Olney Rose Theater Circle Sanitary Sewer Overflow

History, Report & Data

Latest Update: May 19, 2016

DEPARTMENT OF
ENVIRONMENTAL
PROTECTION
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What Happened?

- Three sewage overflow events occurred July 28, 30, and August 12, 2015
- Approx. 1.2 million gallons of sewage was released into James Creek which flows to the Hawlings and Patuxent Rivers. A portion of the spills flowed into Lake Hallowell.
- Sewage was released where the forcemain pipes broke due to corrosion, and also further downstream the at Washington Suburban Sanitary Commission's (WSSC) Olney Sewage Pumping Station.
- Following the spills, WSSC repaired the forcemain, cleaned up and placed signs around affected areas warning people to avoid the area and contact with the water.
- WSSC also collected bacteriological water samples, sending the results to DEP for review.
- On October 26, 2015, DEP determined that the bacteriological levels have stabilized and WSSC can stop sampling.
- DEP inspected the area since July, directed WSSC in its clean-up, and aquatic biologists are continuing to evaluate the creek and lake environments.

Additional References

- Press Release
- Flickr Album

Update #5 May 19, 2016

This is an update of the status of Lake Hallowell and the James Creek area seven months after DEPs last update on this area. The notice and updates were issued August 12, August 13, September 10 and September 24, concluding with a press release on October 29, 2015 informing the public that the bacteriological levels of the stream had returned to normal. The prior DEP notice and updates to the community occurred after the sewage spills from the Olney/James Creek WWPS forcemain that occurred on July 28, July 30 and August 12, 2015. The intent of these updates was to provide up-to-date information on the spills, their biological and bacteriological impact and repair status of the infrastructure from WSSC. This update addresses creek & lake conditions and sewer repair status as of May 19, 2016.

- DEP continues to inspect and sample Lake Hallowell for any residual impacts from the sewage spills. DEP has not observed any impacts that remain at the lake or in James Creek. There have not been any subsequent sewerage spills and the James Creek continuously flushes Lake Hallowell.
- DEP aquatic biologists sampled for mosquito larvae at 6 locations in the upper reach areas of the lake on October 22, 2015. The results of the mosquito sampling indicate that the upper reaches of Lake Hallowell have a healthy aquatic insect community—and mosquito larvae comprise only 0.7%. There were 402 other aquatic insects identified in the samples, 62 of which were mosquito predators such as damselfly and dragonfly larvae.
- DEP aquatic biologists sampled for mosquito larvae again on May 3, 2016 and mosquito larvae were found to only represent 4.6% of the total population of 756 aquatic invertebrates. Mosquito predators represented 20.6% of the ecosystem and combined with other anecdotally documented vertebrate predators like frogs and fish, do a very efficient job of naturally controlling mosquito populations in the lake. Lake Hallowell is documented to have a healthy aquatic environment with many aquatic invertebrates, fish, tadpoles, etc. collected in the sampling of the lake.
- Residents surrounding Lake Hallowell should make sure to regularly check their properties for standing water. The mosquitoes of concern that could *potentially* carry the Zika virus are container breeders and only breed in very small containers of water such as gutters, flower pots, bird baths, trash, and recycle bins. Visit www.montgomerycountymd.gov/mosquito to learn about more ways to “fight the bite”.
- DEP aquatic biologists also evaluated James Creek aquatic resource conditions downstream of Lake Hallowell before and after the sewer overflows. Results indicate a slight improvement in aquatic insect communities and a slight decline in fish communities. Both aquatic insect and fish condition scores following the sewer overflow were within the typical range seen for this stream over the 8 times it has been sampled since 1997.
- DEP has sent stormwater facility inspectors out to the lake recently and reported that the sediment in Lake Hallowell (downstream of creek and stormwater discharge) is uniform in color indicating that it has been deposited over time from stream bank erosion, overland erosion and storm drain sediment. It was stated that there was no evidence of a sewage spill anywhere in the lake.
- DEP has the dredging of Lake Hallowell on a schedule, it is expected that the dredging design work will begin this fall. The design is expected to take approximately two years, followed by

procurement of the dredging contractor and the actual dredging work. DEP has estimated that this work will be complete in 5 years.

- WSSC completed the repair design in November, 2015, installed the by-pass pump around in December 2015, and obtained MDE permits for the repair work in February 2016.
- WSSC has initiated the repair work on the Olney/James Creek WWPS forcemain via "pipe busting" technology (mostly trenchless technology for replacing the existing corroded ductile iron forcemain) with high-density polyethylene (HDPE)pipe that is resistant to corrosion.
- WSSC projects the forcemain replacement work will be completed by July, 2016 and will begin project site restoration. Project activity is planned for completion by the end of August, 2016.
- DEP will provide future updates as needed to address lake Hallowell and James Creek issues. Additional data summaries are available at the link below: http://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/water-reports/Olney-SSO-092115.pdf

Update #4 September 24, 2015

- No additional breaks have occurred since the last update.
- WSSC is continuing to collect water quality samples for bacteriological analysis at several downstream locations. WSSC will continue to collect and analyze the samples until Montgomery County has released them from this responsibility. The Sewer Overflow warning signs that were posted by WSSC will remain in place until the bacteriological samples indicate the effects of the overflow no longer exist.
- DEP is comparing the samples to Maryland Department of the Environment (MDE) water quality criteria for “infrequent Full Body Contact Recreation” criteria, understanding that full body contact recreation does not occur in Lake Hallowell or in James Creek. This standard will ensure that public health is being protected. The data has shown significant reduction in bacteriological levels, but DEP is anticipating further reduction before concluding that there are no further impacts from the sewer overflow.
- MDE and DEP believe that further remediation of the spill impacts are not needed at this time. Natural attenuation is apparent to DEP investigators inspecting Lake Hallowell and James Creek. DEP believes that any further remedial actions would interfere with these natural processes. DEP aquatic biologists have observed many live organisms in this area in recent weeks.
- For long-term aquatic resource impact monitoring, DEP plans to re-sample the fish community and the benthic macroinvertebrates (aquatic insects) in James Creek in late September and October. Pre- overflow aquatic data will be compared to the data collected in in September and October.
- DEP will continue to make periodic visits every 2-3 weeks and after rain events to observe the environmental conditions in Lake Hallowell and James Creek.
- WSSC is in the process of planning and designing the long-term rehabilitation/replacement of the corroded portion of the Olney Wastewater Pumping Station (WWPS) force main. WSSC has indicated that this work will proceed as soon as this planning and design work is complete and the necessary permits are obtained. DEP has requested a meeting with WSSC to understand the long-term rehabilitation/replacement scope and schedule in more detail.
- DEP will send out future updates as information is available.

Update #3 September 10, 2015

- No additional breaks have occurred since the last update. WSSC has modified the operation of the Olney Pump Station to reduce the pressure in the pipe when the sewage is pumped.
- DEP has had both Environmental Investigators and Aquatic Biologists out to Lake Hallowell and James Creek over the past several weeks and they report that they see good improvements and indications of a healthy ecosystem including aquatic insect larva, frogs, toads and salamanders. It is their recommendation that no further intervention is needed. It appears that nature is mitigating the impacts through natural processes.
- They noted that mosquitoes are present, but not at a nuisance level. They noted there is duckweed in Lake Hallowell, which they note is a good condition since it aids in removal of aquatic nutrients. It was noted from historic photos that duckweed has historically been present in Lake Hallowell.
- The latest bacterial water quality testing appears to indicate that the indicator bacteria (enterococci and Escherichia Coli) are at levels below the MDE Bacteria Indicator Criteria for Designated Uses (Infrequent Full Body Contact Recreation (COMAR 26.08.02.03-3). DEP is fully analyzing the sample results and will finalize its report shortly. This report will be distributed for public review.
- WSSC is reviewing permanent repair options for the force main at this time. The repair will require by-pass pumping so that the force main can be taken out of service for the repair work. WSSC is obtaining the necessary permits (MDE and SHA) to proceed with this work as soon as is possible. The plan at this time is to replace 2,000 feet of the pipeline (corroded section) via a “pipe bursting” process that will replace this section of ductile iron pipe with HDPE (high density polyethylene)/plastic pipe. This process will have minimal environmental impacts compared to an open trench process. DEP will be briefed on the schedule and approach as soon as this information is available.
- WSSC and or DEP have been to community meetings to explain the status and plan forward during the past month. DEP and WSSC will continue this outreach effort until all issues are addressed.
- DEP will send out future updates as additional information is available.

Update #2 August 13, 2015

- WSSC reports that the total volume of sewage spilled to James Creek was 270,791 gallons. This accounts for an estimate of 110,880 gallons spilled at the break before the Olney WWPS was shut off and 159, 911 gallons spilled at the sewer manholes at the Olney WWPS when it was turned off. The septage hauling effort was credited for preventing the spilling of 123,425 gallons that was hauled to the Reddy Branch WWPS.
- WSSC reported the repair of the ductile iron forcemain was completed at about 9:30 pm on 6/12/2015
- DEP and MDE have been onsite at the areas of the spills and inspected James Creek below these spill locations. They have coordinated their evaluations and have requested WSSC to vacuum areas with pooled sewage out of the stream bed. WSSC is reviewing their cleanup options and maintaining communication and coordination with DEP and MDE.
- WSSC has put up additional sewage spill warning signs as directed by DEP and MDE and are continuing to monitor for bacterial contamination in the James Creek and Lake Hallowell.
- WSSC inspected the ductile iron forcemain again with CCTV (closed circuit television) and found sever to mild corrosion. The analysis of this information will be used to define the portion of the forcemain to be replaced.
- WSSC is evaluating methods for replacing a significant portion of the corroded ductile iron force main. DEP will be tracking this process to ensure that this is done as soon as is possible.
- DEP will send out future updates as additional information is available.

Update #1 August 12, 2015

- WSSC reported that a third break in the 20-inch (diameter) Olney WWPS forcemain occurred this morning in the same general area as the breaks that occurred on July 28 and July 30 (week before last).
- The report indicated the break occurred at 6:23 am today (8/12/15) at an estimated flow rate of 50 gpm behind houses located on Rose Theatre Circle in Olney (between the houses and James Creek).
- WSSC has not yet estimated the quantity of sewage spilled or the amount reaching James Creek though based on some visual inspection and the fact that they shut off the pump station quickly and were pumping sewage from the WWPS, we expect the volumes are less and the impacts are potentially less. We do not know if flow reached Lake Hallowell as occurred in the prior breaks.
- WSSC's response was fairly quick with WSSC reporting they shut off the source of the sewage at the break by shutting down the Olney WWPS at 10:00 a.m. Accordingly the volume spilling at the break site was believed to be less than experienced at the previous breaks.
- WSSC also took action to minimize the volume of sewage spilled into James Creek at the Olney WWPS site by arranging for a septic hauler to bring in trucks (three total) to pump sewage from the manhole before it entered the WWPS wet well. This prevented the overflow of sewage from the manholes near the pumping station. This action was not taken during the previous sewer breaks. It is hoped that the septage hauler trucks could cycle in repeatedly to prevent/minimize sewage spills to James Creek. The septage haulers were filling trucks at the manhole and them taking the sewage to the nearby Reddy Branch WWPS.
- DEP has had personnel out in the field conferring with WSSC and MDE for most of the day evaluating stream impacts and cleanup requirements.
- DEP's Director, Lisa Feldt with Dave Lake went out to see the break site and to see the WSSC operation at the Olney WWTP first hand. She has also spoken with WSSC General Manager, Jerry Johnson about when and how WSSC would construct a permanent fix to the failing ductile iron WWPS forcemain. She was assured that WSSC sees this as an emergency situation and that WSSC staff would keep DEP informed of their steps to move this forward

Other Updates

Related community concerns not associated with the sewer overflow

Lake Hallowell Dredging

- DEP is responsible for the structural maintenance of Lake Hallowell, which includes dredging of the lake.
- Dredging projects for lakes of this size take multiple years to plan and design before actual construction begins.
- Once DEP is appropriated the funding and begins the planning and design of the dredging project, we will be able to provide the community with more specific details on the areas of the lake that will be targeted for sediment removal, how much sediment will be removed, the project schedule, the project budget, means and methods that will be used to remove the sediment, and impacts to the community.

Lake Hallowell Mosquito Sampling

See following pages

Lake Hallowell Mosquito Sampling

Summary Report

May 19, 2016

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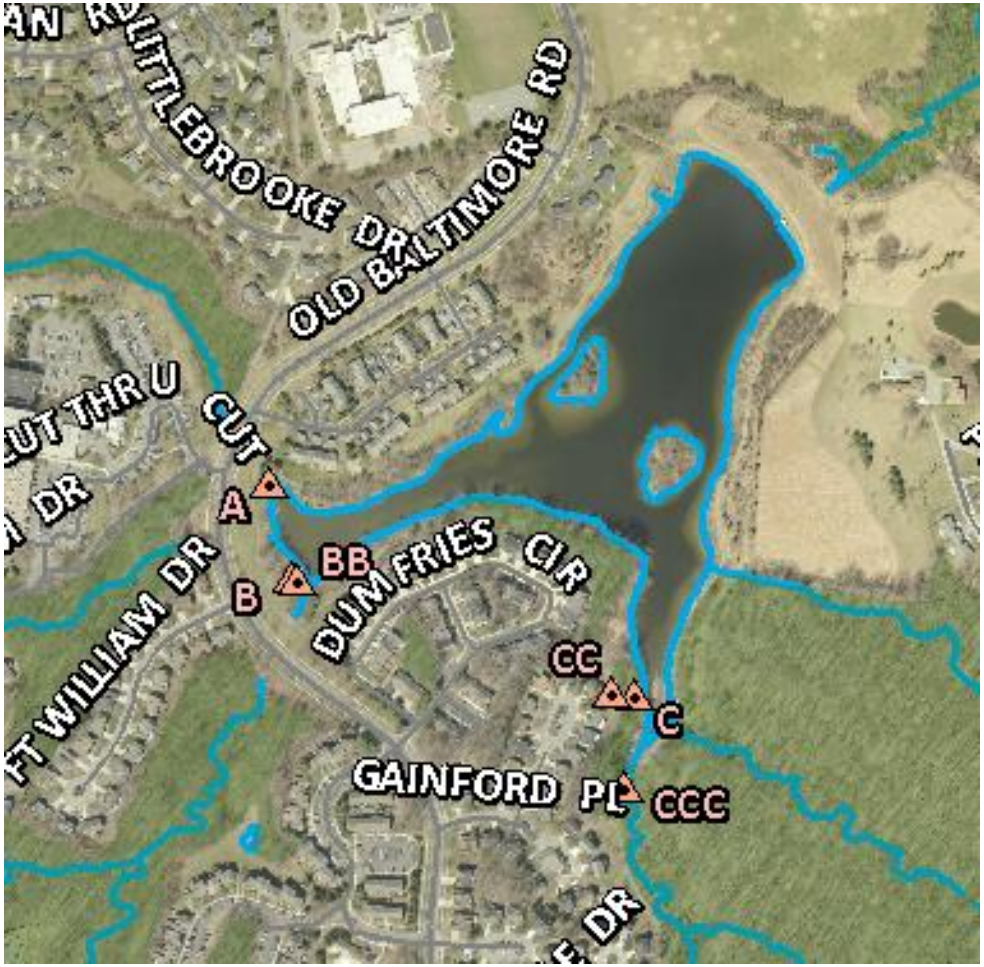
Background

- DEP aquatic biologists sampled Lake Hallowell on October 22, 2015 and May 3, 2016 for aquatic insect community composition to evaluate if the lake was producing nuisance level mosquito populations in response to community complaints.
- On both occasions, DEP found the lake to have a healthy, balanced aquatic insect community with less than 5% representing mosquito larvae and more than 20% representing invertebrate mosquito predators.
- In addition many vertebrate frog and fish predators were observed anecdotally during sampling.
- Sampling consisted of 10-20 sweeps with a D-net through the water column at each of six (6) sample locations around the lake. The same sampling locations were visited for the October and May visits.
- Samples were processed and preserved in the field and brought back to a laboratory where the sample was sub-sampled and aquatic invertebrates were identified to genus where possible.

Sampling Locations



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Sampling Location Photos

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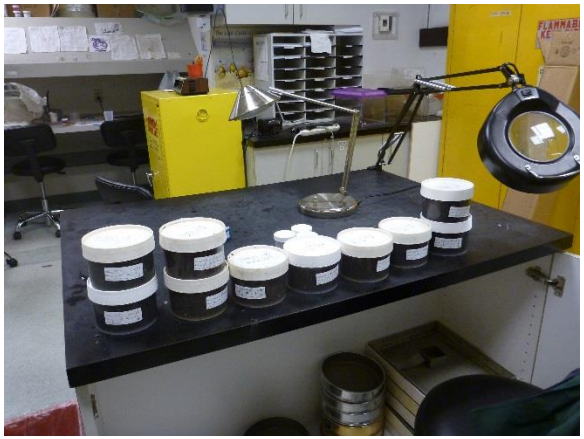
Sampling Photos



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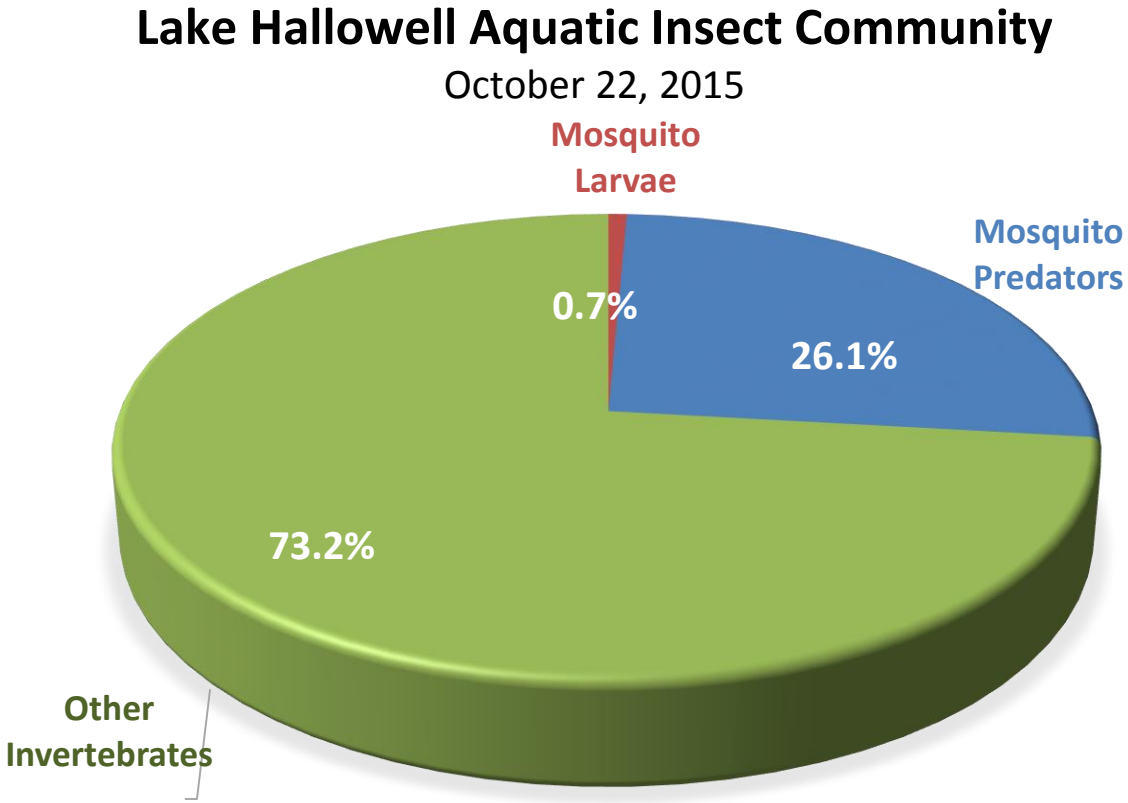
Summary Results – October 22, 2015



Total # Aquatic Insect Larvae in samples = 429

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Detailed Data – October 22, 2015

Sample Area A

Sample Area A; North end of west cove (slackwater area of lake just below where feeder stream drains into lake)					
Taxa	Family	Order	Number	FFG	Common Name
Ranatra sp.	NEPIDAE	HEMIPTERA	1	predator	water scorpion
HYDROPHILIDAE	HYDROPHILIDAE (adult)	COLEOPTERA	1	omnivore	water scavenger beetle
Psephenus sp.	PSEPHINDIAE	COLEOPTERA	1	scraper	water penny
Chimarra sp.	PHILOPOTAMIDAE	TRICHOPTERA	2	filterer	finger-net caddisfly
Stygonectes sp.	GAMMARIDAE	AMPHIPODA	1	shredder	side-swimmer, scud shrimp

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Detailed Data – October 22, 2015

Sample Area B

Sample Area B; South end of west cove (slackwater area of lake just below where feeder stream drains into lake)					
Taxa	Family	Order	Number	FFG	Common Name
SMINTHURIDAE	SMINTHURIDAE	COLLEMBOLA	1	collector	globular springtail
Enallagma sp.	COENAGRIONIDAE	ZYGOPETRA	39	predator	damselfly
Somatochlora sp.	CORDULIIDAE	ANISOPTERA	6	predator	emerald dragonfly
Bueona sp.	NOTONECTIDAE	HEMIPTERA	1	predator	back-swimmer
Notonecta sp.	NOTONECTIDAE	HEMIPTERA	6	predator	back-swimmer
Microvelia sp.	VELIIDAE	HEMIPTERA	2	predator	small or broad-shouldered water stridders
Taxa A	DYTISCIDAE (adult)	COLEOPTERA	3	predator	predaceous diving beetle
Taxa B	DYTISCIDAE (adult)	COLEOPTERA	1	predator	predaceous diving beetle
Taxa C	DYTISCIDAE (adult)	COLEOPTERA	1	predator	predaceous diving beetle
CHIRONOMINI	CHIRONOMIDAE	DIPTERA	2	collector	non-biting midge
ORTHOCLADIINAE	CHIRONOMIDAE	DIPTERA	1	collector	non-biting midge
TANYPODINAE	CHIRONOMIDAE	DIPTERA	1	predator	non-biting midge
NA	CULICIDAE	DIPTERA	1	filterer	mosquito
CLADOCERA	NA	CLADOCERA	1	filterer	water flea
COPEPODA	NA	COPEPODA	1	filterer	water cyclops
PHYSIDAE	PHYSIDAE	GASTROPODA	75	scraper	bladder snail; sinistral (left side opening)
PLANORBIDAE	PLANORBIDAE	GASTROPODA	208	scraper	ramshorn snails; planispiral (coiled flat, no elevated spiral point)
PLANARIIDAE	PLANARIIDAE	TRICLADIDA	1	predator	free-living flatworm
OLIGOCHAETA	NA	Class OLIGOCHAETA	8	collecter	segmented worm

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Detailed Data – October 22, 2015

Sample Area BB

Sample Area BB; South end of west cove; downstream opening of road culvert					
Taxa	Family	Order	Number	FFG	Common Name
Argia sp.	COENAGRIONIDAE	ZYGOPTERA	1	predator	damselfly

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Detailed Data – October 22, 2015

Sample Area C

Sample Area C; South cove; slackwater area of lake parallel and immediately adjacent with paved walker path					
Taxa	Family	Order	Number	FFG	Common Name
PHYSIDAE	PHYSIDAE	GASTROPDA	27	scraper	bladder snail; sinistral (left side opening)
PLANORBIDAE	PLANORBIDAE	GASTROPODA	1	scraper	ramshorn snails; planispiral (coiled flat, no elevated spiral point)
CULICIDAE	CULICIDAE	DIPTERA	1	filterer	mosquito

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Detailed Data – October 22, 2015

Sample Area CC

Sample Area CC; South cove; downstream opening of storm drain outfall, water ponded, minimal flow to lake					
Taxa	Family	Order	Number	FFG	Common Name
Enallagma sp.	COENAGRIONIDAE	ZYGOPETRA	1	predator	damselfly
Eristalis sp.	SYRPHIDAE	DIPTERA	7	collector	rat-tail maggot
CULICIDAE	CULICIDAE	DIPTERA	1	filterer	mosquito
PHYSIDAE	PHYSIDAE	GASTROPODA	1	scraper	bladder snail; sinistral (left side opening)

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Detailed Data – October 22, 2015

Sample Area CCC

Sample Area CCC; South cove, at base of the main storm drain outfall, at confluence of two stream channels, adjacent to footbridge					
Taxa	Family	Order	Number	FFG	Common Name
CHIRONOMINI	CHIRONOMIDAE	DIPTERA		collector	non-biting midge
CLADOCERA	NA	CLADOCERA		filterer	water flea
PHYSIDAE	PHYSIDAE	GASTROPDA		scraper	bladder snail; sinistral (left side opening)
PLANORBIDAE	PLANORBIDAE	GASTROPODA		scraper	ramshorn snails; planispiral (coiled flat, no elevated spiral point)
OLIGOCHAETA	NA	Class OLIGOCHAETA		collector	segmented worm

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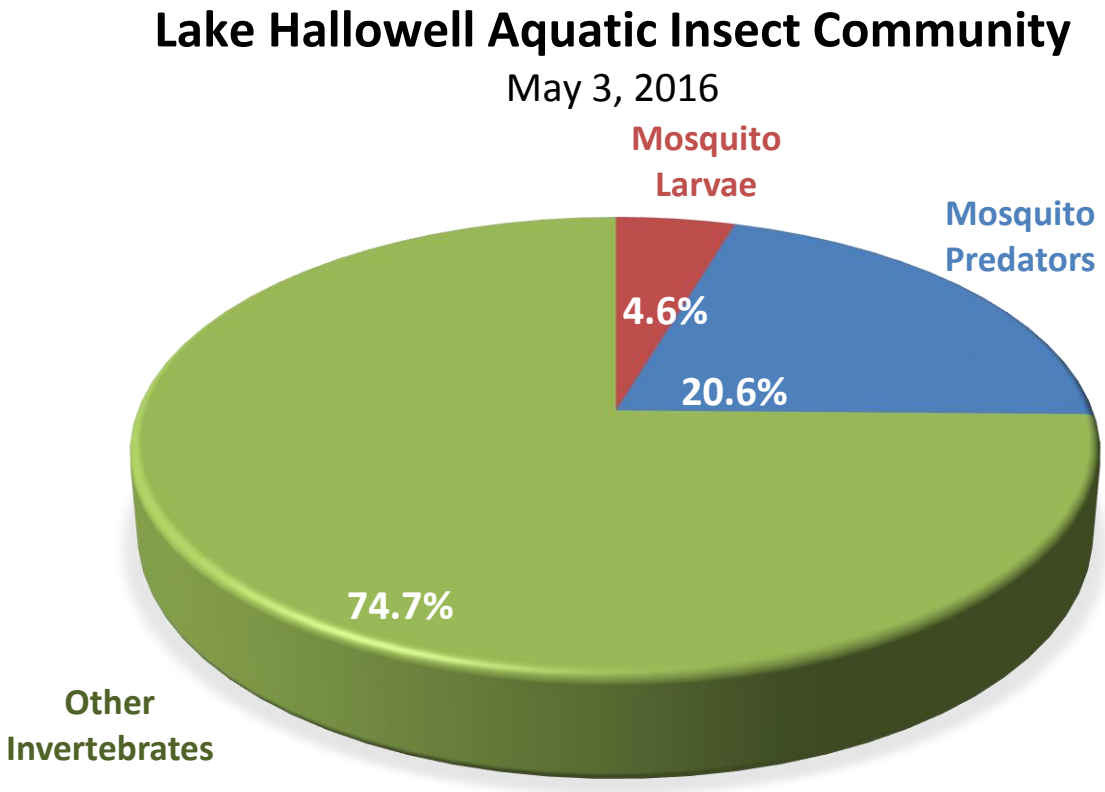
Summary Results – May 3, 2016



Total # Aquatic Insect Larvae in samples = 756

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Detailed Data – May 3, 2016

Sample Area A

Sample Area A; North end of west cove (slackwater area of lake just below where feeder stream drains into lake)					Number in sub-sample: 126
Taxa	Family	Order	Number	FFG	Name
Callicorixa sp.	CORXIDAE (adult)	HEMIPTERA	4	predator	water boatman
CORIXIDAE	CORIXIDAE (nymph)	COLEOPTERA	6	predator	water boatman
Peltodytes sp.	HALIPIDAE (adult)	COLEOPTERA	1	shredder	crawling water beetles
Hydrobius sp.	HYDROPHILIDAE	COLEOPTERA	1	collector	water scavenger beetle
CERATOPOGNONIDAE	CERATOPOGNONIDAE (pupa)	DIPTERA	1	predator	biting midge (aka, punkies, no see-ums)
Probezzia sp.	CERATOPOGNONIDAE (larva)	DIPTERA	1	predator	biting midge (aka, punkies, no see-ums)
CHIRONOMINI	CHIRONOMIDAE	DIPTERA	2	collector	non-biting midge
TANYTARSINI	CHIRONOMIDAE	DIPTERA	2	filterer	non-biting midge
ORTHOCLADIINAE	CHIRONOMIDAE	DIPTERA	4	collector	non-biting midge
TANYPODINAE	CHIRONOMIDAE	DIPTERA	1	predator	non-biting midge
Aedes sp.	CULICIDAE (larva)	DIPTERA	1	filterer	mosquito
CULICIDAE	CULICIDAE (pupa)	DIPTERA	1	filterer	mosquito
NA	EPHYDRIDAE	DIPTERA	1	collector	shore fly
Oxycera sp.	STRATIOMYIDAE	DIPTERA	1	collector	soldier fly
Erioptera sp.	TIPULIDAE (larva)	DIPTERA	4	collector	crane flies
TIPULIDAE	TIPULIDAE (pupa)	DIPTERA	1	NA	crane fly
Gammarus sp.	GAMMARIDAE	AMPHIPODA	14	collector	side-swimmer (aka, scud)
AMPHIPODA	NA	AMPHIPODA	12	collector	side-swimmer (aka, scud)
CYCLOPODIA	NA	CYCLOPODIA	41	filterer	water cyclops (aka, copepods)
CLADOCERA	NA	CLADOCERA	5	filterer	water flea
HYDRACNIDIA	NA	HYDRACNIDIA (Taxon A)	1	external parasite	water mite
HYDRACNIDIA	NA	HYDRACNIDIA (Taxon B)	1	external parasite	water mite
PLANARIIDAE	PLANARIIDAE	TRICLADIA	1	predator	flatworm
OLIGOCHAETA	NA	Class OLIGOCHAETA	19	collector	aquatic segmented worms

Detailed Data – May 3, 2016

Sample Area B

Sample Area B; South end of west cove (slackwater area of lake just below where feeder stream drains into lake)					Number in sub-sample: 121
Taxa	Family	Order	Number	FFG	Name
ISOTOMIDAE	ISOTOMIDAE	COLLEMBOLA	16	collector	springtail
CORIXIDAE	CORIXIDAE (nymph)	COLEOPTERA	3	predator	water boatman
Prinocyphon sp.	SCIRITIDAE	COLEOPTERA	1	collector	marsh beetle
Stenelmis sp. (adult)	ELMIDAE	HEMIPTERA	1	scraper	back-swimmer
CERATOPOGNIDAE	CERATOPOGNIDAE (pupa)	DIPTERA	41	predator	biting midge (aka, punkies, no see-ums)
CHIRONOMIDAE	CHIRONOMIDAE (adult)	DIPTERA	1	collector	non-biting midge
CHIRONOMINI	CHIRONOMIDAE (larva)	DIPTERA	1	collector	non-biting midge
DIAMESINAE	CHIRONOMIDAE (larva)	DIPTERA	1	collector	non-biting midge
ORTHOCLADIINAE	CHIRONOMIDAE (larva)	DIPTERA	5	collector	non-biting midge
TANYPODINAE	CHIRONOMIDAE (larva)	DIPTERA	3	predator	non-biting midge
CULICIDAE	CULICIDAE (pupa)	DIPTERA	1	filterer	mosquito
Aedes sp.	CULICIDAE (larva)	DIPTERA	5	filterer	mosquito
Culex sp.	CULICIDAE (larva)	DIPTERA	1	filterer	mosquito
NA	SCIOMYZIDAE	DIPTERA	2	predator	marsh flies
Nemotelus sp.	STRATIOMYIODAE	DIPTERA	2	collector	soldier flies
TIPULIDAE	TIPULIDAE (adult)	DIPTERA	3	shredder	crane flies
Gammarus sp.	GAMMARIDAE	AMPHIPODA	2	collector	side-swimmer (aka, scud)
CYCLOPODIA	NA	CYCLOPODIA	20	filterer	water cyclops (aka, copepods)
HYDRACNIDIA	NA	HYDRACNIDIA	1	external parasite	water mite
PHYSIDAE	PHYSIDAE	GASTROPDA	1	scraper	bladder snail; sinistral (left side opening)
Gyralus sp.	PLANORBIDAE	GASTROPODA	1	scraper	ramshorn snails; planispiral (coiled flat, no elevated spiral point)
OLIGOCHAETA	NA	Class OLIGOCHAETA	9	collector	aquatic segmented worms

Detailed Data – May 3, 2016

Sample Area BB

Sample Area BB; South end of west cove; downstream opening of road culvert					Number in sub-sample: 112
Taxa	Family	Order	Number	FFG	Name
Isotomurus sp.	ISOTOMIDAE	COLLEMBOLA	1	collector	springtail
Ironquia sp.	LIMNEPHILIDAE	TRICHOPTERA	2	shredder	northern casemaker caddisfly
NA	CORIXIDAE (nymph)	COLEOPTERA	1	predator	water boatman
Enallagma sp.	COENAGRIONIDAE	ZYGOPTERA	1	predator	damselfly
Hydroporus sp.	DYTISCIDAE	COLEPOPTERA	1	predator	predaceous diving beetle
Peltodytes sp.	HALIPIDAE (adult)	COLEOPTERA	3	shredder	crawling water beetles
NA	CERATOPOGNIDAE (pupa)	DIPTERA	1	predator	biting midge (aka, punkies, no see-ums)
Probezzia sp.	CERATOPOGNONIDAE (larva)	DIPTERA	1	predator	biting midge (aka, punkies, no see-ums)
NA	CHIRONOMIDAE	DIPTERA	1	collector	non-biting midge
TANYTARSINI	CHIRONOMIDAE	DIPTERA	5	filterer	non-biting midge
ORTHOCLADIINAE	CHIRONOMIDAE	DIPTERA	1	collector	non-biting midge
TANYPODINAE	CHIRONOMIDAE	DIPTERA	20	predator	non-biting midge
Pericoma sp.	PSYCHODIDAE	DIPTERA	2	collector	moth flies
NA	TABANIDAE	DIPTERA	1	predator	deer & horse flies
Erioptera sp.	TIPULIDAE	DIPTERA	1	collector	crane flies
Gammarus sp.	GAMMARIDAE	AMPHIPODA	10	collector	side-swimmer (aka, scud)
AMPHIPODA	NA	AMPHIPODA	27	collector	side-swimmer (aka, scud)
Lirceus sp.	ASELLIDAE	ISOPODA	1	collector	aquatic sow bug
CLADOCERA	NA	CLADOCERA	1	filterer	water flea
CYCLOPODIA	NA	CYCLOPODIA	16	filterer	water cyclops (aka, copepods)
PHYSIDAE	PHYSIDAE	GASTROPDA	7	scraper	bladder snail; sinistral (left side opening)
Menetus sp.	PLANORBIDAE	GASTROPODA	2	scraper	ramshorn snails; planispiral (coiled flat, no elevated spiral point)
OLIGOCHAETA	NA	Class OLIGOCHAETA	6	collector	aquatic segmented worms

DEPARTMENT OF ENVIRONMENTAL PROTECTION
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Detailed Data – May 3, 2016

Sample Area C

Sample Area C; South cove; slackwater area of lake parallel and immediately adjacent with paved walker path					Number in sub-sample: 138
Taxa	Family	Order	Number	FFG	Name
Isotomurus sp.	ISOTOMIDAE	COLLEMBOLA	2	collector	springtail
ISOTOMIDAE	ISOTOMIDAE	COLLEMBOLA	2	collector	springtail
Amphinemura sp.	NEMOURIDAE	PLECOPTERA	1	shredder	stonefly
Enallagma sp.	COENAGRIONIDAE	ZYGOPTERA	1	predator	damselfly
CERATOPOGNIDAE	CERATOPOGNIDAE (pupa)	DIPTERA	2	predator	biting midge (aka, punkies, no see-ums)
Dasyhelea sp.	CERATOPOGNONIDAE (larva)	DIPTERA	1	predator	biting midge (aka, punkies, no see-ums)
Probezzia sp.	CERATOPOGNONIDAE (larva)	DIPTERA	1	predator	biting midge (aka, punkies, no see-ums)
ISOTOMIDAE	CHIRONOMIDAE (adult)	DIPTERA	1	collector	non-biting midge
CHIRONOMINI	CHIRONOMIDAE (larva)	DIPTERA	3	filterer	non-biting midge
DIAMESINAE	CHIRONOMIDAE (larva)	DIPTERA	1	collector	non-biting midge
ORTHOCLADIINAE	CHIRONOMIDAE (larva)	DIPTERA	10	collector	non-biting midge
TANYPODINAE	CHIRONOMIDAE (larva)	DIPTERA	12	predator	non-biting midge
CULICIDAE	CULICIDAE (pupa)	DIPTERA	1	filterer	mosquito
EPHYDRIDAE	EPHYDRIDAE	DIPTERA	2	collector	shore fly
PSYCHODIDAE	PSYCHODIDAE (pupa)	DIPTERA	2	collector	moth flies
SCIOMYZIDAE	SCIOMYZIDAE	DIPTERA	3	predator	marsh flies
TABANIDAE	TABANIDAE	DIPTERA	1	predator	deer & horse flies
Erioptera sp.	TIPULIDAE	DIPTERA	5	collector	crane flies
Stygonectes sp.	CRANGONYCTIDAE	AMPHIPODA	1	collector	side-swimmer (aka, scud)
CYCLOPODIA	NA	CYCLOPODIA	3	filterer	water cyclops (aka, copepods)
HYDRACNIDIA	NA	HYDRACNIDIA	2	external parasite	water mite
PHYSIDAE	PHYSIDAE	GASTROPDA	1	scraper	bladder snail; sinistral (left side opening)
OLIGOCHAETA	NA	Class OLIGOCHAETA	80	collector	aquatic segmented worms

ENVIRONMENTAL PROTECTION
MONTGOMERY COUNTY • MARYLAND

Detailed Data – May 3, 2016

Sample Area CC

Sample Area CC; South cove; downstream opening of storm drain outfall, water ponded, backflow from lake into storm drain (recent rain, high water elvels)

Taxa	Family	Order	Number	FFG	Name
Isotomurus sp.	ISOTOMIDAE	COLLEMBOLA	20	collector	springtail
ISOTOMIDAE	ISOTOMIDAE	COLLEMBOLA	6	collector	springtail
Enallagma sp.	COENAGRIONIDAE	ZYGOPETRA	1	predator	damselfly
Probezzia sp.	CERATOPOGONIDAE	DIPTERA	2	predator	biting midge (aka, punkies, no see-ums)
CERATOPOGNIDAE	CERATOPOGONIDAE (pupa)	DIPTERA	10	predator	biting midge (aka, punkies, no see-ums)
CHIRONOMIDAE	CHIRONOMIDAE (adult)	DIPTERA	3	predator	non-biting midge
CHIRONOMINI	CHIRONOMIDAE	DIPTERA	21	collector	non-biting midge
TANYTARSINI	CHIRONOMIDAE	DIPTERA	1	filterer	non-biting midge
DIAMESINAE	CHIRONOMIDAE	DIPTERA	11	collector	non-biting midge
ORTHOCLADIINAE	CHIRONOMIDAE	DIPTERA	7	collector	non-biting midge
TANYPODINAE	CHIRONOMIDAE	DIPTERA	4	predator	non-biting midge
CULCIDAE	CULICIDAE	DIPTERA	2	filterer	mosquito
Aedes sp.	CULICIDAE	DIPTERA	23	filterer	mosquito
EPHYDRIDAE	EPHYDRIDAE	DIPTERA	1	collector	shore fly
Pericoma sp.	PSYCHODIDAE	DIPTERA	1	collector	moth flies
Nemotelus sp.	STRATIOMYIODAE	DIPTERA	1	collector	soldier flies
Eristalis sp.	SYRPHIDAE	DIPTERA	1	collector	rat-tail maggot
CLADOCERA	NA	CLADOCERA	2	filterer	water flea
CYCLOPODIA	NA	CYCLOPODIA	2	filterer	water cyclops (aka, copepods)
HYDRACNIDIA	NA	HYDRACNIDIA	3	external parasite	water mite
OSTRACODA	NA	OSTRACODA	2	collector	seed shrimp
PHYSIDAE	PHYSIDAE	GASTROPODA	2	scraper	bladder snail; sinistral (left side opening)
Goniobasis sp.	PLEUROCERIDAE	GASTROPODA	1	scraper	gilled snail; dextral (right side opening)
PLANARIIDAE	PLANARIIDAE	TRICLADIA	1	predator	flatworm
OLIGOCHAETA	NA	Class OLIGOCHAETA	17	collector	aquatic segmented worms

Detailed Data – May 3, 2016

Sample Area CCC

Sample Area CCC; South cove, at base of the main storm drain outfall, at confluence of two stream channels, adjacent to footbridge					
Taxa	Family	Order	Number	FFG	Name
Siphlonurus sp.	SIPHLONURIDAE	EPHEMOPTERA	1	collector	mayfly
CHIRONOMIDAE	CHIRONOMIDAE (adult)	DIPTERA	1	collector	non-biting midge
CHIRONOMINI	CHIRONOMIDAE	DIPTERA	31	collector	non-biting midge
DIAMESINAE	CHIRONOMIDAE	DIPTERA	1	collector	non-biting midge
ORTHOCLADIINAE	CHIRONOMIDAE	DIPTERA	3	collector	non-biting midge
TANYPODINAE	CHIRONOMIDAE	DIPTERA	28	predator	non-biting midge
CYCLOPODIA	NA	CYCLOPODIA	1	filterer	water cyclops (aka, copepods)
Lirceus sp.	ASELLIDAE	ISOPODA	1	collector	aquatic sow bug
PHYSIDAE	PHYSIDAE	GASTROPDA	1	scraper	bladder snail; sinistral (left side opening)
Gyraulus sp.	PLANORBIDAE	GASTROPODA	1	scraper	ramshorn snails; planispiral (coiled flat, no elevated spiral point)
OLIGOCHAETA	NA	Class OLIGOCHAETA	45	collector	segmented worm

DEPARTMENT OF ENVIRONMENTAL PROTECTION
MONTGOMERY COUNTY • MARYLAND

WATERSHED MANAGEMENT DIVISION
STREAM MONITORING SECTION

BIOLOGICAL MONITORING

WATER QUALITY INCIDENT AQUATIC RESOURCE IMPACT

James Creek/Lake Hallowell Sanitary Sewer Overflow

DATE OF REPORT: 5/13/2016

SUMMARY

DEP aquatic biologists assessed potential cumulative impacts to the aquatic insect (benthic macroinvertebrate) and fish communities by sampling before and after the sanitary sewer overflow (SSO) on James Creek site HWJC301 (Figure 1).

BACKGROUND

Three sewage overflow events occurred July 28, 30, and August 12, 2015. Approx. 1.2 million gallons of sewage was released into James Creek which flows to the Hawlings and Patuxent Rivers. A portion of the spills flowed into Lake Hallowell. Sewage was released where the forcemain pipes broke due to corrosion, and also further downstream the at Washington Suburban Sanitary Commission's (WSSC) Olney Sewage Pumping Station (Figure 1).

Following the spills, WSSC repaired the forcemain, cleaned up and placed signs around affected areas warning people to avoid the area and contact with the water. WSSC also collected bacteriological water samples, sending the results to DEP for review. On October 26, 2015, DEP determined that the bacteriological levels had stabilized and WSSC could stop sampling. DEP inspected the area since July, directed WSSC in its clean-up, and aquatic biologists are continuing to evaluate the creek and lake environments. See DEP reports from 9/1/15, 8/12/15 and 8/20/15 for more information.

RESULTS & DISCUSSION

Aquatic Insects

Benthic macroinvertebrates (aquatic insects) were sampled before and after the sewer overflows downstream of Lake Hallowell on James Creek (HWJC301). Before the SSO on April 23, 2015, the aquatic insect community was sampled (Figure 2) and using the Benthic Index of Biotic Integrity (IBI) scoring, the site rated as Fair (55%). After the SSO on October 21, 2015, the IBI score improved by 20% to Good (75%) (Figure 3). The scores before and after the SSO appear to be consistent with the overall trend and variability in scores over time at this site (Figure 4).

It is likely that the sewer overflows caused temporary enrichment of nutrients and organic matter that resulted in the improvement in the aquatic insect community. Scraper and filterer feeding groups surged following the spills, indicating an increased food source of algae and fine particulate organic matter (Figure 5). Tolerant taxa were replaced by additional sensitive scraper individuals and many more intermediate filterers (Figure 6). This shift from tolerant to more sensitive aquatic insects resulted in the increased score following the SSOs.

Fish

Fish populations were also sampled before and after the SSO at the same downstream site (HWJC301) where aquatic insects were sampled. Before the SSO on July 13, 2015, 313 fish consisting of 15 species were collected, counted, and identified (Figures 7 and 8), and the Fish Index of Biotic Integrity (IBI) was calculated to be Good (86%). Following the sewage spills on October 14, 2015, 257 fish consisting of 14 species were documented, and the IBI dropped 22% to Fair (64%) (Figure 9). However, both before and after scores were within the typical range of scores for this site of the 8 times it was sampled since 1997 (Figure 10).

Tolerant predators like largemouth bass replaced many of the more sensitive minnows (Figure 11 and 12). It is possible the largemouth bass young of year grew to a size capable of eating many of the minnows by October when the site was sampled again.

CONCLUSIONS

Results indicate a slight improvement in aquatic insect communities and a slight decline in fish communities following the sewer overflows in James Creek. Both aquatic insect and fish condition scores following the sewer overflow were within the typical range seen for this stream over the 8 times it has been sampled since 1997. DEP will continue to periodically monitor this stream as part of the County's baseline stream monitoring program.

For more information, visit www.montgomerycountymd.gov/dep/water/monitoring.html.

PHOTOS/FIGURES

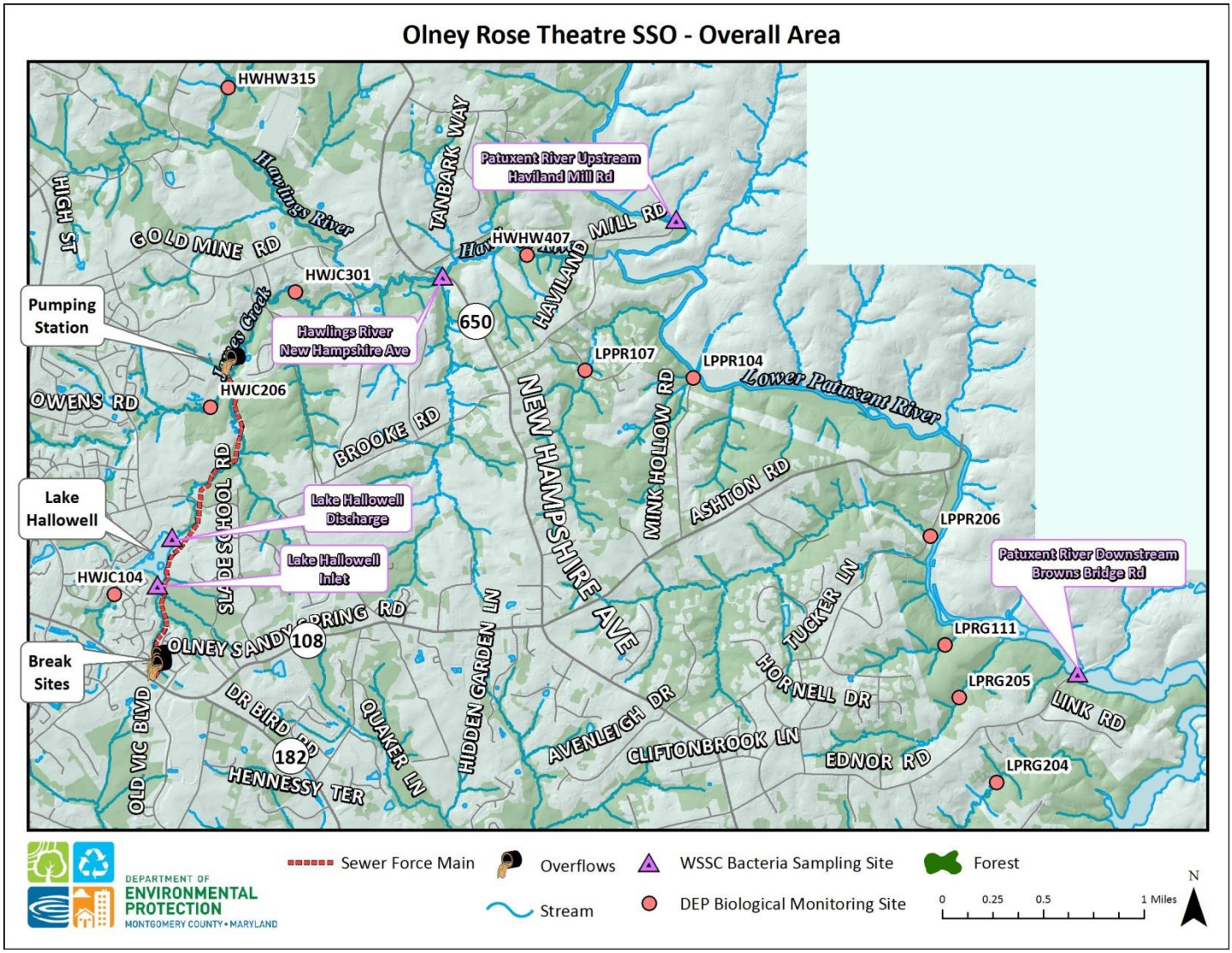

Figure 1. Olney SSO Overall Area Including Sampling Locations, and DEP biological monitoring station HWJC301.

Figure 2. DEP aquatic biologist sampling for benthic macroinvertebrates (aquatic insects).

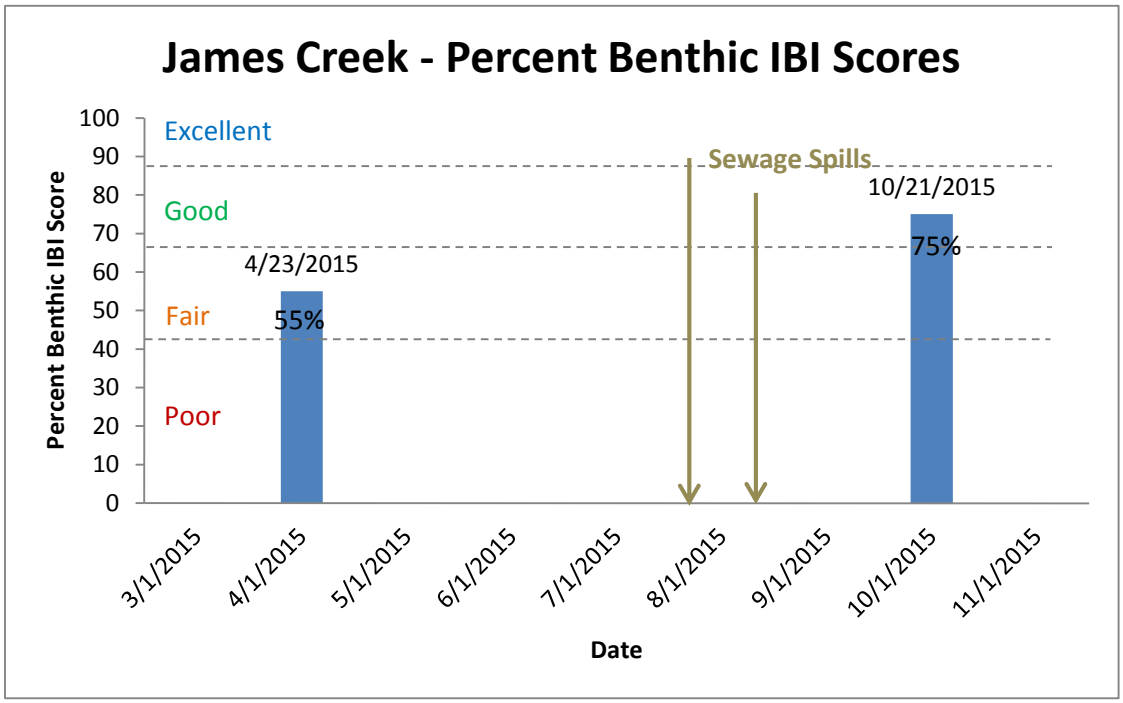

Figure 3. Benthic macroinvertebrate (aquatic insect) Index of Biotic Integrity (IBI) scores before and after Olney SSO

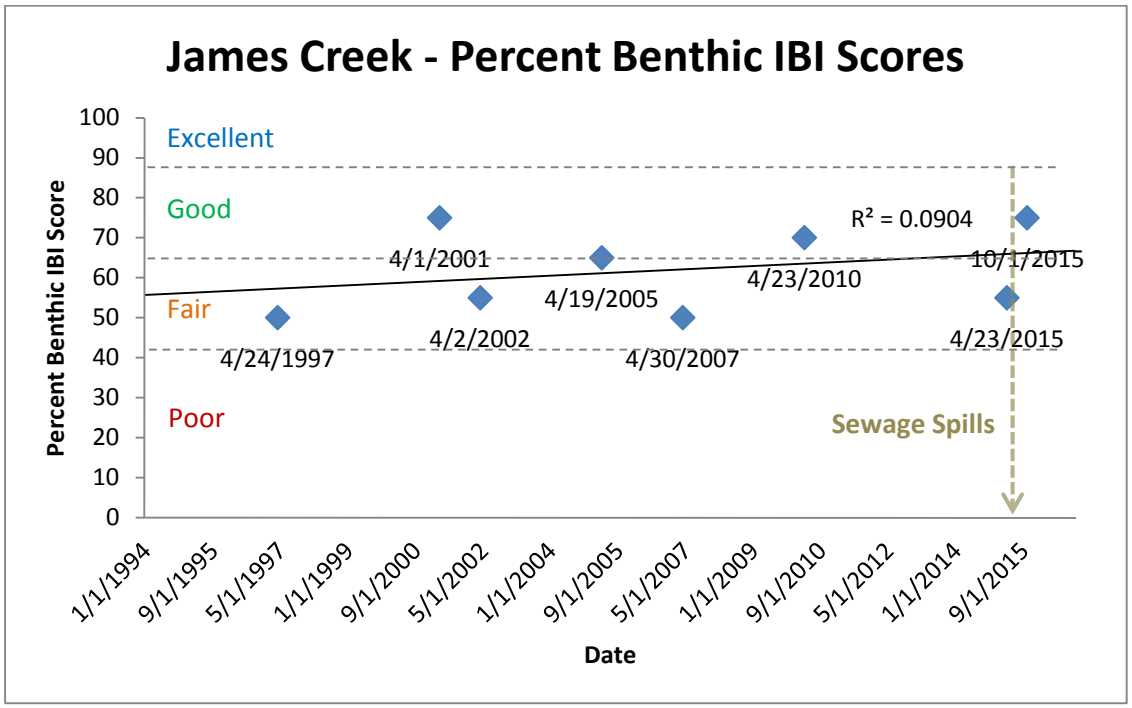

Figure 4. Benthic macroinvertebrate (aquatic insect) Index of Biotic Integrity (IBI) scores over time at James Creek HWJC301

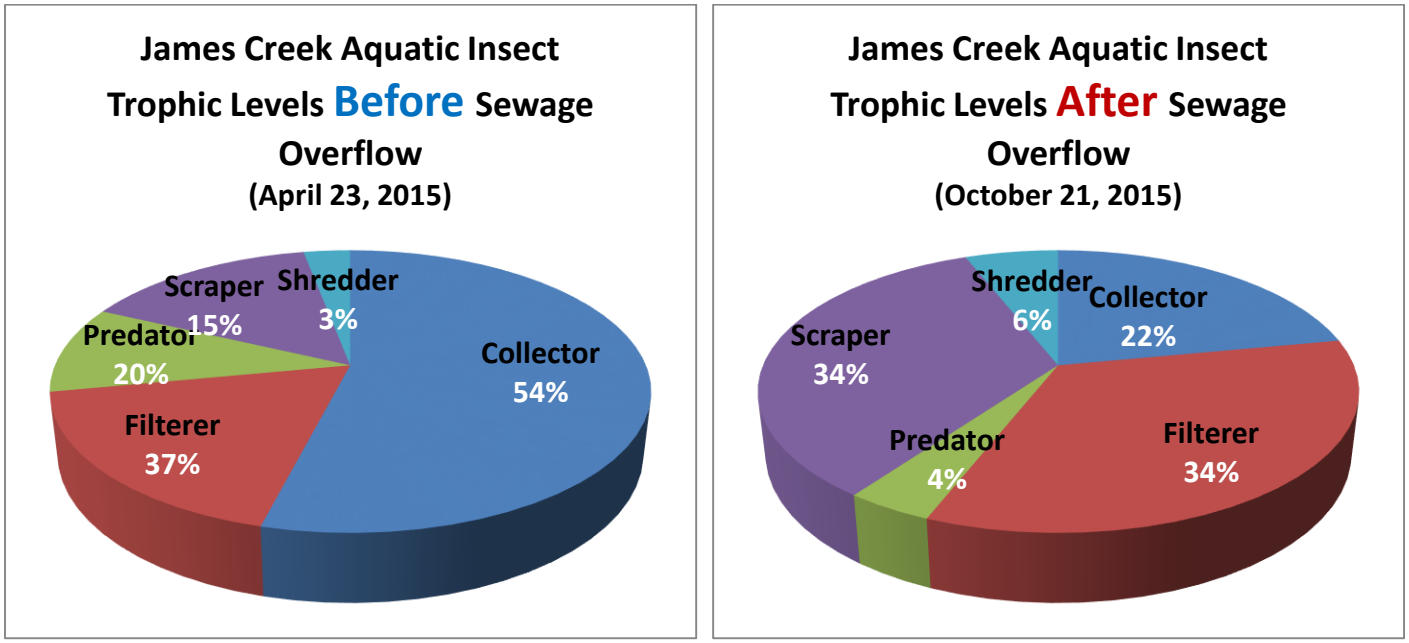

Figure 5. Benthic macroinvertebrate (aquatic insect) trophic feeding group percentages before and after sewage overflows

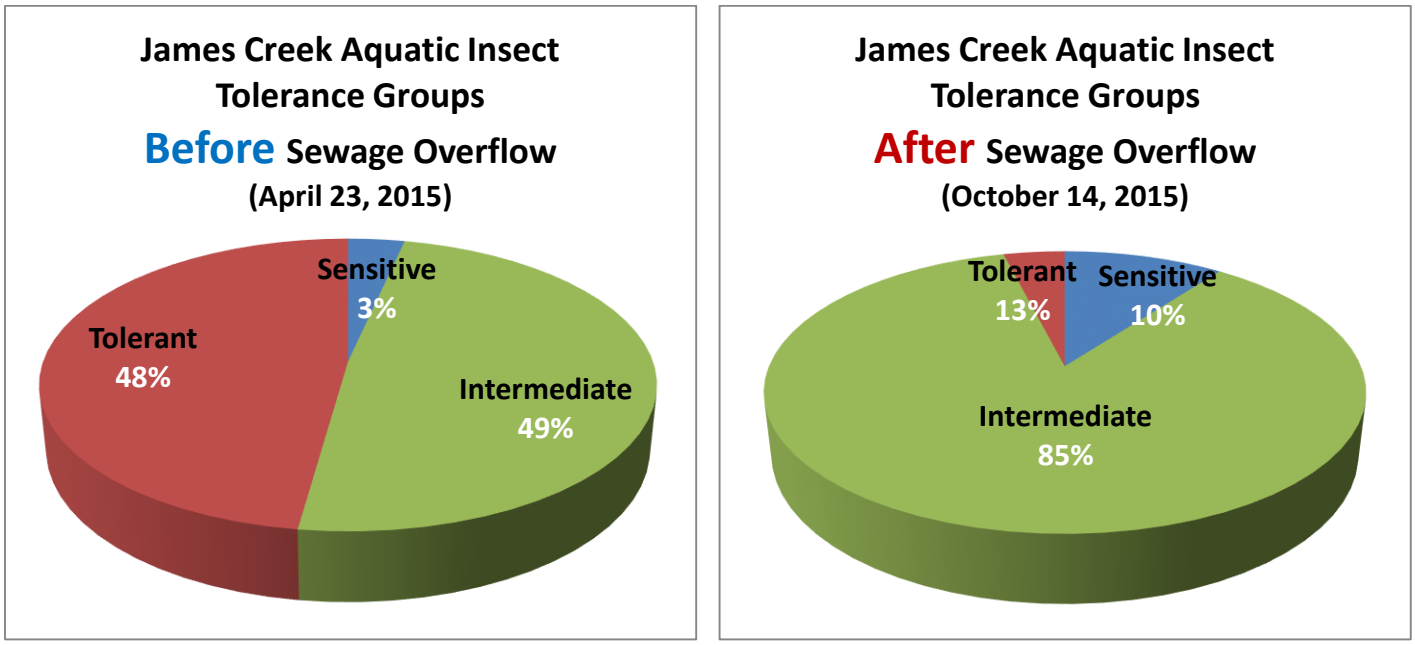

Figure 6. Benthic macroinvertebrate (aquatic insect) tolerance group percentages before and after sewage overflows

Figure 7. Fish sampling at James Creek site HWJC301 on 7/13/2015

Figure 8. Longnose Dace fish collected from James Creek (HWJC301) before SSO on 7/13/2015.

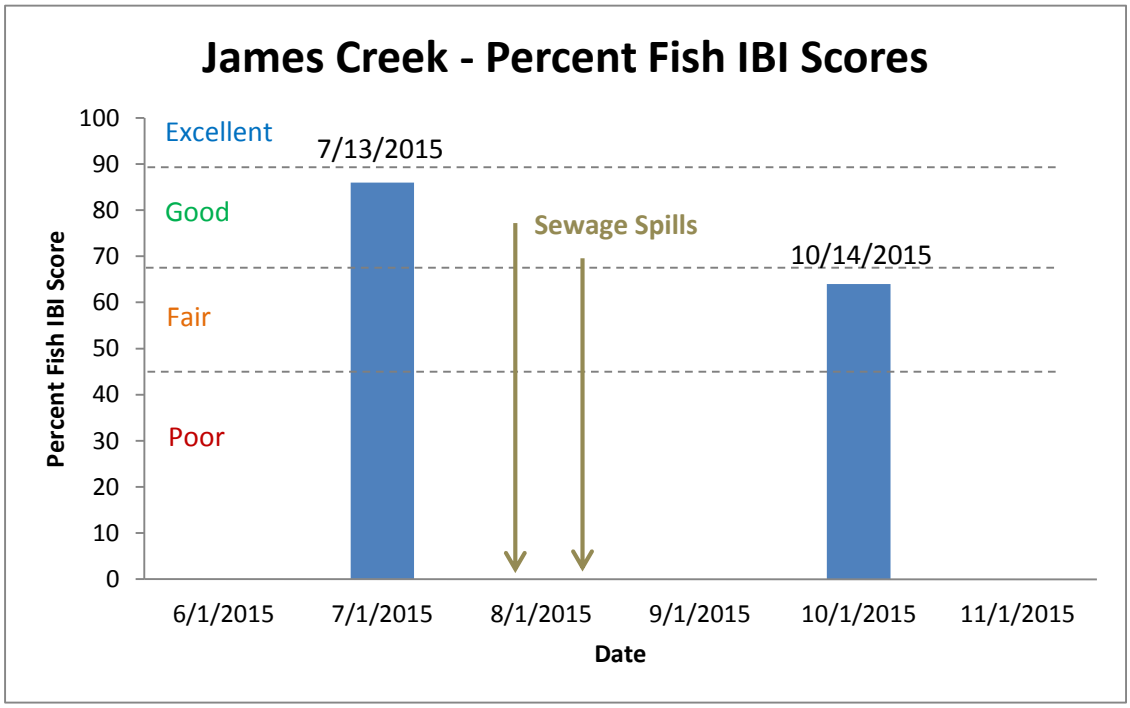

Figure 9. Fish Index of Biotic Integrity (IBI) scores before and after Olney SSO

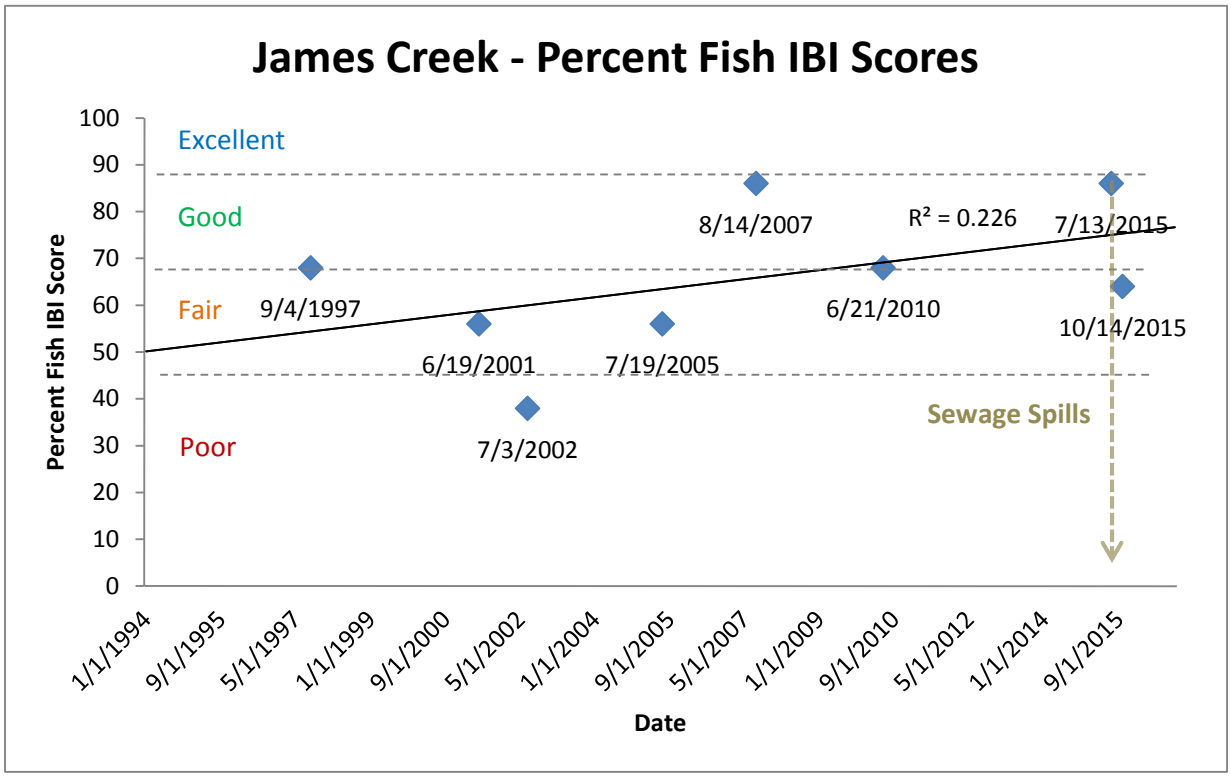

Figure 10. Fish IBI Scores over time in James Creek (HWJC301)

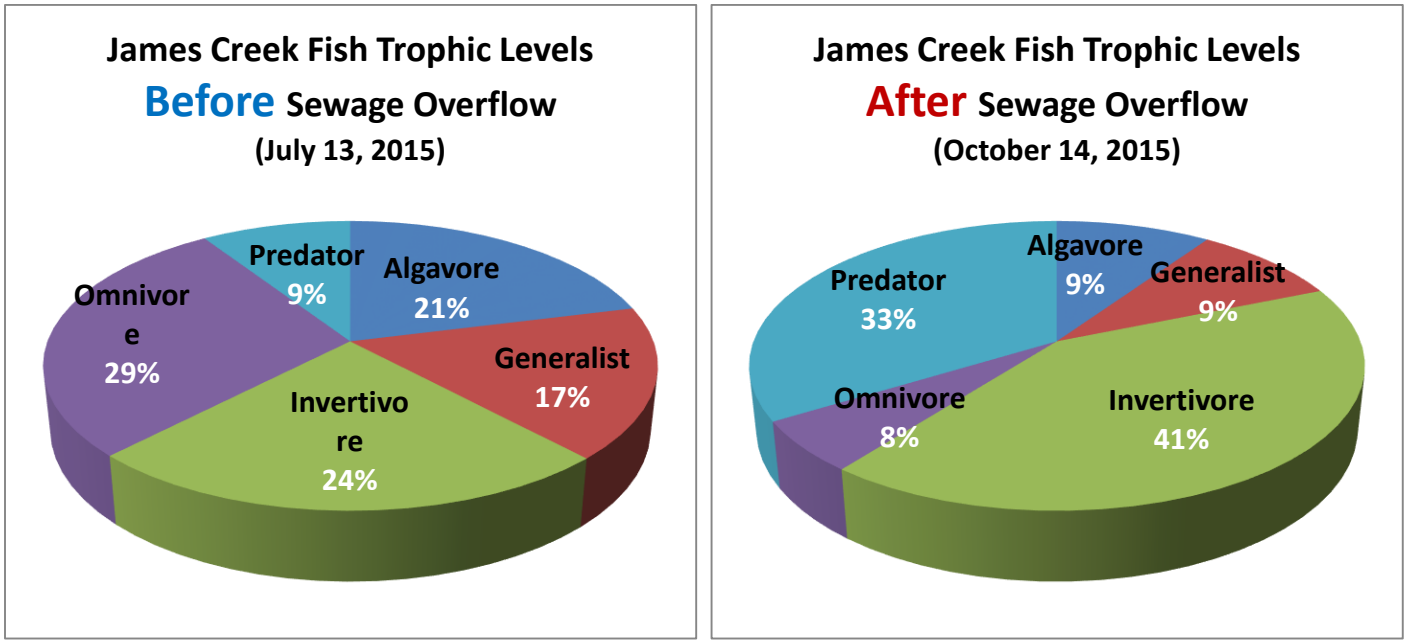

Figure 11. Fish trophic feeding group percentages before and after sewage overflows

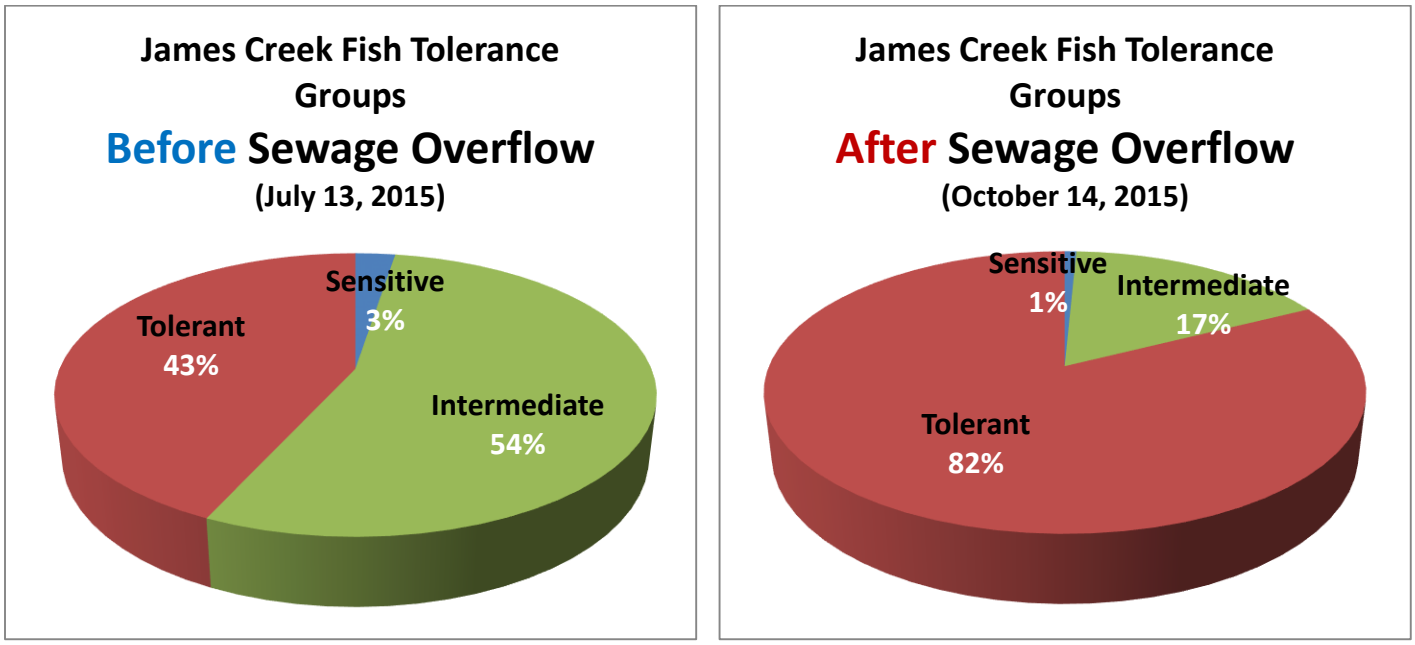

Figure 12. Fish tolerance group percentages before and after sewage overflows

Olney Rose Theatre Circle SSO

Summary Data Analysis

October 20, 2015

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MONTGOMERY COUNTY • MARYLAND

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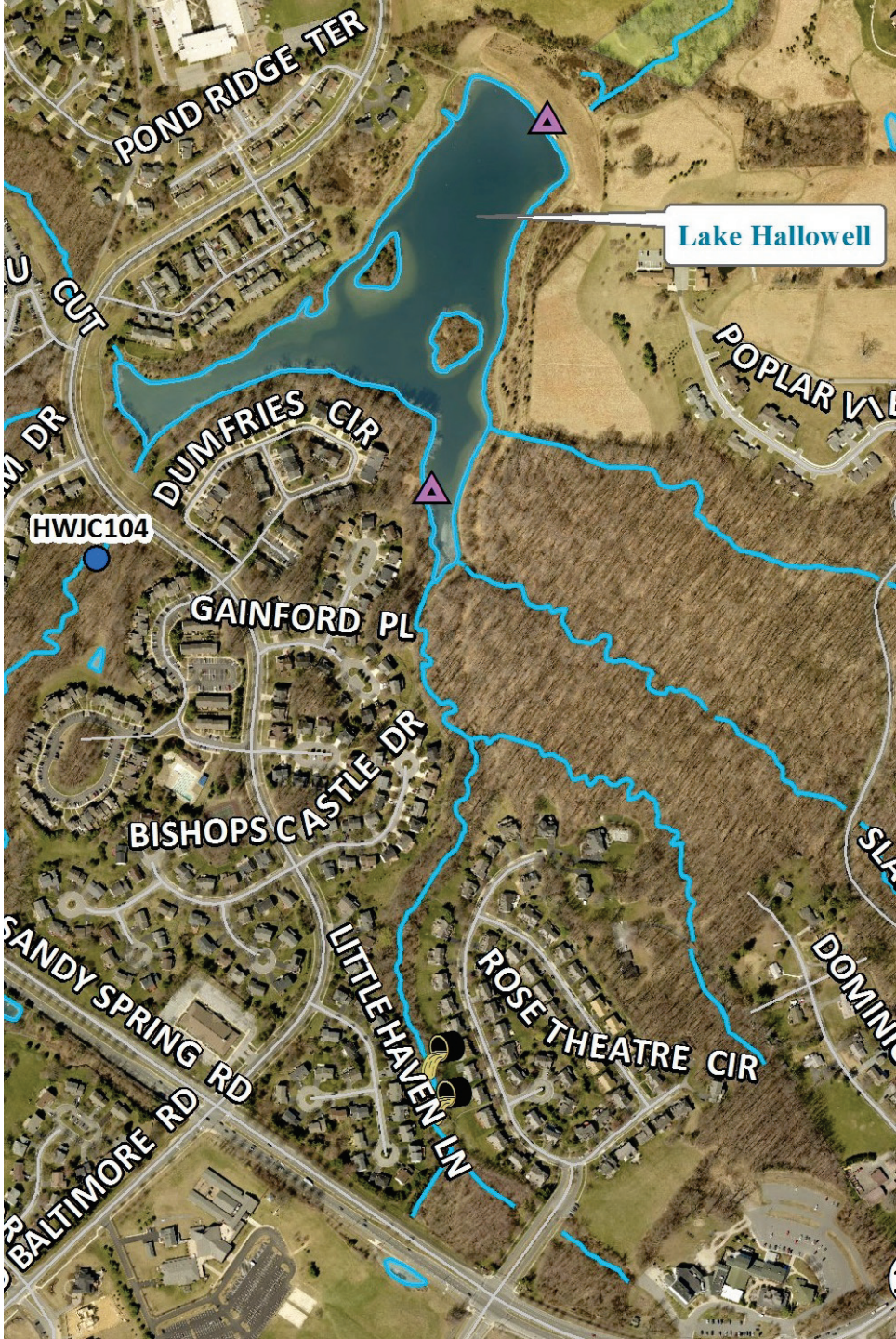
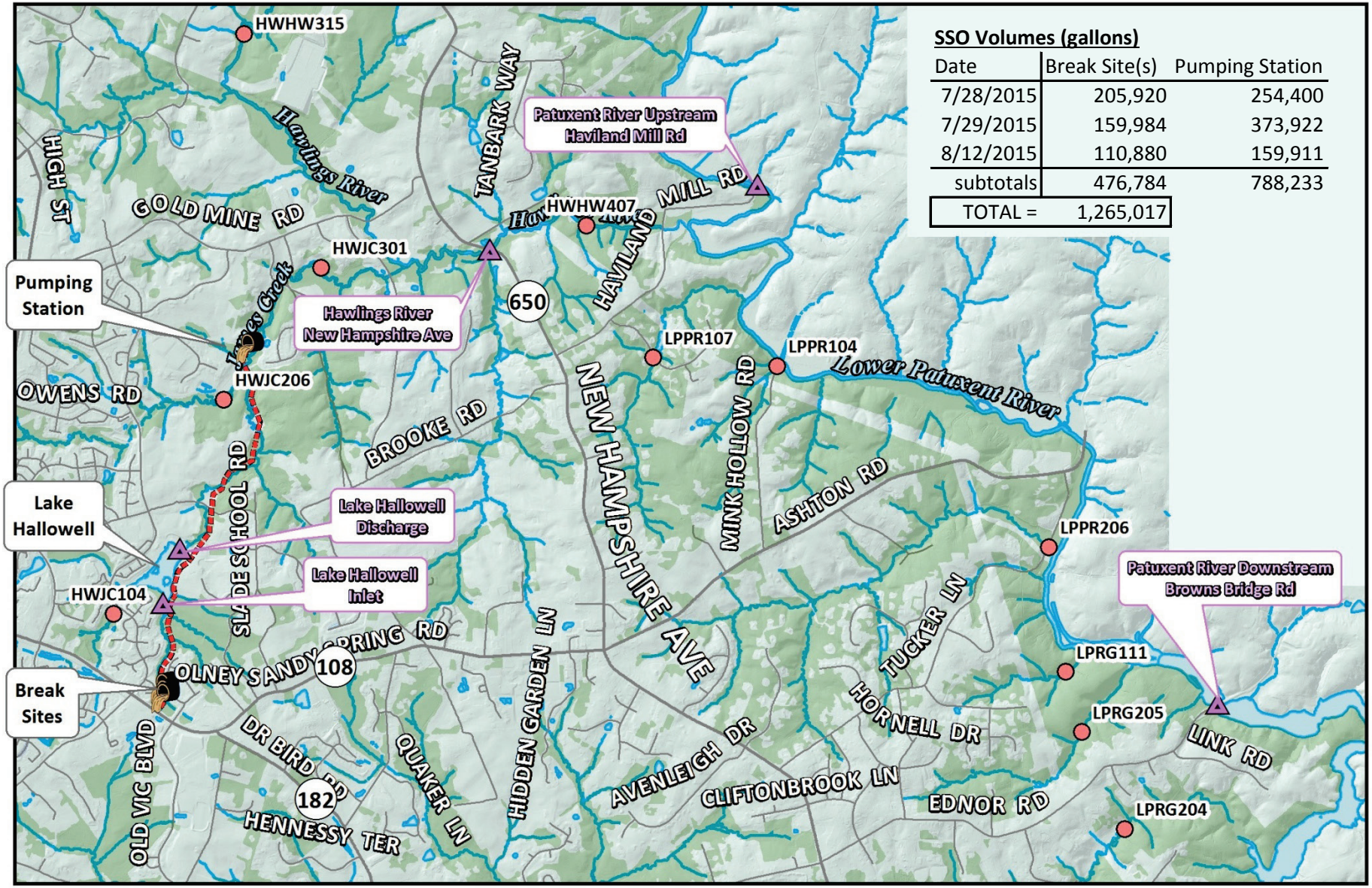


Olney Rose Theatre SSO - Overall Area



SSO Volumes (gallons)

Date	Break Site(s)	Pumping Station
7/28/2015	205,920	254,400
7/29/2015	159,984	373,922
8/12/2015	110,880	159,911
subtotals	476,784	788,233
TOTAL =	1,265,017	

DEPARTMENT OF ENVIRONMENTAL PROTECTION
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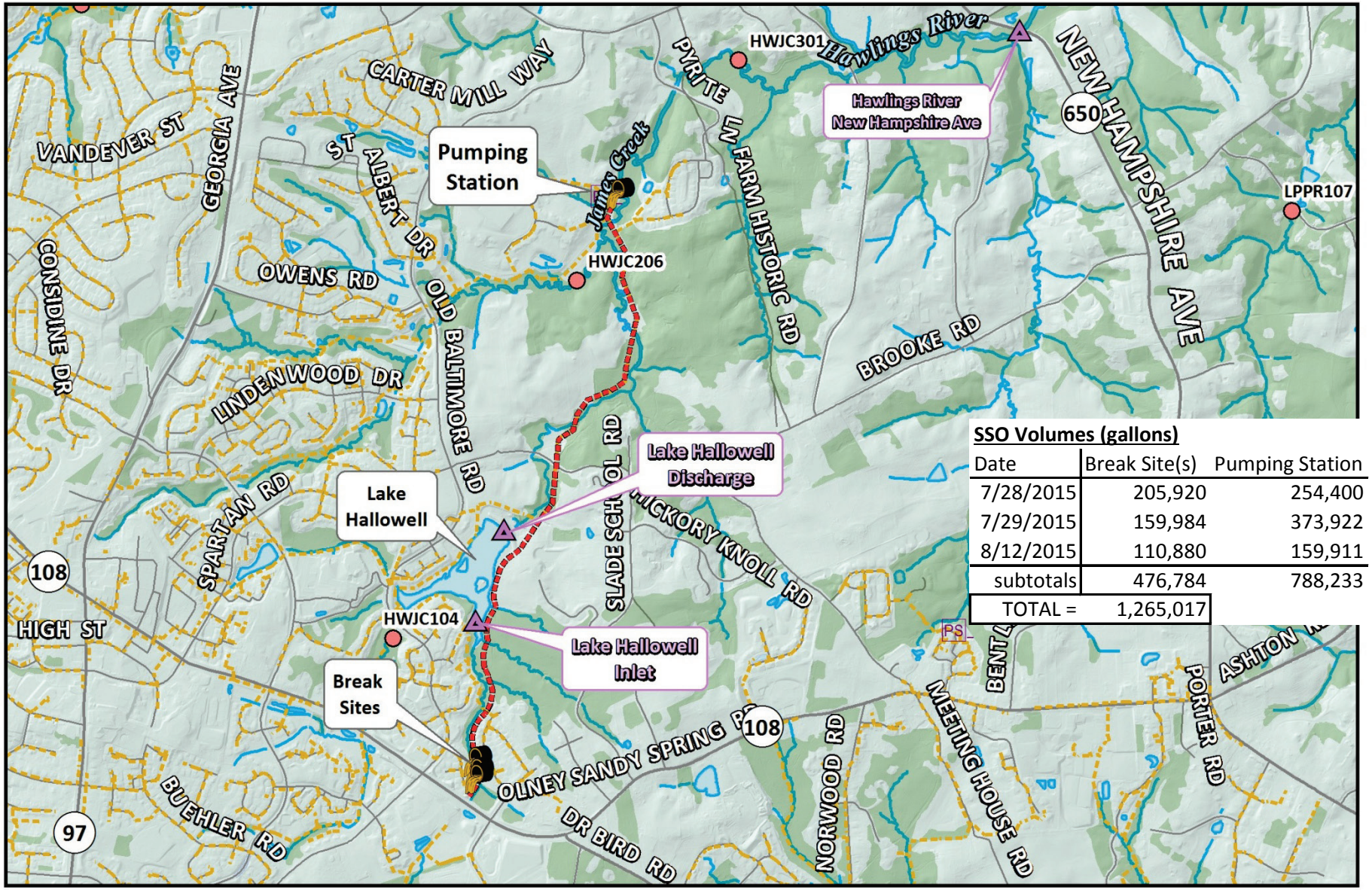
Sewer Force Main
Overflows
WSSC Bacteria Sampling Site
Forest
Stream
DEP Biological Monitoring Site

0 0.25 0.5 1 Miles

N

Olney Rose Theatre SSO - Lake Hallowell Area



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DEPARTMENT OF ENVIRONMENTAL PROTECTION
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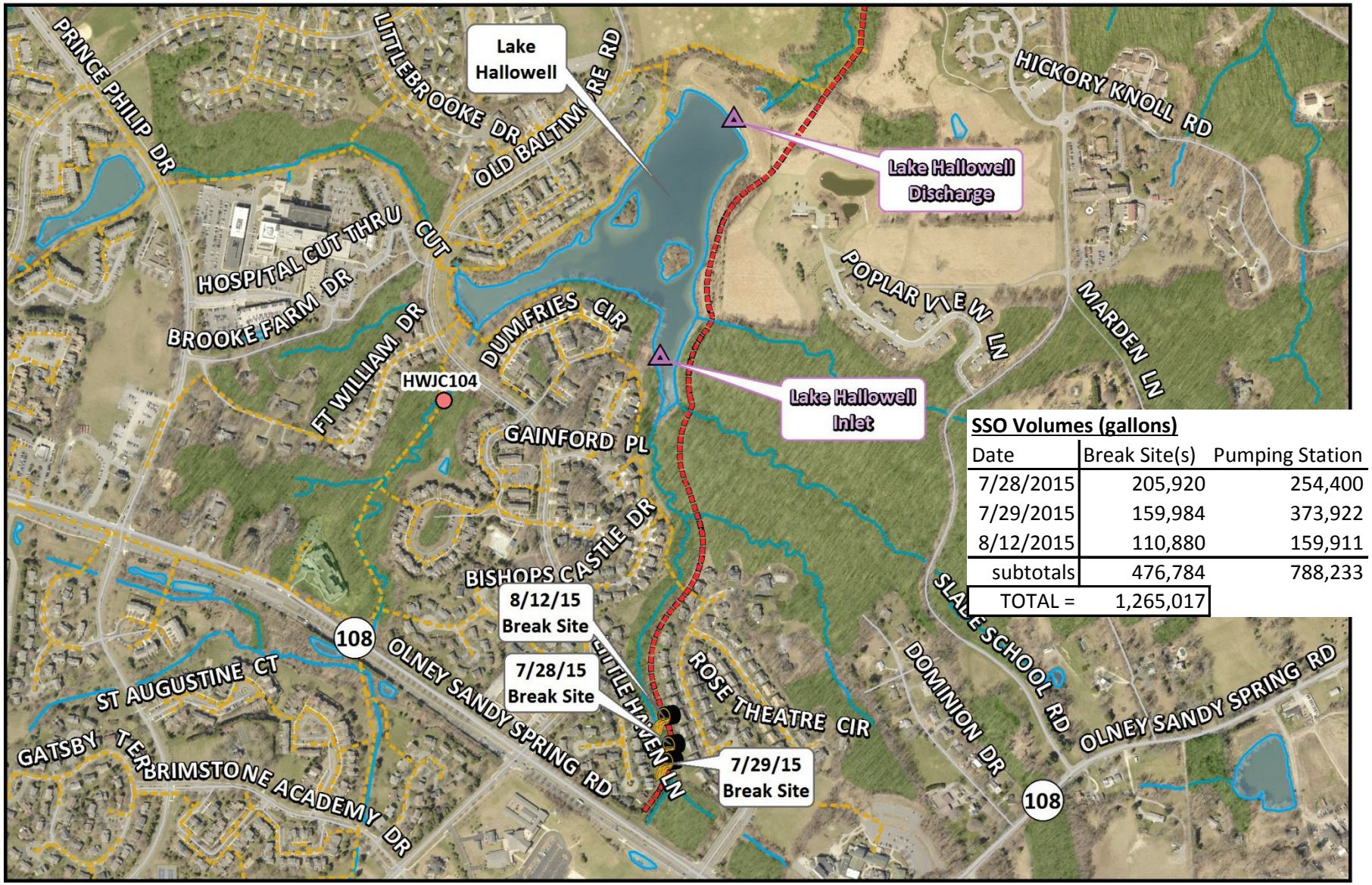
Sewer Force Main
Sewer Gravity
Overflows
Stream
WSSC Bacteria Sampling Site
DEP Biological Monitoring Site
Forest

0 0.125 0.25 0.5 Miles

N

Olney Rose Theatre SSO - Lake Hallowell Area



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DEPARTMENT OF ENVIRONMENTAL PROTECTION
MONTGOMERY COUNTY • MARYLAND

Sewer Force Main
Sewer Gravity
Overflows
Stream
WSSC Bacteria Sampling Site
DEP Biological Monitoring Site
Forest

0 0.05 0.1 0.2 Miles

N

WSSC Bacteria Sampling

- WSSC is collecting bacteria samples within impacted areas approx 3 times a week
- It was not possible to take samples from any areas upstream of the break sites due to zero/low flow conditions, so sampling data is being compared to MD Dept of Environment (MDE) Water Quality Standards for "Infrequent Full Body Contact Recreation"

- Dept of Environmental Protection (DEP) with input from Dept of Health & Human Services (DHHS) determines when samples return to acceptable levels and when WSSC can remove signs

- WSSC posts "5-Day Reports" for Sanitary Sewer Overflows at: www.wsscwater.com/customer-service/emergency-sewerwater-problems/sanitary-sewer-overflow-reports.html

WSSC Bacteria Sampling

A Couple of Important Notes…

- **Bacteria is naturally present in waterways**
  - Some bacteria are ‘unhealthy’; most are beneficial.
  - Bacteria levels are normally high after rain events, especially following long dry periods. This is because the rain washes all of the dirty surfaces that drain into streams and rivers, including all the dog poop and wildlife wastes that have accumulated.

- **Raw sewage biodegrades over time**
  - Sunlight, and living bacteria in soil and water help to biodegrade raw sewage.
  - Plants like duckweed (light green, floating plant) help to filter water of excess nutrients and control mosquito and algae production.

WSSC Bacteria Sampling (7/28 – 9/13)

Olney SSO Bacteria Levels (MPN/100 ml) Most Probable Number

Date	Precip (in)*	Lake Inlet		Lake Discharge		Hawlings New Hampshire		Patuxent US Haviland Mill		Patuxent DS Browns Br	
		Enterococci	E. Coli	Enterococci	E. Coli	Enterococci	E. Coli	Enterococci	E. Coli	Enterococci	E. Coli
7/28/2015											
7/29/2015											
7/30/2015	0.07					15400	24196	3270	579	189	62
7/31/2015	0.18										
8/1/2015											
8/2/2015											
8/3/2015						383	548	82.6	22.6	99.9	125
8/4/2015	0.1										
8/5/2015	0.45					649	1380	44.1	25.6	313	383
8/6/2015											
8/7/2015	0.05					51.2	495	54.4	10	32.4	132
8/8/2015											
8/9/2015											
8/10/2015						122	512	26.6	10	20.7	98
8/11/2015											
8/12/2015				42.4	175	251	420	103	31	23.4	108
8/13/2015											
8/14/2015		106	24196	22.6	605	70	24196	138	20.3	124	68.3
8/15/2015											
8/16/2015											
8/17/2015		1990	4880	4.1	2	131	517	23.3	51.2	16.1	24.3
8/18/2015											
8/19/2015		1010	4870	5.2	72.3	548	308	35.5	108	77.6	272
8/20/2015	0.05										
8/21/2015	0.32	167	9080	197	6500	1010	670	469	146	743	272
8/22/2015	0.01										
8/23/2015											
8/24/2015		243	327	23.8	10	32.4	216	82.8	63	22.3	63
8/25/2015	0.01										
8/26/2015		136	481	10.3	10	22.9	121	58.6	51	53.2	148
8/27/2015											
8/28/2015		158	436	3.1	10.8	299	102	5.2	67.7	59.4	108
8/29/2015											
8/30/2015											
8/31/2015		345	162	23.3	5.2	152	78	3.1	58.3	29.9	111
9/1/2015											
9/2/2015		261	345	1	3.1	238	115	9.7	21.8	66.3	82
9/3/2015											
9/4/2015	0.01	77	43.2	20.4	9.7	22.2	192	77	59.1	57	72.7
9/5/2015											
9/6/2015											
9/7/2015		88.6	7.2	2	5.2	153	102	119	71.7	330	88
9/8/2015											
9/9/2015		1120	90.5	16.6	6.3	53.8	248	397	69.1	72.2	133
9/10/2015											
9/11/2015		411	921	9.7	30.5	579	285	7.5	51.2	33.6	222
9/12/2015											
9/13/2015	0.25										

*Combined data for three weather stations, with preference for nearest station to Lake Hallowell (MD-MG-78)

SSO Event

MDE's Water Quality Standards for "Infrequent Full Body Contact Recreation"
Enterococci = 151 E. Coli. = 576

WSSC Bacteria Sampling (9/23 – 10/16)

Olney SSO Bacteria Levels (MPN/100 mL)

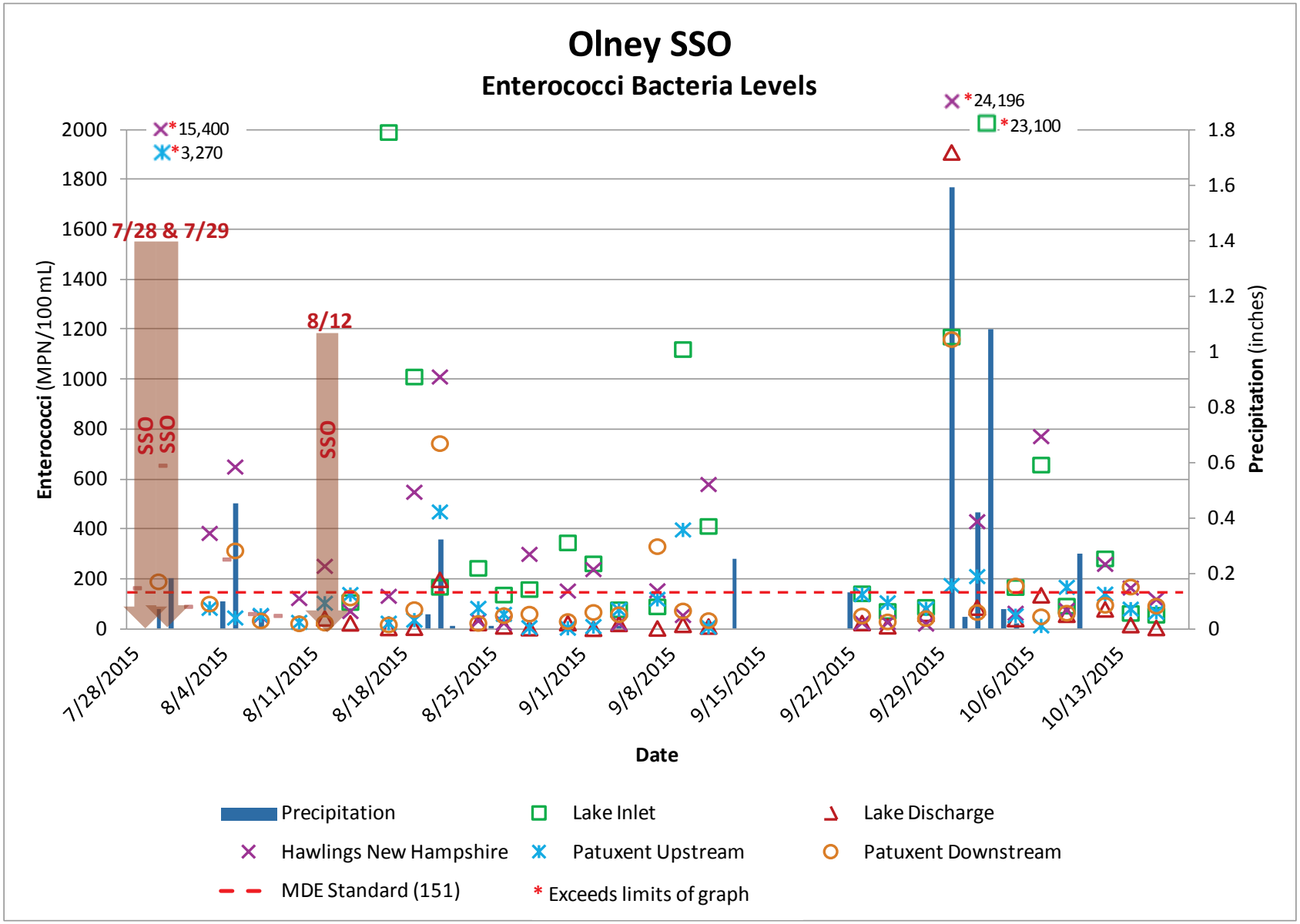
		Lake Inlet		Lake Discharge		Hawlings New		Patuxent US		Patuxent DS Browns	
Date	**Precip (in)***	Enterococci	E. Coli	Enterococci	E. Coli	Enterococci	E. Coli	Enterococci	E. Coli	Enterococci	E. Coli
9/13/2015	0.25										
9/14/2015											
9/15/2015											
9/16/2015											
9/17/2015											
9/18/2015											
9/19/2015											
9/20/2015											
9/21/2015											
9/22/2015	0.13										
9/23/2015		141	1380	23.7	8.5	24.7	201	138	62	51.9	194
9/24/2015											
9/25/2015		70.3	512	10.7	12.1	26	166	105	153	28.3	95.9
9/26/2015											
9/27/2015											
9/28/2015		86.6	378	60.8	95.9	19.6	59.4	80.3	90.8	41.6	1020
9/29/2015											
9/30/2015	1.59	1170	5790	1910	4880	24196	24196	174	72.3	1160	7700
10/1/2015	0.04										
10/2/2015	0.42	23100	4350	85.6	738	430	909	210	161	65.8	272
10/3/2015	1.08										
10/4/2015	0.07										
10/5/2015	0.02	166	365	39.5	411	63	548	52.9	120	172	144
10/6/2015											
10/7/2015		657	276	135	260	771	166	12.2	55.4	48.7	77.6
10/8/2015											
10/9/2015		91.5	106	57.1	59.4	74.7	261	167	42.2	63.3	95.9
10/10/2015	0.27										
10/11/2015											
10/12/2015		281	517	78.4	54.5	259	184	140	46.4	95	117
10/13/2015											
10/14/2015		62.3	201	15.6	28.8	164	128	79.4	31.7	168	60.5
10/15/2015											
10/16/2015		55	95.9	4.1	19.7	118	93.3	66.8	23.8	91.5	35.5
10/17/2015											
10/18/2015											

*Combined data for three weather stations, with preference for nearest station to Lake Hallowell (MD-MG-78)

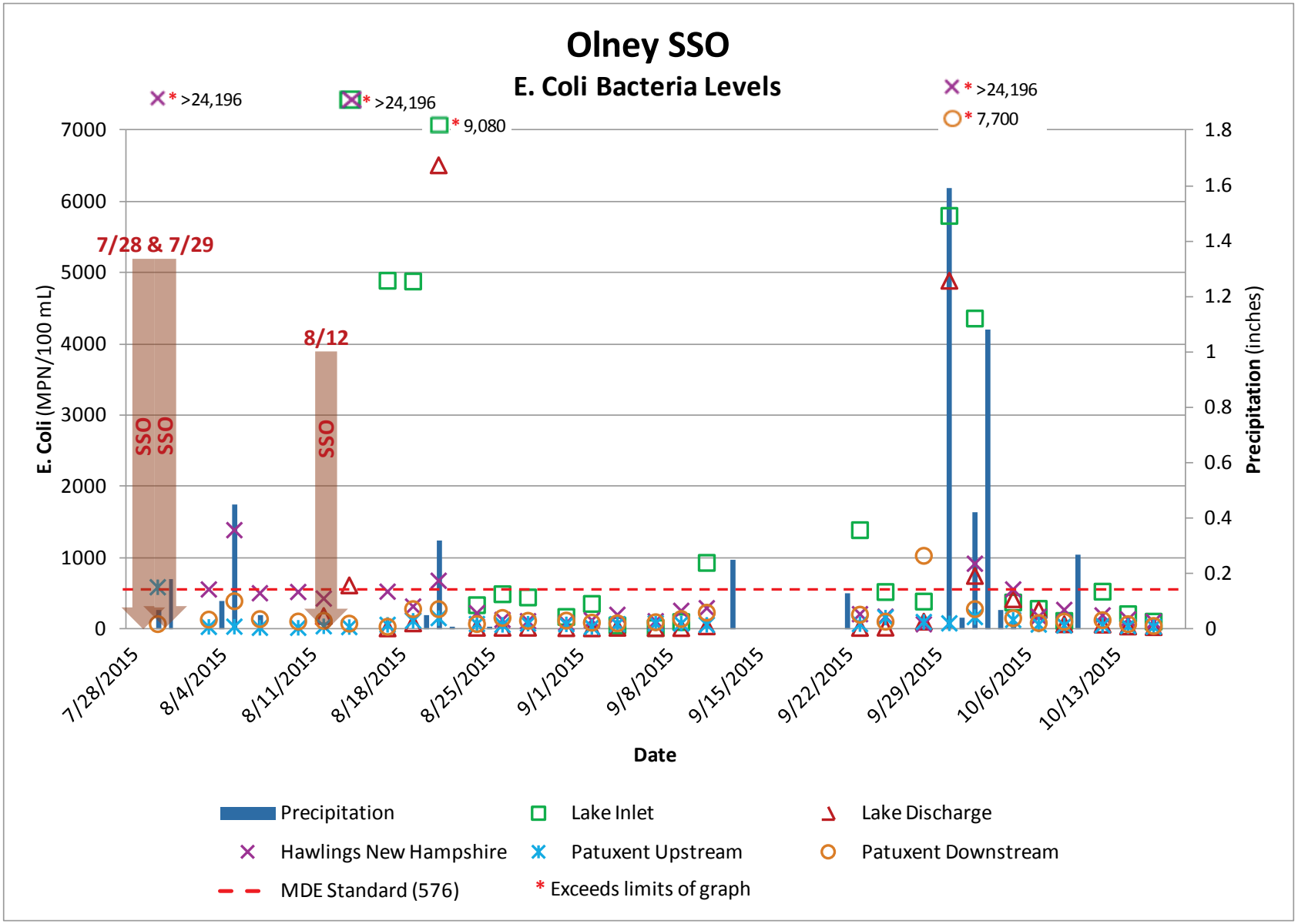
SSO Event

MDE's Water Quality Standards for "Infrequent Full Body Contact Recreation"
Enterococci = 151 E. Coli. = 576

WSSC Bacteria Sampling



WSSC Bacteria Sampling



DEP Aquatic Resource Monitoring

Short-term Monitoring

- DEP visited affected areas to perform visual assessment of aquatic resource impacts 8/12/15, 8/20/15, 9/1/15, & 9/16/15
  - NO dead or dying organisms have been observed associated with these SSO events to date
  - Many observations of frogs, toads, salamanders, turtles, dragonflies, aquatic insects, and water birds
  - Duckweed noted covering upper reach area of lake. Duckweed is beneficial to filter water of excess nutrients, and block mosquito/algae production
  - Detailed reports are available upon request

Northern Two-lined Salamander in stream channel below break sites

Pickerel frog - Upper Reach of Lake

Great Blue Heron - Upper Reach of Lake

DEP Aquatic Resource Monitoring

Long-Term Monitoring

- DEP samples aquatic insect & fish communities to assess cumulative health of streams
- Patuxent/Hawlings/James Creek watersheds monitored routinely on a five-year cycle
- Active sites (including HWJC301) were sampled in April 2015 for aquatic insects & July 2015 for fish, prior to Sewer Overflows
- Samples collected prior to Overflows will be compared to samples collected in fall 2015 to assess more cumulative water resource impacts
- Affected waterways are checked for excessive algae growth and/or fish kills every 2-3 weeks and following rain events.

Rosyside Dace - Fish

Caddisfly larvae – Aquatic Insect

Learn more about DEP's stream monitoring program:
www.montgomerycountymd.gov/dep/water/monitoring.html

WATERSHED MANAGEMENT DIVISION
STREAM MONITORING SECTION

CASE REPORT

WATER QUALITY INCIDENT AQUATIC RESOURCE IMPACT

James Creek/Lake Hallowell Sanitary Sewer Overflow

DATE OF VISIT: 9/1/2015
DATE OF REPORT: 9/2/15, 9/3/15, 9/8/15 update
TYPE OF INCIDENT: SSO

LOCATION(S) OF INCIDENTS (see Figures 1-5)
Sewer line break and SSO in James Creek flowing into Lake Hallowell near 2114 Rose Theatre Cir, Olney
Additional SSO from pumping station into James Creek near Dellabrooke Farm Lane

DEP STAFF

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BACKGROUND

On 8/12/2015 a 20'' sanitary sewer force main break occurred behind 2114 Rose Theatre Cir, causing approximately 270,791 gallons of wastewater to overflow into James Creek and Lake Hallowell. Previous SSOs in the same area occurred between 7/28/2015 and 7/30/2015 resulting in a total of 994,226 gallons of wastewater into the James Creek and Lake Hallowell.

See 8/12/15 and 8/20/15 DEP reports for more information.

The purpose of this site visit was to respond to additional reports from a resident (Tanya Shuy, 14 Gainford Ct, 301-774-6421) about excessive algae growth and mosquitoes in the stream leading into the lake and the upper reaches of the lake. Since the previous visit (8/20/15) the area has received only 0.11 inches of rain (http://www.wunderground.com/personal-weather-station/dashboard?ID=KMDOLNEY5#history/s20150819/e20150903/mcustom). It was possible that the localized areas of stagnant water observed during the previous visit have not had any flow to naturally mitigate the issues.

OBSERVATIONS

Stream channel above the lake (James Creek)

Signage was still posted along neighborhood trail paths behind Rose Theatre Circle and near stream below break sites all the way down to the lake. However, the eastern, adjacent tributary entrance to the lake had no signage (Figure 4). No algae was observed in the stream upstream of the lake. In

comparison to the 8/20/15 visit, there appeared to be less water in both the stream and the lake, and signs (sights and smells) of sewage overflow were less obvious. Water was only observed in the stream slightly further than halfway down to the lake, below the second pedestrian trail crossing. From here to the lake, there were a few stagnant pools (Figure 6) where mosquitoes were breeding, but many (more than 10) frogs and toads (Figures 7-9) were encountered hopping around in each pool area that was approached. Bites from adult mosquitoes were noted to be only occasional. A faint, intermittent sewage smell was also detected in this area. It seemed likely that the mosquito larvae would be flushed through the system during a moderate rain, or would be eaten by predators like the frogs and toads.

Lake Hallowell – Upper Reach

The upper reaches of the lake were covered in green duckweed (Figures 10-11), which has appeared since the last visit. The water here was clear now (was grayish and cloudy 10 days ago). Duckweed is used worldwide to treat sewage effluent and purify water.

There was also no mosquito larva observed in the upper lake waters. Duckweed is known to mitigate mosquito production by physically blocking mosquitoes from laying eggs, and preventing the mosquito larva from reaching the surface for air. It is also known to minimize algae growth. Algae was observed in moderate amounts in the upper reaches of the lake (Figure 12) where the duckweed subsided, but seemed to be in lesser amounts than observed 3 years ago (Figure 13) prior to the sewage overflow.

Several water birds (ducks and heron) were observed feeding on the duckweed (Figures 12 and 14-15). Many dragonflies and other insects were observed in and around the lake. Many frogs (Figure 16) and toads were observed in this area as well. There were no live fish observed during this visit, but it was difficult to see through the duckweed.

Lake Hallowell - Discharge

Water near the lake discharge was clear and relatively deep (compared to upper reach), and no algae was observed (Figure 17).

RECOMMENDATIONS

DEP does not believe that further remediation efforts are needed at this time. The reports by the resident of excessive algae growth were not consistent with observations. It is likely that rain events and other natural processes will help to dilute and break down the bacteria in the water, and any further human intervention may do more harm than good since many live organisms were observed within the affected areas.

DEP recommends WSSC continue to keep signs posted at least until 30 days after the last overflow (9/12/15) and to continue to sample water for bacteria (Enterococci and E. coli) at lake inlet, lake outlet, and in several downstream locations in the watershed (Figure 5). After 9/12/15, DEP will decide whether to take signage down and/or continue bacteria sampling.

For long term aquatic resource impact monitoring, DEP also plans to re-sample the fish community in James Creek in late September, and the benthic macroinvertebrate (aquatic insect) community in mid to late October. DEP sampled James Creek prior to the SSOs the week of 7/13/2015 for fish and 4/23/2015 for benthics. Post-impact data will be compared to pre-impact data. Results of this monitoring may be available by December 2015 or January 2016. DEP also plans to make periodic follow up visits every 2-3 weeks, and after major rain events, to monitor for harmful algae blooms and/or fish kills.

PHOTOS/FIGURES

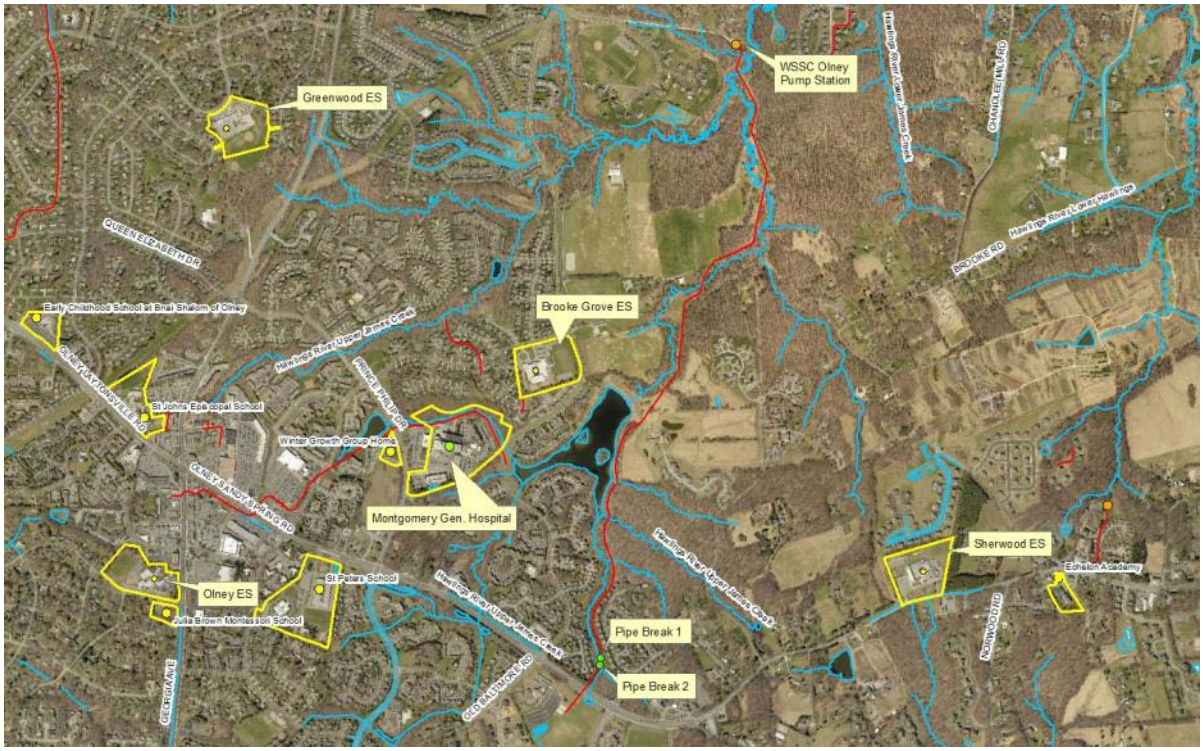


Figure 1. Olney SSO overview map and surrounding public facilities requiring notification

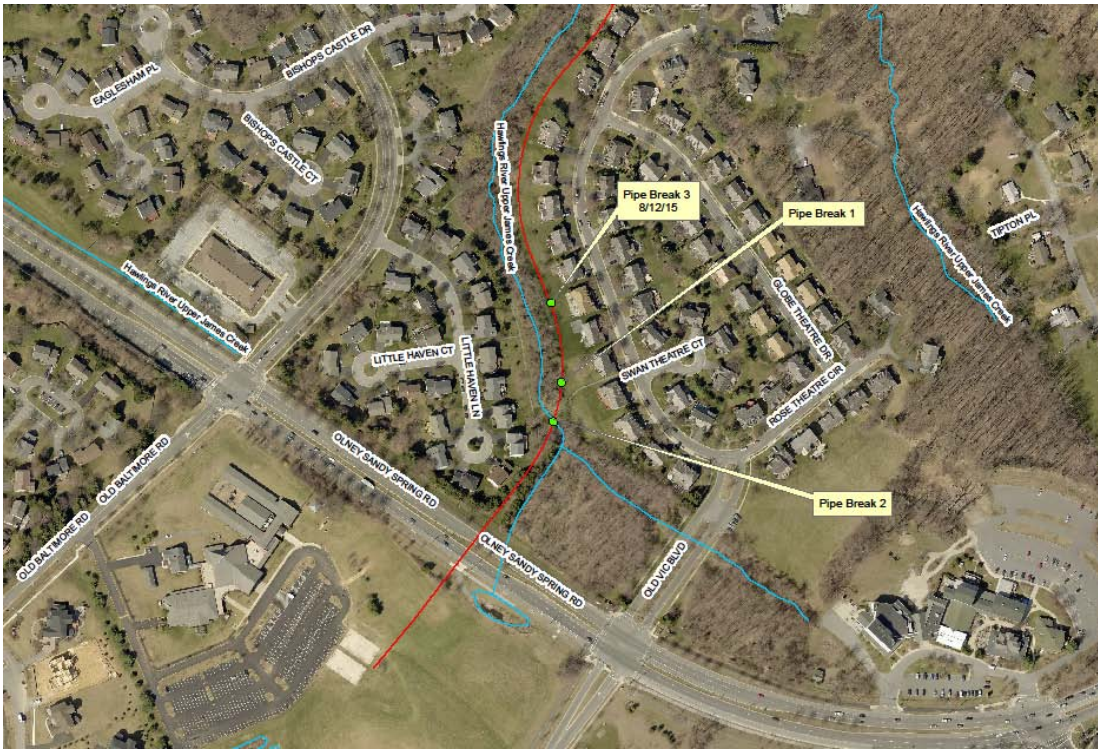


Figure 2. Lake Hallowell SSO Pipe Break zoom

Figure 3. WSSC Olney pump station zoom

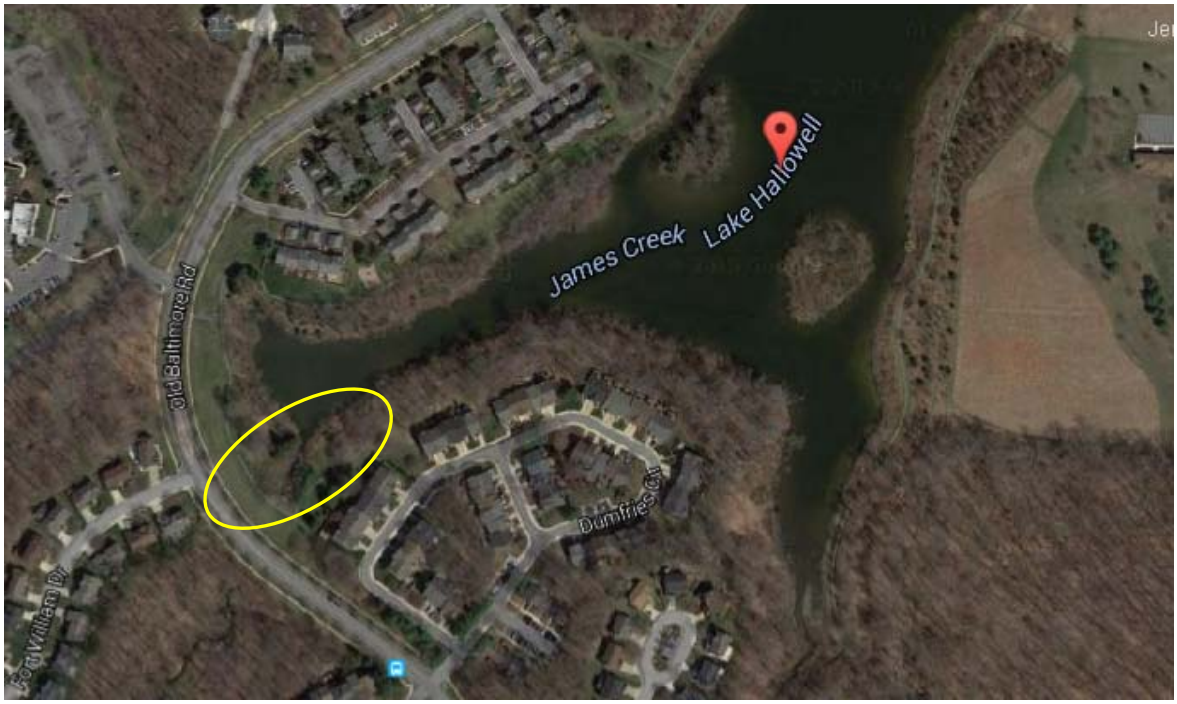


Figure 4. No signage posted in area (yellow circle).

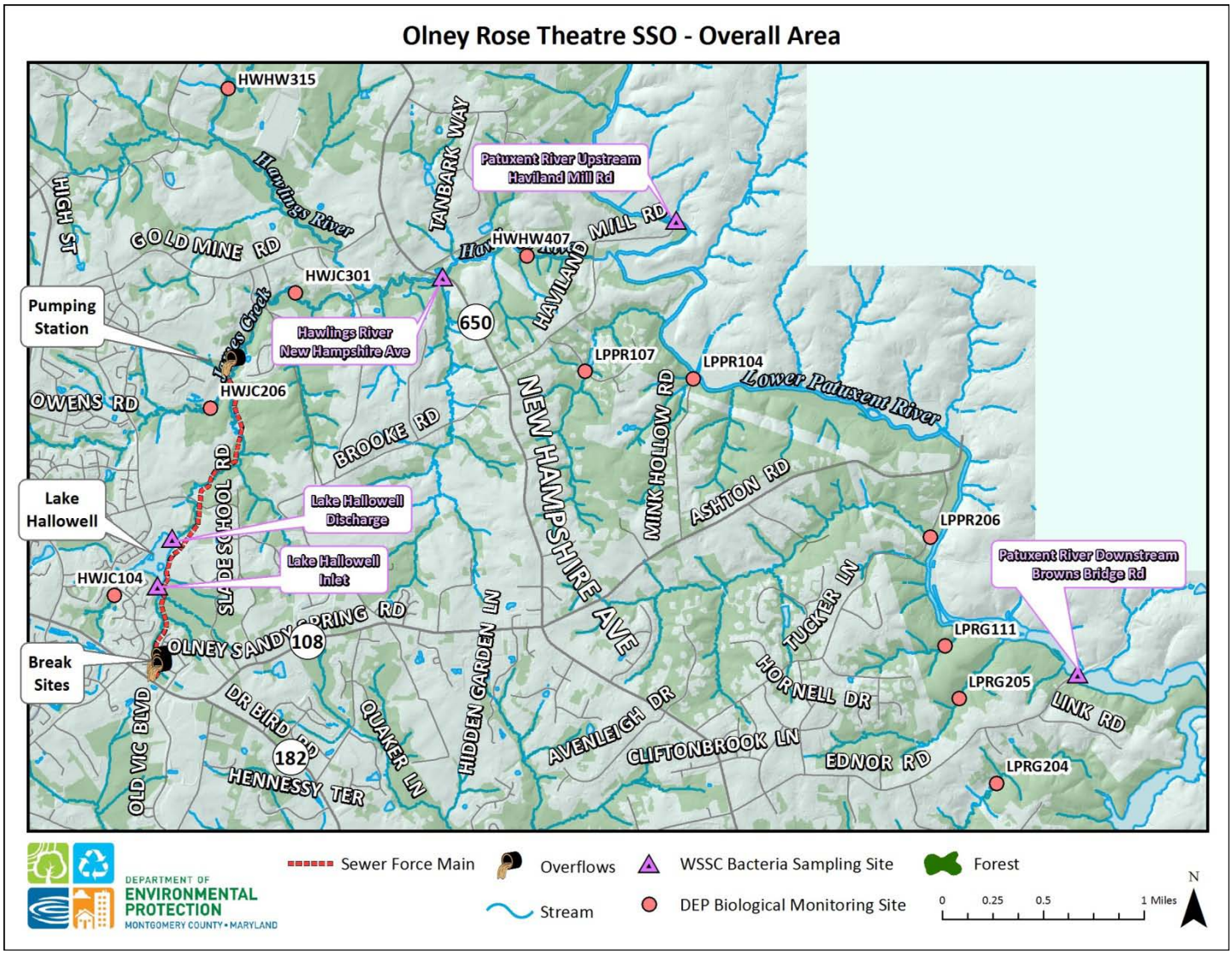


Figure 5. Olney SSO Overall Area Including Sampling Locations.

Figure 6. Example of stagnant pool in stream just above lake.

Figure 7. American Bullfrog observed in clear pool upstream of Lake Hallowell

Figure 8. One of many Pickerel frogs observed in upper stream reach above Lake Hallowell

Figure 9. Stream reach in between two problem areas running clear

Figure 10. Duckweed covering upper reaches of lake

Figure 11. Duckweed up close

Figure 12. Algae intermittent between duckweed; also shows a few water birds wading

Figure 13. August 2013 photo of same area, prior to SSO - Algae present in similar amounts

Figure 14. Great blue heron observed in upper reaches of lake

Figure 15. Ducks feeding on duckweed in upper reaches of lake

Figure 16.Pickerel frog in upper reach of lake

Figure 17. Discharge point of lake

WATERSHED MANAGEMENT DIVISION
STREAM MONITORING SECTION

CASE REPORT

WATER QUALITY INCIDENT AQUATIC RESOURCE IMPACT

James Creek/Lake Hallowell Sanitary Sewer Overflow

DATE OF VISIT: 8/20/2015
DATE OF REPORT: 8/20/15, 8/24/15 update
TYPE OF INCIDENT: SSO

LOCATION(S) OF INCIDENTS (see Figures 1-3)
Sewer line break and SSO in James Creek flowing into Lake Hallowell near 2114 Rose Theatre Cir, Olney
Additional SSO from pumping station into James Creek near Dellabrooke Farm Lane

DEP STAFF
Jennifer St. John, Senior Water Quality Specialist, jennifer.st.john@montgomerycountymd.gov
240-777-7740

BACKGROUND

On 8/12/2015 a 20'' sanitary sewer force main break occurred behind 2114 Rose Theatre Cir, causing approximately 270,791 gallons of wastewater to overflow into James Creek and Lake Hallowell. Previous SSOs in the same area occurred between 7/28/2015 and 7/30/2015 resulting in a total of 994,226 gallons of wastewater into the James Creek and Lake Hallowell.

See 8/12/15 DEP report for more information.

The purpose of this site visit was to respond to reports from a resident (Tanya Shuy, 14 Gainford Ct, 301-774-6421) about excessive algae growth and mosquitoes in the stream leading into the lake and the upper reaches of the lake. The other goal of the visit was to document conditions prior to a large expected rain event. The rain event ended up generating only 0.25 inches of rain in Olney, so follow up visit has not occurred as of 8/24/15.

OBSERVATIONS

Stream channel above the lake (James Creek)

Signage was still posted along neighborhood trail paths (Figures 4-5) and near stream below break site (Figure 6) all the way down to the lake. No algae was observed in the stream upstream of the lake. There were two reaches of stream where stagnant conditions (Figure 7), mosquito breeding (Figure 8), and sewage smell were detected: One area just below where the breaks occurred (Figures 7-8), and another reach just above the lake (Figures 12-16). There were several Northern Greenfrogs (Figure 10) observed in these areas that seemed unaffected by the conditions at this time. The mosquitoes that were breeding were in early stages of development and few if any adults were actually biting. It seemed likely that these larvae would be flushed through the system during the pending rain, or would be eaten by predators like the greenfrogs. The stream reach in between the two problem areas was relatively

clear, with better flow, no sewage smells, and many more greenfrogs and a few Northern Two-lined salamanders observed (Figures 9-11).

Lake Hallowell

Algae was present in moderate amounts in the upper reaches of the lake (Figure 20), but no mosquito breeding was observed in this area. The water in the upper reach had a faint sewage smell and was slightly grey in color (Figures 16-18). However, three turtles were observed swimming through this area and several water birds (ducks and heron) were observed feeding (Figures 19 and 21). There were no live fish seen during this visit, but it was hard to see through the turbid water.

Below Pumping Station (James Creek)

Water was clear and flowing in the reach of stream just below the pumping station (Figures 22-23). Several live crayfish were observed (Figure 24). No live fish were seen, but no dead fish were observed either. No sewage odors were detected.

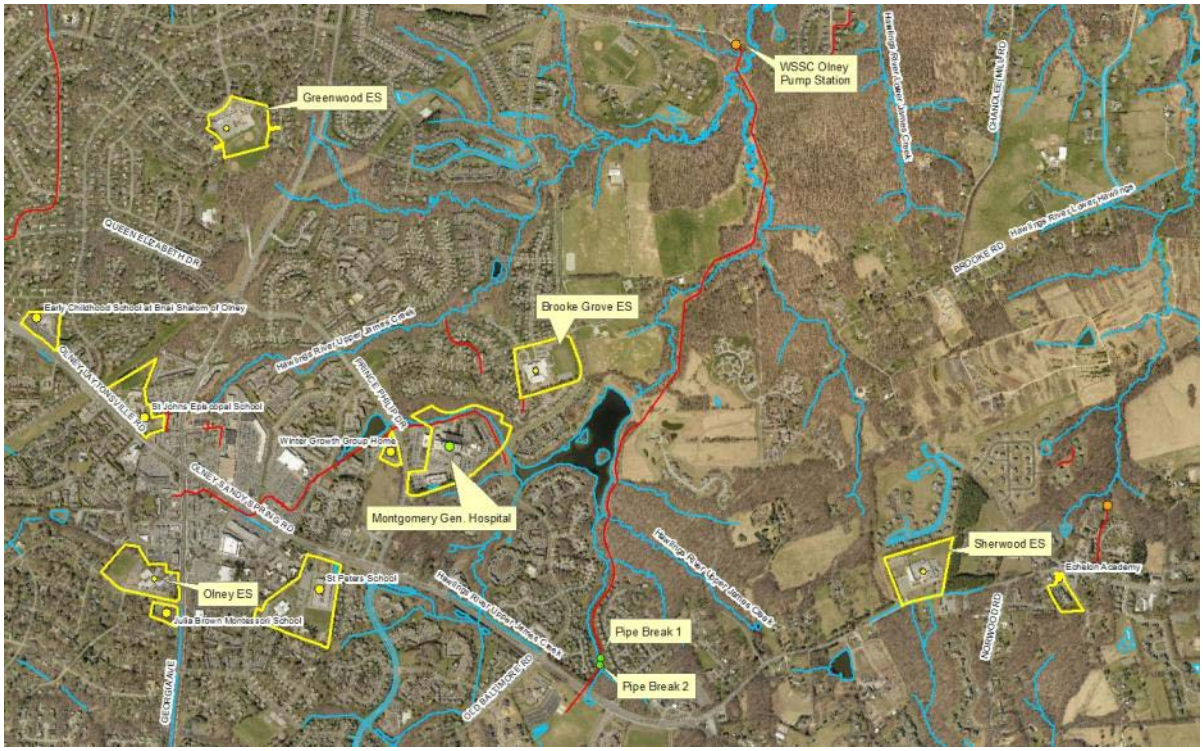
RECOMMENDATIONS

DEP does not believe that further remediation efforts are needed at this time. The reports by the resident of excessive algae growth were not consistent with observations. It is likely that rain events and other natural processes will help to dilute and break down the bacteria in the water, and any further human intervention may do more harm than good since many live organisms were observed within the affected areas.

DEP recommends WSSC continue to keep signs posted and collect water samples at a baseline location, and at impacted sites above the lake and below the break sites, at lake inlet, lake outlet, and in several downstream locations in the watershed.

DEP plans to make periodic follow up visits every 2-3 weeks, and after major rain events, to monitor for harmful algae blooms and fish kills. DEP also plans to re-sample the fish community in James Creek in mid to late September. DEP last sampled James Creek the week of 7/13/2015, prior to the SSOs.

PHOTOS/FIGURES



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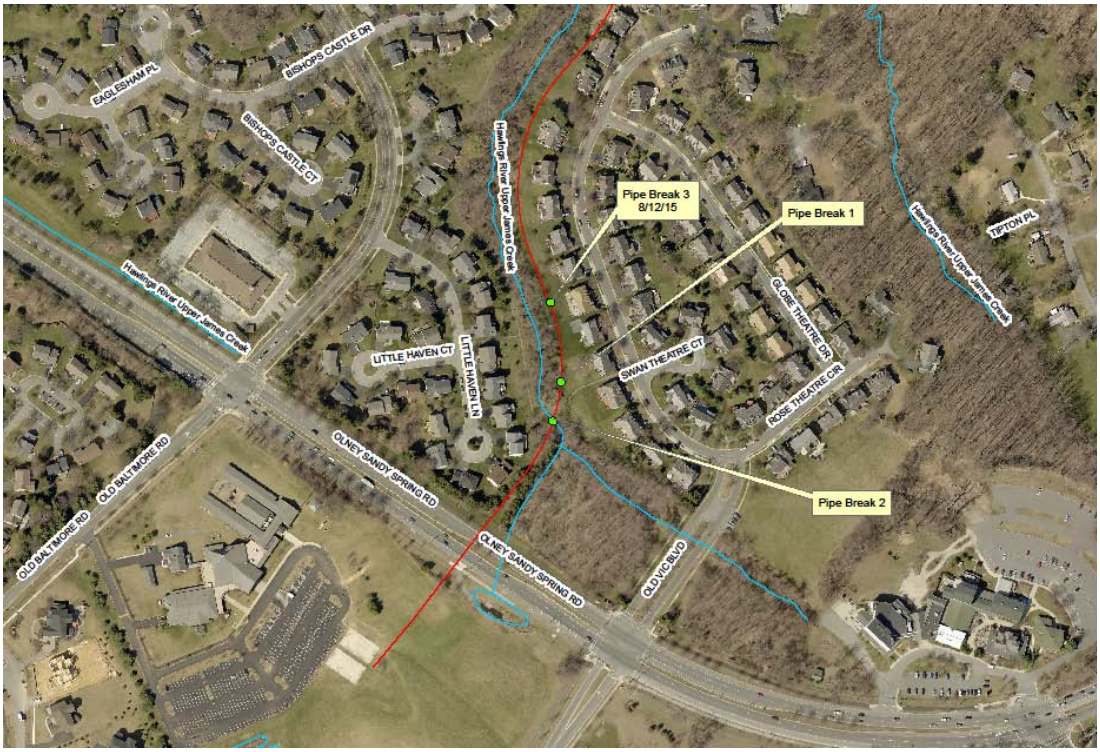

Figure 2. Lake Hallowell SSO Pipe Break zoom

Figure 3. WSSC Olney pump station zoom

Figure 4. Signage off of Rose Theatre Cir along path to break site

Figure 5. Signage near break sites 1 and 2

Figure 6. Break site 1 upstream of first pedestrian bridge behind Rose Theatre Cir.

Figure 7. Pool downstream of break sites 1 and 2

Figure 8. Pool downstream of break sites 1 and 2 with mosquito larvae

Figure 9. Stream reach in between two problem areas running clear

Figure 10. Northern greenfrog observed

Figure 11. Northern two-lined salamander adult observed

Figure 12. From this manhole down to lake, stream conditions were worse; presumably downstream of break site 3

Figure 13. Problem area upstream of lake, presumably below break site 3

Figure 14. Problem area upstream of lake, presumably below break site 3

Figure 15. Problem area upstream of lake, presumably below break site 3

Figure 16. Problem area upstream of lake, just before opens up into lake

Figure 17. Problem area leading into lake

Figure 18. Upper reaches of lake

Figure 19. Area where three turtles were observed swimming under water

Figure 20. Upper reaches of Lake showing moderate algae growth

Figure 21. Ducks and other waterfowl observed feeding in upper reaches of lake

Figure 22. Pumping station overflow area

Figure 23. Stream reach downstream of pumping station overflow area

Figure 24. Stream reach downstream of pumping station overflow area where live crayfish observed

Additional Photos: https://www.dropbox.com/sh/ydx6s8idqcsnmka/AAC0mjaRles0fkNuaiIinrW2a?dl=0