Swale End	1,463	2,762	2,333	6,558
TOTAL	60,448	34,552	30,959	125,999

**TABLE 7.2
 STATEWIDE CONVEYANCES (LF.)**

Type	New Castle	Kent	Sussex	Statewide
Open	2,395,509	8,371,201	11,091,906	21,858,616
Closed	4,919,977	1,561,037	1,090,202	7,571,216
TOTAL	7,315,486	9,932,238	12,182,108	29,429,832

**TABLE 7.3
 STATEWIDE BMPs (NO.)**

Type	New Castle *	Kent	Sussex	Statewide
BaySaver	1	0	0	1
Check Dam	6	0	0	6
Bioswale	93	25	88	206
Bioretention	23	6	2	31
Dry Pond	49	7	3	59
Filter Strip	6	3	15	24
Infiltration Basin/Trench	1	0	3	4
Sand filter	67	1	1	69
Sediment Forebay	4	1	3	8
Wet Pond	91	23	9	123
Wet Pond/Wetland	2	0	0	2
Infiltration Trench	8	0	0	8
Infiltration Basin	0	1	0	1
Underground Storage/ Infiltration	5	0	0	5
Shallow Marsh	2	0	0	2
Diverter Box	0	1	0	1
TOTAL	358	68	124	550

Appendix D. BMP List

DELDOT AGREEMENT 1728
2015 BMP INSPECTION OVERVIEW
STATEWIDE

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
1	08/26/15	Middletown	dry pond	C			X	
2	08/26/15	Middletown	bioretention	C		X	X	
3	12/21/15	Bear	dry pond	C		X	X	
4	10/26/15	Expressways	bioretention	C			X	
5	2015	Cheswold	wet pond	A				
6	07/10/15	Kiamensi	wet pond	B	X			
7	06/21/12	Cheswold	wet pond	B	X			
8	12/02/09	Cheswold	wet pond	C			X	
9	10/20/15	Middletown	wet pond	B	X	X		
10	2015	Cheswold	dry pond	A				
11	11/25/15	Middletown	wet pond	B	X			
12	11/03/15	Middletown	wet pond	C			X	
13	11/03/15	Middletown	wet pond	B	X			
14	11/25/15	Middletown	wet pond	B	X			
15	10/31/15	Middletown	wet pond	C			X	
16	10/31/15	Middletown	wet pond	C		X	X	
17	2015	Cheswold	wet pond	A				
18	2015	Cheswold	wet pond	A				
19	11/25/15	Middletown	dry pond	C			X	
20	07/10/15	Kiamensi	dry pond	C			X	
21	07/02/15	Bear	wet pond	C			X	
22	08/21/15	Talley	dry pond	C			X	
23	08/21/15	Talley	dry pond	C		X	X	
24	08/21/15	Talley	dry pond	C			X	
25	08/21/15	Talley	dry pond	C			X	
26	05/04/15	Talley	biofiltration	B	X			
27	05/04/15	Talley	biofiltration	B	X			
28	07/10/15	Kiamensi	wet pond	B	X			
29	07/03/13	Cheswold	wet pond	C			X	
30	08/21/15	Talley	dry pond	C			X	
31	08/21/15	Talley	wet pond	B	X			
32	05/04/15	Talley	biofiltration	B	X			
33	08/21/15	Talley	dry pond	B	X			
34	05/04/15	Talley	biofiltration	B	X			
35	08/21/15	Talley	sed forebay	A				
36	12/28/15	Bear	biofiltration	C			X	
37	08/28/15	Bear	biofiltration	C			X	
38	08/28/15	Bear	dry pond	B	X	X		
39	09/18/15	Bear	wet pond	B	X			
40	09/18/15	Bear	wet pond	C			X	
41	08/28/15	Bear	wet pond	C			X	
42	08/28/15	Bear	wet pond	C			X	

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Gray Shading = BMP Maintained in 2015

BMP 528: 1 in Talley/1 in Expressways

DELDOT AGREEMENT 1728
2015 BMP INSPECTION OVERVIEW
STATEWIDE

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
43	08/28/15	Bear	wet pond	C			X	
44	08/28/15	Bear	wet pond	B	X			
45	12/28/15	Bear	biofiltration	B	X			
46	10/26/15	Bear	sand filter	A				
47	10/30/13	Dagsboro	biofiltration	C			X	
48	06/12/15	Expressways	water treat sep	B	X			
49	08/14/15	Kiamensi	infil trench	B	X			
50	10/06/15	Middletown	biofiltration	A				
51	05/04/15	Talley	biofiltration	B	X			
52	10/12/15	Kiamensi	sand filter	A				
54	10/19/15	Kiamensi	sand filter	A				
55	10/12/15	Kiamensi	sand filter	A				
56	10/19/15	Kiamensi	sand filter	A				
57	10/12/15	Kiamensi	sand filter	A				
58	10/19/15	Kiamensi	sand filter	A				
59	10/12/15	Kiamensi	sand filter	A				
60	10/19/15	Kiamensi	sand filter	A				
61	10/12/15	Kiamensi	sand filter	A				
62	10/19/15	Kiamensi	sand filter	A				
63	10/12/15	Kiamensi	sand filter	A				
64	10/12/15	Kiamensi	sand filter	A				
65	10/19/15	Kiamensi	sand filter	A				
66	10/12/15	Kiamensi	sand filter	A				
67	10/19/15	Kiamensi	sand filter	A				
68	10/19/15	Kiamensi	sand filter	A				
69	10/12/15	Kiamensi	sand filter	A				
70	10/19/15	Kiamensi	sand filter	A				
71	10/19/15	Kiamensi	sand filter	A				
72	10/12/15	Kiamensi	sand filter	A				
73	10/19/15	Kiamensi	sand filter	A				
74	12/05/15	Dagsboro	biofiltration	C			X	
75	08/14/15	Kiamensi	biofiltration	D				X
76	08/18/15	Kiamensi	wet pond	C			X	
77	2015	Cheswold	wet pond	A				
78	09/18/15	Expressways	wet pond	C			X	
79	08/14/15	Kiamensi	dry pond	B	X			
80	08/14/15	Kiamensi	biofiltration	C			X	
81	11/18/15	Magnolia	wet pond	B	X			
82	08/14/15	Kiamensi	dry pond	C		X	X	
83	09/16/10	Cheswold	wet pond	B	X			
84	09/28/15	Bear	dry pond	B	X			

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DELDOT AGREEMENT 1728
2015 BMP INSPECTION OVERVIEW
STATEWIDE

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
85	09/28/15	Bear	dry pond	C			X	
86	09/28/15	Bear	dry pond	C			X	
87	09/28/15	Bear	wet pond	B	X			
88	09/28/15	Bear	wet pond	C			X	
89	12/28/15	Bear	wet pond	B	X			
90	10/16/15	Middletown	wet pond	B	X			
91	12/28/15	Bear	wet pond	B	X			
92	10/31/15	Middletown	dry pond	C			X	
93	08/26/15	Middletown	biofiltration	A				
94	11/17/15	Harrington	wet pond	A				
95	10/20/15	Middletown	wet pond	C			X	
96	10/20/15	Middletown	wet pond	C		X	X	
97	10/20/15	Middletown	wet pond	B	X			
98	10/20/15	Middletown	wet pond	C			X	
99	10/20/15	Middletown	wet pond	B	X			
100	10/20/15	Middletown	wet pond	C			X	
101	10/20/15	Middletown	wet pond	C			X	
102	10/16/15	Middletown	dry pond	B	X			
103	11/18/15	Ellendale	biofiltration	A				
104	08/14/15	Kiamensi	biofiltration	C			X	
105	08/14/15	Kiamensi	wet pond	C			X	
106	06/07/12	Harrington	infil basin	B	X			
108	08/28/15	Bear	wet pond	B	X			
109	10/06/15	Middletown	biofiltration	A				
110	10/06/15	Middletown	biofiltration	A				
111	10/30/15	Middletown	wet pond	B	X			
112	11/18/15	Magnolia	bioretention	A				
113	12/31/14	Magnolia	bioretention	C			X	
114	12/31/14	Magnolia	bioretention	B	X			
115	12/31/14	Magnolia	bioretention	B	X			
118	10/30/15	Middletown	dry pond	C			X	
119	10/30/15	Middletown	infil trench	C			X	
120	10/23/15	Middletown	dry pond	C			X	
121	10/30/15	Middletown	dry pond	C			X	
122	10/30/15	Middletown	dry pond	C			X	
123	10/30/15	Middletown	dry pond	B	X			
124	10/30/15	Middletown	dry pond	C			X	
125	10/23/15	Middletown	dry pond	B	X			
126	06/05/14	Dagsboro	sed forebay	C			X	
127	10/23/15	Middletown	wet pond	B	X	X		
128	10/30/15	Middletown	wet pond	B	X			
129	10/30/15	Middletown	dry pond	B	X			

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BMP 528: 1 in Talley/1 in Expressways

DELDOT AGREEMENT 1728
2015 BMP INSPECTION OVERVIEW
STATEWIDE

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
130	10/20/15	Middletown	wet pond	B	X			
131	10/20/15	Middletown	wet pond	C			X	
132	11/03/15	Middletown	dry pond	C			X	
133	11/25/15	Middletown	dry pond	C			X	
134	11/03/15	Middletown	dry pond	C			X	
135	11/25/15	Middletown	dry pond	C			X	
136	10/30/15	Middletown	dry pond	C			X	
137	12/21/15	Bear	wet pond	B	X			
138	11/25/15	Middletown	dry pond	C			X	
139	12/21/15	Bear	wet pond	C			X	
140	11/25/15	Middletown	dry pond	C			X	
141	11/03/15	Middletown	wet pond	C			X	
142	08/18/15	Kiamensi	wet pond	C			X	
143	11/11/15	Kiamensi	wet pond	B	X			
145	05/29/12	Gravel Hill	dry pond	B	X			
146	05/29/12	Gravel Hill	dry pond	B	X			
147	09/28/15	Bear	biofiltration	B	X			
148	09/28/15	Bear	biofiltration	C			X	
149	09/28/15	Bear	biofiltration	A				
150	09/28/15	Bear	biofiltration	B	X			
151	09/28/15	Bear	biofiltration	B	X			
152	09/28/15	Bear	biofiltration	A				
153	09/28/15	Bear	biofiltration	A				
154	09/28/15	Bear	biofiltration	A				
155	09/28/15	Bear	biofiltration	A				
156	09/28/15	Bear	biofiltration	B	X			
157	09/28/15	Bear	biofiltration	B	X			
158	09/28/15	Bear	biofiltration	B	X			
160	10/26/15	Bear	biofiltration	A				
162	09/28/15	Bear	biofiltration	B	X			
163	09/28/15	Bear	biofiltration	B	X			
164	10/27/15	Expressways	biofiltration	B	X			
165	10/27/15	Expressways	biofiltration	B	X			
166	10/27/15	Expressways	dry pond	C			X	
167	12/02/09	Cheswold	wet pond	C			X	
168	10/22/15	Gravel Hill	sand filter	A				
169	12/22/15	Bear	wet pond	B	X			
170	12/22/15	Bear	wet pond	C			X	
171	12/21/15	Bear	wet pond	C			X	
172	11/14/15	Gravel Hill	filter strip	A				
173	12/21/15	Bear	wet pond	C			X	
174	06/06/12	Dagsboro	biofiltration	B	X			

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BMP 528: 1 in Talley/1 in Expressways

DELDOT AGREEMENT 1728
2015 BMP INSPECTION OVERVIEW
STATEWIDE

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
176	10/22/15	Cheswold	sand filter	A				
177	12/02/09	Cheswold	dry pond	C			X	
178	06/21/12	Magnolia	dry pond	B	X			
179	11/27/15	Bear	wet pond	B	X	X		
180	05/29/12	Seaford	wet pond	B	X			
181	10/06/15	Middletown	wet pond	A				
182	08/18/15	Kiamensi	wet pond	B	X			
183	08/18/15	Kiamensi	dry pond	C			X	
184	08/18/15	Kiamensi	biofiltration	D				X
185	10/30/15	Middletown	wet pond	C			X	
186	10/23/15	Middletown	wet pond	B	X			
187	10/23/15	Middletown	wet pond	C			X	
188	10/30/15	Middletown	dry pond	C			X	
189	10/23/15	Middletown	wet pond	C			X	
190	10/30/15	Middletown	dry pond	C			X	
191	10/23/15	Middletown	wet pond	C			X	
192	08/14/15	Kiamensi	bioretention	D				X
193	10/26/15	Bear	dry pond	B	X			
194	08/21/15	Talley	wet pond	C			X	
196	08/18/15	Bear	dry pond	C		X	X	
197	12/02/09	Cheswold	biofiltration	C			X	
198	07/10/15	Kiamensi	wet pond	B	X			
199	07/10/15	Kiamensi	wet pond	C			X	
200	10/04/12	Gravel Hill	wet pond	B	X			
201	10/04/12	Gravel Hill	wet pond	B	X			
202	12/28/15	Bear	wet pond	C			X	
203	12/03/09	Magnolia	wet pond	C			X	
204	2015	Magnolia	wet pond	A				
205	12/03/09	Magnolia	wet pond	C			X	
206	2015	Magnolia	wet pond	A				
207	12/03/09	Magnolia	wet pond	C			X	
208	2015	Magnolia	wet pond	A				
209	2015	Magnolia	wet pond	A				
210	12/03/09	Cheswold	wet pond	C			X	
211	2015	Cheswold	wet pond	A				
212	2015	Cheswold	wet pond	A				
213	10/30/13	Seaford	wet pond	C		X	X	
216	08/26/15	Cheswold	biofiltration	C			X	
217	08/14/15	Kiamensi	wet pond	C			X	
218	08/14/15	Kiamensi	wet pond	B	X			
219	12/28/15	Bear	wet pond	B	X			
221	10/31/15	Middletown	wet pond	C			X	

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BMP 528: 1 in Talley/1 in Expressways

DELDOT AGREEMENT 1728
2015 BMP INSPECTION OVERVIEW
STATEWIDE

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
222	12/22/15	Bear	wet pond	B	X			
223	07/10/15	Kiamensi	wet pond	B	X			
224	07/10/15	Kiamensi	wet pond	B	X			
225	07/10/15	Kiamensi	wet pond	B	X			
226	06/06/12	Dagsboro	wet pond	B	X			
227	12/05/15	Dagsboro	biofiltration	A				
228	06/06/12	Dagsboro	biofiltration	B	X			
229	05/04/15	Talley	biofiltration	A				
230	05/04/15	Talley	dry pond	C			X	
232	05/04/15	Expressways	filter strip	A				
233	05/04/15	Expressways	sed forebay	B	X			
234	08/14/15	Kiamensi	wet pond	C			X	
236	06/07/12	Ellendale	wet pond	B	X			
237	09/16/15	Bear	biofiltration	B	X			
238	09/16/15	Bear	biofiltration	B	X			
239	10/26/15	Bear	wet pond	B	X			
240	12/22/15	Bear	wet pond	C			X	
241	12/22/15	Bear	wet pond	C			X	
242	12/28/15	Bear	wet pond	B	X			
243	08/26/15	Cheswold	dry pond	A				
244	09/16/15	Expressways	wet pond/wetland	B	X			
245	07/10/15	Kiamensi	bioretention	A				
246	06/21/12	Magnolia	wet pond	B	X			
247	09/17/10	Gravel Hill	wet pond	C			X	
248	05/29/12	Gravel Hill	bioretention	C			X	
250	12/12/13	Dagsboro	wet pond	C			X	
251	12/12/13	Dagsboro	dry pond	B		X		
253	06/12/15	Expressways	shallow marsh	B	X			
254	06/12/15	Expressways	shallow marsh	B	X			
256	12/05/15	Dagsboro	biofiltration	A				
257	12/12/13	Dagsboro	biofiltration	B	X			
258	12/05/15	Dagsboro	biofiltration	C			X	
259	12/05/15	Dagsboro	biofiltration	B	X			
260	12/05/15	Dagsboro	biofiltration	C			X	
261	12/05/15	Dagsboro	biofiltration	C			X	
262	12/05/15	Dagsboro	biofiltration	A				
263	12/05/15	Dagsboro	biofiltration	A				
264	12/05/15	Dagsboro	biofiltration	A				
265	12/05/15	Dagsboro	biofiltration	B	X			
273	12/05/15	Dagsboro	biofiltration	A				
274	12/05/15	Dagsboro	biofiltration	C			X	

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DELDOT AGREEMENT 1728
2015 BMP INSPECTION OVERVIEW
STATEWIDE

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
275	12/12/13	Dagsboro	biofiltration	B	X			
276	12/05/15	Dagsboro	biofiltration	A				
277	12/12/13	Dagsboro	biofiltration	C			X	
284	08/27/15	Middletown	wet pond	C			X	
291	08/27/15	Middletown	bioretention	C			X	
295	05/01/15	Gravel Hill	sed forebay	C			X	
296	06/06/12	Gravel Hill	sed forebay	B	X			
297	07/10/15	Kiamensi	dry pond	A				
298	07/10/15	Kiamensi	wet pond/wetland	A				
299	07/10/15	Kiamensi	bioretention	A				
300	11/17/15	Harrington	biofiltration	A				
301	11/17/15	Harrington	biofiltration	A				
302	11/17/15	Harrington	biofiltration	A				
303	11/17/15	Harrington	biofiltration	A				
304	06/24/14	Harrington	biofiltration	C			X	
305	10/29/15	Seaford	biofiltration	A				
306	10/29/15	Seaford	biofiltration	A				
307	06/11/14	Seaford	wet pond	C			X	
308	11/17/15	Seaford	biofiltration	B	X			
309	06/11/14	Seaford	biofiltration	D				X
310	11/17/15	Seaford	biofiltration	A				
311	08/26/15	Middletown	biofiltration	A				
312	02/26/15	Cheswold	biofiltration	B	X			
313	08/21/15	Talley	sed forebay	A				
314	08/21/15	Talley	sed forebay	C			X	
315	11/24/15	Bear	wet pond	C		X	X	
316	11/24/15	Bear	bioretention	C		X	X	
318	12/28/15	Expressways	wet pond	C		X	X	
319	10/16/15	Middletown	infil trench	A				
320	06/05/14	Gravel Hill	filter strip	C			X	
321	06/24/14	Harrington	biofiltration	C			X	
322	11/17/15	Harrington	biofiltration	A				
323	11/17/15	Harrington	biofiltration	B	X			
324	06/24/14	Harrington	biofiltration	C			X	
325	11/17/15	Harrington	biofiltration	A				
327	11/17/15	Harrington	biofiltration	A				
328	09/15/10	Cheswold	biofiltration	C			X	
329	07/01/15	Cheswold	dry pond	C			X	
335	10/06/15	Middletown	biofiltration	B	X			
337	10/06/15	Middletown	biofiltration	A				
339	10/06/15	Middletown	biofiltration	A				

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DELDOT AGREEMENT 1728
2015 BMP INSPECTION OVERVIEW
STATEWIDE

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
340	10/06/15	Middletown	infil trench	B	X			
341	10/06/15	Middletown	wet pond	A				
342	10/06/15	Middletown	biofiltration	C			X	
343	10/06/15	Middletown	infil trench	A				
344	10/16/15	Middletown	biofiltration	B	X			
345	10/16/15	Middletown	infil trench	A				
346	10/16/15	Middletown	biofiltration	B	X			
347	10/16/15	Middletown	biofiltration	B	X			
348	10/16/15	Middletown	infil trench	A				
349	10/16/15	Middletown	biofiltration	B	X			
350	10/16/15	Middletown	infil trench	B	X			
351	10/16/15	Middletown	biofiltration	A				
352	10/16/15	Middletown	biofiltration	A				
353	10/16/15	Middletown	infil trench	B	X			
354	05/04/15	Expressways	check dam	A				
355	05/04/15	Expressways	check dam	A				
357	05/04/15	Expressways	check dam	A				
358	05/04/15	Expressways	check dam	A				
359	05/04/15	Expressways	check dam	A				
360	05/04/15	Expressways	check dam	A				
364	10/20/15	Talley	sand filter	A				
365	10/20/15	Talley	sand filter	A				
366	10/20/15	Talley	sand filter	A				
367	10/20/15	Talley	sand filter	A				
368	10/20/15	Talley	sand filter	A				
369	10/20/15	Talley	sand filter	A				
370	10/20/15	Talley	sand filter	A				
371	10/20/15	Talley	sand filter	A				
372	10/20/15	Talley	sand filter	A				
373	10/20/15	Talley	sand filter	A				
374	10/20/15	Talley	sand filter	A				
375	10/20/15	Talley	sand filter	A				
376	10/20/15	Talley	sand filter	A				
377	10/20/15	Talley	sand filter	A				
378	10/20/15	Talley	sand filter	A				
379	10/21/15	Talley	sand filter	C			X	
380	10/21/15	Talley	sand filter	A				
381	10/21/15	Talley	sand filter	A				
382	10/21/15	Talley	sand filter	A				
383	10/21/15	Talley	sand filter	A				
384	10/21/15	Talley	sand filter	A				
385	10/21/15	Talley	sand filter	A				

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BMP 528: 1 in Talley/1 in Expressways

DELDOT AGREEMENT 1728
2015 BMP INSPECTION OVERVIEW
STATEWIDE

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
386	10/21/15	Talley	sand filter	C			X	
387	10/21/15	Talley	sand filter	A				
388	10/21/15	Talley	sand filter	A				
389	10/21/15	Talley	sand filter	A				
390	10/21/15	Talley	sand filter	A				
391	10/21/15	Talley	sand filter	A				
392	10/21/15	Talley	sand filter	A				
393	10/21/15	Talley	sand filter	A				
394	10/26/15	Talley	sand filter	A				
395	10/26/15	Talley	sand filter	A				
396	10/26/15	Talley	sand filter	A				
397	10/26/15	Talley	sand filter	A				
398	11/25/15	Middletown	dry pond	B	X			
399	11/25/15	Middletown	dry pond	C			X	
400	11/25/15	Middletown	dry pond	B	X			
401	07/01/15	Cheswold	filter strip	B	X			
402	09/16/10	Cheswold	biofiltration	C			X	
403	09/16/10	Cheswold	biofiltration	C			X	
404	12/02/09	Cheswold	biofiltration	C			X	
405	11/17/15	Seaford	biofiltration	A				
406	11/17/15	Seaford	biofiltration	A				
407	10/29/15	Seaford	biofiltration	A				
408	10/29/15	Seaford	biofiltration	A				
409	10/29/15	Seaford	biofiltration	A				
410	10/29/15	Seaford	biofiltration	A				
411	11/17/15	Seaford	biofiltration	A				
412	11/17/15	Seaford	biofiltration	A				
413	11/17/15	Seaford	biofiltration	A				
414	06/11/14	Seaford	biofiltration	C			X	
415	06/11/14	Seaford	biofiltration	C			X	
420	06/12/15	Expressways	filter strip	A				
421	10/26/15	Talley	sand filter	A				
422	10/26/15	Talley	sand filter	A				
423	10/26/15	Talley	sand filter	A				
424	10/26/15	Talley	sand filter	A				
425	10/26/15	Talley	sand filter	A				
426	10/26/15	Talley	sand filter	A				
427	10/26/15	Talley	sand filter	C			X	
428	10/26/15	Talley	sand filter	C			X	
429	10/26/15	Talley	sand filter	A				
430	10/26/15	Talley	sand filter	A				
431	10/21/15	Middletown	dry pond	C			X	

Bold = 2015 BMP Inspection

Gray Shading = BMP Maintained in 2015

BMP 528: 1 in Talley/1 in Expressways

DELDOT AGREEMENT 1728
2015 BMP INSPECTION OVERVIEW
STATEWIDE

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
432	08/26/15	Middletown	biofiltration	C		X	X	
433	11/11/15	Talley	bioretention	C			X	
434	11/11/15	Talley	wet pond	B	X			
435	11/11/15	Talley	bioretention	C			X	
436	11/11/15	Talley	wet pond	C			X	
437	11/11/15	Talley	bioretention	B			X	
438	11/11/15	Talley	wet pond	B	X			
439	12/03/09	Magnolia	wet pond	C			X	
454	11/18/15	Harrington	biofiltration	A				
464	10/16/15	Middletown	bioretention	A				
465	10/27/15	Expressways	bioretention	A				
466	10/27/15	Expressways	bioretention	C			X	
467	09/17/15	Expressways	underground stor/infil	C			X	
468	10/27/15	Expressways	bioretention	B	X			
469	10/27/15	Expressways	bioretention	C			X	
470	10/27/15	Expressways	bioretention	C	X			
471	10/27/15	Expressways	bioretention	B	X			
472	10/27/15	Expressways	bioretention	B	X			
473	10/27/15	Expressways	bioretention	B	X			
474	09/17/15	Expressways	underground stor/infil	A				
475	10/27/15	Expressways	bioretention	C			X	
476	10/27/15	Expressways	bioretention	B	X			
477	10/27/15	Expressways	bioretention	B	X			
478	10/26/15	Expressways	bioretention	A				
479	09/17/15	Expressways	underground stor/infil	A				
480	10/16/15	Middletown	biofiltration	A				
481	10/16/15	Middletown	biofiltration	A				
482	10/16/15	Middletown	biofiltration	B	X			
483	10/16/15	Middletown	biofiltration	C			X	
484	10/16/15	Middletown	biofiltration	A				
485	10/16/15	Middletown	biofiltration	A				
487	08/26/15	Cheswold	filter strip	B	X			
488	06/21/12	Cheswold	dry pond	B	X			
489	06/07/12	Ellendale	biofiltration	B	X			
490	06/05/14	Ellendale	biofiltration	B	X			
491	06/05/14	Ellendale	biofiltration	B	X			
492	11/18/15	Ellendale	biofiltration	A				
493	11/18/15	Ellendale	biofiltration	A				
494	11/18/15	Ellendale	biofiltration	B	X			

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BMP 528: 1 in Talley/1 in Expressways

DELDOT AGREEMENT 1728
2015 BMP INSPECTION OVERVIEW
STATEWIDE

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
495	06/05/14	Ellendale	biofiltration	C			X	
496	11/18/15	Ellendale	biofiltration	A				
497	11/18/15	Ellendale	biofiltration	A				
498	11/18/15	Ellendale	biofiltration	A				
499	11/18/15	Ellendale	biofiltration	A				
500	11/18/15	Ellendale	biofiltration	A				
501	06/05/14	Ellendale	biofiltration	C			X	
502	11/18/15	Ellendale	biofiltration	A				
503	06/05/14	Ellendale	biofiltration	B	X			
504	11/18/15	Ellendale	biofiltration	A				
505	06/05/14	Ellendale	biofiltration	C			X	
506	11/18/15	Ellendale	biofiltration	A				
507	11/18/15	Ellendale	biofiltration	A				
508	11/18/15	Ellendale	biofiltration	A				
509	11/18/15	Ellendale	biofiltration	A				
510	06/05/14	Ellendale	biofiltration	B	X			
511	11/18/15	Ellendale	biofiltration	A				
512	11/18/15	Magnolia	biofiltration	B	X			
513	11/18/15	Magnolia	biofiltration	B	X			
514	11/18/15	Magnolia	biofiltration	A				
515	11/18/15	Magnolia	biofiltration	B	X			
519	10/31/15	Middletown	wet pond	C			X	
520	10/31/15	Middletown	wet pond	C			X	
521	12/05/15	Dagsboro	biofiltration	A				
522	12/05/15	Dagsboro	biofiltration	B	X			
523	08/18/15	Bear	biofiltration	A				
524	12/28/15	Expressways	wet pond	C			X	
525	10/27/15	Expressways	wet pond	B	X			
526	08/18/15	Kiamensi	dry pond	A				
527	12/27/12	Gravel Hill	bioretention	B	X			
528	12/05/15	Dagsboro	biofiltration	A				
528	06/12/15	Expressways	wet pond	C			X	
529	12/05/15	Dagsboro	biofiltration	A				
530	12/12/13	Dagsboro	biofiltration	C			X	
531	12/12/13	Dagsboro	biofiltration	C			X	
533	12/05/15	Dagsboro	biofiltration	A				
534	12/05/15	Dagsboro	biofiltration	C			X	
535	05/01/15	Ellendale	infil basin	B	X			
536	05/01/15	Ellendale	infil basin	A				
537	05/01/15	Ellendale	infil basin	B	X			
538	10/26/15	Kiamensi	sand filter	A				
555	11/14/15	Dagsboro	biofiltration	A				

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BMP 528: 1 in Talley/1 in Expressways

DELDOT AGREEMENT 1728
2015 BMP INSPECTION OVERVIEW
STATEWIDE

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
556	11/14/15	Dagsboro	biofiltration	A				
557	11/14/15	Dagsboro	biofiltration	A				
558	11/14/15	Dagsboro	biofiltration	A				
559	11/14/15	Dagsboro	biofiltration	A				
560	11/14/15	Dagsboro	biofiltration	B	X			
585	05/04/15	Expressways	biofiltration	C			X	
586	12/09/15	Cheswold	sediment forebay	B	X			
587	04/24/15	Cheswold	bioretention	A				
588	04/24/15	Cheswold	dry pond	A				
589	04/24/15	Cheswold	bioretention	C			X	
590	04/24/15	Cheswold	diverter box	A				
825	10/31/15	Middletown	biofiltration	C			X	
826	10/31/15	Middletown	biofiltration	C			X	
827	04/24/15	Magnolia	filter strip	A				
832	05/01/15	Harrington	biofiltration	A				
833	05/01/15	Harrington	biofiltration	A				
834	10/16/15	Middletown	filter strip	C			X	
835	11/14/15	Gravel Hill	filter strip	A				
836	11/14/15	Gravel Hill	filter strip	A				
837	10/04/12	Gravel Hill	filter strip	C			X	
838	10/04/12	Gravel Hill	filter strip	B	X			
839	11/14/15	Gravel Hill	filter strip	A				
840	11/14/15	Gravel Hill	filter strip	A				
841	11/14/15	Gravel Hill	filter strip	A				
842	11/14/15	Gravel Hill	filter strip	A				
843	11/14/15	Gravel Hill	filter strip	A				
844	11/14/15	Gravel Hill	filter strip	A				
845	11/14/15	Gravel Hill	filter strip	A				
846	11/14/15	Gravel Hill	filter strip	A				
847	11/14/15	Gravel Hill	filter strip	A				
848	09/23/15	Talley	wet pond	C			X	
849	09/23/15	Talley	wet pond	C			X	
850	09/23/15	Talley	wet pond	B	X	X		
851	06/12/15	Talley	dry pond	B	X			
852	06/12/15	Talley	dry pond	B	X			
853	06/12/15	Talley	wet pond	B	X	X		
854	11/11/15	Talley	dry pond	A				
855	11/11/15	Talley	wet pond	C			X	
856	06/12/15	Expressways	wet pond	C			X	
857	11/17/15	Seaford	biofiltration	B	X			
858	09/27/12	Seaford	biofiltration	B	X			
859	09/27/13	Seaford	biofiltration	B	X			

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BMP 528: 1 in Talley/1 in Expressways

DELDOT AGREEMENT 1728
2015 BMP INSPECTION OVERVIEW
STATEWIDE

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
860	06/11/14	Seaford	biofiltration	C			X	
861	09/27/13	Seaford	biofiltration	B	X			
862	06/11/14	Seaford	biofiltration	C			X	
1012	08/27/15	Middletown	biofiltration	A				
1013	08/27/15	Middletown	biofiltration	C			X	
1014	08/27/15	Middletown	biofiltration	C			X	
1015	08/27/15	Middletown	biofiltration	A				
1016	08/27/15	Middletown	biofiltration	A				
1017	08/27/15	Middletown	biofiltration	A				
1018	08/27/15	Middletown	biofiltration	A				
1019	08/27/15	Middletown	biofiltration	A				
1020	08/27/15	Middletown	biofiltration	A				
1021	08/27/15	Middletown	biofiltration	A				
1022	08/27/15	Middletown	biofiltration	A				
1023	08/27/15	Middletown	biofiltration	A				
1024	08/27/15	Middletown	biofiltration	A				
1025	08/27/15	Middletown	filter strip	A				
1026	08/27/15	Middletown	filter strip	A				
1027	08/27/15	Middletown	biofiltration	A				
1028	08/27/15	Middletown	filter strip	A				
1029	08/27/15	Middletown	biofiltration	A				
1030	08/27/15	Middletown	biofiltration	A				
1031	08/27/15	Middletown	biofiltration	A				
1032	08/27/15	Middletown	biofiltration	B	X			
1033	08/27/15	Middletown	biofiltration	A				
1034	08/27/15	Middletown	biofiltration	B	X			
1036	08/27/15	Middletown	biofiltration	A				
1037	08/27/15	Middletown	biofiltration	A				
1038	08/27/15	Middletown	biofiltration	A				
1039	08/27/15	Middletown	biofiltration	A				
1040	08/27/15	Middletown	biofiltration	A				
1041	08/27/15	Middletown	biofiltration	A				
1042	08/27/15	Middletown	biofiltration	A				
1043	08/27/15	Middletown	biofiltration	A				
1044	08/27/15	Middletown	biofiltration	A				
1045	08/27/15	Middletown	biofiltration	A				
1046	08/27/15	Middletown	biofiltration	B	X			
1047	08/27/15	Middletown	biofiltration	A				
1048	08/27/15	Middletown	biofiltration	B	X			
1049	12/05/15	Dagsboro	biofiltration	A				
1050	12/05/15	Dagsboro	biofiltration	A				
1051	12/05/15	Dagsboro	biofiltration	B	X			

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BMP 528: 1 in Talley/1 in Expressways

DELDOT AGREEMENT 1728
2015 BMP INSPECTION OVERVIEW
STATEWIDE

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
1052	12/05/15	Dagsboro	biofiltration	A				
1053	12/05/15	Dagsboro	biofiltration	A				
1054	12/05/15	Dagsboro	biofiltration	A				
1055	12/05/15	Dagsboro	biofiltration	A				
1056	12/05/15	Dagsboro	biofiltration	A				
2002	09/17/15	Expressways	underground	A				
2003	09/17/15	Expressways	underground	A				

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BMP 528: 1 in Talley/1 in Expressways

Appendix E. DelDOT Maintenance Facilities

APPENDIX E

DeIDOT Maintenance Facilities and Location

Revised: June 2016

County	District	Area	Facility	Northing	Easting	Address	City	State	Zip Code	Facility Contact Name	Watershed	Sic Code	SWPPP	
1	Sussex	South	1	Laurel	39°40'55.58"	77°05'11.17"	10930 Salt Barn Road	Laurel	DE	19956	Wendy Marker	Broad Creek	41, 1611	yes
2	Sussex	South	2	Bridgeville	38°45'39.48"	76°36'02.11"	8583 E Newton Road	Bridgeville	DE	19933	Alan Shields	Lower Nanticoke	41, 1611	in progress
3	Sussex	South	3	Ellendale	39°48'47.49"	76°43'8.25"	20368 Milton-Ellendale Hgwy	Ellendale	DE	19941	Kevin Bailey	Broadkill River	41, 1611	yes
4	Sussex	South	4	Gravel Hill	39°52'11.73"	76°49'50.65"	24450 Lewes-Georgetown Hgwy	Georgetown	DE	19947	Duane Rust	Indian River Bay	41, 1611	yes
5	Sussex	South	5	Dagsboro	39°54'41.73"	77°1'33.07"	Route 334	Dagsboro	DE	19939	Wesley Scott	Indian River Bay	41, 1611	yes
6	Sussex	South	20-HQ	Georgetown	39°49'24.06"	76°53'26.75"	23697 Dupont Highway	Georgetown	DE	19947	Kyle Banks	Upper Nanticoke	41, 1611	yes
7	Kent	Central	6	Harrington	39°40'57.92"	76°32'22.35"	129 Jackson Ditch Road	Harrington	DE	19952	BJ Lewis	Murderkill	41, 1611	yes
8	Kent	Central	7	Magnolia	39°44'2.79"	76°20'58.12"	1235 Briarbush Road	Magnolia	DE	19962	Ron Jarrell	St. Jones River	41, 1611	yes
9	Kent	Central	8	Cheswold	39°39'49.04"	76°10'15.58"	4275 Seven Hickories Road	Cheswold	DE	19936	Kevin Blanchett	Leipsic River	41, 1611	yes
10	Kent	Central	30-HQ	Dover	39°43'31.80"	76°15'30.35"	930 Public Safety Blvd.	Dover	DE	19901	David Leager	St. Jones River	41, 1611	yes
11	New Castle	Canal	22	Sod Farm	39°33'34.67"	75°39'14.86"	4999 S DuPont Parkway	Smyrna	DE	19977	Troy Foraker	Smyrna River	41, 1611	in progress
12	New Castle	Canal	9	Middletown	39°34'25.59"	75°53'23.94"	5369 Summit Bridge Road	Middletown	DE	19709	Evan Moffit	Appoquinimink	41, 1611	yes
13	New Castle	Canal	10	Bear	39°36'53.04"	75°36'13.16"	250 Bear Christiana Road	Bear	DE	19720	Wayne Anthony	Christina River	41, 1611	yes
14	New Castle	Canal	22	Odessa	39°35'57.77"	75°51'48.51"	Route 299	Middletown	DE	19709	Troy Foraker	Appoquinimink	1611	yes
15	New Castle	North	11	Kiamensi	39°37'51.17"	75°31'31.11"	815 Stanton Road	Wilmington	DE	19804	Larry Sinkus	Red Clay Creek	41, 1611	yes
16	New Castle	North	12	Talley	39°42'53.58"	75°27'2.22"	1300 Talley Road	Wilmington	DE	19803	Carl Klinger	Delaware River	41, 1611	yes
17	New Castle	North	HO	Chapman	39°35'33.51"	75°35'21.44"	39 East Regal Blvd	Newark	DE	19713	Kristopher Haas	Christina River	41, 1611	yes

Potential Pollutant Generating Activities:

Storage of Construction Materials

Vehicle Maintenance

Salt Storage

Office Space

Fuel Storage

Storage of Maintenance Equipment and Fluids

Appendix F. DART Facilities

APPENDIX F
DelDOT_DART_ Good Housekeeping Facilities (non-industrial)

Facility Name	Facility Type	Function	Site Size	Available Space	Structure Type	Address	City	Spaces	Property Owner
Aldergate United Methodist Church	Park & Ride	Parking	N/A	N/A	N/A	Concord Pike, Wilmington	Wilmington	75	Private
Bethesda United Methodist Church	Park & Ride	Parking	N/A	N/A	Shelter	Main St, Middletown	Middletown	20	Private
Boyd's Corner P & R	Park & Ride	Parking	N/A	N/A	Shelter	Rt 1 & Pole Bridge Rd	Odessa	120	State
Brandywine Springs Park	Park & Ride Pool	Parking	N/A	N/A	N/A	Rt 41, Wilmington	Wilmington	100	NCC
Brandywine Town Center	Park & Ride	Parking	N/A	N/A	Shelter	Concord Pike, Wilmington	Wilmington	500	Private
Brookside (Scottfield)	Park & Ride	Parking	N/A	N/A	N/A	Chestnut Hill Road, Newark	Newark	20	State
Carpenter Station	Park & Ride	Parking	N/A	N/A	N/A	Naamans Road, Wilmington	Wilmington	18	State
Christiana Mall	Park & Ride	Parking	N/A	N/A	Shelter			200	Private
Claymont Rail Station	Park & Ride	Parking	N/A	N/A	Shelter	Myrtle Ave, Claymont	Claymont	501	State
Concord Presbyterian Church	Park & Ride	Parking	N/A	N/A	Shelter	Foulk Road, Wilmington	Wilmington	20	Private
Delcastle Recreation Center	Park & Ride Pool	Parking	N/A	N/A	N/A	McKennans Curch Rd, Newark	Newark	500	NCC
Fairplay Rail Station	Park & Ride	Parking	N/A	N/A	Shelter	Rt 4 & Delaware Park, Newark	Newark	250	State
Faith Baptist Church	Park & Ride	Parking	N/A	N/A	Shelter	Limestone Road, Pike Creek	Pike Creek	50	Private
Faith Community Church	Park & Ride	Parking	N/A	N/A	N/A	2240 South DuPont	Dover		Private
Faith Presbyterian Church	Park & Ride	Parking	N/A	N/A	N/A	Marsh Road, Wilmington	Wilmington	35	Private
First Baptist Church	Park & Ride Pool	Parking	N/A	N/A	N/A	601 N DuPont Highway	Georgetown		Private
Germay Drive at Aaron's Rental Center	Park & Ride	Parking	N/A	N/A	Shelter	Maryland Ave, Wilmington	Wilmington	50	Private
Greenbank Park	Park & Ride Pool	Parking	N/A	N/A	N/A	Route 41, Hockessin	Hockessin	150	NCC
Harrington Moose Lodge	Pike & Ride Pool	Parking	N/A	N/A	N/A	US Rt 13	Harrington		Private
Hockessin Memorial Hall	Park & Ride	Parking	N/A	N/A	N/A	Route 41, Hockessin	Hockessin	20	Private
I-95 Service Plaza	Park & Ride / Rest Area	Parking	N/A	N/A	N/A		Newark	104	State
Kent County Park & Ride	Park & Ride	Parking	N/A	N/A	N/A	Scarborough Road	Dover		Private
Lantana Square Shopping Center	Park & Ride Pool	Parking	N/A	N/A	N/A	Route 7, Hockessin	Hockessin	20	Private
Lower Branywine Presbyterian Church	Park & Ride	Parking	N/A	N/A	N/A	Old Kennett Rd, Centerville	Centerville	20	Private
Luthern Church of the Good Shepherd	Park & Ride	Parking	N/A	N/A	N/A	Foulk Road, Wilmington	Wilmington	35	Private
Mid County P & R	Park & Ride	Parking	N/A	N/A	Shelter	Routes 13 & 72	Bear	47	State
Milford Bowling Lanes	Park & Ride Pool	Parking	N/A	N/A	N/A	809 North DuPont Highway	Milford		Private
Newark Rail Station	Park & Ride	Parking	N/A	N/A	Shelter	South College Ave, Newark	Newark	276	State
North Baptist Church	Park & Ride	Parking	N/A	N/A	N/A	Silverside Road, Wilmington	Wilmington	10	Private
Odessa Park & Ride	Park & Ride	Parking	N/A	N/A	Shelter	Route 1, Odessa	Odessa	102	State
Odessa Park & Pool	Park & Ride Pool	Parking	N/A	N/A	N/A	Route 13, Odessa	Odessa	20	State
Peoples Plaza	Park & Ride	Parking	N/A	N/A	Shelter	Route 40, Glasgow	Glasgow	20	Private
Pine Tree Corner	Park & Ride Pool	Parking	N/A	N/A	N/A	Route 13, Townend	Townsend	43	State
Prices Corner	Park & Ride	Parking	N/A	N/A	Shelter	Centerville Road, Wilmington	Wilmington	160	State
Seaford Church of Christ	Park & Ride Pool	Parking	N/A	N/A	N/A	US Rt 13 & Road 532	Seaford		Private
Shore Stop	Park & Ride Pool	Parking	N/A	N/A	N/A	US Rt 13 & Road 31	Canterbury		Private
Rehoboth Beach	Park & Ride	Parking	N/A	N/A	Shelter	DE Route 1 and Shuttle Road	Rehoboth		State
Routes 4 & 896	Park & Ride	Parking	N/A	N/A	Shelter	Intersection of Route 4 & 896	Newark	180	State
Routes 7 & 273	Park & Ride	Parking	N/A	N/A	Shelter	Intersection of Route 7 & 273	Newark	180	State
Routes 52 & 100	Park & Ride	Parking	N/A	N/A	N/A	Intersection of Route 52 & 100	Wilmington	30	State
Skyline United Methodist Church	Park & Ride	Parking	N/A	N/A	N/A	Skyline Drive, Pike Creek	Pike Creek	40	Private
Smyrna Rest Stop	Park & Ride / Rest Area	Parking	N/A	N/A	Shelter	Route 13, Smyrna	Smyrna	57	State
St. Andrew's Lutheran Church	Park & Ride	Parking	N/A	N/A	N/A	425 North DuPont Highway	Dover		Private
St. Jude's Catholic Church	Park & Ride Pool	Parking				DE Route 1, north of Five Points			
Tri-State Mall	Park & Ride	Parking	N/A	N/A	Shelter	Naamans Road, Wilmington	Wilmington	150	Private
Trinity Presbyterian Church	Park & Ride	Parking	N/A	N/A	N/A	Darley & Naamans Roads, Wilmington	Wilmington	20	Private
Tybouts Corner	Park & Ride	Parking	N/A	N/A	Shelter	Route 13, Bear	Bear	117	State

APPENDIX F
DelDOT_DART_ Good Housekeeping Facilities (non-industrial)

Facility Name	Facility Type	Function	Site Size	Available Space	Structure Type	Address	City	Spaces	Property Owner
	Park & Ride	Parking	N/A	N/A	Shelter	Route 41, Hockessin	Hockessin	40	Private
Riverfront Parking Deck	Parking Facilities	Parking	56,161 S.F.	N/A	Parking Garage	Wilmington Train Station	Wilmington	424	State
Christina Crescent Parking Garage	Parking Facilities	Parking	404375 S.F.	N/A	Parking Garage	Wilmington Train Station	Wilmington	1120	State
Pennsylvania Bldg Lot	Parking Facilities	Parking	50,336 S.F.	N/A	Open Lot	Wilmington Riverfront	Wilmington	176	State
Mid County Maintenance Facility	Maintenance Facilities	Maintenance	N/A	N/A	Building	Rts 13 and 72	New Castle		State
Dover Admin & Maintenance Facility	Maintenance Facilities	Maintenance	N/A	N/A	Building	800 Public Safety Blvd	Dover		State
Georgetown Maintenance Facility	Maintenance Facilities	Maintenance	N/A	N/A	Building	Rt 123 and S Bedford	Georgetown		State
Dover Transit Center	Transit Center	Parking	N/A	N/A	Shelter	Water Street	Dover		State
Porter Lot	Transit Center	Parking	N/A	N/A	N/A	100 N Walnut Street	Wilmington		State
Newark Transit Center	Transit Center	Parking	N/A	N/A	Shelter	Delaware Ave.	Newark		State
Georgetown Transit Center	Transit Center	Parking	N/A	N/A	Shelter	N Railroad Ave	Georgetown		State
Wilmington Operations Center - Lot 1	Office Property	Office Space	95,200 S.F.	30,000 S.F.	Building		Wilmington	30	State
Wilmington Operations Center - Lot 2	Office Property	Parking	67,200 S.F.	N/A	Open Lot		Wilmington	51	State
Wilmington Operations Center - Lot 3	Office Property	Parking	21,600 S.F.	N/A	Open Lot		Wilmington	90	State
Wilmington Operations Center - Lot 4	Office Property	Parking	39,600 S.F.	N/A	Open Lot		Wilmington	98	State
Wilmington Operations Center - Lot 5	Office Property	M&O	57,600 S.F.	11,600 S.F.	Building		Wilmington	41	State
Wilmington Operations Center - Lot 6	Office Property	Parking	45,000 S.F.	N/A	Open Lot		Wilmington	41	State
Beech Street Admin Center	Office and Ticket sales	Parking	101,920 gsf	N/A	Open Lot	Beech Street	Wilmington	303	State
I-95 Churchmans Marsh	Road Maintenance	Salt Storage		N/A	Salt Shed	Interstate 95 - South of I-295	Wilmington	N/A	State
I-95 and Marsh Road Interchange	Road Maintenance	Salt Storage		N/A	Salt Barn	Interstate 95 Marsh Road Exit	Wilmington	N/A	State
Terminal Avenue	Road Maintenance	Salt Storage		N/A	Salt Barn	Terminal Avenue and I-495 Cloverleaf	Wilmington	N/A	State
St. Georges	Road Maintenance	Salt Storage		N/A	Salt Barn	St. Georges (Under C&D Canal Bridge)	Middletown	N/A	State
Tybouts Corner	Road Maintenance	Laydown Area		N/A	Tool Shed	Tybouts Corner Route 13 and Route 1	Bear	N/A	State

Appendix G. Monitoring Data from DelDOT Maintenance Facilities

**DeIDOT Maintenance Facilities
Semi-annual Wet Weather Grab Samples**

Maintenance Yard Sampling Results

TALLEY, OUTFALL #1

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		
																				8/28/13	5/16/14	8/12/14	4/14/15	8/11/15	2/23/16			
TOTAL SUSPENDED SOLIDS	mg/L																				232	36.7	59.4	10.4	233	21.6		
SURFACTANTS, MBAs	mg/L																				0.09	0.634	0.959	0.231	0.341	0.378		
CHLORIDE	mg/L																				10.3	174	45.8	4730	37.7	5360		
TPH-GASOLINE RANGE ORGANICS	mg/L																											
TPH-DIESEL RANGE ORGANICS	mg/L																											
OIL & GREASE																					ND	27.20	10.4	ND	ND	7.90		
pH	s.u.																				7.38	7.39	7.23	7.04	7.00	7.16		

TALLEY, OUTFALL #2

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016			
																						8/28/13	5/16/14	8/12/14	4/14/15	8/11/15	2/23/16		
TOTAL SUSPENDED SOLIDS	mg/L																				9.6	331	43.6	74.5	54.5				
SURFACTANTS, MBAs	mg/L																				0.372	1.32	0.583	0.299	0.447				
CHLORIDE	mg/L																				ND	6050	36.500	1350	34.3				
TPH-GASOLINE RANGE ORGANICS	mg/L																												
TPH-DIESEL RANGE ORGANICS	mg/L																												
OIL & GREASE																					ND	24.70	5.70	ND	139.00				
pH	s.u.																				7.36	8.35	6.77	7.13	7.23				

KIAMENSI, OUTFALL #1

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
		11/4/04	12/7/04	10/8/05	1/11/06	7/28/06	3/2/07	8/5/07	1/11/08	9/6/08	4/3/09	8/28/09	3/12/10	10/14/10	1/18/11	8/9/11	2/29/12	8/14/12	3/12/13	8/28/13	4/15/14	8/12/14	2/2/15	7/27/15	2/24/16		
TOTAL SUSPENDED SOLIDS	mg/L	28	12	13	56	52	82	33	53	26	28	7	72	6	35	78	52	90.8	40.8	97	42	26.2	55.8	15	14.4		
SURFACTANTS, MBAs	mg/L	0.80	0.06	0.21	0.14	0.17	0.53	0.37	0.17	0.26	0.23	0.28	0.89	0.11	0.18	0.2	0.99	0.174	0.1	0.19	0.27	0.178	0.266	0.212	0.143		
CHLORIDE	mg/L	254	230	1144	17911	424	5750	1910	530	1190	977	713	18100	695	15700	1580	9660	1190	3460	313	2790	1850	6510	3970	4150		
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.32	<0.05	<0.05	<0.05	<0.100	ND								
TPH-DIESEL RANGE ORGANICS	mg/L	0.31	<0.10	0.22	0.13	0.12	0.24	0.18	0.45	0.28	0.3	0.20	1.80	0.20	0.95	0.28	0.49	<0.500	<0.500								
OIL & GREASE																				ND	ND	ND	5.40	ND	ND		
pH	s.u.	7.52	7.37	7.39	6.67	7.06	7.38	8.26	7.3	7.35	7.08	7.36	7.38	7.78	7.58	7.34	7.45	7.34	7.45	7.68	7.47	7.11	7.06	7.40	7.67		

CHAPMAN, OUTFALL #1

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		
																						10/7/13	4/15/14	8/12/14	6/8/15	8/11/15		
TOTAL SUSPENDED SOLIDS	mg/L																				ND	9.8	15	103	21			
SURFACTANTS, MBAs	mg/L																				0.045	0.086	0.173	0.1	0.133			
CHLORIDE	mg/L																				892	2350	882	925	746			
TPH-GASOLINE RANGE ORGANICS	mg/L																											
TPH-DIESEL RANGE ORGANICS	mg/L																											
OIL & GREASE																				ND	ND	ND	ND	ND	ND			
pH	s.u.																			7.38	7.57	7.10	6.73	7.00				

CHAPMAN, OUTFALL #2

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		
TOTAL SUSPENDED SOLIDS	mg/L																											
SURFACTANTS, MBAs	mg/L																											
CHLORIDE	mg/L																											
TPH-GASOLINE RANGE ORGANICS	mg/L																											
TPH-DIESEL RANGE ORGANICS	mg/L																											
OIL & GREASE																												
pH	s.u.																											

CHAPMAN, OUTFALL #3

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		
																						10/7/13	4/15/14	8/12/14	6/8/15	8/11/15		
TOTAL SUSPENDED SOLIDS	mg/L																				130	318	63.7	203	89.5			
SURFACTANTS, MBAs	mg/L																				0.209	0.352	0.319	0.204	0.429			
CHLORIDE	mg/L																				48	298	92.3	115	32.1			
TPH-GASOLINE RANGE ORGANICS	mg/L																											
TPH-DIESEL RANGE ORGANICS	mg/L																											
OIL & GREASE																				2.29	ND	6.90	33.30	ND				
pH	s.u.																			7.03	7.57	6.64	6.93	7.22				

**DeIDOT Maintenance Facilities
Semi-annual Wet Weather Grab Samples**

CHAPMAN, OUTFALL #4

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											10/7/13	11/1/13	4/15/14	8/12/14	6/8/15	8/11/15	
TOTAL SUSPENDED SOLIDS	mg/L										1110	119	876	84.3	96.8	353	
SURFACTANTS, MBAs	mg/L										0.98	0.728	0.385	0.714	0.081	0.368	
CHLORIDE	mg/L										44900	117	1140	117	499	55.1	
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE											43.2	6.80	7.40	9.70	5.70	14.80	
pH	s.u.										7.92	7.16	8.57	6.90	7.01	7.20	



BEAR, OUTFALL #1

		2004	2005	2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
		11/4/04	10/8/05	1/23/06	7/27/06	3/2/07	7/19/07	1/18/08	9/6/08	4/3/09	8/28/09	3/12/10	10/14/10	1/18/11	8/9/11	2/29/12	8/14/12	3/12/13	9/21/13	4/7/14	9/25/14	5/18/15	7/30/15	2/23/16	
TOTAL SUSPENDED SOLIDS	mg/L	65	2530	71	677	318	783	18	107	51	8	18	34	8	261	122.8	113	116	46.8	51.8	18.3	14.5	18.5	5.6	
SURFACTANTS, MBAs	mg/L	0.17	0.31	0.16	0.13	0.15	0.18	0.18	0.27	0.25	0.18	0.17	0.16	0.11	0.16	0.13	0.126	0.073	0.084	0.201	0.115	0.14	0.145	0.081	
CHLORIDE	mg/L	693	483	1487	124	806	260	737	39.3	965	28.5	4530	83.7	1620	107	2420	30	880	96.2	2480	130	1610	261	3130	
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.100	<0.100								
TPH-DIESEL RANGE ORGANICS	mg/L	<0.11	0.20	0.19	0.21	0.22	0.18	106	0.14	0.16	0.13	0.50	0.10	0.23	0.48	0.43	<0.500	<0.500							
OIL & GREASE																			ND	ND	ND	ND	ND	ND	
pH	s.u.	7.86	8.22	7.70	7.40	7.11	7.10	*	7.31	7.16	7.29	8.27	7.85	9.51	7.23	7.18	7.30	7.54	7.42	8.36	7.69	7.27	7.38	6.58	

BEAR, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016	
											9/21/13		4/7/14	9/25/14	5/18/15	7/30/15	2/23/16	
TOTAL SUSPENDED SOLIDS	mg/L										109		16.8	17.3	10	13.5	67.6	
SURFACTANTS, MBAs	mg/L										0.055		1.81	0.189	0.444	0.239	0.178	
CHLORIDE	mg/L										17.9		2440	17.7	153	458	2650	
TPH-GASOLINE RANGE ORGANICS	mg/L																	
TPH-DIESEL RANGE ORGANICS	mg/L																	
OIL & GREASE											ND		8.00	ND	ND	ND	ND	
pH	s.u.										7.15		7.68	6.49	7.25	7.41	7.21	

MIDDLETOWN, OUTFALL #1

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016	
													9/25/14	6/14/15	10/28/15			
TOTAL SUSPENDED SOLIDS	mg/L												6.5	82.5	4			
SURFACTANTS, MBAs	mg/L												ND	0.12	ND			
CHLORIDE	mg/L												14.8	213	52.2			
TPH-GASOLINE RANGE ORGANICS	mg/L																	
TPH-DIESEL RANGE ORGANICS	mg/L																	
OIL & GREASE													ND	ND	ND			
pH	s.u.												6.61	6.73	7.36			

MIDDLETOWN, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016	
											9/21/13		4/15/14	9/25/14	6/14/15	10/28/15		
TOTAL SUSPENDED SOLIDS	mg/L										102		162	64.5	2600	488		
SURFACTANTS, MBAs	mg/L										0.521		0.58	ND	0.16	0.384		
CHLORIDE	mg/L										494		9570	2220	940	4830		
TPH-GASOLINE RANGE ORGANICS	mg/L																	
TPH-DIESEL RANGE ORGANICS	mg/L																	
OIL & GREASE											ND		ND	ND	ND	ND		
pH	s.u.										7.69		7.24	7.35	8.02	7.22		

MIDDLETOWN, OUTFALL #3

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016	
											9/21/13		4/15/14	9/25/14	6/14/15			
TOTAL SUSPENDED SOLIDS	mg/L														78			
SURFACTANTS, MBAs	mg/L														ND			
CHLORIDE	mg/L														1.06			
TPH-GASOLINE RANGE ORGANICS	mg/L																	
TPH-DIESEL RANGE ORGANICS	mg/L																	
OIL & GREASE															ND			
pH	s.u.														7.80			



**DeIDOT Maintenance Facilities
Semi-annual Wet Weather Grab Samples**

CHESWOLD, OUTFALL #2

		2004		2005	2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
		11/4/04	12/7/04		1/14/06	9/1/06	1/5/07	8/20/07	1/11/08	9/6/08	4/3/09	9/11/09	1/17/10	8/12/10	1/18/11	9/6/11	4/22/12	9/18/12	3/12/13	9/21/13	4/8/14	9/25/14	2/2/15	7/27/15	2/24/16	
TOTAL SUSPENDED SOLIDS	mg/L	525	39		47	45	6	469	717	51	33	36	548	372	36	163	221	60	65.5	18.8	26.8	37.6	192	90.7		
SURFACTANTS, MBAs	mg/L	0.49	0.03		0.09	0.29	0.21	0.43	0.28	1.6	0.25	0.15	0.16	0.42	0.16	0.19	0.35	0.233	0.17	0.298	0.151	ND	0.094	0.136	0.14	
CHLORIDE	mg/L	346	13.6		1993	242	457	443	471	107	603	50.5	7460	90.4	9170	258	1050	45.4	545	67.4	526	132	1500	73.2	3310	
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.10		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.100	<0.100								
TPH-DIESEL RANGE ORGANICS	mg/L	0.96	<0.10		0.18	0.14	<0.1	0.22	0.1	3.62	0.23	0.18	1.70	0.40	0.66	0.39	1.13	<0.500	<0.500							
OIL & GREASE																			ND	ND	ND	ND	ND	ND		
pH	s.u.	7.62	6.59		7.96	7.22	8.24	7.68	8.11	7.13	7.43	7.33	8.28	8.19	7.42	7.52	6.94	7.80	7.75	7.74	7.55	7.23	6.94	7.60	7.77	

DOVER, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
												10/7/13	5/16/14	9/25/14	3/26/15	9/10/15	
TOTAL SUSPENDED SOLIDS	mg/L											167	143	19.8	410	495	
SURFACTANTS, MBAs	mg/L											0.05	0.599	0.206	0.203	1.2	
CHLORIDE	mg/L											13.4	60.5	11.5	16.8	45.8	
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE												5.3	ND	ND	ND	6.90	
pH	s.u.											7.85	6.36	6.45	7.36	6.78	

MAGNOLIA, OUTFALL #1

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
												10/7/13	4/7/14	9/25/14	3/26/15	9/10/15	
TOTAL SUSPENDED SOLIDS	mg/L											98.9	50.8	48.5	ND	227	
SURFACTANTS, MBAs	mg/L											<0.040	ND	ND	0.025	2.54	
CHLORIDE	mg/L											197	167	35.7	131	57.4	
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE												<5.00	ND	ND	ND	ND	
pH	s.u.											7.05	7.36	6.56	7.31	6.93	

MAGNOLIA, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
												10/7/13	4/7/14	9/25/14	3/26/15	9/10/15	
TOTAL SUSPENDED SOLIDS	mg/L											670	99.4	84.2	58.5	90.7	
SURFACTANTS, MBAs	mg/L											0.964	0.716	ND	0.973	0.045	
CHLORIDE	mg/L											120	258	163	566	122	
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE												11.8	9.00	ND	8.90	ND	
pH	s.u.											7.55	7.88	6.65	7.36	6.96	



HARRINGTON, OUTFALL #1

		2004		2005	2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
		11/4/04	12/7/04		1/14/06	9/1/06	1/5/07	9/11/07	2/1/08	9/6/08	4/3/09	9/11/09	1/17/10	10/14/10	1/8/11	9/6/11	4/22/12	11/7/12	3/12/13	8/1/13	3/13/14	9/25/14	2/2/15	9/30/15	2/24/16	
TOTAL SUSPENDED SOLIDS	mg/L	320	2130		195	15	106	9	60	48	21	161	37	11	6	5	17.2	<4.00	14	ND	30.7	12.8	6.6	17.6	5.6	
SURFACTANTS, MBAs	mg/L	<0.02	<0.02		0.22	0.27	0.1	0.23	0.16	0.69	0.2	0.22	0.1	0.05	0.07	0.08	0.11	0.088	0.112	0.123	0.201	ND	0.104	0.096	0.142	
CHLORIDE	mg/L	195	504		1453	186	83.2	96.6	1870	331	644	51	9000	98.8	143	68.2	1130	37.1	408	48.2	3090	147	485	103	1020	
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.100	<0.100	0.112							
TPH-DIESEL RANGE ORGANICS	mg/L	0.14	0.15		<0.10	0.20	<0.1	<0.1	<0.13	0.24	0.11	0.23	0.70	0.10	0.11	0.16	<0.5	<0.500	<0.500	ND						
OIL & GREASE																					6.60	ND	ND	ND	ND	
pH	s.u.	7.67	6.80		6.90	6.84	7.24	7.59	6.97	7.26	7.34	7.17	8.33	7.47	7.50	8.93	7.39	7.27	7.52	7.64	7.78	7.22	7.44	7.20	7.94	

ELLENDALE, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
												11/26/13	4/15/14				
TOTAL SUSPENDED SOLIDS	mg/L											5070	ND				
SURFACTANTS, MBAs	mg/L											ND	0.046				
CHLORIDE	mg/L											38.7	109				
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE												3.9	ND				
pH	s.u.											7.31	6.28				

**DeIDOT Maintenance Facilities
Semi-annual Wet Weather Grab Samples**

ELLENDALE, OUTFALL #3

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											11/26/13	4/15/14	9/25/14	4/14/15	9/10/15		
TOTAL SUSPENDED SOLIDS	mg/L										175	6.8	77.7	8.40	463		
SURFACTANTS, MBAs	mg/L										0.272	0.086	0.15	0.0690	0.395		
CHLORIDE	mg/L										90.3	547	174	649	309		
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE											5.00	ND	ND	ND	ND		
pH	s.u.										8.27	6.43	7.87	7.31	7.31		

SEAFORD, OUTFALL #1

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											10/7/13	4/7/14	11/6/14	1/12/15	10/28/15		
TOTAL SUSPENDED SOLIDS	mg/L										324	113	398	400	373		
SURFACTANTS, MBAs	mg/L										0.45	1.11	0.152	0.445	0.536		
CHLORIDE	mg/L										229	1190	196	913	759		
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE											<5.00	ND	ND	5.20	ND		
pH	s.u.										8.04	8.16	8.69	7.69	7.27		

SEAFORD, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
TOTAL SUSPENDED SOLIDS	mg/L																
SURFACTANTS, MBAs	mg/L																
CHLORIDE	mg/L																
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE																	
pH	s.u.																

GEORGETOWN, OUTFALL #1

		2004		2005		2006		2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
		11/4/04	12/7/04	1/18/06	9/1/06	1/7/07	8/20/07							10/7/13	6/26/14	8/13/14	2/2/15	12/30/15		
TOTAL SUSPENDED SOLIDS	mg/L	17	39	47	36	17	19							27	77.1	36	17.8	40.5		
SURFACTANTS, MBAs	mg/L	<0.02	0.03	0.09	0.13	0.08	0.17							0.15	0.171	0.063	0.550	ND		
CHLORIDE	mg/L	12.2	13.6	1993	15.9	8.87	17.3							11.7	233	20.9	274	15		
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.10	<0.05	<0.05	<0.05	<0.05													
TPH-DIESEL RANGE ORGANICS	mg/L	<0.10	<0.10	0.18	<0.10	<0.1	0.14													
OIL & GREASE	mg/L													ND	ND	ND	ND	ND		
pH	s.u.	7.19	6.59	7.96	6.92	7.38	6.9							7.41	8.69	6.46	7.36	7.25		

DAGSBORO, OUTFALL #1

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											11/26/13	4/15/14	8/12/14	6/1/15	12/17/15		
TOTAL SUSPENDED SOLIDS	mg/L										43.8	43.5	114	356	78		
SURFACTANTS, MBAs	mg/L										0.129	0.113	0.127	0.093	ND		
CHLORIDE	mg/L										136	473	141	90.1	24.7		
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE											2.6	ND	5.70*	ND	ND		
pH	s.u.										7.62	6.35	7.99	7.76	7.65		

DAGSBORO, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											11/26/13	4/15/14	8/12/14	6/1/15	12/17/15		
TOTAL SUSPENDED SOLIDS	mg/L										30	215	62.8	184	8.5		
SURFACTANTS, MBAs	mg/L										0.124	0.096	0.081	0.095	ND		
CHLORIDE	mg/L										58.2	26.4	28.000	37.4	18.9		
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE											2.7	ND	ND	ND	ND		
pH	s.u.										7.66	6.09	7.95	7.78	7.39		

**DeIDOT Maintenance Facilities
Semi-annual Wet Weather Grab Samples**

DAGSBORO, OUTFALL #3

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		2016
												01/12/15**	6/1/15	12/17/15	
TOTAL SUSPENDED SOLIDS	mg/L											76.1	269	130	
SURFACTANTS, MBAs	mg/L											0.29	0.209	0.216	
CHLORIDE	mg/L											348	1400	171	
TPH-GASOLINE RANGE ORGANICS	mg/L														
TPH-DIESEL RANGE ORGANICS	mg/L														
OIL & GREASE												ND	ND	ND	
pH	s.u.											6.45	7.27	7.55	

SOD FARM, OUTFALL #1

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		2016
												8/12/14	6/8/15	12/14/15	
TOTAL SUSPENDED SOLIDS	mg/L											203	16	28.4	
SURFACTANTS, MBAs	mg/L											0.127	0.511	0.091	
CHLORIDE	mg/L											256	1170	137	
TPH-GASOLINE RANGE ORGANICS	mg/L														
TPH-DIESEL RANGE ORGANICS	mg/L														
OIL & GREASE												ND*	ND	ND	
pH	s.u.											6.23	7.11	7.41	

SOD FARM, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
TOTAL SUSPENDED SOLIDS	mg/L													
SURFACTANTS, MBAs	mg/L													
CHLORIDE	mg/L													
TPH-GASOLINE RANGE ORGANICS	mg/L													
TPH-DIESEL RANGE ORGANICS	mg/L													
OIL & GREASE														
pH	s.u.													

Benchmark Values:

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

 Completion of BMP retrofit projects

* DAGS01 and SOD01 Oil and Grease samples were mixed up at the lab. The result could be ND or 5.70 for either (5.70 assumed for DAGS01 because oil sheen was observed).

** Sample fulfilling 2014 requirement

Semi-Annual Wet Weather Outfall Grab Samples
Talley Maintenance Yard

TALLEY, OUTFALL #1

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
											8/28/13	5/16/14	8/12/14	4/14/15	8/11/15	2/23/16
TOTAL SUSPENDED SOLIDS	mg/L										232	36.7	59.4	10.4	233	21.6
SURFACTANTS, MBAs	mg/L										0.09	0.634	0.959	0.231	0.341	0.378
CHLORIDE	mg/L										10.3	174	45.8	4730	37.7	5360
OIL & GREASE	mg/L										ND	27.20	10.4	ND	ND	7.90
pH	s.u.										7.38	7.39	7.23	7.04	7.00	7.16

TALLEY, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
											8/28/13	5/16/14	8/12/14	4/14/15	8/11/15	2/23/16
TOTAL SUSPENDED SOLIDS	mg/L										9.6	331	43.6	74.5	54.5	582
SURFACTANTS, MBAs	mg/L										0.372	1.32	0.583	0.299	0.447	0.409
CHLORIDE	mg/L										ND	6050	36.500	1350	34.3	34300
OIL & GREASE	mg/L										ND	24.70	5.70	ND	139.00	13.10
pH	s.u.										7.36	8.35	6.77	7.13	7.23	7.11

Benchmark Values:

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

Semi-Annual Wet Weather Outfall Grab Samples
Kiamensi Maintenance Yard

KIAMENSI, OUTFALL #1

		2004		2005	2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
		11/4/04	12/7/04	10/8/05	1/11/06	7/28/06	3/2/07	8/5/07	1/11/08	9/6/08	4/3/09	8/28/09	3/12/10	10/14/10	1/18/11	8/9/11	2/29/12	8/14/12	3/12/13	8/28/13	4/15/14	8/12/14	2/2/15	7/27/15	2/24/16	
TOTAL SUSPENDED SOLIDS	mg/L	28	12	13	56	52	82	33	53	26	28	7	72	6	35	78	52	90.8	40.8	97	42	26.2	55.8	15	14.4	
SURFACTANTS, MBAs	mg/L	0.80	0.06	0.21	0.14	0.17	0.53	0.37	0.17	0.26	0.23	0.28	0.89	0.11	0.18	0.2	0.99	0.174	0.1	0.19	0.27	0.178	0.266	0.212	0.143	
CHLORIDE	mg/L	254	230	1144	17911	424	5750	1910	530	1190	977	713	18100	695	15700	1580	9660	1190	3460	313	2790	1850	6510	3970	4150	
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.32	<0.05	<0.05	<0.05	<0.100	ND							
TPH-DIESEL RANGE ORGANICS	mg/L	0.31	<0.10	0.22	0.13	0.12	0.24	0.18	0.45	0.28	0.3	0.20	1.80	0.20	0.95	0.28	0.49	<0.500	<0.500							
OIL & GREASE	mg/L																			ND	ND	ND	5.40	ND	ND	
pH	s.u.	7.52	7.37	7.39	6.67	7.06	7.38	8.26	7.3	7.35	7.08	7.36	7.38	7.78	7.58	7.34	7.45	7.34	7.45	7.68	7.47	7.11	7.06	7.40	7.67	

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples
Bear Maintenance Yard

BEAR, OUTFALL #1

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
		11/4/04		10/8/05		1/23/06	7/27/06	3/2/07	7/19/07	1/18/08	9/6/08	4/3/09	8/28/09	3/12/10	10/14/10	1/18/11	8/9/11	2/29/12	8/14/12	3/12/13	9/21/13	4/7/14	9/25/14	5/18/15	7/30/15	2/23/16	
TOTAL SUSPENDED SOLIDS	mg/L	65		2530	71	677	318	783	18	107	51	8	18	34	8	261	122.8	113	116	46.8	51.8	18.3	14.5	18.5	5.6		
SURFACTANTS, MBAs	mg/L	0.17		0.31	0.16	0.13	0.15	0.18	0.18	0.27	0.25	0.18	0.17	0.16	0.11	0.16	0.13	0.126	0.073	0.084	0.201	0.115	0.14	0.145	0.081		
CHLORIDE	mg/L	693		483	1487	124	806	260	737	39.3	965	28.5	4530	83.7	1620	107	2420	30	880	96.2	2480	130	1610	261	3130		
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.100	<0.100								
TPH-DIESEL RANGE ORGANICS	mg/L	<0.11		0.20	0.19	0.21	0.22	0.18	106	0.14	0.16	0.13	0.50	0.10	0.23	0.48	0.43	<0.500	<0.500								
OIL & GREASE	mg/L																										
pH	s.u.	7.86		8.22	7.70	7.40	7.11	7.10	*	7.31	7.16	7.29	8.27	7.85	9.51	7.23	7.18	7.30	7.54	7.42	8.38	7.69	7.27	7.38	6.58		

BEAR, OUTFALL #2

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
																				9/21/13	4/7/14	9/25/14	5/18/15	7/30/15	2/23/16		
TOTAL SUSPENDED SOLIDS	mg/L																			109	16.8	17.3	10	13.5	67.6		
SURFACTANTS, MBAs	mg/L																			0.055	1.81	0.189	0.444	0.239	0.178		
CHLORIDE	mg/L																			17.9	2440	17.7	153	458	2650		
OIL & GREASE	mg/L																			ND	8.00	ND	ND	ND	ND		
pH	s.u.																			7.15	7.68	6.49	7.25	7.41	7.21		

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples
Cheswold Maintenance Yard

CHESWOLD, OUTFALL #2

		2004		2005	2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
		11/4/04	12/7/04		1/14/06	9/1/06	1/5/07	8/20/07	1/11/08	9/6/08	4/3/09	9/11/09	1/17/10	8/12/10	1/18/11	9/6/11	4/22/12	9/18/12	3/12/13	9/21/13	4/8/14	9/25/14	2/2/15	7/27/15	2/24/16	
TOTAL SUSPENDED SOLIDS	mg/L	525	39		47	45	6	469	717	51	33	171	36	548	372	36	163	221	60	65.5	18.8	26.8	37.6	192	90.7	
SURFACTANTS, MBAs	mg/L	0.49	0.03		0.09	0.29	0.21	0.43	0.28	1.6	0.25	0.15	0.16	0.42	0.16	0.19	0.35	0.233	0.17	0.298	0.151	ND	0.094	0.136	0.14	
CHLORIDE	mg/L	346	13.6		1993	242	457	443	471	107	603	50.5	7460	90.4	9170	258	1050	45.4	545	67.4	526	132	1500	73.2	3310	
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.10		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.100	<0.100								
TPH-DIESEL RANGE ORGANICS	mg/L	0.96	<0.10		0.18	0.14	<0.1	0.22	0.1	3.62	0.23	0.18	1.70	0.40	0.66	0.39	1.13	<0.500	<0.500							
OIL & GREASE	mg/L																			ND	ND	ND	ND	ND	ND	
pH	s.u.	7.62	6.59		7.96	7.22	8.24	7.68	8.11	7.13	7.43	7.33	8.28	8.19	7.42	7.52	6.94	7.80	7.75	7.74	7.55	7.23	6.94	7.60	7.77	

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples
Harrington Maintenance Yard

HARRINGTON, OUTFALL #1

		2004		2005	2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
		11/4/04	12/7/04		1/14/06	9/1/06	1/5/07	9/11/07	2/1/08	9/6/08	4/3/09	9/11/09	1/17/10	10/14/10	1/8/11	9/6/11	4/22/12	11/7/12	3/12/13	8/1/13	3/13/14	9/25/14	2/2/15	9/30/15	2/24/16	
TOTAL SUSPENDED SOLIDS	mg/L	320	2130		195	15	106	9	60	48	21	161	37	11	6	5	17.2	<4.00	14	ND	30.7	12.8	6.6	17.6	5.6	
SURFACTANTS, MBAs	mg/L	<0.02	<0.02		0.22	0.27	0.1	0.23	0.16	0.69	0.2	0.22	0.1	0.05	0.07	0.08	0.11	0.088	0.112	0.123	0.201	ND	0.104	0.096	0.142	
CHLORIDE	mg/L	195	504		1453	186	83.2	96.6	1870	331	644	51	9000	98.8	143	68.2	1130	37.1	408	48.2	3090	147	485	103	1020	
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.100	<0.100	0.112							
TPH-DIESEL RANGE ORGANICS	mg/L	0.14	0.15		<0.10	0.20	<0.1	<0.1	<0.13	0.24	0.11	0.23	0.70	0.10	0.11	0.16	<0.5	<0.500	<0.500	ND						
OIL & GREASE	mg/L																				6.60	ND	ND	ND	ND	
pH	s.u.	7.67	6.80		6.90	6.84	7.24	7.59	6.97	7.26	7.34	7.17	8.33	7.47	7.50	8.93	7.39	7.27	7.52	7.64	7.78	7.22	7.44	7.20	7.94	

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples
Georgetown Maintenance Yard

GEORGETOWN, OUTFALL #1

		2004		2005		2006		2007	2008	2009	2010	2011	2012	2013	2014		2015		2016	
		11/4/04	12/7/04	1/18/06	9/1/06	1/7/07	8/20/07							10/7/13	6/26/14	8/13/14	2/2/15	12/30/15		
TOTAL SUSPENDED SOLIDS	mg/L	17	39	47	36	17	19								27	77.1	36	17.8	40.5	
SURFACTANTS, MBAs	mg/L	<0.02	0.03	0.09	0.13	0.08	0.17								0.15	0.171	0.063	0.550	ND	
CHLORIDE	mg/L	12.2	13.6	1993	15.9	8.87	17.3								11.7	233	20.9	274	15	
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.10	<0.05	<0.05	<0.05	<0.05													
TPH-DIESEL RANGE ORGANICS	mg/L	<0.10	<0.10	0.18	<0.10	<0.1	0.14													
OIL & GREASE	mg/L														ND	ND	ND	ND	ND	
pH	s.u.	7.19	6.59	7.96	6.92	7.38	6.9								7.41	8.69	6.46	7.36	7.25	

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples
Chapman Maintenance Yard

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
												10/7/13	4/15/14	8/12/14	6/8/15	8/11/15	
TOTAL SUSPENDED SOLIDS	mg/L											ND	9.8	15	103	21	
SURFACTANTS, MBAs	mg/L											0.045	0.086	0.173	0.1	0.133	
CHLORIDE	mg/L											892	2350	882	925	746	
OIL & GREASE	mg/L											ND	ND	ND	ND	ND	
pH	s.u.											7.38	7.57	7.10	6.73	7.00	

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
TOTAL SUSPENDED SOLIDS	mg/L																
SURFACTANTS, MBAs	mg/L																
CHLORIDE	mg/L																
OIL & GREASE	mg/L																
pH	s.u.																

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
												10/7/13	4/15/14	8/12/14	6/8/15	8/11/15	
TOTAL SUSPENDED SOLIDS	mg/L											130	318	63.7	203	89.5	
SURFACTANTS, MBAs	mg/L											0.209	0.352	0.319	0.204	0.429	
CHLORIDE	mg/L											48	298	92.3	115	32.1	
OIL & GREASE	mg/L											2.29	ND	6.90	33.30	ND	
pH	s.u.											7.03	7.57	6.64	6.93	7.22	

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016	
												10/7/13	11/1/13	4/15/14	8/12/14	6/8/15	8/11/15	
TOTAL SUSPENDED SOLIDS	mg/L											1110	119	876	84.3	96.8	353	
SURFACTANTS, MBAs	mg/L											0.98	0.728	0.385	0.714	0.081	0.368	
CHLORIDE	mg/L											44900	117	1140	117	499	55.1	
OIL & GREASE	mg/L											43.2	6.80	7.40	9.70	5.70	14.80	
pH	s.u.											7.92	7.16	8.57	6.90	7.01	7.20	

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples
Dover Maintenance Yard

DOVER, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
											10/7/13	5/16/14	9/25/14	3/26/15	9/10/15	
TOTAL SUSPENDED SOLIDS	mg/L										167	143	19.8	410	495	
SURFACTANTS, MBAs	mg/L										0.05	0.599	0.206	0.203	1.2	
CHLORIDE	mg/L										13.4	60.5	11.5	16.8	45.8	
OIL & GREASE	mg/L										5.3	ND	ND	ND	6.90	
pH	s.u.										7.85	6.36	6.45	7.36	6.78	

Benchmark Values:

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

Semi-Annual Wet Weather Outfall Grab Samples
Magnolia Maintenance Yard

MAGNOLIA, OUTFALL #1

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
											10/7/13	4/7/14	9/25/14	3/26/15	9/10/15	
TOTAL SUSPENDED SOLIDS	mg/L										98.9	50.8	48.5	ND	227	
SURFACTANTS, MBAs	mg/L										<0.040	ND	ND	0.025	2.54	
CHLORIDE	mg/L										197	167	35.7	131	57.4	
OIL & GREASE	mg/L										<5.00	ND	ND	ND	ND	
pH	s.u.										7.05	7.36	6.56	7.31	6.93	

MAGNOLIA, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
											10/7/13	4/7/14	9/25/14	3/26/15	9/10/15	
TOTAL SUSPENDED SOLIDS	mg/L										670	99.4	84.2	58.5	90.7	
SURFACTANTS, MBAs	mg/L										0.964	0.716	ND	0.973	0.045	
CHLORIDE	mg/L										120	258	163	566	122	
OIL & GREASE	mg/L										11.8	9.00	ND	8.90	ND	
pH	s.u.										7.55	7.88	6.65	7.36	6.96	

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples
 Ellendale Maintenance Yard

ELLENDALE, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
											11/26/13	4/15/14		
TOTAL SUSPENDED SOLIDS	mg/L										5070	ND		
SURFACTANTS, MBAs	mg/L										ND	0.046		
CHLORIDE	mg/L										38.7	109		
OIL & GREASE	mg/L										3.9	ND		
pH	s.u.										7.31	6.28		

ELLENDALE, OUTFALL #3

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
											11/26/13	4/15/14	9/25/14	4/14/15	9/10/15
TOTAL SUSPENDED SOLIDS	mg/L										175	6.8	77.7	8.40	463
SURFACTANTS, MBAs	mg/L										0.272	0.086	0.15	0.0690	0.395
CHLORIDE	mg/L										90.3	547	174	649	309
OIL & GREASE	mg/L										5	ND	ND	ND	ND
pH	s.u.										8.27	6.43	7.87	7.31	7.31

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples
Dagsboro Maintenance Yard

DAGSBORO, OUTFALL #1

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
											11/26/13	4/15/14	8/12/14	6/1/15	12/17/15	
TOTAL SUSPENDED SOLIDS	mg/L										43.8	43.5	114	356	78	
SURFACTANTS, MBAs	mg/L										0.129	0.113	0.127	0.093	ND	
CHLORIDE	mg/L										136	473	141	90.1	24.7	
OIL & GREASE	mg/L										2.6	ND	5.70*	ND	ND	
pH	s.u.										7.62	6.35	7.99	7.76	7.65	

DAGSBORO, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
											11/26/13	4/15/14	8/12/14	6/1/15	12/17/15	
TOTAL SUSPENDED SOLIDS	mg/L										30	215	62.8	184	8.5	
SURFACTANTS, MBAs	mg/L										0.124	0.096	0.081	0.095	ND	
CHLORIDE	mg/L										58.2	26.4	28	37.4	18.9	
OIL & GREASE	mg/L										2.7	ND	ND	ND	ND	
pH	s.u.										7.66	6.09	7.95	7.78	7.39	

DAGSBORO, OUTFALL #3

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
												01/12/15**	6/1/15	12/17/15		
TOTAL SUSPENDED SOLIDS	mg/L											76.1	269	130		
SURFACTANTS, MBAs	mg/L											0.29	0.209	0.216		
CHLORIDE	mg/L											348	1400	171		
OIL & GREASE	mg/L											ND	ND	ND		
pH	s.u.											6.45	7.27	7.55		

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

* DAGS01 and SOD01 Oil and Grease samples were mixed up at the lab. The result could be ND or 5.70 for either (5.70 assumed for DAGS01 because oil sheen was observed).

** Sample fulfilling 2014 requirement

Semi-Annual Wet Weather Outfall Grab Samples
Sod Farm

SOD FARM, OUTFALL #1

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
												8/12/14	6/9/15	12/14/15
TOTAL SUSPENDED SOLIDS	mg/L											203	16	28.4
SURFACTANTS, MBAs	mg/L											0.127	0.511	0.091
CHLORIDE	mg/L											256	1170	137
OIL & GREASE												ND*	ND	ND
pH	s.u.											6.23	7.11	7.41

SOD FARM, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
TOTAL SUSPENDED SOLIDS	mg/L													
SURFACTANTS, MBAs	mg/L													
CHLORIDE	mg/L													
OIL & GREASE														
pH	s.u.													

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

* DAGS01 and SOD01 Oil and Grease samples were mixed up at the lab. The result could be ND or 5.70 for either (5.70 assumed for DAGS01 because oil sheen was observed).

Appendix H. Maintenance Facilities Wet Weather Benchmark Monitoring Follow-up Form



MAINTENANCE FACILITY WET WEATHER BENCHMARK MONITORING FOLLOW-UP

Requirement:

- Semi-annual analytical monitoring of wet weather discharges from DeIDOT maintenance facilities is required by the industrial general permit and the facility Pollution Prevention Plans.
- Benchmark values for each parameter tested are set by DNREC. When the measured values at an outfall exceed the benchmark values, the permit requires the facility to investigate the cause(s) of the exceedance, document the results of the investigation, and identify follow-up actions to be taken to eliminate or treat the pollution source.
- Place a copy of the completed/signed form in the facilities' PPP notebook.

This form must be completed, signed, and returned to Brian Urbanek, NPDES Section within 30 days.

Facility:

Sample Date:

Sample Time:

Monitoring Results:

See attached map for outfall locations. **Results that exceed the benchmark are highlighted in yellow.**

Parameter	Units	Benchmark Value	Outfall	
Suspended Solids (TSS)	mg/L	100		
Surfactants (Detergents)	mg/L	1.0		
Chloride	mg/L	no benchmark		
pH	mg/L	6.0 - 9.0		
Oil and Grease	mg/L	15.0		

*ND = Not Detected

Other Observations:

Identify the source(s) of the contaminants that exceeded benchmarks, highlighted above:

Follow-up actions to be taken:

Maureen Kelley
Maintenance Engineer
Canal District

Date

Ray Jubb
Superintendent
Canal District

Date



MAINTENANCE FACILITY WET WEATHER BENCHMARK MONITORING FOLLOW-UP

Requirement:

- Semi-annual analytical monitoring of wet weather discharges from DelDOT maintenance facilities is required by the industrial general permit and the facility Pollution Prevention Plans.
- Benchmark values for each parameter tested are set by DNREC. When the measured values at an outfall exceed the benchmark values, the permit requires the facility to investigate the cause(s) of the exceedance, document the results of the investigation, and identify follow-up actions to be taken to eliminate or treat the pollution source.
- Place a copy of the completed/signed form in the facilities' PPP notebook.

This form must be completed, signed, and returned to Brian Urbanek, NPDES Section within 30 days.

Facility:

Sample Date:

Sample Time:

Monitoring Results:

See attached map for outfall locations. **Results that exceed the benchmark are highlighted in yellow.**

Parameter	Units	Benchmark Value	Outfall	
Suspended Solids (TSS)	mg/L	100		
Surfactants (Detergents)	mg/L	1.0		
Chloride	mg/L	no benchmark		
pH	mg/L	6.0 - 9.0		
Oil and Grease	mg/L	15.0		

*ND = Not Detected

Other Observations:

Identify the source(s) of the contaminants that exceeded benchmarks, highlighted above:

Follow-up actions to be taken:

Shahin Taavoni
Pollution Prevention Team Leader
Central District

Date

Area Supervisor

Date



MAINTENANCE FACILITY WET WEATHER BENCHMARK MONITORING FOLLOW-UP

Requirement:

- Semi-annual analytical monitoring of wet weather discharges from DelDOT maintenance facilities is required by the industrial general permit and the facility Pollution Prevention Plans.
- Benchmark values for each parameter tested are set by DNREC. When the measured values at an outfall exceed the benchmark values, the permit requires the facility to investigate the cause(s) of the exceedance, document the results of the investigation, and identify follow-up actions to be taken to eliminate or treat the pollution source.
- Place a copy of the completed/signed form in the facilities' PPP notebook.

This form must be completed, signed, and returned to Brian Urbanek, NPDES Section within 30 days.

Facility:

Sample Date:

Sample Time:

Monitoring Results:

See attached map for outfall locations. **Results that exceed the benchmark are highlighted in yellow.**

Parameter	Units	Benchmark Value	Outfall			
Suspended Solids (TSS)	mg/L	100				
Surfactants (Detergents)	mg/L	1.0				
Chloride	mg/L	no benchmark				
pH	mg/L	6.0 - 9.0				
Oil and Grease	mg/L	15.0				

*ND = Not Detected

Other Observations:

Identify the source(s) of the contaminants that exceeded benchmarks, highlighted above:

Follow-up actions to be taken:

Bill Thatcher
Pollution Prevention Team Leader
North District

Date

Area Supervisor

Date



MAINTENANCE FACILITY WET WEATHER BENCHMARK MONITORING FOLLOW-UP

Requirement:

- Semi-annual analytical monitoring of wet weather discharges from DelDOT maintenance facilities is required by the industrial general permit and the facility Pollution Prevention Plans.
- Benchmark values for each parameter tested are set by DNREC. When the measured values at an outfall exceed the benchmark values, the permit requires the facility to investigate the cause(s) of the exceedance, document the results of the investigation, and identify follow-up actions to be taken to eliminate or treat the pollution source.
- Place a copy of the completed/signed form in the facilities' PPP notebook.

This form must be completed, signed, and returned to Brian Urbanek, NPDES Section within 30 days.

Facility:

Sample Date:

Sample Time:

Monitoring Results:

See attached map for outfall locations. **Results that exceed the benchmark are highlighted in yellow.**

Parameter	Units	Benchmark Value	Outfall		
Suspended Solids (TSS)	mg/L	100			
Surfactants (Detergents)	mg/L	1.0			
Chloride	mg/L	no benchmark			
pH	mg/L	6.0 - 9.0			
Oil and Grease	mg/L	15.0			

*ND = Not Detected

Other Observations:

Identify the source(s) of the contaminants that exceeded benchmarks, highlighted above:

Follow-up actions to be taken:

Alastair Probert
Pollution Prevention Team Leader
South District

Date

Area Supervisor

Date

Appendix I. DSWA Approval and Chemical Analyses of Street Sweeping Wastes



DELAWARE SOLID WASTE AUTHORITY

Richard P. Watson, P.E., BCEE
Chief Executive Officer

Robin M. Roddy, P.E., BCEE
Chief Operating Officer

June 10, 2015

Mr. Randy Cole
Environmental Program Manager
DelDOT NPDES Program
800 Bay Road
P.O. Box 778
Dover, DE 19903

Re: Special Waste Approval for Street Sweeper Waste
Special Waste Approval Number: **CIL-15.57**

Dear Mr. Cole:

I have received your special waste application and associated analytical testing dated June 9, 2015. Delaware Solid Waste Authority (DSWA) approves your request to dispose of approximately 2,880 tons of street sweeper waste. The material will be accepted at the Cherry Island Landfill (CIL). This material must be delivered in segregated loads and not mixed with other waste. Wastes not accurately represented by the information submitted in the special waste application or as stipulated in the DSWA Special Waste Policy may be rejected.

You are requested to contact DSWA at least 24 hours in advance to schedule the waste disposal.

The rate charged for the material will be at our current tipping rate at time of disposal. A copy of this approval letter must accompany each load of waste delivered to CIL. This approval expires on June 30, 2016.

If you have any questions, please feel free to contact me at (302) 764-5385.

Sincerely,

Jason M. Munyan, P.E., BCEE
Senior Facility Manager

JMM:ur

- c: L. V. Miller, P.E., BCEE
- M. R. Lenkiewicz, P.E.
- F. W. Oehler (Compliance Supervisor)
- O. T. Webster (Compliance)
- NSWMC Weighmasters
- J. Rowe (G&L)
- M. Lyon (DNREC)

FOR DSWA USE ONLY	
WM initials:	_____
delivery date:	_____
expiration date:	_____
tonnage:	_____
ticket #:	_____
acct/truck #	_____

Board of Directors
 Gerard L. Esposito
Chairman
 Ronald G. McCabe
Vice Chairman
 Timothy P. Sheldon
 Tonda L. Parks
 Gregory V. Moore, P.E.
 Norman D. Griffiths
 Michael R. Paraskewich, Jr., Ph.D., P.E.

RECEIVED
JUN 14 2015
M&O SUPPORT SERVICES



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION

800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

June 9, 2015

Jason Munyan
Facility Manager, Cherry Island Landfill
1706 E. 12th Street
Wilmington, DE 19809

Dear Mr. Munyan:

DelDOT is seeking to renew its special waste disposal approval from the Delaware Solid Waste Authority to deliver street sweeper wastes to the Cherry Island landfill. The current approval expires on July 31, 2015.

In compliance with the DSWA Policy on Special Solid Wastes, we are providing the required information about these wastes as follows:

- a) The wastes in question are generated by street sweeping activities conducted by DelDOT throughout the year in New Castle County. The materials collected by the sweepers are staged in piles at six DelDOT maintenance yards (Talley, Kiamensi, Chapman Road, Bear, Odessa and Middletown).
- b) The composition of these waste materials is relatively consistent over time, consisting primarily of soil particles, road dust, litter, and some organic matter such as leaves and grass.
- c) None of the material is collected from a Federal Superfund site.
- d) This material is not hazardous waste.
- e) We conducted a new set of analytical tests on the street sweeper wastes on May 20, 2015. Composite samples of the wastes – one from the Bear yard (in New Castle County), one from the Cheswold yard (in Kent County) and one from the Laurel yard (in Sussex County) were collected by KCI Technologies, Inc. Each composite sample contained a mixture of three to five subsamples taken from representative sections of a pile of sweepings held at the maintenance yard.
- f) Copies of the test results are enclosed.
- g) The laboratory analyses were performed by QC Laboratories, Inc. (QCL), in Newark. QCL is a Delaware-certified, full-service environmental analytical company. The laboratory uses EPA-approved protocols for solid and hazardous waste and groundwater testing (EPA SW-846 methods).

- h) We estimate that DelDOT will deliver a total of up to 2,000 tons of sweeper wastes to the landfill per year.
- i) Maintenance staff from each of the six staging yards typically will need to transport these piles to the landfill on approximately once per month basis. Thus, each month approximately 20 to 40 tons of material will be delivered to the landfill from each of the yards.

If you need any additional information from us, please contact me at 302.760.2194, or Randy.Cole@state.de.us.

Sincerely,



Randy Cole
Environmental Program Manager
DelDOT NPDES Program

RC:rc
Enclosure

cc: Don Weber, North District Engineer
Maureen Kelley North District Maintenance Engineer
Kevin Canning, Canal District Engineer
Rich Fain, Canal District Maintenance Engineer
Brian Urbanek, Asst. Director, Statewide Support Services



Analytical Report

Serialized: 06/04/2015 04:05pm QC36

BRUCE THOMPSON
KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

PROJECT ID:

AL0120

LABORATORY REPORT NUMBER:

L5597728

PO NUMBER:

17121613



Authorized by: Oommen V. Kappil, QA Director

QCL Accreditations: Southampton Div: EPA ID PA000181 NELAP's: PA0900131 NJ PA166, NM223
State ID's CT PH0768, DE PA018, MD206, S: 8902100 FDA Reg: : 255238
Delaware Division: State ID's: DE0011, M 138
Vineland Division: State ID NJ 06005; Pending Di State ID: PA 003543
Wind Gap Division: State ID's: PA001334, NPA001
E. Rutherford Division: Site ID: N02015

BRUCE THOMPSON
KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Regarding:
BRUCE THOMPSON
KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Account No:AL0120, KCI TECHNOLOGIES, INC.
Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
PWSID No:

Sample ID **Sample Description**
L5597728-1 BEAR MY

Samp. Date/Time/Temp **Sampled by**
05/20/15 10:15am NA C Customer

Satellite Received Temp 25.6 C **Iced (Y/N):** N
Exceeds recommended temperature for chemical testing.
Received Date/Time/Temp 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GENERAL CHEMISTRY							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	167	53.7	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:16AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	93.14	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT
METALS							
Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Barium-TCLP	0.336	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Silver-TCLP	0.0196	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:39PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
 PWSID No:

Sample ID Sample Description
 L5597728-1 BEAR MY

Samp. Date/Time/Temp Sampled by
 05/20/15 10:15am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N
 Exceeds recommended temperature for chemical testing.
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
-----------	--------	----	-------	--------	----	------	--------------------------

GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL

GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
Ethylbenzene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
m, p-Xylenes	ND	1320	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
o-Xylene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
Toluene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP

GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Aroclor 1016	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1221	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.
Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
PWSID No:

Sample ID L5597728-1
Sample Description BEAR MY

Samp. Date/Time/Temp 05/20/15 10:15am NA C
Sampled by Customer

Satellite Received Temp 25.6 C **Iced (Y/N):** N
Exceeds recommended temperature for chemical testing.
Received Date/Time/Temp 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GAS CHROMATOGRAPHY continued							
Aroclor 1232	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1242	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1248	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1254	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1260	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:35AM AKP
2,4-D Methyl ester-TCLP	0.00326	0.00250	mg/l	EPA 8151A	1		06/02/15 01:35AM AKP

Sample ID L5597728-2
Sample Description CHESWOLD MY

Samp. Date/Time/Temp 05/20/15 09:30am NA C
Sampled by Customer

Satellite Received Temp 25.6 C **Iced (Y/N):** N
Exceeds recommended temperature for chemical testing.
Received Date/Time/Temp 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GENERAL CHEMISTRY							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	83.0	50.5	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:31AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	98.98	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT

METALS

Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Barium-TCLP	0.287	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Silver-TCLP	0.0295	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:41PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
 PWSID No:

Sample ID Sample Description
 L5597728-2 CHESWOLD MY

Samp. Date/Time/Temp Sampled by
 05/20/15 09:30am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N
 Exceeds recommended temperature for chemical testing.
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM B.JL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM B.JL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM B.JL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM B.JL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM B.JL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:29PM B.JL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM B.JL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM B.JL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM B.JL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM B.JL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM B.JL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM B.JL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:29PM B.JL

GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
Ethylbenzene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
m, p-Xylenes	ND	10.1	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
o-Xylene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
Toluene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP

GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Aroclor 1016	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1221	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.
Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
PWSID No:

Sample ID L5597728-2
Sample Description CHESWOLD MY

Samp. Date/Time/Temp 05/20/15 09:30am NA C
Sampled by Customer

Satellite Received Temp 25.6 C **Iced (Y/N):** N
Exceeds recommended temperature for chemical testing.
Received Date/Time/Temp 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GAS CHROMATOGRAPHY continued							
Aroclor 1232	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1242	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1248	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1254	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1260	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:08AM AKP
2,4-D Methyl ester-TCLP	ND	0.00250	mg/l	EPA 8151A	1		06/02/15 01:08AM AKP

Sample ID L5597728-3
Sample Description LAUREL MY

Samp. Date/Time/Temp 05/20/15 11:00am NA C
Sampled by Customer

Satellite Received Temp 25.6 C **Iced (Y/N):** N
Exceeds recommended temperature for chemical testing.
Received Date/Time/Temp 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GENERAL CHEMISTRY							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	63.5	56.3	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:46AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	88.87	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT

METALS

Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Barium-TCLP	0.535	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Silver-TCLP	0.0262	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:46PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
 PWSID No:

Sample ID Sample Description
 L5597728-3 LAUREL MY

Samp. Date/Time/Temp Sampled by
 05/20/15 11:00am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N
 Exceeds recommended temperature for chemical testing.
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL

GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
Ethylbenzene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
m, p-Xylenes	ND	11.3	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
o-Xylene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
Toluene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP

GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Aroclor 1016	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1221	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.
Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
PWSID No:

Sample ID **Sample Description**
L5597728-3 LAUREL MY

Samp. Date/Time/Temp **Sampled by**
05/20/15 11:00am NA C Customer

Satellite Received Temp 25.6 C **Iced (Y/N):** N
Exceeds recommended temperature for chemical testing.
Received Date/Time/Temp 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GAS CHROMATOGRAPHY continued							
Aroclor 1232	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1242	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1248	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1254	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1260	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:41AM AKP
2,4-D Methyl ester-TCLP	ND	0.00250	mg/l	EPA 8151A	1		06/02/15 01:41AM AKP

Sample Comments:

L5597728-1 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.
For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.

L5597728-2 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.
For the 8270 TCLP analysis, surrogate Phenol_d5 (42%) recovered above the laboratory quality control limits (17% to 41%).

For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.
Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
PWSID No:

L5597728-3 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7. For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.



DEFINITIONS

The following terms or abbreviations are used in this report:

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor (For Microbiology, DF = volume of sample tested)
POS	Positive	QUAL	Qualifier
NEG	Negative	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The analyte was not detected at a concentration above the RL / MDL.
J	Estimated value \geq MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
Q	Indicates this analyte did not meet quality control requirements.
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

Data Qualifiers (EPA CLP Convention)

<u>Organics</u>		<u>Metals</u>	
B	Analyte was detected in the method blank	B	Value is \geq MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

Warranties, Terms, and Conditions

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the QCL Southampton Division (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the QCL facility in Horsham (702 Electronic Drive, Horsham, PA 19044).
- The test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. QCL is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- QCL is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. QCL's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by QCL: Nicki Smith (Environmental Chemistry), Amanda Lukaszewski (Pharmaceutical), Ryan Baker (Dairy), Karen Battista (Food Micro), Jonathan Decenzi (Food Chemistry), Sue Abbott (QCL Delaware).

OCL Accreditations

Southampton Division	EPA ID:	PA00018	Reading Division	State ID:	PA 06-03543
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223	Vineland Division	State ID:	NJ 06005
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware Division	State IDs:	DE 00011; MD 138			
Wind Gap Division	State IDs:	PA 48-01334; NJ PA001			
East Rutherford Division	State ID:	NJ 02015			



DELAWARE SOLID WASTE AUTHORITY

Board of Directors

Gerard L. Esposito

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Richard P. Watson, P.E., BCEE
*Chief Executive Officer*Robin M. Roddy, P.E., BCEE
Chief Operating Officer

August 1, 2015

RECEIVED

AUG 1 2 2015

M&O SUPPORT SERVICES

Randy Cole
Environmental Program Manager
DelDOT NPDES Program
State of Delaware
Department of Transportation
800 Bay Road
P.O. Box 778
Dover, Delaware 19903Re: Special Waste Approval: Street Sweepings (Cheswold, Magnolia, & Harrington Yards)
Special Waste Approval Number: CSW15.05

Dear Mr. Cole:

I have received your special waste application and analytical testing results dated June 10, 2015. Delaware Solid Waste Authority (DSWA) approves your request of June 9, 2015 for disposal of approximately thirty-three (33) tons of Street Sweepings per month. The material will be accepted at the Central Solid Waste Management Center (CSWMC) located in Sandtown, Delaware. The material must be delivered in segregated loads and not mixed with other waste. Wastes not accurately represented by the information submitted in the special waste application or as stipulated in the DSWA *Special Waste Policy* may be rejected.

The rate charged for the material will be at our current tipping rate at time of disposal. **A copy of this approval letter must accompany each load of waste delivered to CSWMC. This approval expires August 6, 2016.**

If you have any questions, please feel free to contact me at 302-284-8851.

Sincerely,

Lynsey B. Kocenko, P.E., BCEE
Facility Manager

LBK:blp

Cc: Richard P. Watson, P.E., BCEE
Robin M. Roddy, P.E., BCEE
Logan V. Miller, P.E., BCEE
Fred Oehler
Jason C. Nicholson

CSWMC\Special Waste\DelDot 1505

FOR DSWA USE ONLY	
WM initials:	_____
Delivery Date:	_____
Expiration Date:	_____
Tonnage:	_____
Ticket #:	_____
Acct/Truck #:	_____

1128 S. Bradford Street, Dover, Delaware 19904

Phone: (302) 739-5361 Fax: (302) 739-4287

CITIZENS' RESPONSE LINE: 1-800-404-7080

www.dswa.com



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION

800 BAY ROAD
P.O. Box 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

June 9, 2015

Lynsey Kocenko
Facility Manager, Sandtown Landfill
1107 Willow Grove Rd
Felton, DE 19943

Dear Mr. Kocenko:

DeIDOT is seeking to renew its special waste disposal approval from the Delaware Solid Waste Authority to deliver street sweeper wastes to the Sandtown landfill. The current approval expires on August 2, 2015.

In compliance with the DSWA Policy on Special Solid Wastes, we are providing the required information about these wastes as follows:

- a) The wastes in question are generated by street sweeping activities conducted by DeIDOT throughout the year in Kent County. The materials collected by the sweepers are staged in piles at three DeIDOT maintenance yards (Cheswold, Magnolia and Harrington).
- b) The composition of these waste materials is relatively consistent over time, consisting primarily of soil particles, road dust, litter, and some organic matter such as leaves and grass.
- c) None of the material is collected from a Federal Superfund site.
- d) This material is not hazardous waste.
- e) We conducted a new set of analytical tests on the street sweeper wastes on May 20, 2015. Composite samples of the wastes – one from the Bear yard (in New Castle County), one from the Cheswold yard (in Kent County) and one from the Laurel yard (in Sussex County) were collected by KCI Technologies, Inc. Each composite sample contained a mixture of three to five subsamples taken from representative sections of a pile of sweepings held at the maintenance yard. Copies of the test results are enclosed.
- f) The laboratory analyses were performed by QC Laboratories, Inc. (QCL), in Newark. QCL is a Delaware-certified, full-service environmental analytical company. The laboratory uses EPA-approved protocols for solid and hazardous waste and groundwater testing (EPA SW-846 methods).
- g) We estimate that DeIDOT will deliver a total of approximately 400 tons of sweeper wastes to the Sandtown facility per month.

- h) Maintenance staff from each of the three staging yards typically will need to transport these piles to the landfill on approximately once per month basis. Thus, each month approximately 10 to 20 tons of material will be delivered to the landfill from each of the yards.

If you need any additional information from us, please contact me at 302.760.2194, or Randy.Cole@state.de.us.

Sincerely,



Randy Cole
Environmental Program Manager
DeLDOT NPDES Program

RC:rc
Enclosure

cc: Tom Greve, Central District Engineer
Shahin Taavoni, Central District Maintenance Engineer
Brian Urbanek, Asst. Director, Statewide Support Services



Analytical Report

Serialized: 06/04/2015 04:05pm QC36

BRUCE THOMPSON
KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

PROJECT ID:

AL0120

LABORATORY REPORT NUMBER:

L5597728

PO NUMBER:

17121613



Authorized by: Oommen V. Kappil, QA Director

QCL Accreditations: Southampton Div: EPA ID PA000181 NELAP's: PA0900131 NJ PA166, NM223
State ID's CT PH0768, DE PA018, MD206, S 8902100 FDA Reg. : 255238
Delaware Division: State ID's: DE0011, M 138
Vineland Division: State ID NJ 06005; Pending Di State ID: PA 003543
Wind Gap Division: State ID's: PA01334, NPA001
E. Rutherford Division: State ID: N02015

BRUCE THOMPSON
KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Regarding:
BRUCE THOMPSON
KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Account No:AL0120, KCI TECHNOLOGIES, INC.
Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
PWSID No:

Sample ID **Sample Description**
L5597728-1 BEAR MY

Samp. Date/Time/Temp **Sampled by**
05/20/15 10:15am NA C Customer

Satellite Received Temp 25.6 C **Iced (Y/N):** N
Exceeds recommended temperature for chemical testing.
Received Date/Time/Temp 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GENERAL CHEMISTRY							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	167	53.7	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:16AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	93.14	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT
METALS							
Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Barium-TCLP	0.336	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Silver-TCLP	0.0196	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:39PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
 PWSID No:

Sample ID Sample Description
 L5597728-1 BEAR MY

Samp. Date/Time/Temp Sampled by
 05/20/15 10:15am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N
 Exceeds recommended temperature for chemical testing.
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL

GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
Ethylbenzene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
m, p-Xylenes	ND	1320	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
o-Xylene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
Toluene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP

GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Aroclor 1016	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1221	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.
Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
PWSID No:

Sample ID L5597728-1
Sample Description BEAR MY

Samp. Date/Time/Temp 05/20/15 10:15am NA C
Sampled by Customer

Satellite Received Temp 25.6 C **Iced (Y/N):** N
Exceeds recommended temperature for chemical testing.
Received Date/Time/Temp 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GAS CHROMATOGRAPHY continued							
Aroclor 1232	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1242	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1248	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1254	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1260	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:35AM AKP
2,4-D Methyl ester-TCLP	0.00326	0.00250	mg/l	EPA 8151A	1		06/02/15 01:35AM AKP

Sample ID L5597728-2
Sample Description CHESWOLD MY

Samp. Date/Time/Temp 05/20/15 09:30am NA C
Sampled by Customer

Satellite Received Temp 25.6 C **Iced (Y/N):** N
Exceeds recommended temperature for chemical testing.
Received Date/Time/Temp 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GENERAL CHEMISTRY							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	83.0	50.5	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:31AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	98.98	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT

METALS

Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Barium-TCLP	0.287	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Silver-TCLP	0.0295	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:41PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
 PWSID No:

Sample ID Sample Description
 L5597728-2 CHESWOLD MY

Samp. Date/Time/Temp Sampled by
 05/20/15 09:30am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N
 Exceeds recommended temperature for chemical testing.
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL

GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
Ethylbenzene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
m, p-Xylenes	ND	10.1	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
o-Xylene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
Toluene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP

GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Aroclor 1016	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1221	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
 PWSID No:

Sample ID L5597728-2
 Sample Description CHESWOLD MY

Samp. Date/Time/Temp 05/20/15 09:30am NA C
 Sampled by Customer

Satellite Received Temp 25.6 C Iced (Y/N): N
 Exceeds recommended temperature for chemical testing.
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GAS CHROMATOGRAPHY continued							
Aroclor 1232	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1242	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1248	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1254	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1260	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:08AM AKP
2,4-D Methyl ester-TCLP	ND	0.00250	mg/l	EPA 8151A	1		06/02/15 01:08AM AKP

Sample ID L5597728-3
 Sample Description LAUREL MY

Samp. Date/Time/Temp 05/20/15 11:00am NA C
 Sampled by Customer

Satellite Received Temp 25.6 C Iced (Y/N): N
 Exceeds recommended temperature for chemical testing.
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GENERAL CHEMISTRY							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	63.5	56.3	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:46AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	88.87	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT

METALS

Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Barium-TCLP	0.535	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Silver-TCLP	0.0262	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:46PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
 PWSID No:

Sample ID Sample Description
 L5597728-3 LAUREL MY

Samp. Date/Time/Temp Sampled by
 05/20/15 11:00am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N
 Exceeds recommended temperature for chemical testing.
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL

GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
Ethylbenzene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
m, p-Xylenes	ND	11.3	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
o-Xylene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
Toluene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP

GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Aroclor 1016	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1221	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.
Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
PWSID No:

Sample ID **Sample Description**
L5597728-3 LAUREL MY

Samp. Date/Time/Temp **Sampled by**
05/20/15 11:00am NA C Customer

Satellite Received Temp 25.6 C **Iced (Y/N):** N
Exceeds recommended temperature for chemical testing.
Received Date/Time/Temp 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GAS CHROMATOGRAPHY continued							
Aroclor 1232	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1242	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1248	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1254	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1260	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:41AM AKP
2,4-D Methyl ester-TCLP	ND	0.00250	mg/l	EPA 8151A	1		06/02/15 01:41AM AKP

Sample Comments:

L5597728-1 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.
For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.

L5597728-2 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.
For the 8270 TCLP analysis, surrogate Phenol_d5 (42%) recovered above the laboratory quality control limits (17% to 41%).

For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.
Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
PWSID No:

L5597728-3 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7. For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.



DEFINITIONS

The following terms or abbreviations are used in this report:

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor (For Microbiology, DF = volume of sample tested)
POS	Positive	QUAL	Qualifier
NEG	Negative	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The analyte was not detected at a concentration above the RL / MDL.
J	Estimated value \geq MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
Q	Indicates this analyte did not meet quality control requirements.
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

Data Qualifiers (EPA CLP Convention)

<u>Organics</u>		<u>Metals</u>	
B	Analyte was detected in the method blank	B	Value is \geq MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

Warranties, Terms, and Conditions

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the QCL Southampton Division (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the QCL facility in Horsham (702 Electronic Drive, Horsham, PA 19044).
- The test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. QCL is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- QCL is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. QCL's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by QCL: Nicki Smith (Environmental Chemistry), Amanda Lukaszewski (Pharmaceutical), Ryan Baker (Dairy), Karen Battista (Food Micro), Jonathan Decenzi (Food Chemistry), Sue Abbott (QCL Delaware).

OCL Accreditations

Southampton Division	EPA ID:	PA00018	Reading Division	State ID:	PA 06-03543
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223	Vineland Division	State ID:	NJ 06005
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware Division	State IDs:	DE 00011; MD 138			
Wind Gap Division	State IDs:	PA 48-01334; NJ PA001			
East Rutherford Division	State ID:	NJ 02015			



1205 Industrial Blvd. Phone: 215-355-3900
Southampton, PA 18966-0514 Fax: 215-355-7231

CHAIN OF CUSTODY

Page _____ of _____

Bill to/Report to: (if different)

Lab LIMS No: **L5597728**

MATRIX CODES

- DW: DRINKING WATER
- GW: GROUND WATER
- WW: WASTEWATER
- SO: SOIL
- SL: SLUDGE
- OIL: OIL
- SSL: NON SOIL SOLID
- MI: MISCELLANEOUS
- X: OTHER

Client/Acct. No. **KCI Technologies, Inc.**

Address **1352 Marrows Rd.**

Sampling Site Address: (if different)

LAB USE ONLY:

- # ___ Ascorbic/HCl Vials # ___ HCl Vials
- # ___ Na₂S₂O₃ _____
- # ___ Na OH/Zn acetate pH _____
- # ___ HNO₃ pH _____
- # ___ H₂SO₄ pH _____
- # ___ NaOH pH _____
- # **3** Unpreserved **1000g. w/ 3 splits**
- # ___ Hcl pH _____

City/State/Zip **NEWARK DE 19711**

Phone/Fax _____

P.O. No. _____

Client Contact _____

QC Contact _____

LAB USE ONLY	PROJECT	Collection		Matrix Code	Total	Number of Containers																	
	FIELD ID	Date	Military Time			H	S	C	R	Y	N	Z	U	B									
						1	2	3	4	5	6	7	8	9	10	11	12						
	BEAR MY	5/20/15	1015	SO																			
	CHESWOLD MY	5/20/15	0930	SO																			
	LAUREL MY	5/19/15	1100	SO																			

1-800-800-8000

ANALYSIS REQUESTED

Full TCLP, RCRA Char, SulFok, Percent Solids, PCBs, BTEX, Paint Filter Test

FINAL REPORT

SAMPLED BY: (Name/Company) _____

Verbal/fax data due: _____ / _____ / _____

Hardcopy due: _____ / _____ / _____

Please call for pricing and availability on rush (<14-21 day) turnaround and on all but standard format.

Report Format: Standard Forms

Standard + QC NJ Reduced Disk

Field Parameters Analyzed By: _____

Sig: _____ Date/Time: _____

SAMPLE CUSTODY EXCHANGES MUST BE DOCUMENTED BELOW. USE FULL LEGAL SIGNATURE, DATE AND MILITARY TIME (24 HOUR CLOCK, I.E. 8AM IS 0800, 4 PM IS 1600)

RELINQUISHED BY SAMPLER	DATE	TIME	RECEIVED BY	DATE	TIME	DELIVERY METHOD: <input type="checkbox"/> QC COURIER <input type="checkbox"/> CLIENT	Custody Seal Number
Katherine Adair	5/20/15	1250	Carla DeOlla	5/20/15	12:50	<input type="checkbox"/> UPS <input type="checkbox"/> FEDEX <input type="checkbox"/> OTHER _____	
Carla DeOlla	5/20/15	13:40	2 Copley #829			COMMENTS: 25.6" PDE NOTILED	
#329	5/20/15	1425	J Muller	5/20/15	1425		

Hazardous: yes / no

For example to aid completion, see reverse side.



DELAWARE SOLID WASTE AUTHORITY

Richard P. Watson, P.E., BCEE
Chief Executive Officer

Robin M. Roddy, P.E., BCEE
Chief Operating Officer

Randy Cole
Environmental Program Manager
State of Delaware
Department of Transportation
800 Bay Road
P.O. Box 778
Dover, DE 19903

June 11, 2015

Board of Directors

Gerard L. Esposito
Chairman
Ronald G. McCabe
Vice Chairman
Timothy P. Sheldon
Tonda L. Parks
Gregory V. Moore, P.E.
Norman D. Griffiths
Michael P. Paskevich, Jr., Ph.D., P.E.

RECEIVED

JUN 14 2015

M&O SUPPORT SERVICES

Re: Special Waste Approval: Street Sweeper Wastes
Special Waste Approval Number: ssw15.032

Dear Ms. Walch:

I have received your special waste application dated June 9, 2015 and analytical testing dated June 10, 2015. Delaware Solid Waste Authority (DSWA) approves your request to deliver approximately 700 tons of sweeper wastes over a one (1) year period. The material will be accepted at the Southern Solid Waste Management Center (SSWMC) located in Georgetown, Delaware at the standard rate tipping fee. This material must be delivered in segregated loads and not mixed with other waste. Wastes not accurately represented by the information submitted in the special waste application or as stipulated in the DSWA *Special Waste Policy* may be rejected.

A copy of this approval letter must accompany each load of waste delivered to SSWMC.

This approval expires July 30, 2016.

If you have any questions, please feel free to contact me at 302-875-3448.

Sincerely,

James Vescovi, P.E., BCEE
Senior Facility Manager

cc: Logan V. Miller, P.E., BCEE
Adolf A. Korosec
Shawn L. Lovenguth
Weighmasters
Compliance

ssw15.032

FOR DSWA USE ONLY	
WM initials:	_____
Delivery Date:	_____
Expiration Date:	_____
Tonnage:	_____
Ticket #:	_____
Acct/Truck #:	_____

1128 S. Bradford Street, Dover, Delaware 19904
Phone: (302) 739-5361 Fax: (302) 739-4287

CITIZENS' RESPONSE LINE: 1-800-404-7080 www.dswa.com



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION

800 BAY ROAD
P.O. Box 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

June 9, 2015

James Vescovi, P.E., BCEE
Facility Manager, Jones Crossroads Landfill
28560 Landfill Lane
Georgetown, DE 19947

Dear Mr. Vescovi:

DeIDOT is seeking to renew its special waste disposal approval from the Delaware Solid Waste Authority to deliver street sweeper wastes to the Jones Crossroads landfill. The current approval expires on July 30, 2015.

In compliance with the DSWA Policy on Special Solid Wastes, we are providing the required information about these wastes as follows:

- a) The wastes in question are generated by street sweeping activities conducted by DeIDOT throughout the year in Sussex County. The materials collected by the sweepers will be staged in piles at five DeIDOT maintenance yards (Laurel, Seaford, Ellendale, Gravel Hill, Dagsboro).
- b) The composition of these waste materials is relatively consistent over time, consisting primarily of soil particles, road dust, litter, and some organic matter such as leaves and grass.
- c) None of the material is collected from a Federal Superfund site.
- d) This material is not hazardous waste.
- e) We conducted a new set of analytical tests on the street sweeper wastes on May 20, 2015. Composite samples of the wastes – one from the Bear yard (in New Castle County), one from the Cheswold yard (in Kent County) and one from the Laurel yard (in Sussex County) were collected by KCI Technologies, Inc. Each composite sample contained a mixture of three to five subsamples taken from representative sections of a pile of sweepings held at the maintenance yard. Copies of the test results are enclosed.
- f) Copies of the test results are enclosed.
- g) The laboratory analyses were performed by QC Laboratories, Inc. (QCL), in Newark. QCL is a Delaware-certified, full-service environmental analytical company. The laboratory uses EPA-approved protocols for solid and hazardous waste and groundwater testing (EPA SW-846 methods).

- h) We estimate that DelDOT will deliver a total of approximately 700 tons of sweeper wastes to the Jones Crossroads facility per year, or 50 to 70 tons per month.
- i) Maintenance staff from each of the three staging yards typically will need to transport these piles to the landfill on approximately once per month basis. Thus, each month approximately 10 to 20 tons of material will be delivered to the landfill from each of the yards.

If you need any additional information from us, please contact me at 302.760.2194, or Randy.Cole@state.de.us.

Sincerely,



Randy Cole
Environmental Program Manager
DelDOT NPDES Program

RC:rc
Enclosure

cc: Jeff Reed, South District Engineer
Alastair Probert, South District Maintenance Engineer
Brian Urbanek, Asst. Director, Statewide Support Services



Analytical Report

Serialized: 06/04/2015 04:05pm QC36

BRUCE THOMPSON
KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

PROJECT ID:

AL0120

LABORATORY REPORT NUMBER:

L5597728

PO NUMBER:

17121613



Authorized by: Oommen V. Kappil, QA Director

QCL Accreditations: Southampton Div: EPA ID PA000181 NELAP's: PA0900131 NJ PA166, NM223
State ID's CT PH0768, DE PA018, MD206, S 8902100 FDA Reg. : 255238
Delaware Division: State ID's: DE0011, M 138
Vineland Division: State ID NJ 06005; Pending Di State ID: PA 003543
Wind Gap Division: State ID's: PA01334, NPA001
E. Rutherford Division: State ID: N02015

BRUCE THOMPSON
KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Regarding:
BRUCE THOMPSON
KCI TECHNOLOGIES, INC.
1352 MARROWS ROAD
SUITE 100
NEWARK, DE 19711

Account No:AL0120, KCI TECHNOLOGIES, INC.
Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
PWSID No:

Sample ID **Sample Description**
L5597728-1 BEAR MY

Samp. Date/Time/Temp **Sampled by**
05/20/15 10:15am NA C Customer

Satellite Received Temp 25.6 C **Iced (Y/N):** N
Exceeds recommended temperature for chemical testing.
Received Date/Time/Temp 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GENERAL CHEMISTRY							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	167	53.7	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:16AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	93.14	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT
METALS							
Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Barium-TCLP	0.336	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Silver-TCLP	0.0196	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:39PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.
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P.O. No:17121613

Inv. No: 1705318 PI
 PWSID No:

Sample ID Sample Description
 L5597728-1 BEAR MY

Samp. Date/Time/Temp Sampled by
 05/20/15 10:15am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N
 Exceeds recommended temperature for chemical testing.
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL

GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
Ethylbenzene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
m, p-Xylenes	ND	1320	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
o-Xylene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
Toluene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP

GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Aroclor 1016	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1221	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.
Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
PWSID No:

Sample ID **Sample Description**
L5597728-1 BEAR MY

Samp. Date/Time/Temp **Sampled by**
05/20/15 10:15am NA C Customer

Satellite Received Temp 25.6 C **Iced (Y/N):** N
Exceeds recommended temperature for chemical testing.
Received Date/Time/Temp 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GAS CHROMATOGRAPHY continued							
Aroclor 1232	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1242	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1248	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1254	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1260	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:35AM AKP
2,4-D Methyl ester-TCLP	0.00326	0.00250	mg/l	EPA 8151A	1		06/02/15 01:35AM AKP

Sample ID **Sample Description**
L5597728-2 CHESWOLD MY

Samp. Date/Time/Temp **Sampled by**
05/20/15 09:30am NA C Customer

Satellite Received Temp 25.6 C **Iced (Y/N):** N
Exceeds recommended temperature for chemical testing.
Received Date/Time/Temp 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GENERAL CHEMISTRY							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	83.0	50.5	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:31AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	98.98	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT

METALS

Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Barium-TCLP	0.287	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Silver-TCLP	0.0295	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:41PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
 PWSID No:

Sample ID Sample Description
 L5597728-2 CHESWOLD MY

Samp. Date/Time/Temp Sampled by
 05/20/15 09:30am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N
 Exceeds recommended temperature for chemical testing.
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL

GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
Ethylbenzene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
m, p-Xylenes	ND	10.1	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
o-Xylene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
Toluene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP

GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Aroclor 1016	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1221	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
 PWSID No:

Sample ID Sample Description
 L5597728-2 CHESWOLD MY

Samp. Date/Time/Temp Sampled by
 05/20/15 09:30am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N
 Exceeds recommended temperature for chemical testing.
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GAS CHROMATOGRAPHY continued							
Aroclor 1232	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1242	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1248	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1254	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1260	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:08AM AKP
2,4-D Methyl ester-TCLP	ND	0.00250	mg/l	EPA 8151A	1		06/02/15 01:08AM AKP

Sample ID Sample Description
 L5597728-3 LAUREL MY

Samp. Date/Time/Temp Sampled by
 05/20/15 11:00am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N
 Exceeds recommended temperature for chemical testing.
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GENERAL CHEMISTRY							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	63.5	56.3	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:46AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	88.87	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT

METALS

Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Barium-TCLP	0.535	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Silver-TCLP	0.0262	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:46PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
 PWSID No:

Sample ID Sample Description
 L5597728-3 LAUREL MY

Samp. Date/Time/Temp Sampled by
 05/20/15 11:00am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N
 Exceeds recommended temperature for chemical testing.
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL

GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
Ethylbenzene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
m, p-Xylenes	ND	11.3	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
o-Xylene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
Toluene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP

GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Aroclor 1016	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1221	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.
Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
PWSID No:

Sample ID **Sample Description**
L5597728-3 LAUREL MY

Samp. Date/Time/Temp **Sampled by**
05/20/15 11:00am NA C Customer

Satellite Received Temp 25.6 C **Iced (Y/N):** N
Exceeds recommended temperature for chemical testing.
Received Date/Time/Temp 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
GAS CHROMATOGRAPHY continued							
Aroclor 1232	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1242	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1248	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1254	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1260	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:41AM AKP
2,4-D Methyl ester-TCLP	ND	0.00250	mg/l	EPA 8151A	1		06/02/15 01:41AM AKP

Sample Comments:

L5597728-1 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.
For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.

L5597728-2 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.
For the 8270 TCLP analysis, surrogate Phenol_d5 (42%) recovered above the laboratory quality control limits (17% to 41%).

For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.
Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI
PWSID No:

L5597728-3 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7. For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.



DEFINITIONS

The following terms or abbreviations are used in this report:

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor (For Microbiology, DF = volume of sample tested)
POS	Positive	QUAL	Qualifier
NEG	Negative	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The analyte was not detected at a concentration above the RL / MDL.
J	Estimated value \geq MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
Q	Indicates this analyte did not meet quality control requirements.
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

Data Qualifiers (EPA CLP Convention)

<u>Organics</u>		<u>Metals</u>	
B	Analyte was detected in the method blank	B	Value is \geq MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

Warranties, Terms, and Conditions

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the QCL Southampton Division (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the QCL facility in Horsham (702 Electronic Drive, Horsham, PA 19044).
- The test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. QCL is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- QCL is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. QCL's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by QCL: Nicki Smith (Environmental Chemistry), Amanda Lukaszewski (Pharmaceutical), Ryan Baker (Dairy), Karen Battista (Food Micro), Jonathan Decenzi (Food Chemistry), Sue Abbott (QCL Delaware).

OCL Accreditations

Southampton Division	EPA ID:	PA00018	Reading Division	State ID:	PA 06-03543
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223	Vineland Division	State ID:	NJ 06005
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware Division	State IDs:	DE 00011; MD 138			
Wind Gap Division	State IDs:	PA 48-01334; NJ PA001			
East Rutherford Division	State ID:	NJ 02015			



1205 Industrial Blvd. Phone: 215-355-3900
Southampton, PA 18966-0514 Fax: 215-355-7231

CHAIN OF CUSTODY

Page _____ of _____

Bill to/Report to: (if different)

Lab LIMS No: **L5597728**

MATRIX CODES

- DW: DRINKING WATER
- GW: GROUND WATER
- WW: WASTEWATER
- SO: SOIL
- SL: SLUDGE
- OIL: OIL
- SSL: NON SOIL SOLID
- MI: MISCELLANEOUS
- X: OTHER

Client/Acct. No. **KCI Technologies, Inc.**

Address **1352 Marrows Rd.**

Sampling Site Address: (if different)

City/State/Zip **NEWARK DE 19711**

Phone/Fax

P.O. No.

Client Contact

QC Contact

LAB USE ONLY:

- # ___ Ascorbic/HCl Vials # ___ HCl Vials
- # ___ Na₂S₂O₃ _____
- # ___ Na OH/Zn acetate pH _____
- # ___ HNO₃ pH _____
- # ___ H₂SO₄ pH _____
- # ___ NaOH pH _____
- # **3** Unpreserved **1000g. w/ 3 splits**
- # ___ Hcl pH _____

1-801-801-1111

LAB USE ONLY

PROJECT	Collection		Matrix Code	Number of Containers																	
	Date	Military Time		Total	H	S	C	R	Y	N	Z	U	B								
BEAR MY	5/20/15	1015	SO																		
CHESWOLD MY	5/20/15	09:30	SO																		
LAUREL MY	5/19/15	1100	SO																		

ANALYSIS REQUESTED

Full TCLP, RCRA Char, SulFak, Percent Solids, PCBs, BTEX, Paint Filter Test

Field pH, Temp (C or F), DO, Cl₂, S, Cond. etc.

FINAL REPORT

SAMPLED BY: (Name/Company)

Verbal/fax data due: / /

Report Format: Standard Forms

Field Parameters Analyzed By: .

Hardcopy due: / /

Standard + QC NJ Reduced Disk

Sig:

Date/Time:

Please call for pricing and availability on rush (<14-21 day) turnaround and on all but standard format.

SAMPLE CUSTODY EXCHANGES MUST BE DOCUMENTED BELOW. USE FULL LEGAL SIGNATURE, DATE AND MILITARY TIME (24 HOUR CLOCK, I.E. 8AM IS 0800, 4 PM IS 1600)

RELINQUISHED BY SAMPLER	DATE	TIME	RECEIVED BY	DATE	TIME	DELIVERY METHOD: <input type="checkbox"/> QC COURIER <input type="checkbox"/> CLIENT	Custody Seal Number
1 Katherine Adair	5/20/15	1250	[Signature]	5/20/15	12:50	<input type="checkbox"/> UPS <input type="checkbox"/> FEDEX <input type="checkbox"/> OTHER _____	
2 [Signature]	5/20/15	13:40	2 Copley #829			COMMENTS: 25.6" PDE NOTILED	
3 #329	5/20/15	1425	3 [Signature]	5/20/15	1425		
4			4				
5			5				
							Hazardous: yes / no

For example to aid completion, see reverse side.