Clean Water 2020 Program

SUPPLEMENTAL ENVIRONMENTAL PROJECT (SEP) COMPLETION REPORT

June 2019

We Are Columbia

Table of Contents

List of Tables

List of Figures

Acronyms & Abbreviations

BMP – Best Management Practice

CD – Consent Decree

City – City of Columbia

Columbia – City of Columbia

DHEC – [South Carolina] Department of Health and Environmental Control

DOJ – [United States] Department of Justice

EPA – [United States] Environmental Protection Agency

DO – Dissolved Oxygen

HDPE – High-Density Polyethylene

MTD – Manufactured Treatment Device

QAPP – Quality Assurance Project Plan

RBWA – Rocky Branch Watershed Alliance

RCP – Reinforced Concrete Pipe

SEP – Supplemental Environmental Project

Temp – Temperature

TSS – Total Suspended Solids

Program Summary and Intent

As required by the Consent Decree (CD) entered by order dated May 21, 2014 in *The United States of America and State of South Carolina by and through the Department of Health and Environmental Control vs. The City of Columbia*, Civil Action No. 3:13-2429-TWL, DOJ (United States Department of Justice) Case Number 90-5-1-1-00954, Paragraph 31, "Within 30 days after the deadline for completion of the SEP, Columbia shall submit a SEP Completion Report to the United States, in accordance with Section XVI of this Consent Decree (Notices). The SEP Completion Report shall contain the following information:

(i). a detailed description of the SEP as implemented;
(ii). a description of any problems encountered in completing the SEP and the solutions thereto;
(iii). an itemized list of all eligible SEP costs expended;
(iv). certification that the SEP has been fully implemented pursuant to the provisions of this Decree; and
(v). a description of the environmental and public health benefits resulting from implementation of the SEP (with a quantification of the benefits and pollutant reductions, if appropriate)."

The City of Columbia (City) has developed this SEP Completion Report to describe how the City implemented the Supplemental Environmental Project(s) as required in Paragraphs 28 through 30 in the CD and as described in Revised Appendix I of the CD.

This SEP Completion Report has been prepared in accordance with the requirements of Paragraphs 28 through 30 and Revised Appendix I of the CD. This project was undertaken in connection with the settlement of an enforcement action, United States et al. v. City of Columbia, taken on behalf of the U.S. Environmental Protection Agency [EPA] and South Carolina Department of Health and Environmental Control [DHEC], under the Clean Water Act.

As required by Paragraphs 28 through 30 of the CD, "Columbia shall implement a Supplemental Environmental Project (SEP), as described in Appendix I of this Consent Decree in accordance with all provisions of Appendix I of this Consent Decree. The SEP Columbia shall implement, as described in Appendix I, consists of Flooding and Water Quality Improvements in three areas: (i) along the Lower Reach of Rocky Branch, (ii) Smith Branch, and (iii) Gills Creek, with expenditures totaling at least $1,000,000. The SEP shall be completed within 60 months after entry of this Decree."

Upon execution of the CD, the City certified the truth and accuracy of each of the following with respect to the SEP obligations under the CD:

a. that all cost information provided to EPA in connection with EPA's approval of the SEP is complete and accurate and that Columbia in good faith estimates that the cost to implement the SEP, exclusive of overhead, additional employee time and salary, administrative expenses, legal fees, and contractor oversight, is $1,000,000;
b. that, as of the date of executing this Decree, Columbia is not required to perform or develop the SEP by any federal, state, or local law or regulation and is not required to

perform or develop the SEP by agreement, grant, or as injunctive relief awarded in any other action in any forum;

c. that Columbia is not a party to any open federal financial assistance transaction that is funding or could be used to fund the same activity as the SEP identified in Appendix I. Columbia further certifies that, to the best of its knowledge and belief after reasonable inquiry, there is no such open federal financial transaction that is funding or could be used to fund the same activity as the SEP, nor has the same activity been described in an unsuccessful federal financial assistance transaction proposal submitted to EPA within two years of the date of this settlement (unless the project was barred from funding as statutorily ineligible). For the purposes of this certification, the term "open federal financial assistance transaction" refers to a grant, cooperative agreement, loan, federally-guaranteed loan guarantee or other mechanism for providing federal financial assistance whose performance period has not yet expired;
d. that the SEP is not a project that Columbia was planning or intending to construct, perform, or implement other than in settlement of the claims resolved in this Decree;
e. that Columbia has not received and will not receive credit for the SEP in any other enforcement action; and
f. that Columbia will not receive any reimbursement for any portion of the SEP from any other person.

During the public comment period on the proposed Consent Decree, the EPA received comments on the SEP filed with the proposed Consent Decree. As originally proposed, the SEP consisted of stream cleanup and water quality improvement projects in three areas within the City's service area: the Upper Congaree River Watershed along the Lower and Middle Reach of Rocky Branch (designated Area 1), Smith Branch (designated Area 2), and Gills Creek (designated Area 3). The proposed projects for each of these three areas were generally the same. Based on the comments received and the City's discussions with the commenting parties, the SEP in Revised Appendix I of the CD was developed to recognize prior work conducted in each of the three areas and to design projects to address the unique environmental concerns and conditions in each of those areas as summarized below.

Area 1 – Stream Cleanup, Flooding, and/or Water Quality Improvement of the Upper Congaree River Watershed Along the Lower and Middle Reach of Rocky Branch

The scope of work for Area 1 in Revised Appendix I of the CD required the City to coordinate with the Rocky Branch Watershed Alliance to develop an integrated Watershed Management Plan and to undertake projects to improve water quality and reduce flood risk in this area:

> Columbia will develop and implement, in conjunction with the Rocky Branch Watershed Alliance ("RBWA"), a multi-year, phased project designed to facilitate long-term efforts to improve the water quality of Rocky Branch. During the initial phase of this project ("Phase I of the Rocky Branch Project"), Columbia will engage a consultant, in consultation with

> RBWA, to develop an integrated Watershed Management Plan consistent with the planning protocols of the Center for Watershed Protection. The consultant will utilize prior assessments conducted by the City and RBWA and conduct new assessments as required to develop a comprehensive plan that prioritizes actions and capital improvements required to meet the long-term goals for Rocky Branch, including those beyond the scope of Phase II of the Rocky Branch Project.
>
> The second phase ("Phase II of the Rocky Branch Project") will implement projects identified in the Watershed Management Plan developed during Phase I. Projects will be implemented on a prioritized scale to improve water quality and reduce flood risk as determined by the City of Columbia in consultation with RBWA. This phase also includes implementing engineering techniques designed to improve water quality, minimize flooding, and restore and stabilize stream banks of Rocky Branch, such as stream and riparian buffer restoration, re-vegetation and low impact design standards. Additionally, Columbia shall maintain those selected engineering techniques until EPA determines that Columbia has satisfactorily completed this SEP pursuant to Paragraph 33 of the Consent Decree. Any remaining funds will be used for a one-time stream cleanup project, consisting of removal of debris, such as trash, furniture, household appliances, tires, and construction debris, from the banks and contiguous stream beds of Area 1 accessible from Rocky Branch and within the municipal limits of the City. Columbia will secure necessary federal, state, and local permits for the project and will dispose of and/or recycle all removed debris consistent with applicable federal, state, and local requirements.

As stated above, a one-time stream cleanup project was proposed, but was contingent on the availability of funds after completion of the required projects.

Area 2 – Stream Cleanup and Water Quality Improvement of Smith Branch

The scope of work for Area 2 in Revised Appendix I of the CD required the City to develop a Smith Branch Comprehensive Watershed Management Plan and to conduct a one-time stream cleanup project in this area:

> During the initial phase of this project ("Phase I of the Smith Branch Project"), Columbia will engage a design professional in consultation with Congaree Riverkeeper to develop a Smith Branch Comprehensive Watershed Management Plan consistent with the planning protocols of the Center for Watershed Protection.
>
> During the second phase of this project ("Phase II of Smith Branch Project"), Columbia will conduct a one-time stream cleanup project in an effort to improve the overall quality and sustainability of Smith Branch. The stream cleanup project shall consist of removal of debris, such as trash, furniture, household appliances, tires, and construction debris, from the banks and contiguous stream beds of Area 2 accessible from Smith Branch and within the municipal limits of the City. Columbia will secure necessary federal, state, and local permits for the project and will dispose of and/or recycle all removed debris consistent with applicable federal, state, and local requirements. This phase may also include additional projects identified in the Smith Branch Watershed Management Plan

developed during Phase I. For those Phase II projects which include implementing engineering techniques, Columbia shall maintain those engineering techniques until EPA determines that Columbia has satisfactorily completed this SEP pursuant to Paragraph 33 of the Consent Decree.

Area 3 – Stream Cleanup and Water Quality Improvements of Gills Creek

Unlike Areas 1 and 2, a watershed management plan had already been developed for Area 3 by the Gills Creek Watershed Association. Therefore, based on negotiations with the commenting parties, the scope of work for Area 3 in Revised Appendix I of the CD required the City to implement certain projects identified in the Gills Creek Watershed Management Plan dated May 2009 and to conduct a one-time stream cleanup project:

The Gills Creek Watershed Management Plan dated May 2009 identifies watershed management projects to improve the water quality of Gills Creek. In conjunction with the Gills Creek Watershed Association, the City has identified the certain projects to be conducted on the section of Gills Creek which is generally described as Item 3 on the attached map (hereinafter referred to as "Gills Creek") and flows through an environmental justice community. During the initial phase of this project ("Phase I of the Gills Creek Project"), the City will implement the following projects in the Gills Creek Watershed:

1) Install a pocket wetland or other similar best management practice (BMP) at the end of Pelham Drive near where it meets Gills Creek Parkway;
2) Install a pocket wetland or other similar BMP at the end of Hampton Leas Lane where the road dead ends into the Gills Creek floodplain;
3) Install a pocket wetland or other similar BMP at the end of Tall Pines Circle where the road dead ends in the Gills Creek floodplain;
4) Install an erosion control BMP and outlet protection at the two major discharges entering the Gills Creek floodplain under Gills Creek Parkway;
5) Install a pocket wetland or other similar BMP at the end of Edmond Drive where the stormwater network drains to the Gills Creek floodplain (tax map number R13709-03-11); and
6) Install a pocket wetland or other similar BMP at the end of Hampton Trace Lane where the stormwater network drains to the Gills Creek floodplain (tax map number R13709-03-05).

Columbia shall maintain these BMPs until EPA determines that Columbia has satisfactorily completed this SEP pursuant to Paragraph 33 of the Consent Decree. During the second phase of this project ("Phase II of Gills Creek Project"), Columbia will conduct a one-time stream cleanup project on select portions of Gills Creek as prioritized by the City in consultation with the Gills Creek Watershed Association. The stream cleanup project shall consist of removal of debris, such as trash, furniture, household appliances, tires, and construction debris, from the banks and contiguous stream beds of Area 3 accessible from Gills Creek. Columbia will secure necessary federal, state, and local permits for Phase I and Phase II of the project and will dispose of and/or recycle all debris removed during the project consistent with applicable federal, state, and local requirements.

Water Quality Monitoring Component

The SEP in Revised Appendix I of the CD further required the City to conduct water quality monitoring at the following monitoring sites in Smith Branch and Gills Creek:

Table 1: Water Quality Monitoring Stations/Sites

Site	Description	Impairment	TMDL	Monitoring Parameters	Frequency
C-001	Gills Creek at Garners Ferry Rd.	Fecal Coliform	Yes	DO *E. coli* Temp TSS	Quarterly during years 1-3, and monthly during year 4-6
B-280	Smith Branch at N. Main Street	Fecal Coliform	Yes	DO *E. coli* Temp TSS	Quarterly during years 1-3, and monthly during year 4-6
C-017	Gills Creek at Bluff Road	Fecal Coliform DO	Yes	DO *E. coli* Temp TSS	Quarterly during years 1-3, and every other month (between DHEC samplings) years 4-6

To accomplish the requirements of the CD Paragraphs 28 through 30 and the requirements of Revised Appendix I of the CD, the items as described in detail in **Section 1** of this report were completed and/or are ongoing as needed in the affected areas in accordance with the deadlines established in the CD.

Section 1 Detailed Description of the SEP as Implemented

The City has implemented the SEP as follows:

Area 1 – Stream Cleanup, Flooding, and/or Water Quality Improvement of the Upper Congaree River Watershed Along the Lower and Middle Reach of Rocky Branch

To meet the requirements for the first phase of the Rocky Branch Project, the City engaged a consultant, McCormick Taylor, to develop an integrated Watershed Management Plan, which was dated May 20, 2016. The total SEP eligible cost for this plan was $271,454.77 (see **Section 3** and **Appendix B** and **Appendix C** for more detailed invoice information relating to this plan).

To meet the requirements for the second phase of the Rocky Branch project, the City completed the Martin Luther King Jr. Park Detention and Water Quality Project (SD842301). Martin Luther King Jr. Park is located on Rocky Branch near Five Points and is predominately used as a passive park. Park facilities include a softball field, community center, playground, and open area that make it home to multiple events like softball tournaments, outdoor concerts, festivals, and social gatherings. The park provides open space for detaining stormwater entering the Five Points area in a manner which will not detract from park amenities or interfere with usage of the park.

The City engaged Woolpert, Inc. to design and construct an "off-line" dry detention area to assist with storm water attenuation from Rocky Branch. The goal was to increase the overall storage capacity within the park, slow the velocities within the stream during storm events, and to provide for pollutant trapping within the new storage areas. The detention area was also designed to be aesthetically pleasing and to enhance the purpose of the park. The City's Engineering and Parks Departments worked with Woolpert to create a design that would provide significant detention and water quality benefits. The design included the following features:

One of the detention areas from December 2018.

- Underdrain system to facilitate use of areas that traditionally remain wet long after rain events.
- Dry detention to reduce flooding in Five Points and to promote increased water quality benefits.

- Additional dry detention area designed to be used as an amphitheater when dry.
- Plantings and vegetation to maximize pollutant uptake providing increased water quality benefits.

A new path/boardwalk and "lookout" area along Rocky Branch was added to provide greater access in a safe manner. The boardwalk was not part of the SEP, nor is it included in the calculations for SEP expenses.

The project added a significant amount of storage capacity to the park. **Table 2** shows a comparison between the storage capacity of the park before and after the construction was completed, and the resulting increase in storage volume the project provided. After construction, the storage volume at a water surface elevation of +220.1 will increase by 1.6 acre-feet. According to the flood data, the stream will reach an elevation of +220.1 during a 2 Year 24-hour storm event. The storage volume of the stream at a water surface elevation of +225.2 will increase by 2.1 acre-feet. According to flood data, this is the elevation of the stream during a 10-year storm event having a duration of 24 hours.

Silt fence installed at the start of construction to prevent sediment from entering Rocky Branch (upper two photos) and the construction entrance (bottom photo) located on Greene Street to prevent sediment leaving the site on truck tires and other equipment.

Table 2: Stage Vs. Storage Data – Storage Volume Available to Stream

STAGE VS. STORAGE DATA - STORAGE VOLUME AVAILABLE TO STREAM

PRE-CONSTRUCTION (N. Side of Stream only)			
Elevation	Area		Vol
(Ft)	(Acres)	(SF)	(Ac-Ft)
218.3			
218.6			
219	0.055188	2404	0.0184
220	0.128191	5584	0.10756
220.14	0.212149	9241.22	0.13114
221	0.727893	31707	0.51327
222	1.355234	59034	1.53871
223	1.827732	79616	3.12432
224	2.126217	92618	5.09941
225	2.385996	103934	7.35427
225.26	2.447656	106619.9	7.98262
226	2.636892	114863	9.86348
227	2.896143	126156	12.62898
228	3.097452	134925	15.62522

POST-CONSTRUCTION (N Side of Stream only)			
Elevation	Area		Vol
(Ft)	(Acres)	(SF)	(Ac-Ft)
215.5	0	0	0.0000
216	0.1139348	4963	0.0190
217	0.1809458	7882	0.1549
218	0.2433655	10601	0.3662
218.3	0.1101928	4800	0.4685
218.6	0.1829339	7968.6	0.5783
219	0.5482553	23882	0.7309
220	1.1546832	50298	1.5806
220.14	1.2092208	52674	1.7460
221	1.5442378	67267	2.9272
222	1.640427	71457	3.5521
223	1.9519513	85027	5.1314
224	2.1301653	92790	7.0676
225	2.5137741	109500	9.3869
225.26	2.5669858	111818	10.0474
226	2.7184343	118415	12.0028
227	2.931359	127690	14.8270
228	3.1089302	135425	17.8467

Increase in Storage Volume
(Ac-Ft)
0.0000
0.0190
0.1549
0.3662
0.4685
0.5783
0.7125
1.4730
1.6149
2.4139
2.0134
2.0071
1.9682
2.0327
2.0648
2.1393
2.1980
2.2215

NOTES:
1. According to Flood Data, the stream reaches elevation +220.14 during a 2-Year Storm Event having a duration of 24 hours
2. According to Flood Data, the stream reaches elevation +225.26 during a 10-Year Storm Event having a duration of 24 hours
3. Info provided by Woolpert, Inc.

Water quality benefits from the increased detention were at the forefront of the design. The small detention pond located closest to Greene Street acts as a forebay that slows the velocity of the stormwater runoff and allows sediment to deposit before entering the larger detention pond and finally Rocky Branch. Plantings and vegetation were selected specifically to serve as a tool to maximize pollutant uptake providing increased water quality benefits.

Two of the three detention areas (top) on site from March 2019. Flow from the smaller detention area (top of the picture) enters the larger detention area through the detention pond inlet shown; picture of the large detention area and boardwalk from March 2019.

The project was deemed to be completed via a final inspection on January 24, 2019.

Panoramic picture of the park in December 2018 after major construction and the installation of the plantings and vegetation was completed.

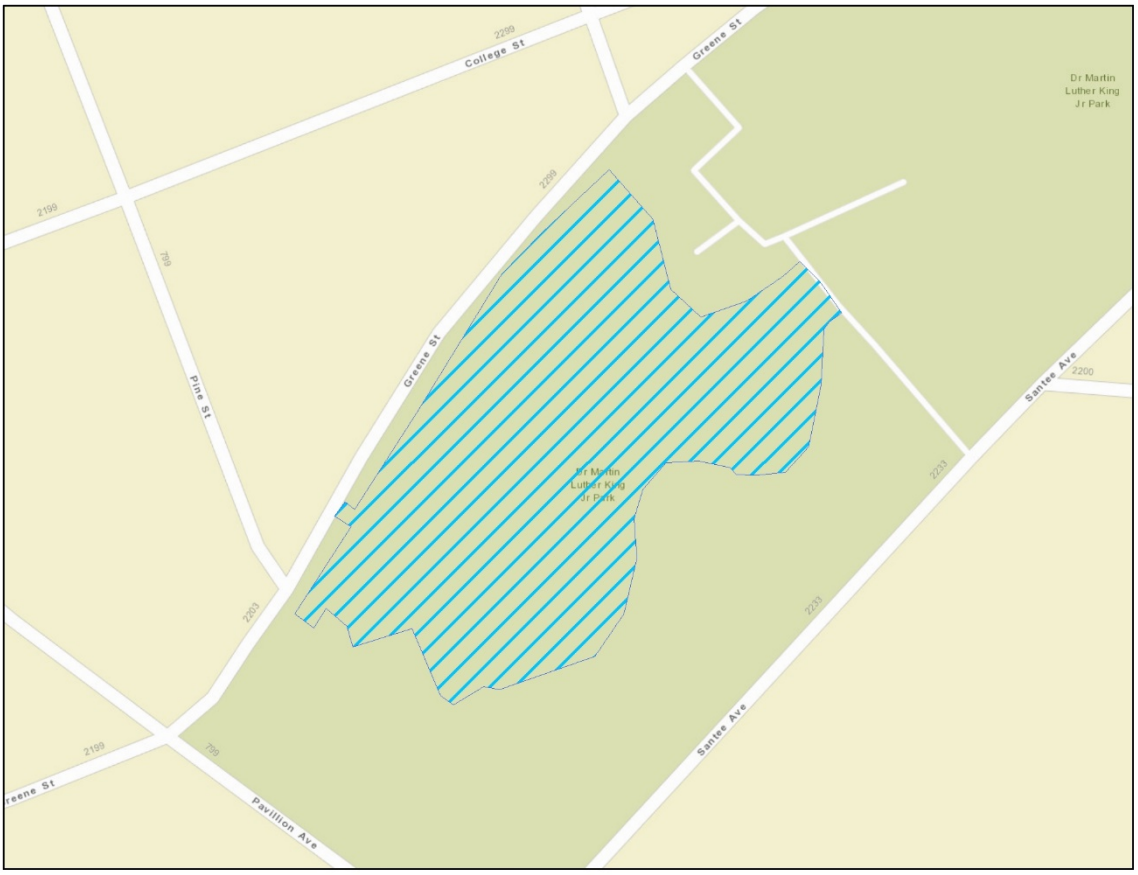
The total SEP eligible cost for this project was $836,070.25 (see **Section 3** and **Appendix B** and **Appendix C** for more detailed invoice information relating to this project).

As noted in the **Program Summary and Intent** section of this report, a one-time stream cleanup project in the second phase in Rocky Branch was contingent of the availability of funds following the required projects. As set forth in **Section 3**, the costs to complete the required projects in the SEP has exceeded

the SEP minimal expenditure of $1,000,000 by more than 80 percent, and therefore, a one-time stream cleanup project in Rocky Branch was not conducted.

Area 1 - Project Location Map

Figure 1: MLK Park Detention Project (SD842301) Map



Area 2 – Stream Cleanup and Water Quality Improvement of Smith Branch

To meet the requirements for the first phase of the Smith Branch Project, the City engaged a consultant, McCormick Taylor, to develop a comprehensive Watershed Management Plan, which was dated May 20, 2016. The total SEP eligible cost for this plan was $290,193.38 (see **Section 3** and **Appendix B** and **Appendix C** for more detailed invoice information relating to this plan).

To meet the requirements for the second phase of the Smith Branch Project, the City, in cooperation with Congaree Riverkeeper, conducted a volunteer litter pickup/stream cleanup on April 8, 2018. The event consisted of 24 volunteers and collected over 1,000 pounds of trash and debris, which was removed and disposed of by City Solid Waste crews.

Volunteers and Congaree Riverkeeper at April 8, 2018 Smith Branch Cleanup.

There were no additional projects required to be completed in the second phase in Smith Branch.

Area 2 - Project Location Map

Figure 2: Map of Smith Branch Volunteer Cleanup Site

Area 3 – Stream Cleanup and Water Quality Improvements of Gills Creek

To meet the requirements for the first phase of the Gills Creek Project, the City completed six projects as detailed in the Gills Creek SEP Completion Report dated November 2016 and recounted below. The total SEP eligible cost for these projects was $407,378.91 (see **Section 3** and **Appendix B** and **Appendix C** for more detailed invoice information relating to these projects).

Site 1 - Install a pocket wetland or other similar best management practice (BMP) at the end of Pelham Drive near where it meets Gills Creek Parkway

A Manufactured Treatment Device (MTD) was selected for Site 1 at Pelham Drive and Gills Creek Parkway. The site is located at a 90-degree road turn, with a wide outside shoulder. Based on observation of the site and discussions with City Streets personnel, it was determined that vehicular traffic on the shoulder would prevent long-term success of a vegetated control on the surface. The subsurface MTD is well-suited to the site's characteristics and is installed online with the existing storm drains. It effectively treats low flows from the drainage area and is equipped to bypass larger flow volumes. Observations of the unit following rainfall events indicate the unit is functioning as designed.

Surface view (left) and interior view (right) of the Site 1 MTD.

Site 2 - Install a pocket wetland or other similar BMP at the end of Hampton Leas Lane where the road dead ends into the Gills Creek floodplain

A combination wet pond and infiltration basin was selected for Site 2 at Hampton Leas Lane. Initially, the planned control for the site was a pocket wetland with a series of shallow wetland pools spilling in a series from the storm drain at the cul-de-sac to the wetlands bordering Gills Creek. Particularly sandy soils in the project location required an alteration of the initial plan. Slopes were laid back, weirs were made considerably more robust, and riprap armoring was introduced. The result was a pond/basin consisting of three pools in series.

Prior to installation of this control, a large storm drain carried water from the drainage area and emptied into an open ditch at the end of the cul-de-sac. The ditch, which had suffered significant erosion over time, carried the water directly from the storm drain outlet to Gills Creek. A junction box was installed near the

outlet of the storm drain, equipped with a weir to divert low flows through the newly constructed pond. The diverted flows travel through an 18" reinforced concrete pipe (RCP) and empty into the first pool.

Broad rectangular weirs were constructed to regulate flow from pool to pool, and at the exit into the wetland. Under most low flow conditions, the first pool is expected to retain water at nearly full capacity, the second to retain water between half and full capacity, and the third to rarely retain water above half capacity. Treatment of low flows will be a combination of that expected from a wet retention pond and that expected in an infiltration basin. This control is well-suited to function fully as either a wet pond or an infiltration basin though it is expected to serve as a combination of the two under most conditions.

To test the functionality flow from a nearby hydrant was introduced to the pond upon completion. Observations of the pond during this test indicate the pond is functioning as intended. The following photos were taken during the test.

View during construction of the first and second pools, facing upstream (top); the first and second pools, facing downstream (middle); third pool, facing downstream (bottom).

Site 3 - Install a pocket wetland or other similar BMP at the end of Tall Pines Circle where the road dead ends in the Gills Creek floodplain

An MTD was selected for Site 3 at Tall Pines Circle. This site is restricted primarily by the square footage available for installation of a water quality control. Water collected in the inlet at the end of the cul-de-sac is routed to the MTD for treatment prior to discharge into the adjacent wetland. The subsurface MTD effectively treats low flows from the drainage area and is equipped to bypass larger flow volumes. Observations of the unit following rainfall events indicate the unit is functioning as designed.

Surface view (left) and interior view (right) of Site 3 MTD and inlet.

Site 4 - Install an erosion control BMP and outlet protection at the two major discharges entering the Gills Creek floodplain under Gills Creek Parkway

Large riprap plunge pools were selected to serve as erosion control at the two locations, 4B and 4C, for Site 4 under Gills Creek Parkway (Note: 4A was eliminated early in the planning process). The plunge pools are of sufficient size and depth to dissipate energy from high velocity flows through the outfalls. Observations following several rainfall events indicate the pools are functioning as designed.

Riprap plunge pool at Site 4B (left) and 4C (right).

Site 5 - Install a pocket wetland or other similar BMP at the end of Edmond Drive where the stormwater network drains to the Gills Creek floodplain (tax map number R13709-03-11)

For Site 5 at Edmond Drive, an enhanced filter swale was selected. Initially, a pocket wetland was planned for the site. However, upon evaluation, it was discovered that a majority of the land available for construction of a control was existing wetland. The storm drainage along the roadway emptied into a ditch prior to discharging into the existing wetland. An enhanced filter swale in place of the ditch was determined to be the best approach, filtering flow and reducing velocity between the pipe outfall and the wetland.

A subsurface vein of drainage stone was installed then covered with additional stone and riprap. Low flows filter through the subsurface stone and empty into the riprap apron at the end of the swale. Larger flows will flow along the surface over the riprap. Observations of the swale during low flows (which to-date have remained constant), and after rainfall events, have indicated the swale is functioning as designed.

Upstream side (left) of the swale at Site 5 and downstream side (right).

Site 6 - Install a pocket wetland or other similar BMP at the end of Hampton Trace Lane where the stormwater network drains to the Gills Creek floodplain (tax map number R13709-03-05)

An MTD was selected for Site 6 at Hampton Trace Lane. This site is in the cul-de-sac of a residential neighborhood and the MTD provided for a minimally noticeable alteration at the surface. This selection has been well-received by the occupants of the homes between which the unit was installed. The MTD is installed online with the existing storm drains and effectively treats low flows from the drainage area while it is also equipped to bypass larger flow volumes. Observations of the unit following rainfall events indicate the unit is functioning as designed.

Surface view (left) and interior view (right) of the Site 6 MTD.

To meet the requirements for the second phase of the Gills Creek Project, the City, in cooperation with the Gills Creek Watershed Association, conducted a volunteer litter pickup/stream cleanup on October 20, 2018. The event consisted of 37 volunteers and collected over 1,000 pounds of trash and debris which was removed and disposed of by City Solid Waste crews.

Trash and Debris at October 20, 2018 Gills Creek Cleanup.

Area 3 - Project Location Maps

Figure 3: Map of Site 1

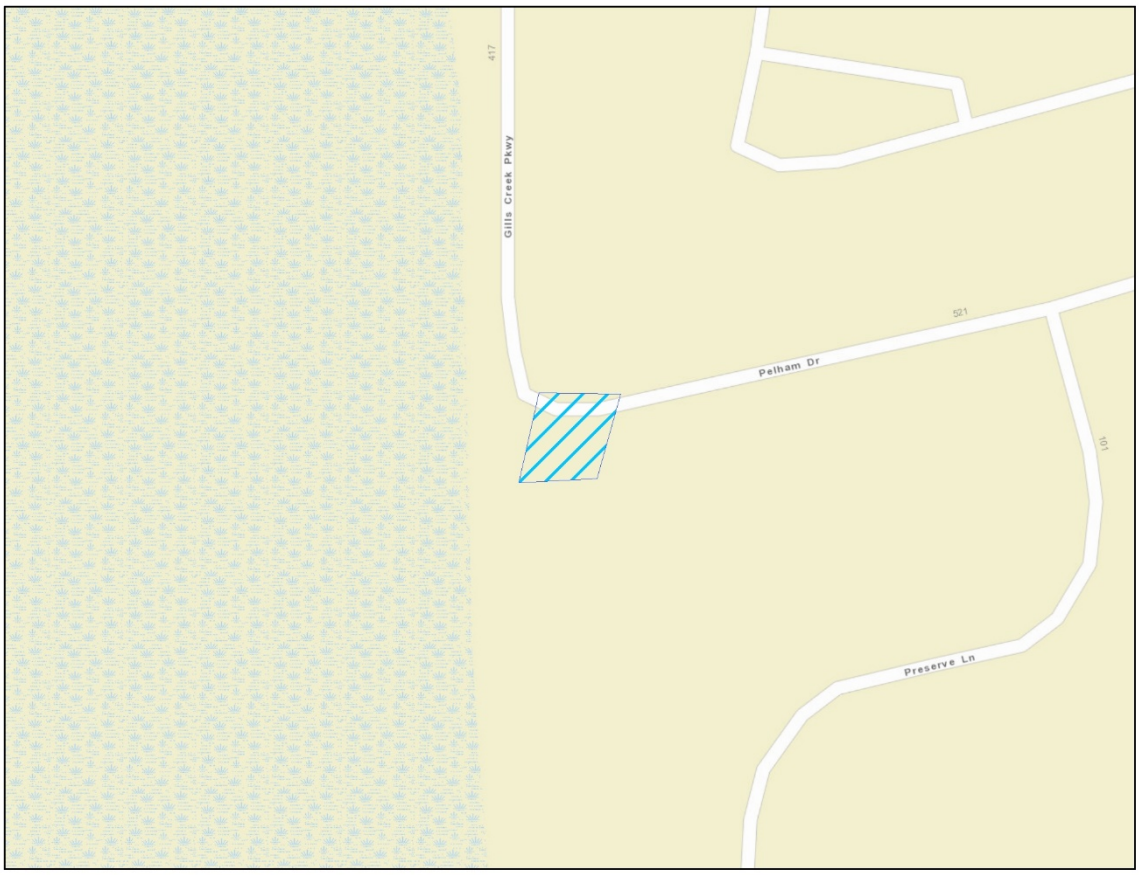


Figure 4: Map of Site 2

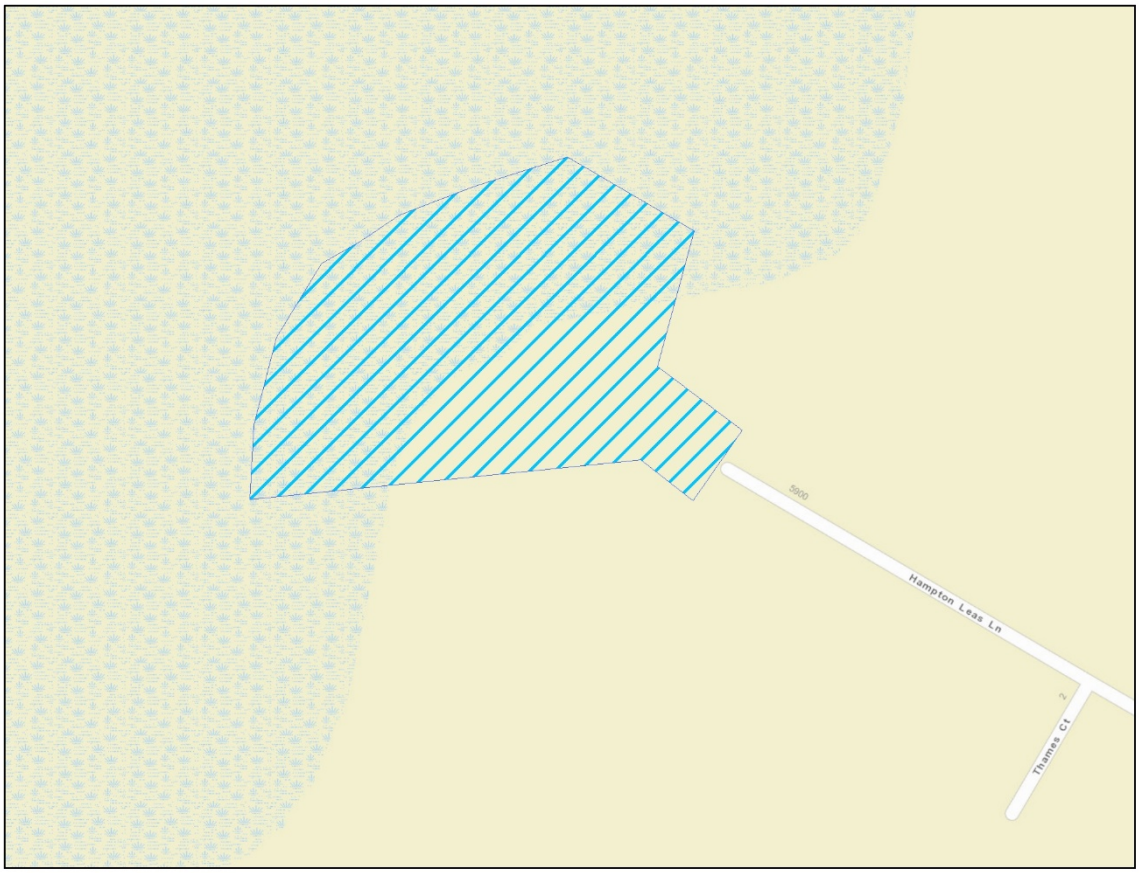


Figure 5: Map of Site 3

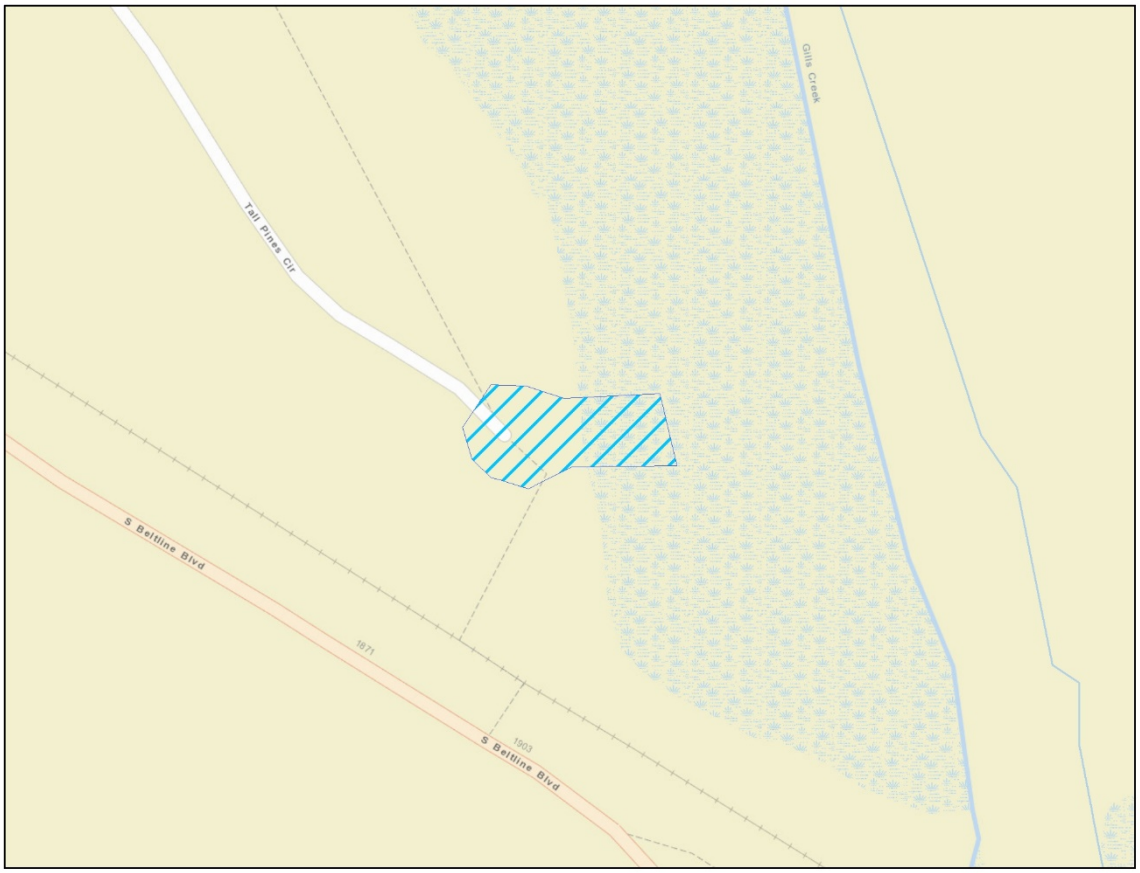


Figure 6: Map of Site 4B

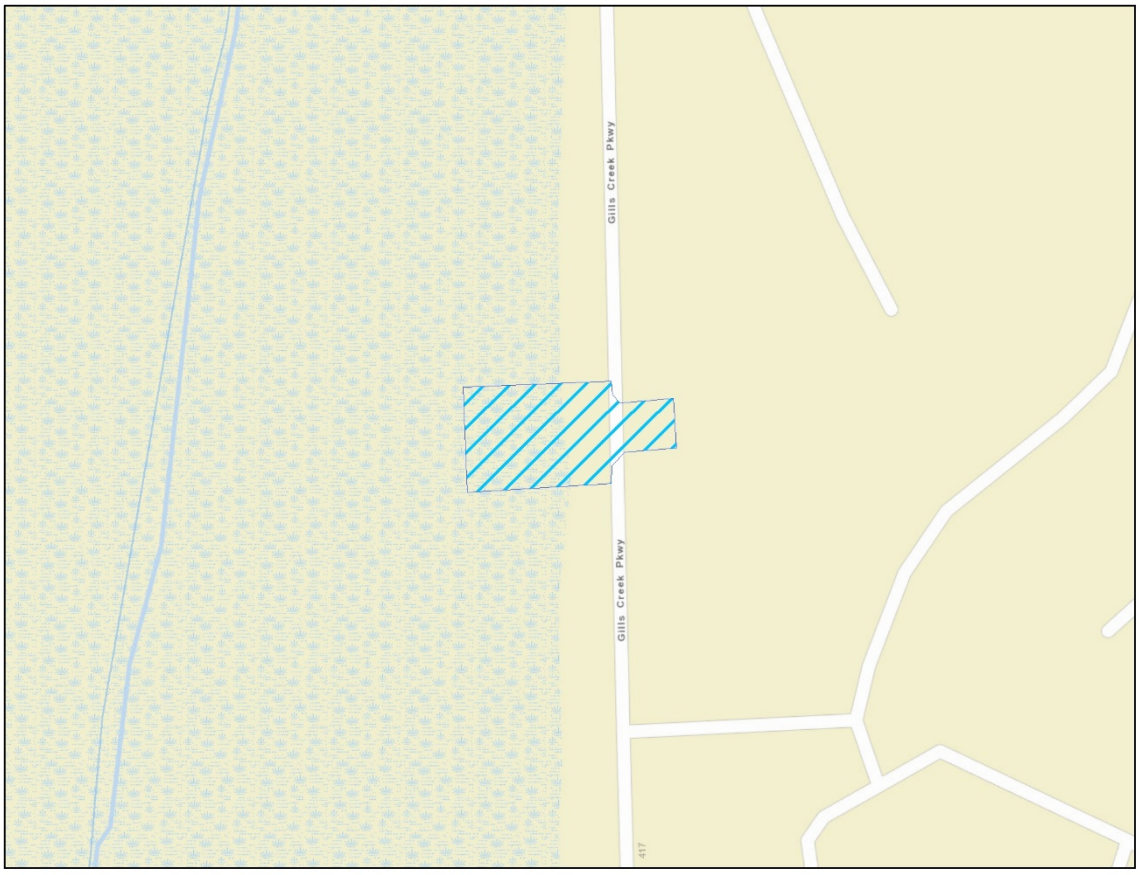


Figure 7: Map of Site 4C

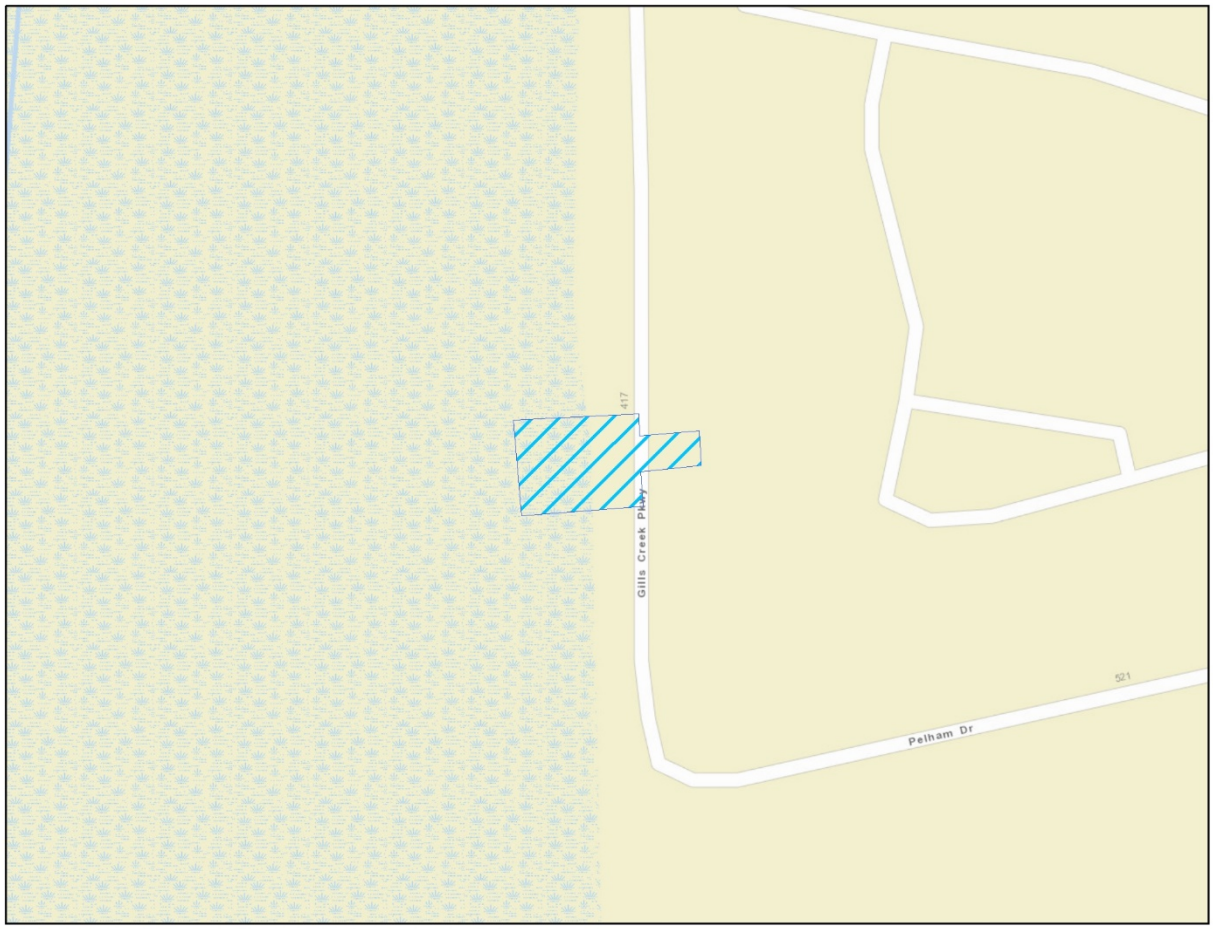


Figure 8: Map of Site 5

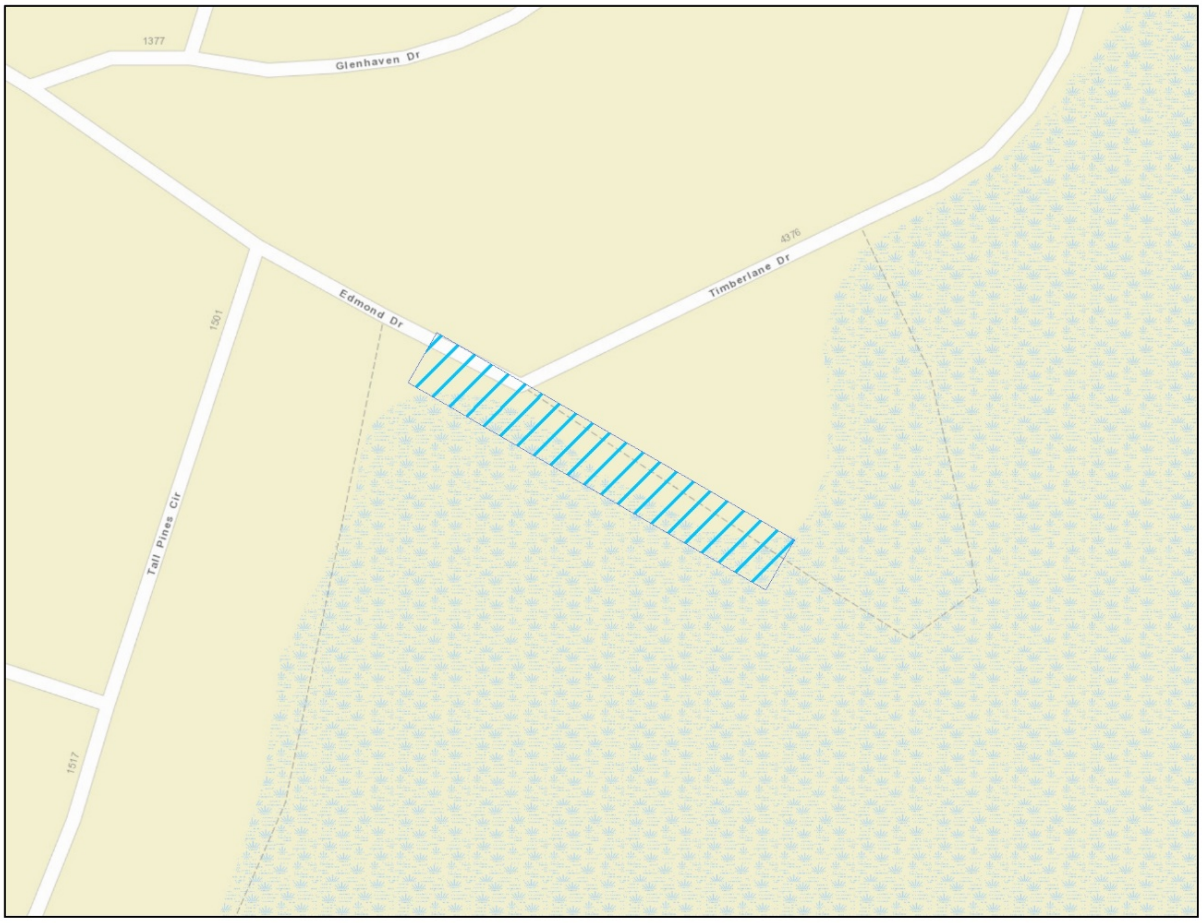


Figure 9: Map of Site 6

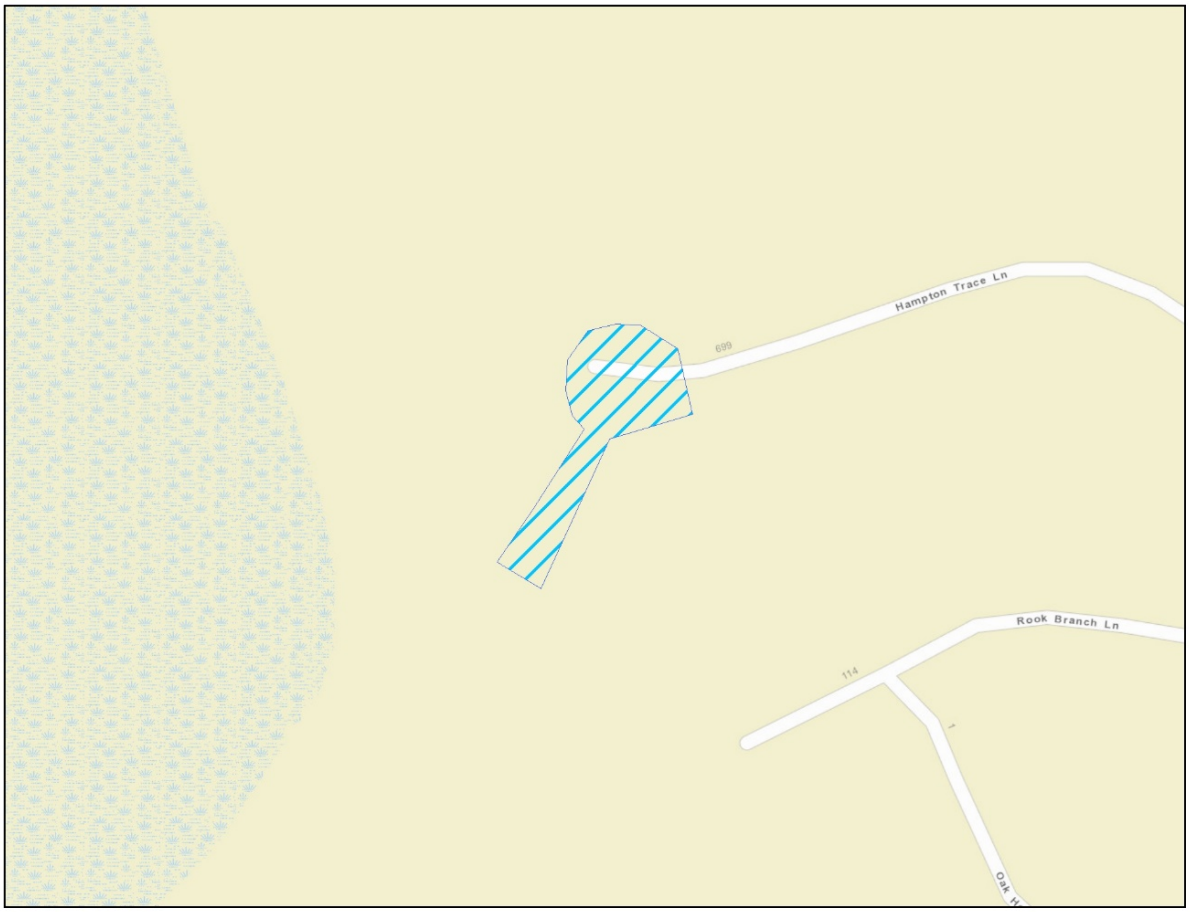
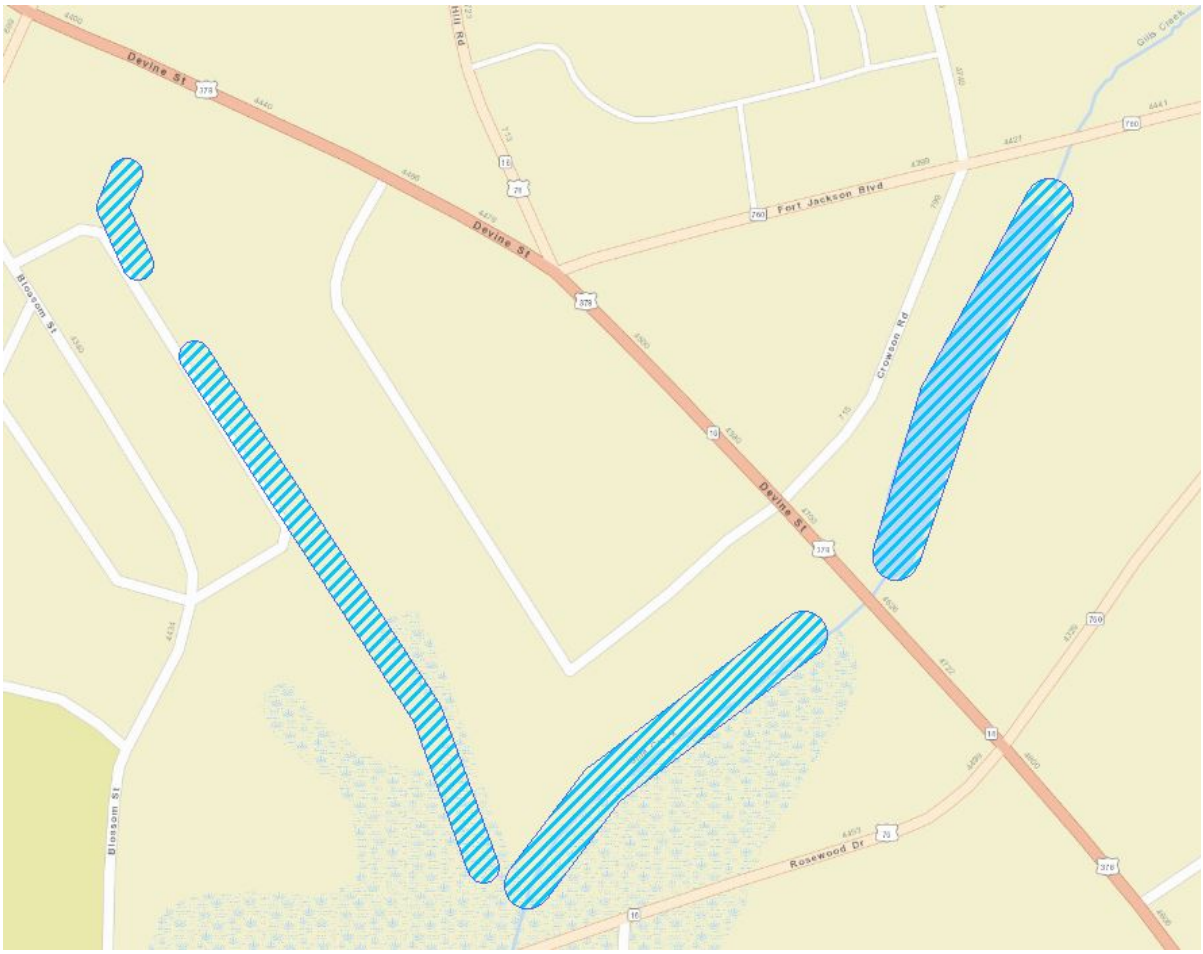


Figure 10: Map of Gills Creek Volunteer Cleanup Sites

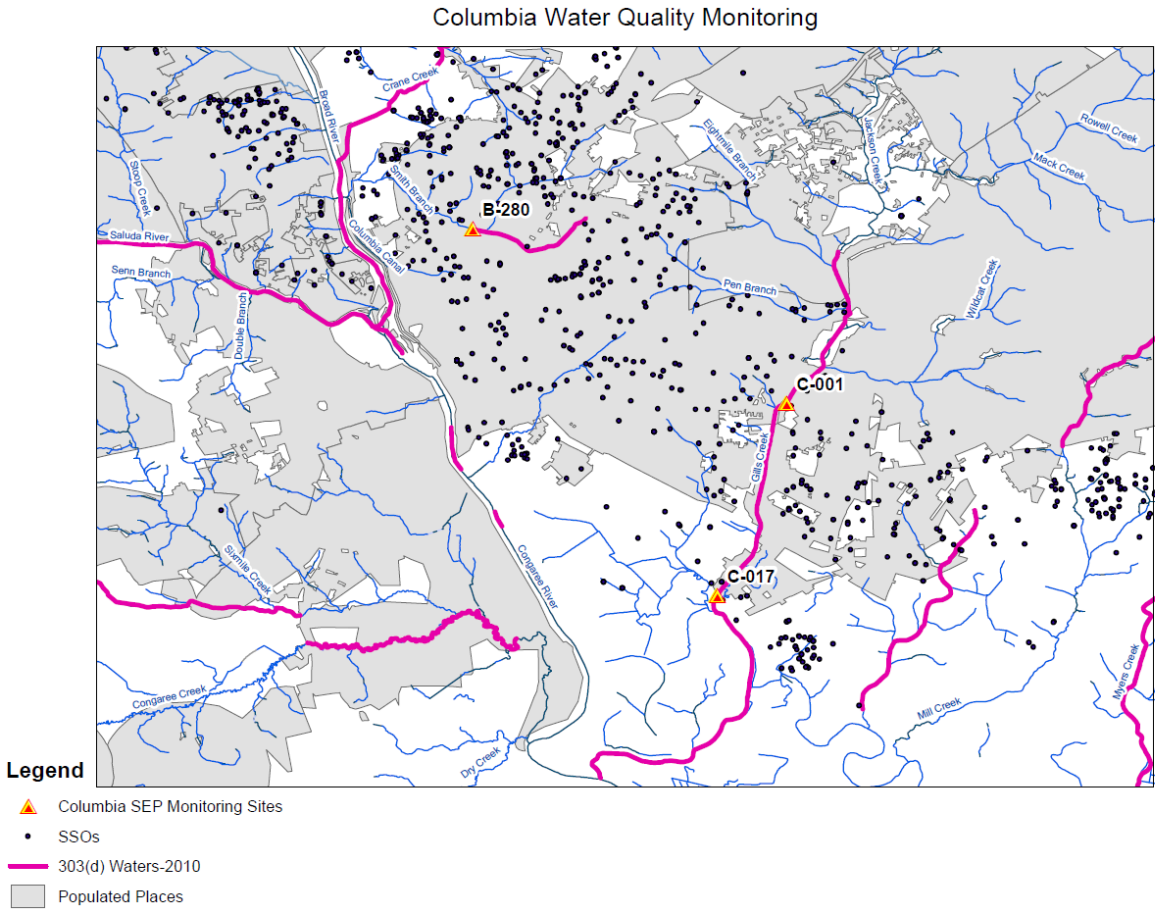


Water Quality Monitoring Component

To meet the requirements for Water Quality Monitoring Component, per the CD and the initial QAPP approval on 1/15/16, Access Analytical conducted quarterly testing and monthly and bi-monthly testing. The first test Access Analytical conducted was on 1/27/16, with a results report dated 2/2/16. The final test Access Analytical conducted was on 3/25/19, with a results report dated 4/1/19. A revision of the QAPP was approved on 4/2/19, which approved a new laboratory for monthly and bi-monthly testing among other changes. Starting in April 2019, Rogers and Callcott Environmental conducted testing and prepared testing reports in accordance with the QAPP and CD. These tests should conclude in December 2021 per the 6-year testing schedule.

Water Quality Monitoring Component - Project Locations Map

Figure 11: Water Quality Monitoring - Project Locations Map



Source: Revised Appendix I of the CD, Entry Number 9-1 (Pg. 9 of 9)

Section 2 Description of Problems Encountered in Completing the SEP and the Solutions Thereto

The City encountered the following problems and devised solutions thereto.

MLK Park Detention Project (SD842301):

The primary environmental consideration for this project was the portion of the Rocky Branch corridor that flows through Martin Luther King Jr. Park. Sediment and erosion control measures were taken to ensure that the stream was not adversely impacted by construction activities. Rain events over the course of the project caused the stream stage to rise and the stream to periodically inundate portions of the project area. Inundation became frequent due to the large quantity of rain events and occurred even with small amounts of rainfall. These events directly impacted sediment and erosion control measures and construction progress in the immediate area.

Once detention pond outlet piping and control structures were installed, there were frequent backwater impacts due to flow from the adjacent portion of Rocky Branch into the detention ponds while they were still under construction. During certain phases of work, the detention pond outlet structures had to be plugged to prevent the impact of backflow from the stream. While the detention pond outlet structures were plugged, pumps were installed to dewater on-site runoff that could not discharge to the adjacent unnamed stream via gravity flow. Additional measures were employed to protect the site, and frequent inspection of controls was necessary to maintain compliance and meet the goals of the project. There were, however, significant rainfall events beyond the design storm that exceeded the capacity of the control measures.

Over the course of the project, there were some periods of dry weather. During those periods, water trucks were used to wet the site and keep dust at a minimum. Street sweeping was also performed during the dry periods to clear the roads of sediment and debris and reduce the impacts of construction on neighboring homeowners.

This project was completed under the City of Columbia mentor / protégé construction program and the team's protégé was primarily responsible for the earthwork portion of the project. The protégé overcame wet project conditions to complete earthwork operations required for construction of the storm drainage collection system and the retaining wall, both of which had to be completed in advance of boardwalk construction. The boardwalk subcontractor overcame wet working conditions and spent many hours custom fitting boardwalk finishes that required field measurement and mitered cuts on high-density polyethylene (HDPE) materials. Since the boardwalk connects to the retaining wall in two locations, the boardwalk to retaining wall connections required custom fitting and fabrication. The landscape subcontractor also encountered and overcame wet conditions to complete the project. Their scope and timing required them to work in sync with the retaining wall subcontractor and the boardwalk subcontractor in order to complete their work on schedule.

Gills Creek Project Site 1:

Due to a high-water table and a constant presence of ground water in the installation area at Gills Creek Project Site 1, the City was not able to install the MTD. The solution was hiring a contractor to design an engineered housing for the MTD to be placed in, which allowed for installation without interference from ground water. The housing also provided some protection from future erosive flows.

Gills Creek Project Site 2:

The soil in the Gills Creek Project Site 2 area is very sandy, so clay soils were delivered to the site for the permanent pool areas. The sandy soil also caused erosion problems after installation was complete. Following an initial seeding of grass that failed to establish, generous applications of hydroseed were applied to ensure an establishment of grass sufficient for stabilization of the area.

Gills Creek Project Site 3:

Due to a high-water table and a constant presence of ground water in the installation area at Gills Creek Project Site 3, the City was not able to install the MTD. The solution was hiring a contractor with experience in installing stormwater infrastructure in high ground water sites to install the MTD. An engineered housing was not necessary at this location.

Gills Creek Project Sites 4B and 4C:

No SEP related problems encountered.

Gills Creek Project Site 5:

No SEP related problems encountered.

Gills Creek Project Site 6:

After installation of the engineered water quality swale at Gills Creek Project Site 6, mulch was applied to dissipate energy from erosive flows. The day after installation was complete, the first rain to affect the area washed away most of the mulch and caused some erosion in the swale. The swale was repaired, and riprap was installed to be a more robust energy dissipater.

Water Quality Monitoring:

No SEP related problems encountered.

Section 3 Itemized List of all Eligible SEP Expenses

Pursuant to the CD, the City of Columbia agreed to expend at least $1,000,000 in performing the SEP. At the completion of the SEP, and as of the submittal of this Completion Report, the City has been invoiced a total of $1,805,097.31 for SEP Eligible Expenses. Of the invoiced amount, the City has paid $1,724,134.11. The remaining unpaid amount is due to LAD Corporation of West Columbia for construction work performed on SD842301 – Martin Luther King Jr. Park Detention and Water Quality Project. **Table 3** includes a summary of the projects, vendors, invoice amounts, and SEP eligible expenses. A full invoice listing can be found in **Appendix B**.

Table 3: SEP Eligible Expenses

Project Name	Vendor	Number of Invoices / Work Orders	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses
Gills Creek Watershed Projects 1-6	Bluegrass Materials Company	14	$1,788.65	$1,788.65
	Carolina Fresh Farms	1	$400.00	$400.00
	City of Columbia	23	$50,258.44	$50,258.44
	Concrete Supply Co	5	$5,355.35	$5,355.35
	Fortiline Waterworks	10	$24,189.01	$24,189.01
	JMS Fence Company	1	$6,995.00	$6,995.00
	Maxim Crane Works	1	$669.38	$669.38
	Metts Recycling & Landscape	3	$6,084.00	$6,084.00
	North American Pipeline Management	2	$179,023.18	$179,023.18
	Oldcastle Precast	3	$59,193.12	$59,193.12
	Palmetto Hydroseeding	3	$4,600.00	$4,600.00
	Site One Landscaping (Blue Max Materials)	1	$1,075.98	$1,075.98
	Sneed, Stewart Morris (Cycle Stops LLC)	1	$4,995.00	$4,995.00
	Sunbelt Rentals	5	$3,838.17	$3,838.17
	Thomas & Hutton	7	$58,808.87	$58,808.87
	Thomas Concrete of South Carolina	1	$104.76	$104.76
	Gills Creek Watershed Projects 1-6 Totals	**81**	**$407,378.91**	**$407,378.91**
Smith Branch Watershed Supplemental Environmental Project - Watershed Assessment Report	McCormick Taylor	9	$290,193.38	$290,193.38
	Smith Branch Watershed Supplemental Environmental Project - Watershed Assessment Report Totals	**9**	**$290,193.38**	**$290,193.38**

Project Name	Vendor	Number of Invoices / Work Orders	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses
Rocky Branch Watershed Supplemental Environmental Project - Watershed Assessment Report	McCormick Taylor	9	$271,454.77	$271,454.77
	Rocky Branch Watershed Supplemental Environmental Project - Watershed Assessment Report Totals	**9**	**$271,454.77**	**$271,454.77**
Martin Luther King Jr. Park Detention and Water Quality Project	LAD Corporation of West Columbia*	9	$1,145,931.99	$809,632.00
	Woolpert, Inc.	7	$37,420.00	$26,438.25
	Martin Luther King Jr. Park Detention and Water Quality Project Totals	**16**	**$1,183,351.99**	**$836,070.25**
	Supplemental Environmental Projects Total	**115**	**$2,152,379.05**	**$1,805,097.31**

***All invoices received, but not all paid as of SEP Completion Report Submittal.**
See Appendices B & C for full invoice / project details.

Section 4 Certification of SEP Implementation

Pursuant to Paragraph 31.a.(iv)., the City provides the following certification of implementation of the SEP:

> I certify that the Supplemental Environmental Project required pursuant to the provisions of the Consent Decree in *The United States of America and State of South Carolina by and through the Department of Health and Environmental Control vs. The City of Columbia*, Civil Action No. 3:13-2429-TWL, DOJ Case Number 90-5-1-1-00954, has been fully implemented pursuant to the Section VIII and described in the Revised Appendix I to the Consent Decree. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Joseph D. Jaco, P.E.
Director of Utility Operations

Section 5 Description of the Environmental and Public Health Benefits Resulting from the Implementation of the SEP

Regarding the environmental and public health benefits resulting from the implementation of the SEP and the required Water Quality Monitoring, there has been no quantifiable difference in pre-project testing results and post-project testing results. However, it should be noted, there was no testing required, nor completed in Rocky Branch for the monitoring parameters, so any impact from the completion of the detention project in MLK Park is not quantifiable. However, the retention area should provide some level of water quantity and quality improvements. Full monitoring results for the applicable time frame are included in **Appendix D** and summarized in tabular form in the same appendix. Below are the required monitoring sites and the projects/stream cleanups completed. The results of the monitoring are briefly discussed in each site section.

Smith Branch (testing site B-280 – stream cleanup project completion date 4/8/2018)

- TSS - Readings after the stream cleanup project completion show no significant reduction in TSS. Post-project readings are comparable to pre-project data.
- *E. coli* – Readings post stream cleanup project completion do not indicate an improvement when compared to pre-project completion data.
- DO – Dissolved oxygen levels trend with climate/temperature data. No notable improvements or upward trending in DO as a result of the stream cleanup project.

Gills Creek (testing site C-001 – projects completed 11/21/16 – stream cleanup completed 10/23/18)

- TSS – If not for the reading on 7/27/2017, the overall trend post-project completion is downward which would indicate improvement.
- *E. coli* - Readings post-project completion do not indicate an improvement when compared to pre-project completion data.
- DO – Dissolved oxygen levels trend with climate/temperature data. No notable improvements or upward trending in DO as a result of the completed project.

Gills Creek (testing site C-017 – projects completed 11/21/16 – stream cleanup completed 10/23/18)

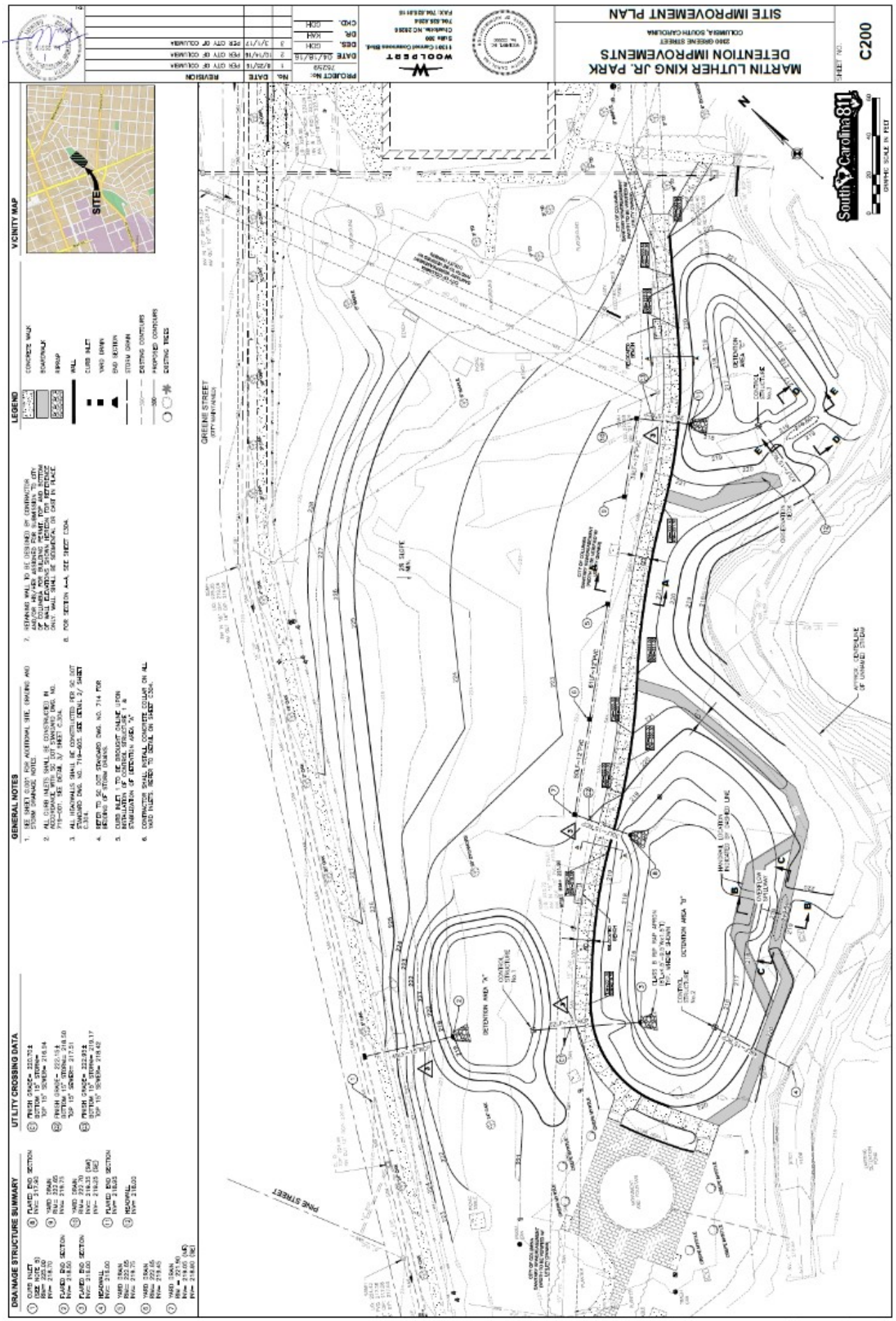
- TSS – There is no clear trending to indicate improvement post-project completion.
- *E. coli* - Readings post project completion do not indicate an improvement when compared to pre-project completion data.

- DO – Dissolved oxygen levels trend with climate/temperature data. No notable improvements or upward trending in DO as a result of the completed project.

Section 6 Appendices

Appendix A – SD842301 Construction Drawing for Martin Luther King, Jr. Park Detention and Water Quality Project

Appendix A – SD842301 Construction Drawing for Martin Luther King, Jr. Park Detention and Water Quality Project



Appendix B – SEP Invoice Detail of Project Cost by Vendor

Project Name	Vendor	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid
Gills Creek Watershed Projects 1-6	Bluegrass Materials Company	9425831263	5/10/2016	$111.39	$111.39	$111.39
		9425831355	5/10/2016	$61.96	$61.96	$61.96
		9425831357	5/10/2016	$61.99	$61.99	$61.99
		9425835531	5/18/2016	$302.02	$302.02	$302.02
		9425836093	5/19/2016	$600.72	$600.72	$600.72
		9425851142	6/21/2016	$62.15	$62.15	$62.15
		9425852003	8/22/2016	$61.39	$61.39	$61.39
		9425903699	10/5/2016	$72.79	$72.79	$72.79
		9425918913	11/6/2016	$49.33	$49.33	$49.33
		9425918914	11/6/2016	$60.51	$60.51	$60.51
		9425920607	11/8/2016	$67.83	$67.83	$67.83
		9425921742	11/10/2016	$55.57	$55.57	$55.57
		9425923169	11/14/2016	$106.75	$106.75	$106.75
		9425923862	11/15/2016	$114.25	$114.25	$114.25
	Bluegrass Materials Company Total	**Total Invoices**	**14**	**$1,788.65**	**$1,788.65**	**$1,788.65**
	Carolina Fresh Farms	0101023533	10/11/2016	$400.00	$400.00	$400.00
	Carolina Fresh Farms Total	**Total Invoices**	**1**	**$400.00**	**$400.00**	**$400.00**
	City of Columbia	515905	4/1/2016 -7/1/2016	$14,775.25	$14,775.25	$14,775.25
		515925	4/1/2016 -7/1/2016	$772.96	$772.96	$772.96
		516046	4/1/2016 -7/1/2016	$697.11	$697.11	$697.11
		516051	4/1/2016 -7/1/2016	$652.66	$652.66	$652.66
		516095	4/1/2016 -7/1/2016	$513.15	$513.15	$513.15
		518692	6/14/2016 - 8/2/2016	$2,995.13	$2,995.13	$2,995.13
		518695	6/1/2016 - 9/1/2016	$1,318.46	$1,318.46	$1,318.46
		518696	6/1/2016 - 9/1/2016	$40.44	$40.44	$40.44
		521352	6/14/2016 - 8/2/2016	$35.87	$35.87	$35.87
		522797	6/7/2016 - 12/12/2016	$9,984.87	$9,984.87	$9,984.87
		522809	6/7/2016 - 12/12/2016	$282.12	$282.12	$282.12
		523035	6/14/2016 - 8/2/2016	$1,892.70	$1,892.70	$1,892.70
		523136	4/1/2016 -7/1/2016	$598.00	$598.00	$598.00
		534013	6/7/2016 - 12/12/2016	$3,621.75	$3,621.75	$3,621.75
		534014	6/7/2016 - 12/12/2016	$1,712.94	$1,712.94	$1,712.94
		534017	6/7/2016 - 12/12/2016	$7,778.66	$7,778.66	$7,778.66
		534062	6/7/2016 - 12/12/2016	$1,623.64	$1,623.64	$1,623.64
		535193	6/7/2016 - 12/12/2016	$74.43	$74.43	$74.43
		535196	6/7/2016 - 12/12/2016	$42.88	$42.88	$42.88
		535610	6/7/2016 - 12/12/2016	$180.89	$180.89	$180.89
		538263	6/7/2016 - 12/12/2016	$566.23	$566.23	$566.23
		541818	6/7/2016 - 12/12/2016	$41.62	$41.62	$41.62
		541833	6/7/2016 - 12/12/2016	$56.68	$56.68	$56.68

Project Name	Vendor	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid
Gills Creek Watershed Projects 1-6	**City of Columbia Total**	**Total Invoices**	**23**	**$50,258.44**	**$50,258.44**	**$50,258.44**
	Concrete Supply Co	4382780	10/27/2016	$1,251.90	$1,251.90	$1,251.90
		4382781	10/27/2016	$1,877.85	$1,877.85	$1,877.85
		4385024	11/4/2016	$1,251.90	$1,251.90	$1,251.90
		4386065	11/7/2016	$347.75	$347.75	$347.75
		4387698	11/11/2016	$625.95	$625.95	$625.95
	Concrete Supply Co Total	**Total Invoices**	**5**	**$5,355.35**	**$5,355.35**	**$5,355.35**
	Fortiline Waterworks	3660886	5/20/2016	$7,103.13	$7,103.13	$7,103.13
		3666894	5/27/2016	$125.28	$125.28	$125.28
		3680255	6/15/2016	$305.28	$305.28	$305.28
		3699086	7/12/2016	$1,337.61	$1,337.61	$1,337.61
		3751202	9/14/2016	$1,590.11	$1,590.11	$1,590.11
		3751664	9/14/2016	$1,533.76	$1,533.76	$1,533.76
		3755681	9/20/2016	$1,904.74	$1,904.74	$1,904.74
		3864881	4/13/2017	$5,093.46	$5,093.46	$5,093.46
		3864897	4/13/2017	$3,677.27	$3,677.27	$3,677.27
		3924443	4/17/2017	$1,518.37	$1,518.37	$1,518.37
	Fortiline Waterworks Total	**Total Invoices**	**10**	**$24,189.01**	**$24,189.01**	**$24,189.01**
	JMS Fence Company	1482	9/13/2017	$6,995.00	$6,995.00	$6,995.00
	JMS Fence Company Total	**Total Invoices**	**1**	**$6,995.00**	**$6,995.00**	**$6,995.00**
	Maxim Crane Works	45742721	6/16/2016	$669.38	$669.38	$669.38
	Maxim Crane Works Total	**Total Invoices**	**1**	**$669.38**	**$669.38**	**$669.38**
	Metts Recycling & Landscape	16-1083	7/26/2016	$234.00	$234.00	$234.00
		16-1239	8/26/2016	$1,950.00	$1,950.00	$1,950.00
		16-1290	9/6/2016	$3,900.00	$3,900.00	$3,900.00
	Metts Recycling & Landscape Total	**Total Invoices**	**3**	**$6,084.00**	**$6,084.00**	**$6,084.00**
	North American Pipeline Management	1	10/18/2016	$166,700.00	$166,700.00	$166,700.00
		2	10/18/2016	$12,323.18	$12,323.18	$12,323.18
	North American Pipeline Management Total	**Total Invoices**	**2**	**$179,023.18**	**$179,023.18**	**$179,023.18**
	Oldcastle Precast	410135938	5/17/2016	$18,253.00	$18,253.00	$18,253.00
		410135939	6/17/2016	$13,385.00	$13,385.00	$13,385.00
		410137666	10/7/2016	$27,555.12	$27,555.12	$27,555.12

Project Name	Vendor	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid
Gills Creek Watershed Projects 1-6	**Oldcastle Precast Total**	**Total Invoices**	**3**	**$59,193.12**	**$59,193.12**	**$59,193.12**
	Palmetto Hydroseeding	1428	11/18/2016	$3,100.00	$3,100.00	$3,100.00
		1463	5/19/2017	$750.00	$750.00	$750.00
		1483	8/4/2017	$750.00	$750.00	$750.00
	Palmetto Hydroseeding Total	**Total Invoices**	**3**	**$4,600.00**	**$4,600.00**	**$4,600.00**
	Site One Landscaping (Blue Max Materials)	3458	8/17/2016	$1,075.98	$1,075.98	$1,075.98
	Site One Landscaping (Blue Max Materials) Total	**Total Invoices**	**1**	**$1,075.98**	**$1,075.98**	**$1,075.98**
	Sneed, Stewart Morris (Cycle Stops LLC)	1048	2/27/2017	$4,995.00	$4,995.00	$4,995.00
	Sneed, Stewart Morris (Cycle Stops LLC) Total	**Total Invoices**	**1**	**$4,995.00**	**$4,995.00**	**$4,995.00**
	Sunbelt Rentals	60729548-001	6/6/2016	$384.18	$384.18	$384.18
		60927992-001	6/29/2016	$2,648.16	$2,648.16	$2,648.16
		61644956-001	7/8/2016	$138.90	$138.90	$138.90
		61684736-001	7/15/2016	$384.18	$384.18	$384.18
		61857275-001	7/19/2016	$282.75	$282.75	$282.75
	Sunbelt Rentals Total	**Total Invoices**	**5**	**$3,838.17**	**$3,838.17**	**$3,838.17**
	Thomas & Hutton	0144529	1/31/2016	$2,478.13	$2,478.13	$2,478.13
		0145443	2/29/2016	$4,868.87	$4,868.87	$4,868.87
		0146521	3/31/2016	$18,085.00	$18,085.00	$18,085.00
		0147007	4/30/2016	$26,563.58	$26,563.58	$26,563.58
		0148266	5/31/2016	$1,515.00	$1,515.00	$1,515.00
		0148874	6/30/2016	$1,165.00	$1,165.00	$1,165.00
		0149912	7/31/2016	$4,133.29	$4,133.29	$4,133.29
	Thomas & Hutton Total	**Total Invoices**	**7**	**$58,808.87**	**$58,808.87**	**$58,808.87**
	Thomas Concrete of South Carolina	608183	6/17/2016	$104.76	$104.76	$104.76
	Thomas Concrete of South Carolina Total	**Total Invoices**	**1**	**$104.76**	**$104.76**	**$104.76**
		Totals	**81**	**$407,378.91**	**$407,378.91**	**$407,378.91**

Project Name	Vendor	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid
Smith Branch Watershed Supplemental Environmental Project - Watershed Assessment Report	McCormick Taylor	1	2/29/2016	$7,725.14	$7,725.14	$7,725.14
		2	3/17/2016	$40,943.22	$40,943.22	$40,943.22
		3	4/21/2016	$46,568.37	$46,568.37	$46,568.37
		4	5/26/2016	$65,338.94	$65,338.94	$65,338.94
		5	6/27/2016	$98,371.37	$98,371.37	$98,371.37
		6	7/7/2016	$8,289.30	$8,289.30	$8,289.30
		7	8/30/2016	$14,358.42	$14,358.42	$14,358.42
		8	9/30/2016	$7,559.61	$7,559.61	$7,559.61
		9	12/28/2016	$1,039.01	$1,039.01	$1,039.01
		Totals	**9**	**$290,193.38**	**$290,193.38**	**$290,193.38**

Project Name	Vendor	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid
Rocky Branch Watershed Supplemental Environmental Project - Watershed Assessment Report	McCormick Taylor	1	1/27/2016	$17,780.49	$17,780.49	$17,780.49
		2	2/26/2016	$43,379.59	$43,379.59	$43,379.59
		3	3/17/2016	$20,546.63	$20,546.63	$20,546.63
		4	4/21/2016	$41,870.78	$41,870.78	$41,870.78
		5	5/27/2016	$68,950.28	$68,950.28	$68,950.28
		6	6/27/2016	$65,259.70	$65,259.70	$65,259.70
		7	7/7/2016	$1,359.35	$1,359.35	$1,359.35
		8	8/30/2016	$9,222.51	$9,222.51	$9,222.51
		9	10/24/2016	$3,085.44	$3,085.44	$3,085.44
		Totals	**9**	**$271,454.77**	**$271,454.77**	**$271,454.77**

Project Name	Vendor	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid
Martin Luther King Jr. Park Detention and Water Quality Project	LAD Corporation of West Columbia	1	4/27/2018	$61,300.00	$61,300.00	$55,170.00
		2	5/31/2018	$103,665.00	$103,665.00	$93,298.50
		3	7/10/2018	$42,890.00	$42,890.00	$38,601.00
		4	9/20/2018	$183,475.00	$121,075.00	$108,967.50
		5	10/30/2018	$389,780.27	$220,520.00	$198,468.00
		6	11/29/2018	$245,666.72	$155,940.00	$140,346.00
		7	12/21/2018	$104,405.00	$89,492.00	$80,542.80
		8	1/18/2019	$14,750.00	$14,750.00	$13,275.00
		9	2/28/2019	$0.00	$0.00	$0.00

Project Name	Vendor	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid
Martin Luther King Jr. Park Detention and Water Quality Project	**LAD Corporation of West Columbia Total**	**Total Invoices**	**9**	**$1,145,931.99**	**$809,632.00**	**$728,668.80**
	Woolpert, Inc.	2016002620	4/4/2016	$2,157.50	$1,524.33	$1,524.33
		2016003181	4/28/2016	$12,592.50	$8,896.94	$8,896.94
		2016005251	7/6/2016	$12,325.00	$8,707.95	$8,707.95
		2016007529	9/28/2016	$1,822.39	$1,287.57	$1,287.57
		2016009432	11/30/2016	$4,952.50	$3,499.08	$3,499.08
		2016010042	12/21/2016	$1,855.00	$1,310.61	$1,310.61
		2017000657	1/30/2017	$1,715.11	$1,211.78	$1,211.78
	Woolpert, Inc. Total	**Total Invoices**	**7**	**$37,420.00**	**$26,438.25**	**$26,438.25**
		Totals	**16**	**$1,183,351.99**	**$836,070.25**	**$755,107.05**
		Grand Total	**115**	**$2,152,379.05**	**$1,805,097.31**	**$1,724,134.11**

Appendix C – SEP Invoice Calculations by Project

Project Number - Project Name	Vendor	PO Number	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid	Invoice / Work Order SEP Eligible Expenses - Work Description
SD387001 - Gills Creek Watershed Project 1	North American Pipeline Management	P160811	2	10/18/2016	$12,323.18	$12,323.18	$12,323.18	Gills Creek Watershed Project 1 - Design and Installation Services of Manufactured Stormwater Treatment Devices
	Oldcastle Precast	P158057	410135938	5/17/2016	$18,253.00	$18,253.00	$18,253.00	Gills Creek Watershed Project 1 - Manufactured Stormwater Treatment Device
	Thomas & Hutton	P156045	0144529*	1/31/2016	$413.02	$413.02	$413.02	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0145443*	2/29/2016	$811.48	$811.48	$811.48	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0146521*	3/31/2016	$3,014.17	$3,014.17	$3,014.17	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0147007*	4/30/2016	$4,427.26	$4,427.26	$4,427.26	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0148266*	5/31/2016	$252.50	$252.50	$252.50	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0148874*	6/30/2016	$194.17	$194.17	$194.17	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0149912*	7/31/2016	$688.88	$688.88	$688.88	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	North American Pipeline Management	P160811	1*	10/18/2016	$87,900.00	$87,900.00	$87,900.00	Gills Creek Watershed Project 1 - Design and Installation Services of Manufactured Stormwater Treatment Devices
	Maxim Crane Works	P158515	45742721*	6/16/2016	$334.69	$334.69	$334.69	Crane Rental for Work on Gills Creek Watershed Project 1/6
SD387001 - Gills Creek Watershed Project 1 Total					**$128,612.35**	**$128,612.35**	**$128,612.35**	
SD387001 - Gills Creek Watershed Project 2	Sneed, Stewart Morris (Cycle Stops LLC)	P163383	1048	2/27/2017	$4,995.00	$4,995.00	$4,995.00	Fence, Posts, Gates for Gills Creek Watershed Project 2
	Palmetto Hydroseeding	P160875 - PO not on IFAS	1428	11/18/2016	$3,100.00	$3,100.00	$3,100.00	Hydroseeding, Flexterra FGM for Gills Creek Watershed Project 2
	Palmetto Hydroseeding	P160875 - PO not on IFAS	1463	5/19/2017	$750.00	$750.00	$750.00	Maintenance Fertilizer, Lime for Gills Creek Watershed Project 2
	JMS Fence Company	P167498	1482	9/13/2017	$6,995.00	$6,995.00	$6,995.00	Chain Link Fence / Gate for Gills Creek Watershed Project 2

Project Number - Project Name	Vendor	PO Number	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid	Invoice / Work Order SEP Eligible Expenses - Work Description
SD387001 - Gills Creek Watershed Project 2	Palmetto Hydroseeding	P166380	1483	8/4/2017	$750.00	$750.00	$750.00	Maintenance Fertilizer, Lime for Gills Creek Watershed Project 2
	Site One Landscaping (Blue Max Materials)	P158623	3458	8/17/2016	$1,075.98	$1,075.98	$1,075.98	Bio-Retention Soil for Gills Creek Watershed Project 2
	City of Columbia	N/A	522797	6/7/2016 - 12/12/2016	$9,984.87	$9,984.87	$9,984.87	Gills Creek Watershed Project 2 City Labor
	City of Columbia	N/A	522809	6/7/2016 - 12/12/2016	$282.12	$282.12	$282.12	Gills Creek Watershed Project 2 City Labor
	City of Columbia	N/A	534013	6/7/2016 - 12/12/2016	$3,621.75	$3,621.75	$3,621.75	Gills Creek Watershed Project 2 City Labor
	City of Columbia	N/A	534014	6/7/2016 - 12/12/2016	$1,712.94	$1,712.94	$1,712.94	Gills Creek Watershed Project 2 City Labor
	City of Columbia	N/A	534017	6/7/2016 - 12/12/2016	$7,778.66	$7,778.66	$7,778.66	Gills Creek Watershed Project 2 City Labor
	City of Columbia	N/A	534062	6/7/2016 - 12/12/2016	$1,623.64	$1,623.64	$1,623.64	Gills Creek Watershed Project 2 City Labor
	City of Columbia	N/A	535193	6/7/2016 - 12/12/2016	$74.43	$74.43	$74.43	Gills Creek Watershed Project 2 City Labor
	City of Columbia	N/A	535196	6/7/2016 - 12/12/2016	$42.88	$42.88	$42.88	Gills Creek Watershed Project 2 City Labor
	City of Columbia	N/A	535610	6/7/2016 - 12/12/2016	$180.89	$180.89	$180.89	Gills Creek Watershed Project 2 City Labor
	City of Columbia	N/A	538263	6/7/2016 - 12/12/2016	$566.23	$566.23	$566.23	Gills Creek Watershed Project 2 City Labor
	City of Columbia	N/A	541818	6/7/2016 - 12/12/2016	$41.62	$41.62	$41.62	Gills Creek Watershed Project 2 City Labor
	City of Columbia	N/A	541833	6/7/2016 - 12/12/2016	$56.68	$56.68	$56.68	Gills Creek Watershed Project 2 City Labor
	Fortiline Waterworks	P158298	3751202	9/14/2016	$1,590.11	$1,590.11	$1,590.11	Junction Box for Gills Creek Watershed Project 2
	Fortiline Waterworks	P158298	3751664	9/14/2016	$1,533.76	$1,533.76	$1,533.76	Conseal F/RCP, 18" RCP for Gills Creek Watershed Project 2
	Concrete Supply Co	P161440	4382780	10/27/2016	$1,251.90	$1,251.90	$1,251.90	Concrete Dividers for Gills Creek Watershed Project 2
	Concrete Supply Co	P161440	4382781	10/27/2016	$1,877.85	$1,877.85	$1,877.85	Concrete Dividers for Gills Creek Watershed Project 2
	Concrete Supply Co	P161440	4385024	11/4/2016	$1,251.90	$1,251.90	$1,251.90	Concrete Dividers for Gills Creek Watershed Project 2
	Concrete Supply Co	P161440	4386065	11/7/2016	$347.75	$347.75	$347.75	Concrete Dividers for Gills Creek Watershed Project 2
	Concrete Supply Co	P161440	4387698	11/11/2016	$625.95	$625.95	$625.95	Concrete Dividers for Gills Creek Watershed Project 2

Project Number - Project Name	Vendor	PO Number	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid	Invoice / Work Order SEP Eligible Expenses - Work Description
SD387001 - Gills Creek Watershed Project 2	Carolina Fresh Farms	P160865	0101023533	10/11/2016	$400.00	$400.00	$400.00	Palisades Zoysia Slabs for Gills Creek Watershed Project 2
	Bluegrass Materials Company	P158005	9425831263	5/10/2016	$111.39	$111.39	$111.39	Sand Clay for Gills Creek Watershed Project 2
	Bluegrass Materials Company	P158005	9425831355	5/10/2016	$61.96	$61.96	$61.96	Sand Clay for Gills Creek Watershed Project 2
	Bluegrass Materials Company	P158005	9425831357	5/10/2016	$61.99	$61.99	$61.99	Sand Clay for Gills Creek Watershed Project 2
	Bluegrass Materials Company	P158005	9425835531	5/18/2016	$302.02	$302.02	$302.02	Sand Clay for Gills Creek Watershed Project 2
	Bluegrass Materials Company	P158005	9425836093	5/19/2016	$600.72	$600.72	$600.72	Sand Clay for Gills Creek Watershed Project 2
	Bluegrass Materials Company	P158005	9425851142	6/21/2016	$62.15	$62.15	$62.15	Sand Clay for Gills Creek Watershed Project 2
	Bluegrass Materials Company	P158005	9425852003	8/22/2016	$61.39	$61.39	$61.39	Sand Clay for Gills Creek Watershed Project 2
	Bluegrass Materials Company	P158005	9425903699	10/5/2016	$72.79	$72.79	$72.79	Sand Clay for Gills Creek Watershed Project 2
	Bluegrass Materials Company	P158005	9425918913	11/6/2016	$49.33	$49.33	$49.33	Sand Clay for Gills Creek Watershed Project 2
	Bluegrass Materials Company	P158005	9425918914	11/6/2016	$60.51	$60.51	$60.51	Sand Clay for Gills Creek Watershed Project 2
	Bluegrass Materials Company	P158005	9425920607	11/8/2016	$67.83	$67.83	$67.83	Sand Clay for Gills Creek Watershed Project 2
	Bluegrass Materials Company	P158005	9425921742	11/10/2016	$55.57	$55.57	$55.57	Sand Clay for Gills Creek Watershed Project 2
	Bluegrass Materials Company	P158005	9425923169	11/14/2016	$106.75	$106.75	$106.75	Sand Clay for Gills Creek Watershed Project 2
	Bluegrass Materials Company	P158005	9425923862	11/15/2016	$114.25	$114.25	$114.25	Sand Clay for Gills Creek Watershed Project 2
	Thomas & Hutton	P156045	0144529*	1/31/2016	$413.02	$413.02	$413.02	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0145443*	2/29/2016	$811.48	$811.48	$811.48	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0146521*	3/31/2016	$3,014.17	$3,014.17	$3,014.17	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0147007*	4/30/2016	$4,427.26	$4,427.26	$4,427.26	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0148266*	5/31/2016	$252.50	$252.50	$252.50	Technical Consulting Support for Gills Creek Watershed Projects 1-6

Project Number - Project Name	Vendor	PO Number	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid	Invoice / Work Order SEP Eligible Expenses - Work Description
SD387001 - Gills Creek Watershed Project 2	Thomas & Hutton	P156045	0148874*	6/30/2016	$194.17	$194.17	$194.17	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0149912*	7/31/2016	$688.88	$688.88	$688.88	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Metts Recycling & Landscape	P158624	16-1239*	8/26/2016	$975.00	$975.00	$975.00	30 Boulders Delivered to Site for Gills Creek Watershed Project 2/4
	Metts Recycling & Landscape	P158624	16-1290*	9/6/2016	$1,950.00	$1,950.00	$1,950.00	60 Boulders Delivered to Site for Gills Creek Watershed Project 2/4
	Fortiline Waterworks	P158298	3660886*	5/20/2016	$2,367.71	$2,367.71	$2,367.71	Erosion Eel, Silt Fence, Non-Woven Fabric for Gills Creek Watershed Project 2/4/6
	Fortiline Waterworks	P158298	3680255*	6/15/2016	$101.76	$101.76	$101.76	Manhole Joint Wrap, Conseal F/RCP for Gills Creek Watershed Project 2/4/6
	Fortiline Waterworks	P165082	3864897*	4/13/2017	$2,235.47	$2,235.47	$2,235.47	Cement Mix, 18" RCP, Manhole Joint Wrap, Concrete JT Sealent
	Sunbelt Rentals	P158089	60729548-001*	6/6/2016	$128.06	$128.06	$128.06	Equipment Rental for Work on Gills Creek Watershed Project 2/4/6
	Sunbelt Rentals	P158089	60927992-001*	6/29/2016	$882.72	$882.72	$882.72	Equipment Rental for Work on Gills Creek Watershed Project 2/4/6
	Sunbelt Rentals	P158089	61644956-001*	7/8/2016	$46.30	$46.30	$46.30	Equipment Rental for Work on Gills Creek Watershed Project 2/4/6
	Sunbelt Rentals	P158089	61684736-001*	7/15/2016	$128.06	$128.06	$128.06	Equipment Rental for Work on Gills Creek Watershed Project 2/4/6
	Sunbelt Rentals	P158089	61857275-001*	7/19/2016	$94.25	$94.25	$94.25	Equipment Rental for Work on Gills Creek Watershed Project 2/4/6
SD387001 - Gills Creek Watershed Project 2 Total					**$73,011.37**	**$73,011.37**	**$73,011.37**	
SD387001 - Gills Creek Watershed Project 3	Oldcastle Precast	P158057	410137666	10/7/2016	$27,555.12	$27,555.12	$27,555.12	Gills Creek Watershed Project 3 - Manufactured Stormwater Treatment Device
	Thomas & Hutton	P156045	0144529*	1/31/2016	$413.02	$413.02	$413.02	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0145443*	2/29/2016	$811.48	$811.48	$811.48	Technical Consulting Support for Gills Creek Watershed Projects 1-6

Project Number - Project Name	Vendor	PO Number	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid	Invoice / Work Order SEP Eligible Expenses - Work Description
SD387001 - Gills Creek Watershed Project 3	Thomas & Hutton	P156045	0146521*	3/31/2016	$3,014.17	$3,014.17	$3,014.17	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0147007*	4/30/2016	$4,427.26	$4,427.26	$4,427.26	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0148266*	5/31/2016	$252.50	$252.50	$252.50	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0148874*	6/30/2016	$194.17	$194.17	$194.17	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0149912*	7/31/2016	$688.88	$688.88	$688.88	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	North American Pipeline Management	P160811	1*	10/18/2016	$78,800.00	$78,800.00	$78,800.00	Gills Creek Watershed Project 3 - Design and Installation Services of Manufactured Stormwater Treatment Devices
SD387001 - Gills Creek Watershed Project 3 Total					**$116,156.60**	**$116,156.60**	**$116,156.60**	
SD387001 - Gills Creek Watershed Project 4	City of Columbia	N/A	515905	4/1/2016 - 7/1/2016	$14,775.25	$14,775.25	$14,775.25	Gills Creek Watershed Project 4 City Labor
	City of Columbia	N/A	515925	4/1/2016 - 7/1/2016	$772.96	$772.96	$772.96	Gills Creek Watershed Project 4 City Labor
	City of Columbia	N/A	516046	4/1/2016 - 7/1/2016	$697.11	$697.11	$697.11	Gills Creek Watershed Project 4 City Labor
	City of Columbia	N/A	516051	4/1/2016 - 7/1/2016	$652.66	$652.66	$652.66	Gills Creek Watershed Project 4 City Labor
	City of Columbia	N/A	516095	4/1/2016 - 7/1/2016	$513.15	$513.15	$513.15	Gills Creek Watershed Project 4 City Labor
	City of Columbia	N/A	523136	4/1/2016 - 7/1/2016	$598.00	$598.00	$598.00	Gills Creek Watershed Project 4 City Labor
	Fortiline Waterworks	P158298	3666894	5/27/2016	$125.28	$125.28	$125.28	Erosion Eel for Gills Creek Watershed Project 4
	Fortiline Waterworks	P158298	3699086	7/12/2016	$1,337.61	$1,337.61	$1,337.61	Conseal F/RCP, 36" RCP for Gills Creek Watershed Project 4
	Fortiline Waterworks	P158298	3755681	9/20/2016	$1,904.74	$1,904.74	$1,904.74	48" Diameter Manhole, 18" RCP for Gills Creek Watershed Project 4B
	Thomas & Hutton	P156045	0144529*	1/31/2016	$413.02	$413.02	$413.02	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0145443*	2/29/2016	$811.48	$811.48	$811.48	Technical Consulting Support for Gills Creek Watershed Projects 1-6

Project Number - Project Name	Vendor	PO Number	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid	Invoice / Work Order SEP Eligible Expenses - Work Description
SD387001 - Gills Creek Watershed Project 4	Thomas & Hutton	P156045	0146521*	3/31/2016	$3,014.17	$3,014.17	$3,014.17	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0147007*	4/30/2016	$4,427.26	$4,427.26	$4,427.26	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0148266*	5/31/2016	$252.50	$252.50	$252.50	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0148874*	6/30/2016	$194.17	$194.17	$194.17	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0149912*	7/31/2016	$688.88	$688.88	$688.88	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Metts Recycling & Landscape	P158624	16-1239*	8/26/2016	$975.00	$975.00	$975.00	30 Boulders Delivered to Site for Gills Creek Watershed Project 2/4
	Metts Recycling & Landscape	P158624	16-1290*	9/6/2016	$1,950.00	$1,950.00	$1,950.00	60 Boulders Delivered to Site for Gills Creek Watershed Project 2/4
	Fortiline Waterworks	P158298	3660886*	5/20/2016	$2,367.71	$2,367.71	$2,367.71	Erosion Eel, Silt Fence, Non-Woven Fabric for Gills Creek Watershed Project 2/4/6
	Fortiline Waterworks	P158298	3680255*	6/15/2016	$101.76	$101.76	$101.76	Manhole Joint Wrap, Conseal F/RCP for Gills Creek Watershed Project 2/4/6
	Fortiline Waterworks	P165082	3864897*	4/13/2017	$1,441.80	$1,441.80	$1,441.80	Cement Mix, 36" RCP, Manhole Joint Wrap, Concrete JT Sealent
	Sunbelt Rentals	P158089	60729548-001*	6/6/2016	$128.06	$128.06	$128.06	Equipment Rental for Work on Gills Creek Watershed Project 2/4/6
	Sunbelt Rentals	P158089	60927992-001*	6/29/2016	$882.72	$882.72	$882.72	Equipment Rental for Work on Gills Creek Watershed Project 2/4/6
	Sunbelt Rentals	P158089	61644956-001*	7/8/2016	$46.30	$46.30	$46.30	Equipment Rental for Work on Gills Creek Watershed Project 2/4/6
	Sunbelt Rentals	P158089	61684736-001*	7/15/2016	$128.06	$128.06	$128.06	Equipment Rental for Work on Gills Creek Watershed Project 2/4/6
	Sunbelt Rentals	P158089	61857275-001*	7/19/2016	$94.25	$94.25	$94.25	Equipment Rental for Work on Gills Creek Watershed Project 2/4/6
SD387001 - Gills Creek Watershed Project 4 Total					**$39,293.90**	**$39,293.90**	**$39,293.90**	
	Thomas & Hutton	P156045	0144529*	1/31/2016	$413.02	$413.02	$413.02	Technical Consulting Support for Gills

Project Number - Project Name	Vendor	PO Number	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid	Invoice / Work Order SEP Eligible Expenses - Work Description
								Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0145443*	2/29/2016	$811.48	$811.48	$811.48	Technical Consulting Support for Gills Creek Watershed Projects 1-6
SD387001 - Gills Creek Watershed Project 5	Thomas & Hutton	P156045	0146521*	3/31/2016	$3,014.16	$3,014.16	$3,014.16	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0147007*	4/30/2016	$4,427.27	$4,427.27	$4,427.27	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0148266*	5/31/2016	$252.50	$252.50	$252.50	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0148874*	6/30/2016	$194.16	$194.16	$194.16	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0149912*	7/31/2016	$688.88	$688.88	$688.88	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Metts Recycling & Landscape	P158624	16-1083	7/26/2016	$234.00	$234.00	$234.00	18 Yards Mulch for Gills Creek Watershed Project 5
SD387001 - Gills Creek Watershed Project 5 Total					**$10,035.47**	**$10,035.47**	**$10,035.47**	
	City of Columbia	N/A	518692	6/14/2016 - 8/2/2016	$2,995.13	$2,995.13	$2,995.13	Gills Creek Watershed Project 6 City Labor
	City of Columbia	N/A	518695	6/1/2016 - 9/1/2016	$1,318.46	$1,318.46	$1,318.46	Gills Creek Watershed Project 6 City Labor
SD387001 - Gills Creek Watershed Project 6	City of Columbia	N/A	518696	6/1/2016 - 9/1/2016	$40.44	$40.44	$40.44	Gills Creek Watershed Project 6 City Labor
	City of Columbia	N/A	521352	6/14/2016 - 8/2/2016	$35.87	$35.87	$35.87	Gills Creek Watershed Project 6 City Labor
	City of Columbia	N/A	523035	6/14/2016 - 8/2/2016	$1,892.70	$1,892.70	$1,892.70	Gills Creek Watershed Project 6 City Labor
	Thomas Concrete of South Carolina	P158004	608183	6/17/2016	$104.76	$104.76	$104.76	Flowfill For Gills Creek Watershed Project 6
	Fortiline Waterworks	P158298	3864881	4/13/2017	$5,093.46	$5,093.46	$5,093.46	SC Type 18 CB Top, 72" Precast Manhole
	Fortiline Waterworks	P165082	3924443	4/17/2017	$1,518.37	$1,518.37	$1,518.37	Cement Mix, 18" RCP for Gills Creek Watershed Project 6
	Oldcastle Precast	P158057	410135939	6/17/2016	$13,385.00	$13,385.00	$13,385.00	Gills Creek Watershed Project 6 - Manufactured Stormwater Treatment Device
	Thomas & Hutton	P156045	0144529*	1/31/2016	$413.02	$413.02	$413.02	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0145443*	2/29/2016	$811.48	$811.48	$811.48	Technical Consulting Support for Gills

Project Number - Project Name	Vendor	PO Number	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid	Invoice / Work Order SEP Eligible Expenses - Work Description
								Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0146521*	3/31/2016	$3,014.16	$3,014.16	$3,014.16	Technical Consulting Support for Gills Creek Watershed Projects 1-6
SD387001 - Gills Creek Watershed Project 6	Thomas & Hutton	P156045	0147007*	4/30/2016	$4,427.27	$4,427.27	$4,427.27	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0148266*	5/31/2016	$252.50	$252.50	$252.50	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0148874*	6/30/2016	$194.16	$194.16	$194.16	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Thomas & Hutton	P156045	0149912*	7/31/2016	$688.88	$688.88	$688.88	Technical Consulting Support for Gills Creek Watershed Projects 1-6
	Fortiline Waterworks	P158298	3660886*	5/20/2016	$2,367.71	$2,367.71	$2,367.71	Erosion Eel, Silt Fence, Non-Woven Fabric for Gills Creek Watershed Project 2/4/6
	Fortiline Waterworks	P158298	3680255*	6/15/2016	$101.76	$101.76	$101.76	Manhole Joint Wrap, Conseal F/RCP for Gills Creek Watershed Project 2/4/6
	Maxim Crane Works	P158515	45742721*	6/16/2016	$334.69	$334.69	$334.69	Crane Rental for Work on Gills Creek Watershed Project 1/6
	Sunbelt Rentals	P158089	60729548-001*	6/6/2016	$128.06	$128.06	$128.06	Equipment Rental for Work on Gills Creek Watershed Project 2/4/6
	Sunbelt Rentals	P158089	60927992-001*	6/29/2016	$882.72	$882.72	$882.72	Equipment Rental for Work on Gills Creek Watershed Project 2/4/6
	Sunbelt Rentals	P158089	61644956-001*	7/8/2016	$46.30	$46.30	$46.30	Equipment Rental for Work on Gills Creek Watershed Project 2/4/6
	Sunbelt Rentals	P158089	61684736-001*	7/15/2016	$128.06	$128.06	$128.06	Equipment Rental for Work on Gills Creek Watershed Project 2/4/6
	Sunbelt Rentals	P158089	61857275-001*	7/19/2016	$94.25	$94.25	$94.25	Equipment Rental for Work on Gills Creek Watershed Project 2/4/6
SD387001 - Gills Creek Watershed Project 6 Total					**$40,269.22**	**$40,269.22**	**$40,269.22**	
	McCormick Taylor	P155745	1	2/29/2016	$7,725.14	$7,725.14	$7,725.14	Development of Smith Branch Watershed Assessment Report
	McCormick Taylor	P155745	2	3/17/2016	$40,943.22	$40,943.22	$40,943.22	Development of Smith Branch Watershed Assessment Report

Project Number - Project Name	Vendor	PO Number	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid	Invoice / Work Order SEP Eligible Expenses - Work Description
SD387003 - Smith Branch Watershed Supplemental Environmental Project - Watershed Assessment Report	McCormick Taylor	P155745	3	4/21/2016	$46,568.37	$46,568.37	$46,568.37	Development of Smith Branch Watershed Assessment Report
	McCormick Taylor	P155745	4	5/26/2016	$65,338.94	$65,338.94	$65,338.94	Development of Smith Branch Watershed Assessment Report
	McCormick Taylor	P155745	5	6/27/2016	$98,371.37	$98,371.37	$98,371.37	Development of Smith Branch Watershed Assessment Report
	McCormick Taylor	P155745	6	7/7/2016	$8,289.30	$8,289.30	$8,289.30	Development of Smith Branch Watershed Assessment Report
	McCormick Taylor	P155745	7	8/30/2016	$14,358.42	$14,358.42	$14,358.42	Development of Smith Branch Watershed Assessment Report
	McCormick Taylor	P155745	8	9/30/2016	$7,559.61	$7,559.61	$7,559.61	Development of Smith Branch Watershed Assessment Report
	McCormick Taylor	P155745	9	12/28/2016	$1,039.01	$1,039.01	$1,039.01	Development of Smith Branch Watershed Assessment Report
SD387003 - Smith Branch Watershed Supplemental Environmental Project - Watershed Assessment Report Total					**$290,193.38**	**$290,193.38**	**$290,193.38**	
SD387004 - Rocky Branch Watershed Supplemental Environmental Project - Watershed Assessment Report	McCormick Taylor	P154706	1	1/27/2016	$17,780.49	$17,780.49	$17,780.49	Development of Rocky Branch Watershed Assessment Report
	McCormick Taylor	P154706	2	2/26/2016	$43,379.59	$43,379.59	$43,379.59	Development of Rocky Branch Watershed Assessment Report
	McCormick Taylor	P154706	3	3/17/2016	$20,546.63	$20,546.63	$20,546.63	Development of Rocky Branch Watershed Assessment Report
	McCormick Taylor	P154706	4	4/21/2016	$41,870.78	$41,870.78	$41,870.78	Development of Rocky Branch Watershed Assessment Report
	McCormick Taylor	P154706	5	5/27/2016	$68,950.28	$68,950.28	$68,950.28	Development of Rocky Branch Watershed Assessment Report
	McCormick Taylor	P154706	6	6/27/2016	$65,259.70	$65,259.70	$65,259.70	Development of Rocky Branch Watershed Assessment Report
	McCormick Taylor	P154706	7	7/7/2016	$1,359.35	$1,359.35	$1,359.35	Development of Rocky Branch Watershed Assessment Report
	McCormick Taylor	P154706	8	8/30/2016	$9,222.51	$9,222.51	$9,222.51	Development of Rocky Branch Watershed Assessment Report
	McCormick Taylor	P154706	9	10/24/2016	$3,085.44	$3,085.44	$3,085.44	Development of Rocky Branch Watershed Assessment Report

Project Number - Project Name	Vendor	PO Number	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid	Invoice / Work Order SEP Eligible Expenses - Work Description
SD387004 - Rocky Branch Watershed Supplemental Environmental Project - Watershed Assessment Report Total					**$271,454.77**	**$271,454.77**	**$271,454.77**	
SD842301 - Martin Luther King Jr. Park Detention and Water Quality Project	LAD Corporation of West Columbia	P169991	1	4/27/2018	$61,300.00	$61,300.00	$55,170.00	All Project Expenses not Pertaining to Boardwalk
	LAD Corporation of West Columbia	P169991	2	5/31/2018	$103,665.00	$103,665.00	$93,298.50	All Project Expenses not Pertaining to Boardwalk
	LAD Corporation of West Columbia	P169991	3	7/10/2018	$42,890.00	$42,890.00	$38,601.00	All Project Expenses not Pertaining to Boardwalk
	LAD Corporation of West Columbia	P169991	4	9/20/2018	$183,475.00	$121,075.00	$108,967.50	All Project Expenses not Pertaining to Boardwalk
	LAD Corporation of West Columbia	P169991	5	10/30/2018	$389,780.27	$220,520.00	$198,468.00	All Project Expenses not Pertaining to Boardwalk
	LAD Corporation of West Columbia	P169991	6	11/29/2018	$245,666.72	$155,940.00	$140,346.00	All Project Expenses not Pertaining to Boardwalk
	LAD Corporation of West Columbia	P169991	7	12/21/2018	$104,405.00	$89,492.00	$80,542.80	All Project Expenses not Pertaining to Boardwalk
	LAD Corporation of West Columbia	P169991	8	1/18/2019	$14,750.00	$14,750.00	$13,275.00	All Project Expenses not Pertaining to Boardwalk
	LAD Corporation of West Columbia	P169991	9	2/28/2019	$0.00	$0.00	$0.00	All Project Expenses not Pertaining to Boardwalk
	Woolpert, Inc.	P156461	2016002620	4/4/2016	$2,157.50	$1,524.33	$1,524.33	Preliminary Planning Specific Purpose Survey, Site Planning, Conceptual Engineering, and Development of Site Civil Construction plans at MLK Park
	Woolpert, Inc.	P156461	2016003181	4/28/2016	$12,592.50	$8,896.94	$8,896.94	Preliminary Planning Specific Purpose Survey, Site Planning, Conceptual Engineering, and Development of Site Civil Construction plans at MLK Park
	Woolpert, Inc.	P156461	2016005251	7/6/2016	$12,325.00	$8,707.95	$8,707.95	Preliminary Planning Specific Purpose Survey, Site Planning, Conceptual Engineering, and Development of Site Civil Construction plans at MLK Park

Project Number - Project Name	Vendor	PO Number	Invoice / Work Order Number	Invoice / Work Order Date	Invoice / Work Order Amount	Invoice / Work Order SEP Eligible Expenses	Invoice / Work Order SEP Eligible Expenses Paid	Invoice / Work Order SEP Eligible Expenses - Work Description
SD842301 - Martin Luther King Jr. Park Detention and Water Quality Project	Woolpert, Inc.	P165067	2016007529	9/28/2016	$1,822.39	$1,287.57	$1,287.57	Preliminary Planning Specific Purpose Survey, Site Planning, Conceptual Engineering, and Development of Site Civil Construction plans at MLK Park
	Woolpert, Inc.	P165067	2016009432	11/30/2016	$4,952.50	$3,499.08	$3,499.08	Preliminary Planning Specific Purpose Survey, Site Planning, Conceptual Engineering, and Development of Site Civil Construction plans at MLK Park
	Woolpert, Inc.	P165067	2016010042	12/21/2016	$1,855.00	$1,310.61	$1,310.61	Preliminary Planning Specific Purpose Survey, Site Planning, Conceptual Engineering, and Development of Site Civil Construction plans at MLK Park
	Woolpert, Inc.	P165067	2017000657	1/30/2017	$1,715.11	$1,211.78	$1,211.78	Preliminary Planning Specific Purpose Survey, Site Planning, Conceptual Engineering, and Development of Site Civil Construction plans at MLK Park
SD842301 - Martin Luther King Jr. Park Detention and Water Quality Project Total					**$1,183,351.99**	**$836,070.25**	**$755,107.05**	
Grand Total					**$2,152,379.05**	**$1,805,097.31**	**$1,724,134.11**	

*** Invoice split across multiple projects. Invoice amount shown here only pertains to applicable project. For total invoice amounts, please see Appendix B.**

Appendix D – SEP Water Quality Monitoring

WQM Results

Site	Site Name	Sample Date	TSS (mg/L)	E. Coli (MPN)	DO (mg/L)	Temp (Deg. C)
B-280	Smith Branch at N. Main Street	1/27/2016	16.00	686.70	10.30	11.00
B-280	Smith Branch at N. Main Street	4/28/2016	4.80	547.50	7.30	21.00
B-280	Smith Branch at N. Main Street	7/28/2016	4.40	613.10	7.50	28.00
B-280	Smith Branch at N. Main Street	10/28/2016	13.00	344.80	6.30	19.00
B-280	Smith Branch at N. Main Street	1/23/2017	14.60	1413.60	9.70	15.00
B-280	Smith Branch at N. Main Street	4/27/2017	8.00	920.80	8.10	20.00
B-280	Smith Branch at N. Main Street	7/27/2017	9.00	1299.70	8.08	28.00
B-280	Smith Branch at N. Main Street	10/24/2017	23.60	1732.90	7.60	21.20
B-280	Smith Branch at N. Main Street	1/22/2018	2.80	59.10	10.91	9.90
B-280	Smith Branch at N. Main Street	4/24/2018	19.60	2419.60	8.02	20.10
B-280	Smith Branch at N. Main Street	7/24/2018	5.00	517.20	6.98	26.10
B-280	Smith Branch at N. Main Street	10/22/2018	4.30	1413.60	9.30	14.20
B-280	Smith Branch at N. Main Street	1/24/2019	22.30	1732.90	10.20	14.70
B-280	Smith Branch at N. Main Street	2/21/2019	15.30	2419.60	10.47	11.80
B-280	Smith Branch at N. Main Street	3/25/2019	3.00	648.80	9.78	17.30
Site	**Site Name**	**Sample Date**	**TSS (mg/L)**	**E. Coli (MPN)**	**DO (mg/L)**	**Temp (Deg. C)**
C-001	Gills Creek at Garners Ferry Rd.	1/27/2016	23.00	79.80	11.10	10.00
C-001	Gills Creek at Garners Ferry Rd.	4/28/2016	40.00	80.90	4.10	25.00
C-001	Gills Creek at Garners Ferry Rd.	7/28/2016	10.00	69.70	3.80	35.00
C-001	Gills Creek at Garners Ferry Rd.	10/28/2016	17.00	261.30	5.80	17.00
C-001	Gills Creek at Garners Ferry Rd.	1/23/2017	99.70	686.70	9.00	15.00
C-001	Gills Creek at Garners Ferry Rd.	4/27/2017	36.30	307.60	8.20	23.00
C-001	Gills Creek at Garners Ferry Rd.	7/27/2017	331.00	166.40	6.46	29.00
C-001	Gills Creek at Garners Ferry Rd.	10/24/2017	14.80	770.10	6.61	21.10
C-001	Gills Creek at Garners Ferry Rd.	1/22/2018	4.00	248.90	11.06	8.70
C-001	Gills Creek at Garners Ferry Rd.	4/24/2018	12.00	387.30	7.36	19.70
C-001	Gills Creek at Garners Ferry Rd.	7/24/2018	18.20	727.00	4.88	29.40
C-001	Gills Creek at Garners Ferry Rd.	10/22/2018	8.00	248.90	8.93	17.30
C-001	Gills Creek at Garners Ferry Rd.	1/24/2019	20.30	866.40	11.42	12.10
C-001	Gills Creek at Garners Ferry Rd.	2/21/2019	6.70	115.30	10.13	10.90
C-001	Gills Creek at Garners Ferry Rd.	3/25/2019	12.00	146.00	8.91	17.00
Site	**Site Name**	**Sample Date**	**TSS (mg/L)**	**E. Coli (MPN)**	**DO (mg/L)**	**Temp (Deg. C)**
C-017	Gills Creek at Bluff Road	1/27/2016	8.80	38.40	9.60	10.00
C-017	Gills Creek at Bluff Road	4/28/2016	7.70	37.90	5.00	23.00
C-017	Gills Creek at Bluff Road	7/28/2016	11.00	61.70	4.50	29.00
C-017	Gills Creek at Bluff Road	10/28/2016	5.70	195.60	5.90	18.00
C-017	Gills Creek at Bluff Road	1/23/2017	14.10	980.40	7.40	15.00
C-017	Gills Creek at Bluff Road	4/27/2017	16.80	143.90	5.70	21.00
C-017	Gills Creek at Bluff Road	7/27/2017	6.70	78.90	5.92	27.00
C-017	Gills Creek at Bluff Road	10/24/2017	22.40	2419.60	5.59	19.60
C-017	Gills Creek at Bluff Road	1/22/2018	3.20	53.80	11.55	8.60
C-017	Gills Creek at Bluff Road	4/24/2018	11.20	1553.10	6.07	18.90
C-017	Gills Creek at Bluff Road	7/24/2018	10.00	1553.10	4.50	25.50
C-017	Gills Creek at Bluff Road	10/22/2018	2.30	139.60	7.40	15.90
C-017	Gills Creek at Bluff Road	1/24/2019	21.70	791.50	9.78	13.30
C-017	Gills Creek at Bluff Road	2/21/2019	2.30	91.00	10.28	9.90
C-017	Gills Creek at Bluff Road	3/25/2019	165.00	63.80	7.81	17.30

City Of Columbia Quality Assurance Project Plan (QAPP) Data Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP November 2015

Laboratory Report Date: 02/02/2016

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Andrew T. Stroud/QA Manager — Date: 02/03/2016

The undersigned validates the data in the above referenced report, per the QAPP requirements.

Michael Jaspers/Project Validator — Date: 02/03/2016

ACCESS
ANALYTICAL, INC.

Comprehensive Environmental Laboratory Services

DATE: 02/02/2016

SCDHEC #32571

CLIENT: City of Columbia
Attn: Andrew Stroud
1136 Washington Street
Columbia SC 29201

PROJECT: WATER QUALITY MONITORING

ID#: 150349 Sample Name: C-017 Sampled on 01/27/2016 at 1202 Received on 01/28/2016 at 1330

Parameter	Method#	Value	Units	Anal. on/	at/	by
TSS (SM)	SM 2540 D-2011	8.8	mg/L	01/28/2016	1330	RA
E. Coli MPN	SM 9223 B-2004	38.4	MPN	01/28/2016	1452	JS
Dissolved Oxygen (SM)	SM4500OG-2011	9.6	mg/L	01/28/2016	1202	JS
Temperature (SM)	SM 2550 B-2010	10	Deg. C	01/28/2016	1202	JS

ID#: 150350 Sample Name: C-001 Sampled on 01/27/2016 at 1233 Received on 01/28/2016 at 1330

Parameter	Method#	Value	Units	Anal. on/	at/	by
TSS (SM)	SM 2540 D-2011	23	mg/L	01/28/2016	1330	RA
E. Coli MPN	SM 9223 B-2004	79.8	MPN	01/28/2016	1452	JS
Dissolved Oxygen (SM)	SM4500OG-2011	11.1	mg/L	01/28/2016	1233	JS
Temperature (SM)	SM 2550 B-2010	10	Deg. C	01/28/2016	1233	JS

ID#: 150351 Sample Name: B-280 Sampled on 01/27/2016 at 1302 Received on 01/28/2016 at 1330

Parameter	Method#	Value	Units	Anal. on/	at/	by
TSS (SM)	SM 2540 D-2011	16	mg/L	01/28/2016	1330	RA
E. Coli MPN	SM 9223 B-2004	686.7	MPN	01/28/2016	1452	JS
Dissolved Oxygen (SM)	SM4500OG-2011	10.3	mg/L	01/28/2016	1302	JS
Temperature (SM)	SM 2550 B-2010	11	Deg. C	01/28/2016	1302	JS

Report Released by: _____
Bryant Boyd, Laboratory Director

200 Rich Lex Drive
Lexington, SC 29072

Page ____ of ____

Phone: 803-939-4983
Fax: 803-939-4984
oleinc.com

ON LINE ENVIRONMENTAL, INC

Chain of Custody Record

SCDHEC LAB ID# 32571/25003

Client: **City of Columbia** Attn: **Andrew Stroud**
Address: **1136 Washington Street** Phone: **803-545-4001**
City, State, Zip: **Columbia, SC 29201** Email: atstroud@columbiasc.net

Prog. Area	Sample ID# (FOR LAB USE ONLY)	Sample Name	Date/Time of Sample	Sample Type (G or C)	Preservation/Bottle Type	# of bottles	Parameter(s)
WW	150349	C-017	1-28-16 / 1202	G	A/P	1	TSS
WW	↓	C-017	/ "	G	GF/P	1	E. Coli MPN
WW	↓	C-017	/ "	G	Field An.	NA	D.O. (mg/L)= 9.6 Temp. (°C)= 10°
WW	350	C-001	/ 1253	G	A/P	1	TSS
WW	↓	C-001	/ "	G	GF/P	1	E. Coli MPN
WW	↓	C-001	/ "	G	Field An.	NA	D.O. (mg/L)= 11.1 Temp. (°C)= 10
WW	351	B-280	/ 1302	G	A/P	1	TSS
WW	↓	B-280	/ "	G	GF/P	1	E. Coli MPN
WW	↓	B-280	/ "	G	Field An.	NA	D.O. (mg/L)= 10.3 Temp. (°C)= 11

G=grab C=composite

Prog. Area: WW=wastewater DW=drinking water MW=monitoring well SS=semi solid SL=soil SD=solid

Samplers signature: Jesse Dawson

Auto Sampler Data

Date/Time Set On: /
by whom: /
Date/Time Off: /
by whom: /

Meter Reading After:
Meter Reading Before:
Difference:
x _____ (factor):

Special Instructions:
Received in lab @ 3 °C

Project: **Water Quality Monitoring**

PW

Relinquished by	Date	Time	Received by	Date	Time

Preservation Codes: A=≤6°C, B=H_2SO_4, C=HNO_3, D=HCl, E=NaOH, F=$Na_2S_2O_3$, G= ≤10°C, O=Other (describe) **Bottle Type:** Glass = G, Plastic = P

Received in lab by: Jesse Dawson Date: 1-28-16 Time: 1330

Sample Rcd. On Ice: Yes No

City Of Columbia Quality Assurance Project Plan (QAPP) Data Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP November 2015

Laboratory Report Date: 5/04/16

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Andrew T. Stroud/QA Manager

7/11/16
Date

The undersigned validates the data in the above referenced report, per the QAPP requirements.

Michael Jaspers/Project Validator

7/11/16
Date

ACCESS
ANALYTICAL, INC.

Comprehensive Environmental Laboratory Services

DATE: 05/04/2016

SCDHEC #32571

CLIENT: City of Columbia
Attn: Andrew Stroud
1136 Washington Street
Columbia SC 29201

PROJECT:

ID#: 153240 Sample Name: C-017 Sampled on 04/28/2016 at 1119 Received on 04/28/2016 at 1330

Parameter	Method#	Value	Units	Anal. on/	at/	by
TSS (SM)	SM 2540 D-2011	7.7	mg/L	04/29/2016	0950	RA
E. Coli MPN	SM 9223 B-2004	37.9	MPN	04/28/2016	1543	RA
Dissolved Oxygen (SM)	SM4500OG-2011	5.0	mg/L	04/28/2016	1119	JS
Temperature (SM)	SM 2550 B-2010	23	Deg. C	04/28/2016	1119	JS

ID#: 153241 Sample Name: C-001 Sampled on 04/28/2016 at 1153 Received on 04/28/2016 at 1330

Parameter	Method#	Value	Units	Anal. on/	at/	by
TSS (SM)	SM 2540 D-2011	40	mg/L	04/29/2016	0950	RA
E. Coli MPN	SM 9223 B-2004	80.9	MPN	04/28/2016	1543	RA
Dissolved Oxygen (SM)	SM4500OG-2011	4.1	mg/L	04/28/2016	1153	JS
Temperature (SM)	SM 2550 B-2010	25	Deg. C	04/28/2016	1153	JS

ID#: 153242 Sample Name: B-280 Sampled on 04/28/2016 at 1226 Received on 04/28/2016 at 1330

Parameter	Method#	Value	Units	Anal. on/	at/	by
TSS (SM)	SM 2540 D-2011	4.8	mg/L	04/29/2016	0950	RA
E. Coli MPN	SM 9223 B-2004	547.5	MPN	04/28/2016	1543	RA
Dissolved Oxygen (SM)	SM4500OG-2011	7.3	mg/L	04/28/2016	1226	JS
Temperature (SM)	SM 2550 B-2010	21	Deg. C	04/28/2016	1226	JS

Report Released by: _____
Bryant Boyd, Laboratory Director

200 Rich Lex Drive
Lexington, SC 29072

Phone: 803-939-4983
Fax: 803-939-4984
oleinc.com

ON LINE ENVIRONMENTAL, INC

Chain of Custody Record

SCDHEC LAB ID# 32571/25003

Client: **City of Columbia** Attn: **Andrew Stroud**
Address: **1136 Washington Street** Phone: **803-545-4001**
City, State, Zip: **Columbia, SC 29201** Email: atstroud@columbiasc.net

Prog Area	Sample ID# (FOR LAB USE ONLY)	Sample Name	Date/Time of Sample	Sample Type (C or G)	Preservation/Bottle Type	# of bottles	Parameter(s)
WW	153240	C-017	4-28-16 11:19	G	A/P	1	TSS
WW	"	C-017	" 11:19	G	GF/P	1	E. Coli MPN
WW	"	C-017	" 11:19	G	Field An.	NA	D.O. (mg/L)= 5.0 Temp. (°C)= 23
WW	153241	C-001	" 11:53	G	A/P	1	TSS
WW	"	C-001	" "	G	GF/P	1	E. Coli MPN
WW	"	C-001	" "	G	Field An.	NA	D.O. (mg/L)= 4.1 Temp. (°C)= 25
WW	153242	B-280	" 1226	G	A/P	1	TSS
WW	"	B-280	"	G	GF/P	1	E. Coli MPN
WW	"	B-280	"	G	Field An.	NA	D.O. (mg/L)= 7.3 Temp. (°C)= 21

G=grab C=composite

Prog. Area: WW=wastewater DW=drinking water MW=monitoring well SS=semi solid SL=soil SD=solid

Samplers signature:

Auto Sampler Data

Date/Time Set On: /
by whom: /
Date/Time Off: /
by whom: /

Meter Reading After:
Meter Reading Before:
Difference:
x _____ (factor):

Special Instructions:
Received in lab @ 1 °C

Project: **Water Quality Monitoring**

(Sample Jan, April, July, Oct)

Relinquished by	Date	Time	Received by	Date	Time

Preservation Codes: A=≤6°C, B=H_2SO_4, C=HNO_3, D=HCl, E=NaOH, F=$Na_2S_2O_3$, G= ≤10°C, O=Other (describe) **Bottle Type:** Glass = G, Plastic = P

Received in lab by: _____ Date: 4-28-16 Time: 1330

Sample Rcd. On Ice: (Yes) No

City Of Columbia Quality Assurance Project Plan (QAPP) Data Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP November 2015

Laboratory Report Date: 8/03/2016

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Andrew T. Stroud/QA Manager

08/04/2016
Date

The undersigned validates the data in the above referenced report, per the QAPP requirements.

Michael Jaspers/Project Validator

8/4/2016
Date

ACCESS ANALYTICAL, INC.

Comprehensive Environmental Laboratory Services

DATE: 08/03/2016

SCDHEC #32571

CLIENT: City of Columbia
Attn: Andrew Stroud
1136 Washington Street
Columbia SC 29201

PROJECT: WATER QUALITY MONITORING

ID#: 156218 Sample Name: C-017 Sampled on 07/28/2016 at 1255 Received on 07/28/2016 at 1500

Parameter	Method#	Value	Units	Anal. on/	at/	by
TSS (SM)	SM 2540 D-2011	11	mg/L	07/29/2016	0930	RA
E. Coli MPN	SM 9223 B-2004	61.7	MPN	07/28/2016	1630	MML

ID#: 156219 Sample Name: C-017 Sampled on 07/28/2016 at 1254 Received on 07/28/2016 at 1500

Parameter	Method#	Value	Units	Anal. on/	at/	by
Dissolved Oxygen (SM)	SM4500OG-2011	4.5	mg/L	07/28/2016	1254	RC
Temperature (SM)	SM 2550 B-2010	29	Deg. C	07/28/2016	1254	RC

ID#: 156220 Sample Name: C-001 Sampled on 07/28/2016 at 1320 Received on 07/28/2016 at 1500

Parameter	Method#	Value	Units	Anal. on/	at/	by
TSS (SM)	SM 2540 D-2011	10	mg/L	07/29/2016	0930	RA
E. Coli MPN	SM 9223 B-2004	69.7	MPN	07/28/2016	1630	MML

ID#: 156221 Sample Name: C-001 Sampled on 07/28/2016 at 1325 Received on 07/28/2016 at 1500

Parameter	Method#	Value	Units	Anal. on/	at/	by
Dissolved Oxygen (SM)	SM4500OG-2011	3.8	mg/L	07/28/2016	1325	RC
Temperature (SM)	SM 2550 B-2010	35	Deg. C	07/28/2016	1325	RC

ID#: 156222 Sample Name: B-280 Sampled on 07/28/2016 at 1400 Received on 07/28/2016 at 1500

Parameter	Method#	Value	Units	Anal. on/	at/	by
TSS (SM)	SM 2540 D-2011	4.4	mg/L	07/29/2016	0930	RA
E. Coli MPN	SM 9223 B-2004	613.1	MPN	07/28/2016	1630	MML
Dissolved Oxygen (SM)	SM4500OG-2011	7.5	mg/L	07/28/2016	1400	RC
Temperature (SM)	SM 2550 B-2010	28	Deg. C	07/28/2016	1400	RC

Report Released by: _____

Bryant Boyd, Laboratory Director

200 Rich Lex Drive
Lexington, SC 29072

Phone: 803-939-4983
Fax: 803-939-4984
oleinc.com

ON LINE ENVIRONMENTAL, INC

Chain of Custody Record

SCDHEC LAB ID# 32571/25003

Client: **City of Columbia** Attn: **Andrew Stroud**
Address: **1136 Washington Street** Phone: **803-545-4001**
City, State, Zip: **Columbia, SC 29201** Email: atstroud@columbiasc.net

Prog. Area	Sample ID# (FOR LAB USE ONLY)	Sample Name	Date/Time of Sample	Sample Type (G or C)	Preservation/Bottle Type	# of bottles	Parameter(s)
WW	56218	C-017	7-28-16 1255	G	A/P	1	TSS
WW	↓	C-017	↓ 1255	G	GF/P	1	E. Coli MPN
WW	219	C-017	↓ 1254	G	Field An.	NA	D.O. (mg/L)= 4.5 Temp. (°C)= 29°
WW	220	C-001	7-28-16 1320	G	A/P	1	TSS
WW	↓	C-001	↓ 1320	G	GF/P	1	E. Coli MPN
WW	221	C-001	↓ 1325	G	Field An.	NA	D.O. (mg/L)= 3.8 Temp. (°C)= 35°
WW	222	B-280	7-28-16 1400	G	A/P	1	TSS
WW	↓	B-280	↓ 1400	G	GF/P	1	E. Coli MPN
WW	↓	B-280	↓ 1400	G	Field An.	NA	D.O. (mg/L)= 7.5 Temp. (°C)= 28°

G=grab C=composite

Prog. Area: WW=wastewater DW=drinking water MW=monitoring well SS=semi solid SL=soil SD=solid

Samplers signature: Robin Charles

Auto Sampler Data

Date/Time Set On: /
by whom: /
Date/Time Off: /
by whom: /

Meter Reading After:
Meter Reading Before:
Difference:
x _____ (factor):

Special Instructions: 0
Received in lab @ 1 °C

Project: **Water Quality Monitoring**

(Sample Jan, April, July, Oct)

Pu

Relinquished by	Date	Time	Received by	Date	Time

Preservation Codes: A=≤6°C, B=H_2SO_4, C=HNO_3, D=HCl, E=NaOH, F=$Na_2S_2O_3$, G= ≤10°C, O=Other (describe) **Bottle Type:** Glass = G, Plastic = P

Received in lab by: Robin Charles Date: 7-28-16 Time: 1500

Sample Rcd. On Ice: ~~Yes~~ No

City Of Columbia Quality Assurance Project Plan (QAPP) Data Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP November 2015

Laboratory Report Date: 11/2/2016

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Andrew T. Stroud/QA Manager — Date: 11/2/2016

The undersigned validates the data in the above referenced report, per the QAPP requirements.

Michael Jaspers/Project Validator — Date: 11/2/2016

ACCESS
ANALYTICAL, INC.

Comprehensive Environmental Laboratory Services

DATE: 11/02/2016

SCDHEC #32571

CLIENT: City of Columbia
Attn: Andrew Stroud
1136 Washington Street
Columbia SC 29201

PROJECT: WATER QUALITY MONITORING

ID#: 159562 Sample Name: C-017 Sampled on 10/28/2016 at 0952 Received on 10/28/2016 at 1137

Parameter	Method#	Value	Units	Anal. on/	at/	by
TSS (SM)	SM 2540 D-2011	5.7	mg/L	10/28/2016	1300	RA
E. Coli MPN	SM 9223 B-2004	195.6	MPN	10/28/2016	1330	JS
Dissolved Oxygen (SM)	SM4500OG-2011	5.9	mg/L	10/28/2016	0952	JS
Temperature (SM)	SM 2550 B-2010	18	Deg. C	10/28/2016	0952	JS

ID#: 159563 Sample Name: C-001 Sampled on 10/28/2016 at 1031 Received on 10/28/2016 at 1137

Parameter	Method#	Value	Units	Anal. on/	at/	by
TSS (SM)	SM 2540 D-2011	17	mg/L	10/28/2016	1300	RA
E. Coli MPN	SM 9223 B-2004	261.3	MPN	10/28/2016	1330	JS
Dissolved Oxygen (SM)	SM4500OG-2011	5.8	mg/L	10/28/2016	1031	JS
Temperature (SM)	SM 2550 B-2010	17	Deg. C	10/28/2016	1031	JS

ID#: 159564 Sample Name: B-280 Sampled on 10/28/2016 at 1058 Received on 10/28/2016 at 1137

Parameter	Method#	Value	Units	Anal. on/	at/	by
TSS (SM)	SM 2540 D-2011	13	mg/L	10/28/2016	1300	RA
E. Coli MPN	SM 9223 B-2004	344.8	MPN	10/28/2016	1330	JS
Dissolved Oxygen (SM)	SM4500OG-2011	6.3	mg/L	10/28/2016	1058	JS
Temperature (SM)	SM 2550 B-2010	19	Deg. C	10/28/2016	1058	JS

Report Released by: Bryant Boyd

Bryant Boyd, Laboratory Director

200 Rich Lex Drive
Lexington, SC 29072

Phone: 803-939-4983
Fax: 803-939-4984
oleinc.com

ON LINE ENVIRONMENTAL, INC

Chain of Custody Record

SCDHEC LAB ID# 32571/25003

Client: **City of Columbia** Attn: **Andrew Stroud**
Address: **1136 Washington Street** Phone: **803-545-4001**
City, State, Zip: **Columbia, SC 29201** Email: atstroud@columbiasc.net

Prog. Area	Sample ID# (FOR LAB USE ONLY)	Sample Name	Date/Time of Sample	Sample Type (G or C)	Preservation/Bottle Type	# of bottles	Parameter(s)
WW	159562	C-017	10-28-16 / 9572	G	A/P	1	TSS
WW	↓	C-017	" / "	G	GF/P	1	E. Coli MPN
WW	↓	C-017	" / "	G	Field An.	NA	D.O. (mg/L)= 5.9 Temp. (°C)= 18
WW	563	C-001	" / 1031	G	A/P	1	TSS
WW	↓	C-001	" / "	G	GF/P	1	E. Coli MPN 5.8
WW	↓	C-001	" / "	G	Field An.	NA	D.O. (mg/L)= 5.8 Temp. (°C)= 17
WW	564	B-280	" / 1058	G	A/P	1	TSS
WW	↓	B-280	" / "	G	GF/P	1	E. Coli MPN
WW	↓	B-280	" / "	G	Field An.	NA	D.O. (mg/L)= 6.3 Temp. (°C)= 19

G=grab C=composite

Prog. Area: WW=wastewater DW=drinking water MW=monitoring well SS=semi solid SL=soil SD=solid

Samplers signature: [signature]

Auto Sampler Data

Date/Time Set On: /
by whom: /
Date/Time Off: /
by whom: /

Meter Reading After:
Meter Reading Before:
Difference:
x _____ (factor):

Special Instructions:

Received in lab @ 1 ° C

Project: **Water Quality Monitoring**

(Sample Jan, April, July, Oct)

PW

Relinquished by	Date	Time	Received by	Date	Time

Preservation Codes: A=≤6°C, B=H_2SO_4, C=HNO_3, D=HCl, E=NaOH, F=$Na_2S_2O_3$, G= ≤10°C, O=Other (describe) **Bottle Type**: Glass = G, Plastic = P

Received in lab by: [signature] Date: 10-28-16 Time: 11:37

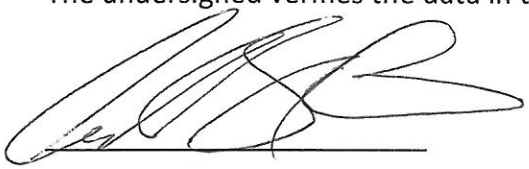
Sample Rcd. On Ice: (Yes) No

City Of Columbia Quality Assurance Project Plan (QAPP) Data Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP November 2015

Laboratory Report Date: 2/1/17

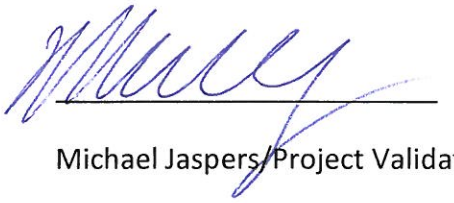
The undersigned verifies the data in the above referenced report, per the QAPP requirements.



2/2/17

Andrew T. Stroud/QA Manager Date

The undersigned validates the data in the above referenced report, per the QAPP requirements.



2/2/17

Michael Jaspers/Project Validator Date

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

PROJECT:

WATER QUALITY PARAMETERS

REPORT DATE:

02.01.17

REPORT APPROVED BY:

Bryant W. Boyd
Laboratory Manager
bryant@axs-inc.com

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.939.4983 or via email at the address listed above.

Access Analytical, Inc. SCDHEC certification #'s: 32571001 (Lexington Lab)
25003001 (Hampton Lab)

Access Analytical, Inc.
200-B Rich-Lex Dr. ~ Lexington, SC 29072
PHONE: 803.939.4983 ~ FAX: 803.939.4984 ~ WEB: www.axs-inc.com

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 01275-001
Project: WATER QUALITY PARAMETERS
Sample Name: C-017
Matrix: Waste Water
Collected: 1/23/2017 @ 12:25
Date Received: 1/23/2017 @ 13:55

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	7.4	None	mg/L	SM 4500-O G-2011		1/23/2017 12:25	JRS
E. Coli (MPN)	980.4	1	MPN	SM 9223 B-2004		1/23/2017 16:00	RDA
Temperature	15	None	oC	SM 2550B-2010		1/23/2017 12:25	JRS
TSS	14.1	1	mg/L	SM 2540 D-2011		1/26/2017 13:45	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 01275-002
Project: WATER QUALITY PARAMETERS
Sample Name: C-001
Matrix: Waste Water
Collected: 1/23/2017 @ 12:55
Date Received: 1/23/2017 @ 13:55

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	9.0	None	mg/L	SM 4500-O G-2011		1/23/2017 12:55	JRS
E. Coli (MPN)	686.7	1	MPN	SM 9223 B-2004		1/23/2017 16:00	RDA
Temperature	15	None	oC	SM 2550B-2010		1/23/2017 12:55	JRS
TSS	99.7	1	mg/L	SM 2540 D-2011		1/26/2017 13:45	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 01275-003
Project: WATER QUALITY PARAMETERS
Sample Name: B-280
Matrix: Waste Water
Collected: 1/23/2017 @ 13:20
Date Received: 1/23/2017 @ 13:55

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	9.7	None	mg/L	SM 4500-O G-2011		1/23/2017 13:20	JRS
E. Coli (MPN)	1413.6	1	MPN	SM 9223 B-2004		1/23/2017 16:00	RDA
Temperature	15	None	oC	SM 2550B-2010		1/23/2017 13:20	JRS
TSS	14.6	1	mg/L	SM 2540 D-2011		1/26/2017 13:45	RDA

ACCESS
ANALYTICAL, INC.

Laboratory Endorsement / Definitions

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency, Standard Methods or other recognized agencies.

Common abbreviations that may be utilized in this report:

ND	Indicates the result was Not Detected at the specified reporting limit
"<"	Indicated the result as less than the indicated amount
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous to Count
SUB	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DF	Dilution Factor
RL	Reporting Limit
MDL	Calculated minimum detection limit
PQL	Practical Quantitation Limit
RE	Re-analysis

Reporting flags that may be utilized in this report:

J	Indicates the result is between the MDL and PQL and considered to be an estimated result
MB	Indicates the analyte was detected in the associated Method Blank
H	Indicates the recommended holding time was exceeded
*	Indicates a non-compliant or not applicable QC recovery or RPD
A	BOD or CBOD GGA check value for this sample did not meet acceptance criteria.
B	BOD or CBOD blank depletion did not meet acceptance criteria.
C	Indicates the spike % recovery was not acceptable.
D	Indicates the duplicate % difference was not acceptable.
E	Toxicity is apparent in the sample.

Sample receipt at Access Analytical is documented through the attached chain of custody. In accordance with laboratory protocol, this report shall be reproduced only in full and with the written permission of Access Analytical, Inc.. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the attached report and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

ACCESS
ANALYTICAL, INC.

Sample Receipt

Were samples received on ice?	YES
Were samples received within required temperature limits?	YES
Are the number of samples the same as stated on the chain of custody?	YES
Are samples submitted with a correct and complete chain of custody?	YES
Are bottle caps tight and securely in place, coolers and samples intact?	YES
Are the correct sample containers provided?	YES
Were samples within the holding time for requested test(s)?	YES
Is the volume of sample submitted sufficient for the requested test(s)?	YES
Is there sufficient air space in bottle for bacteriological analysis?	YES
Were samples received with applicable preservative?	YES

ACCESS ANALYTICAL, INC.

Chain of Custody

200 Rich Lex Drive
Lexington, SC 29072

Phone: 803-939-4983
Fax: 803-939-4984
oleinc.com

Page 1 of 1

ON LINE ENVIRONMENTAL, INC — Chain of Custody Record — SCDHEC LAB ID# 32571/25003

Client: **City of Columbia** Attn: **Andrew Stroud**
Address: **1136 Washington Street** Phone: **803-545-4001**
City, State, Zip: **Columbia, SC 29201** Email: **atstroud@columbiasc.net**

Prog. Area	Sample ID# (FOR LAB USE ONLY)	Sample Name	Date/Time of Sample	Sample Type (G or C)	Preservation/Bottle Type	# of bottles	Parameter(s)
WW	01275-001	C-017	1-23-17 1225	G	A/P	1	TSS
WW	〃	C-017	〃 / 〃	G	GF/P	1	E. Coli MPN
WW	〃	C-017	〃 / 〃	G	Field An.	NA	D.O. (mg/L)= 7.4 Temp. (°C)= 15
WW	01275-002	C-001	〃 / 1255	G	A/P	1	TSS
WW	〃	C-001	〃 / 〃	G	GF/P	1	E. Coli MPN
WW	〃	C-001	〃 / 〃	G	Field An.	NA	D.O. (mg/L)= 7.0 Temp. (°C)= 15
WW	01275-003	B-280	〃 / 1320	G	A/P	1	TSS
WW	〃	B-280	〃 / 〃	G	GF/P	1	E. Coli MPN
WW	〃	B-280	〃 / 〃	G	Field An.	NA	D.O. (mg/L)= 9.1 Temp. (°C)= 15

G=grab C=composite — Prog. Area: WW=wastewater DW=drinking water MW=monitoring well SS=semi solid SL=soil SD=solid

Samplers signature: [signature]

Special Instructions:
Received in lab @ 4 °C
Project: Water Quality Monitoring
(Sample Jan, April, July, Oct)

Auto Sampler Data
Date/Time Set On: / /
by whom:
Date/Time Off: / /
by whom:
Meter Reading After:
Meter Reading Before:
Difference: x (factor):

Relinquished by	Date	Time	Received by	Date	Time

Preservation Codes: A=≤6°C, B=H_2SO_4, C=HNO_3, D=HCl, E=NaOH, F=$Na_2S_2O_3$, G= ≤10°C, O=Other (describe) Bottle Type: Glass = G, Plastic = P

Received in lab by: [signature] Date: 1-23-17 Time: 1355 Sample Rcd. On Ice: (Yes) No

City Of Columbia Quality Assurance Project Plan (QAPP) Data Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP November 2015

Laboratory Report Date: 5/1/17

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Ralana Wilson/QA Manager — Date: 5/22/17

The undersigned validates the data in the above referenced report, per the QAPP requirements.

Michael Jaspers/Project Validator — Date: 5/22/17

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

PROJECT:

WATER QUALITY MONITORING

REPORT DATE:

05.01.17

REPORT APPROVED BY:

Bryant W. Boyd
Laboratory Manager
bryant@axs-inc.com

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.939.4983 or via email at the address listed above.

Access Analytical, Inc. SCDHEC certification #'s: 32571001 (Lexington Lab)
25003001 (Hampton Lab)

Access Analytical, Inc.
200-B Rich-Lex Dr. ~ Lexington, SC 29072
PHONE: 803.939.4983 ~ FAX: 803.939.4984 ~ WEB: www.axs-inc.com

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 03154-001
Project: WATER QUALITY MONITORING
Sample Name: C-017
Matrix: Waste Water
Collected: 4/27/2017 @ 11:32
Date Received: 4/27/2017 @ 13:30

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	5.7	None	mg/L	SM 4500-O G-2011		4/27/2017 11:32	JRS
E. Coli (MPN)	143.9	1	MPN	SM 9223 B-2004		4/27/2017 15:32	JRS
Temperature	21	None	oC	SM 2550B-2010		4/27/2017 11:32	JRS
TSS	16.8	1	mg/L	SM 2540 D-2011		4/27/2017 11:30	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 03154-002
Project: WATER QUALITY MONITORING
Sample Name: C-001

Matrix: Waste Water
Collected: 4/27/2017 @ 11:52
Date Received: 4/27/2017 @ 13:30

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	8.2	None	mg/L	SM 4500-O G-2011		4/27/2017 11:52	JRS
E. Coli (MPN)	307.6	1	MPN	SM 9223 B-2004		4/27/2017 15:32	JRS
Temperature	23	None	oC	SM 2550B-2010		4/27/2017 11:52	JRS
TSS	36.3	1	mg/L	SM 2540 D-2011		4/27/2017 11:30	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 03154-003
Project: WATER QUALITY MONITORING
Sample Name: B-280
Matrix: Waste Water
Collected: 4/27/2017 @ 12:20
Date Received: 4/27/2017 @ 13:30

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	8.1	None	mg/L	SM 4500-O G-2011		4/27/2017 12:20	JRS
E. Coli (MPN)	920.8	1	MPN	SM 9223 B-2004		4/27/2017 15:32	JRS
Temperature	20	None	oC	SM 2550B-2010		4/27/2017 12:20	JRS
TSS	8.0	1	mg/L	SM 2540 D-2011		4/27/2017 11:30	RDA

ACCESS
ANALYTICAL, INC.

Laboratory Endorsement / Definitions

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency, Standard Methods or other recognized agencies.

Common abbreviations that may be utilized in this report:

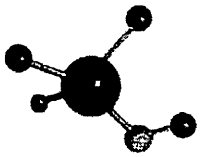
ND	Indicates the result was Not Detected at the specified reporting limit
"<"	Indicated the result as less than the indicated amount
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous to Count
SUB	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DF	Dilution Factor
RL	Reporting Limit
MDL	Calculated minimum detection limit
PQL	Practical Quantitation Limit
RE	Re-analysis

Reporting flags that may be utilized in this report:

J	Indicates the result is between the MDL and PQL and considered to be an estimated result
MB	Indicates the analyte was detected in the associated Method Blank
H	Indicates the recommended holding time was exceeded
*****	Indicates a non-compliant or not applicable QC recovery or RPD
A	BOD or CBOD GGA check value for this sample did not meet acceptance criteria.
B	BOD or CBOD blank depletion did not meet acceptance criteria.
C	Indicates the spike % recovery was not acceptable.
D	Indicates the duplicate % difference was not acceptable.
E	Toxicity is apparent in the sample.

Sample receipt at Access Analytical is documented through the attached chain of custody. In accordance with laboratory protocol, this report shall be reproduced only in full and with the written permission of Access Analytical, Inc.. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the attached report and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.



ACCESS
ANALYTICAL, INC.

Sample Receipt

Were samples received on ice?	YES
Were samples received within required temperature limits?	YES
Are the number of samples the same as stated on the chain of custody?	YES
Are samples submitted with a correct and complete chain of custody?	YES
Are bottle caps tight and securely in place, coolers and samples intact?	YES
Are the correct sample containers provided?	YES
Were samples within the holding time for requested test(s)?	YES
Is the volume of sample submitted sufficient for the requested test(s)?	YES
Is there sufficient air space in bottle for bacteriological analysis?	YES
Were samples received with applicable preservative?	YES

ACCESS ANALYTICAL, INC.

Chain of Custody

ON LINE ENVIRONMENTAL, INC — Chain of Custody Record — SCDHEC LAB ID# 32571/25003

200 Rich Lex Drive
Lexington, SC 29072

Page ___ of ___

Phone: 803-939-4983
Fax: 803-939-4984
oleinc.com

Client: City of Columbia
Address: 1136 Washington Street
City, State, Zip: Columbia, SC 29201

Attn: Andrew Stroud
Phone: 803-545-4001
Email: alstroud@columbiasc.net

Prog. Area	Sample ID# (FOR LAB USE ONLY)	Sample Name	Date/Time of Sample	Sample Type (G or C)	Preservation/Bottle Type	# of bottles	Parameter(s)
WW	03164.03	C-017	4-24-17 11:30	G	A/P	1	TSS
WW		C-017	" / 1032	G	GF/P	1	E. Coli MPN
WW		C-017	" / 10:32	G	Field An.	NA	D.O. (mg/L)= 5.7 Temp. (°C)= 20.8
WW	-02	C-001	" / 11:52	G	A/P	1	TSS
WW		C-001	" / "	G	GF/P	1	E. Coli MPN
WW		C-001	" / "	G	Field An.	NA	D.O. (mg/L)= 6.2 Temp. (°C)= 22.5
WW	-03	B-280	" / 1220	G	A/P	1	TSS
WW		B-280	" / "	G	GF/P	1	E. Coli MPN
WW		B-280	" / "	G	Field An.	NA	D.O. (mg/L)= 8.1 Temp. (°C)= 20.1

G=grab C=composite — Prog Area: WW=wastewater DW=drinking water MW=monitoring well SS=semi solid SL=soil SD=solid

Samplers signature:

Special Instructions
Received in lab @ 4.2 °C

Project: Water Quality Monitoring

(Sample Jan, April, July, Oct)

Auto Sampler Data
Date/Time Set On: / Meter Reading After:
by whom: / Meter Reading Before:
Date/Time Off: / Difference:
by whom / x (factor)

Relinquished by	Date	Time	Received by	Date	Time

Preservation Codes: A=≤6°C, B=H_2SO_4, C=HNO_3, D=HCl, E=NaOH, F=$Na_2S_2O_3$, G= ≤10°C, O=Other (describe) Bottle Type: Glass = G, Plastic = P

Received in lab by: _____ Date: 4-27-17 Time: 1330

Sample Rcd On Ice: (Yes) No

City Of Columbia Quality Assurance Project Plan (QAPP) Data Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP November 2015

Laboratory Report Date: 8/4/17

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Ralana Wilson/QA Manager — Date: 8/15/17

The undersigned validates the data in the above referenced report, per the QAPP requirements.

Michael Jaspers/Project Validator — Date: 8/15/17

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

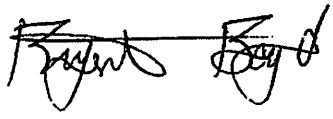
PROJECT:

WATER QUALITY MONITORING

REPORT DATE:

08.04.17

REPORT APPROVED BY:



Bryant W. Boyd
Laboratory Manager
bryant@axs-inc.com

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.781.4243 or via email at the address listed above.

Access Analytical, Inc. SCDHEC certification #'s: 32571001 (Irmo Lab)
25003001 (Hampton Lab)

Access Analytical, Inc.
15 Thames Valley Rd. ~ Irmo, SC 29063
PHONE: 803.781.4243 ~ FAX: 803.781.4303 ~ WEB: www.axs-inc.com

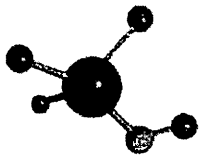
ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 05056-001
Project: WATER QUALITY MONITORING
Sample Name: C-017

Matrix: Waste Water
Collected: 7/27/2017 @ 14:01
Date Received: 7/27/2017 @ 15:24

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	5.92	None	mg/L	SM 4500-O G-2011		7/27/2017 14:01	JRS
E. Coli (MPN)	78.9	1	MPN	SM 9223 B-2004		7/27/2017 16:05	MML
Temperature	27	None	oC	SM 2550B-2010		7/27/2017 14:01	JRS
TSS	6.7	1	mg/L	SM 2540 D-2011		7/28/2017 14:00	JRS



ACCESS
ANALYTICAL, INC.

Report of Analysis

Lab ID #: 05056-002
Project: WATER QUALITY MONITORING
Sample Name: C-001

Matrix: Waste Water
Collected: 7/27/2017 @ 14:20
Date Received: 7/27/2017 @ 15:24

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	6.46	None	mg/L	SM 4500-O G-2011		7/27/2017 14:20	JRS
E. Coli (MPN)	166.4	1	MPN	SM 9223 B-2004		7/27/2017 16:05	MML
Temperature	29	None	oC	SM 2550B-2010		7/27/2017 14:20	JRS
TSS	331	1	mg/L	SM 2540 D-2011		7/28/2017 14:00	JRS

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 05056-003
Project: WATER QUALITY MONITORING
Sample Name: B-280
Matrix: Waste Water
Collected: 7/27/2017 @ 14:50
Date Received: 7/27/2017 @ 15:24

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	8.08	None	mg/L	SM 4500-O G-2011		7/27/2017 14:50	JRS
E. Coli (MPN)	1299.7	1	MPN	SM 9223 B-2004		7/27/2017 16:05	MML
Temperature	28	None	oC	SM 2550B-2010		7/27/2017 14:50	JRS
TSS	9.0	1	mg/L	SM 2540 D-2011		7/28/2017 14:00	JRS

ACCESS
ANALYTICAL, INC.

Laboratory Endorsement / Definitions

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency, Standard Methods or other recognized agencies.

Common abbreviations that may be utilized in this report:

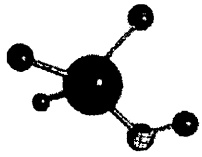
ND	Indicates the result was Not Detected at the specified reporting limit
"<"	Indicated the result as less than the indicated amount
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous to Count
SUB	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DF	Dilution Factor
RL	Reporting Limit
MDL	Calculated minimum detection limit
PQL	Practical Quantitation Limit
RE	Re-analysis

Reporting flags that may be utilized in this report:

J	Indicates the result is between the MDL and PQL and considered to be an estimated result
MB	Indicates the analyte was detected in the associated Method Blank
H	Indicates the recommended holding time was exceeded
*****	Indicates a non-compliant or not applicable QC recovery or RPD
A	BOD or CBOD GGA check value for this sample did not meet acceptance criteria.
B	BOD or CBOD blank depletion did not meet acceptance criteria.
C	Indicates the spike % recovery was not acceptable.
D	Indicates the duplicate % difference was not acceptable.
E	Toxicity is apparent in the sample.

Sample receipt at Access Analytical is documented through the attached chain of custody. In accordance with laboratory protocol, this report shall be reproduced only in full and with the written permission of Access Analytical, Inc.. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the attached report and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.



ACCESS
ANALYTICAL, INC.

Sample Receipt

Were samples received on ice?	YES
Were samples received within required temperature limits?	YES
Are the number of samples the same as stated on the chain of custody?	YES
Are samples submitted with a correct and complete chain of custody?	YES
Are bottle caps tight and securely in place, coolers and samples intact?	YES
Are the correct sample containers provided?	YES
Were samples within the holding time for requested test(s)?	YES
Is the volume of sample submitted sufficient for the requested test(s)?	YES
Is there sufficient air space in bottle for bacteriological analysis?	YES
Were samples received with applicable preservative?	YES

ACCESS ANALYTICAL, INC.

Chain of Custody

Chain of Custody Record

Access Lab Report #: 05056
Sub Lab (if applicable): ________ / Sub Report #: ________

Access Analytical, Inc. · Irmo
15 Thames Valley Rd · Irmo, SC 29063
Phone: 803-781-4243 / Fax: 803-781-4303 / Web: www.axs-inc.com
SCDHEC Lab Certification # 32571

Client:	City of Columbia	Preservatives (see codes):	9 | S | NA
Attn:	Mike Jaspers	Bottle Types (see codes):	P | P | NA
Address:	1136 Washington Street		
City:	Columbia	State: SC	Zip Code: 29201
Phone:	803-545-0076	Fax:	
Email:	mjjaspers@columbiasc.net		
Project Name:	Water Quality Monitoring		
Sampled By (Signature):	[signature]		

Requested Lab Analysis:

Lab ID	Sample Name	Date Collected	Time Collected	G=Grab C=Comp	Matrix (see codes)	Program Area (see codes)	Total # Containers	TSS	E. Coli	DO, Temperature	Notes / Comments
001	C-017	7-27-17	1401	G	WW	CWA	2	1	1	NA	DO (mg/L)= 5.92 Temperature (°C)= 27.3
002	C-001	"	1420	G	WW	CWA	2	1	1	NA	DO (mg/L)= 6.46 Temperature (°C)= 28.6
003	B-280	"	1450	G	WW	CWA	2	1	1	NA	DO (mg/L)= 8.08 Temperature (°C)= 27.6

**Sample the last week of Jan, April, July & October

Pu

Preservation Codes / Bottle Types:

*Preservative Codes:
0 = None, 1 = HCl, 2 = HNO3, 3 = H_2SO_4, 4 = NaOH, 5 = $Na_2S_2O_3$, 6 = Method 5035 set w/ $NaHSO_4$ & CH_3OH, 7 = NaOH/ZnOAC, 8 = H_3PO_4, 9 = cooled to ≤6°C, 10 = cooled to ≤10°C, 11 = Amm.Cl, 12 = Ascorbic Acid / HCl, 13 = EDA

*Matrix Codes:
GW = ground water, WW = waste water, DW = drinking water, SW = surface/storm water, S = soil, SL = sludge, A = air, IW = industrial waste, O = other (specify in comments section)

*Program Area Codes:
CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking water), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

Auto Sampler Data (composite samples only): **Composite Harvest Temp (°C)=** ________
Date/Time Set On ________ by whom: ________
Date/Time Off ________ by whom: ________

Meter Reading After: ________
Meter Reading Before: ________
Difference: ________
x ________ (factor): ________

Turnaround Time Requested:		Project Location:	Relinquished By:	Received By:	Date:	Time (24hr):	Samples Received on Ice:
Standard		SC					___Y ___N ___N/A
Rush *		NC					___Y ___N ___N/A
*Date Required		Other (Specify)					___Y ___N ___N/A
Rush data emailed/faxed by end of business day on date required. Standard TAT ≤ 7-10 business days.			Received in lab by: [signature]		7-27-17	1524	✓Y ___N ___N/A
Chain of Custody Page ____ of ____					Sample Temp. Upon Receipt in Lab: 2.2 (°C)		

White Copy: Lab original / Canary Copy: File Copy / Pink Copy: Client Copy

NOTE: Relinquishing samples via this Chain of Custody document constitutes client acceptance of Access Analytical terms and conditions.

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

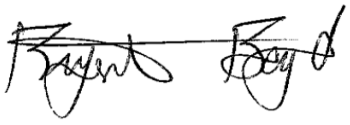
PROJECT:

WATER QUALITY MONITORING

REPORT DATE:

10.30.17

REPORT APPROVED BY:



Bryant W. Boyd
Laboratory Manager
bryant@axs-inc.com

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.781.4243 or via email at the address listed above.

Access Analytical, Inc. SCDHEC certification #'s: 32571001 (Irmo Lab)
25003001 (Hampton Lab)

Access Analytical, Inc.
15 Thames Valley Rd. ~ Irmo, SC 29063
PHONE: 803.781.4243 ~ FAX: 803.781.4303 ~ WEB: www.axs-inc.com

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 07126-001
Project: WATER QUALITY MONITORING
Sample Name: C-017
Matrix: Waste Water
Collected: 10/24/2017 @ 13:00
Date Received: 10/24/2017 @ 15:00

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	5.59	None	mg/L	SM 4500-O G-2011		10/24/2017 13:00	JRS
E. Coli (MPN)	2419.6	1	MPN	SM 9223 B-2004		10/24/2017 15:55	RDA
Temperature	19.6	None	oC	SM 2550B-2010		10/24/2017 13:00	JRS
TSS	22.4	1	mg/L	SM 2540 D-2011		10/26/2017 12:30	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 07126-002
Project: WATER QUALITY MONITORING
Sample Name: C-001
Matrix: Waste Water
Collected: 10/24/2017 @ 13:31
Date Received: 10/24/2017 @ 15:00

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	6.61	None	mg/L	SM 4500-O G-2011		10/24/2017 13:31	JRS
E. Coli (MPN)	770.1	1	MPN	SM 9223 B-2004		10/24/2017 15:55	RDA
Temperature	21.1	None	oC	SM 2550B-2010		10/24/2017 13:31	JRS
TSS	14.8	1	mg/L	SM 2540 D-2011		10/26/2017 12:30	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 07126-003
Project: WATER QUALITY MONITORING
Sample Name: B-280
Matrix: Waste Water
Collected: 10/24/2017 @ 14:04
Date Received: 10/24/2017 @ 15:00

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	7.60	None	mg/L	SM 4500-O G-2011		10/24/2017 14:04	JRS
E. Coli (MPN)	1732.9	1	MPN	SM 9223 B-2004		10/24/2017 15:55	RDA
Temperature	21.2	None	oC	SM 2550B-2010		10/24/2017 14:04	JRS
TSS	23.6	1	mg/L	SM 2540 D-2011		10/26/2017 12:30	RDA

ACCESS ANALYTICAL, INC.

Laboratory Endorsement / Definitions

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency, Standard Methods or other recognized agencies.

Common abbreviations that may be utilized in this report:

ND	Indicates the result was Not Detected at the specified reporting limit
"<"	Indicated the result as less than the indicated amount
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous to Count
SUB	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DF	Dilution Factor
RL	Reporting Limit
MDL	Calculated minimum detection limit
PQL	Practical Quantitation Limit
RE	Re-analysis

Reporting flags that may be utilized in this report:

J	Indicates the result is between the MDL and PQL and considered to be an estimated result
MB	Indicates the analyte was detected in the associated Method Blank
H	Indicates the recommended holding time was exceeded
*****	Indicates a non-compliant or not applicable QC recovery or RPD
A	BOD or CBOD GGA check value for this sample did not meet acceptance criteria.
B	BOD or CBOD blank depletion did not meet acceptance criteria.
C	Indicates the spike % recovery was not acceptable.
D	Indicates the duplicate % difference was not acceptable.
E	Toxicity is apparent in the sample.

Sample receipt at Access Analytical is documented through the attached chain of custody. In accordance with laboratory protocol, this report shall be reproduced only in full and with the written permission of Access Analytical, Inc.. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the attached report and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

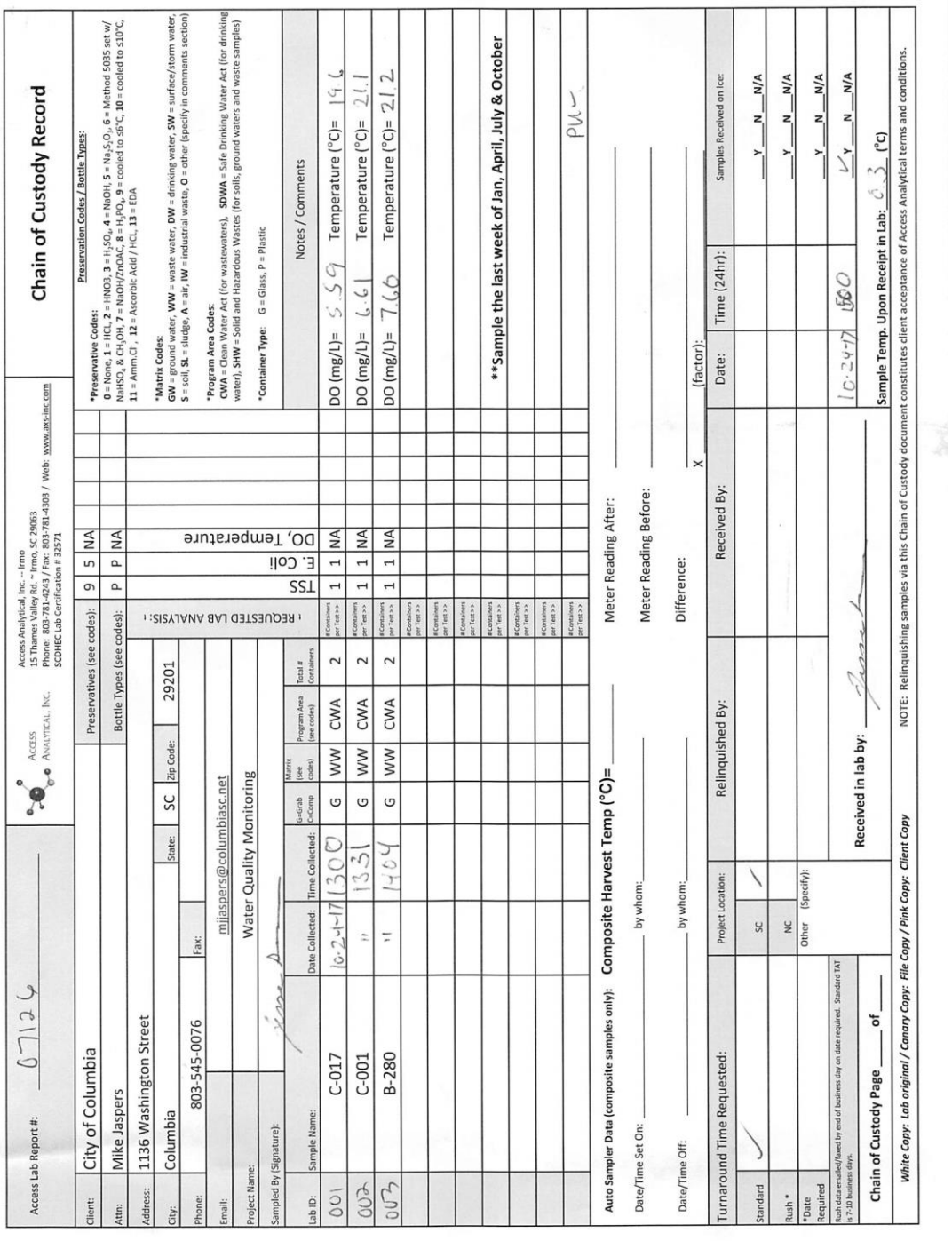
ACCESS ANALYTICAL, INC.

Sample Receipt

Were samples received on ice?	YES
Were samples received within required temperature limits?	YES
Are the number of samples the same as stated on the chain of custody?	YES
Are samples submitted with a correct and complete chain of custody?	YES
Are bottle caps tight and securely in place, coolers and samples intact?	YES
Are the correct sample containers provided?	YES
Were samples within the holding time for requested test(s)?	YES
Is the volume of sample submitted sufficient for the requested test(s)?	YES
Is there sufficient air space in bottle for bacteriological analysis?	YES
Were samples received with applicable preservative?	YES

ACCESS ANALYTICAL, INC.

Chain of Custody



Access Lab Report #: 07126

Access Analytical, Inc. -- Irmo
15 Thames Valley Rd. ~ Irmo, SC 29063
Phone: 803-781-4243 / Fax: 803-781-4303 / Web: www.axs-inc.com
SCDHEC Lab Certification # 32571

Chain of Custody Record

Client: City of Columbia
Attn: Mike Jaspers
Address: 1136 Washington Street
City: Columbia State: SC Zip Code: 29201
Phone: 803-545-0076 Fax:
Email: mjaspers@columbiasc.net
Project Name: Water Quality Monitoring
Sampled By (Signature):

Preservatives (see codes): 9 P 5 NA
Bottle Types (see codes): P P NA

- REQUESTED LAB ANALYSIS: -
TSS
F. Coli
DO, Temperature

Lab ID:	Sample Name:	Date Collected:	Time Collected:	G=Grab C=Comp	Matrix (see codes)	Program Area (see codes)	Total # Containers	TSS	F. Coli	DO, Temperature	Notes / Comments
001	C-017	10-24-17	1300	G	WW	CWA	2	1	1	NA	DO (mg/L)= 5.59 Temperature (°C)= 19.6
002	C-001	"	1331	G	WW	CWA	2	1	1	NA	DO (mg/L)= 6.61 Temperature (°C)= 21.1
003	B-280	"	1404	G	WW	CWA	2	1	1	NA	DO (mg/L)= 7.66 Temperature (°C)= 21.2
											**Sample the last week of Jan, April, July & October
											PWS

Preservative Codes:
0 = None, **1** = HCL, **2** = HNO_3, **3** = H_2SO_4, **4** = NaOH, **5** = $Na_2S_2O_3$, **6** = Method 5035 set w/ $NaHSO_4$ & CH_3OH, **7** = NaOH/ZnOAC, **8** = H_3PO_4, **9** = cooled to ≤6°C, **10** = cooled to ≤10°C, **11** = Amm.Cl , **12** = Ascorbic Acid / HCL, **13** = EDA

Matrix Codes:
GW = ground water, **WW** = waste water, **DW** = drinking water, **SW** = surface/storm water, **S** = soil, **SL** = sludge, **A** = air, **IW** = industrial waste, **O** = other (specify in comments section)

Program Area Codes:
CWA = Clean Water Act (for wastewaters), **SDWA** = Safe Drinking Water Act (for drinking water), **SHW** = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

Container Type: G = Glass, P = Plastic

Auto Sampler Data (composite samples only): Composite Harvest Temp (°C)= _____ Meter Reading After: _____
Date/Time Set On: _____ by whom: _____ Meter Reading Before: _____
Date/Time Off: _____ by whom: _____ Difference: _____ X _____ (factor):

Turnaround Time Requested:	Project Location:	Relinquished By:	Received By:	Date:	Time (24hr):	Samples Received on Ice:
Standard ✓	SC ✓					___Y___N___N/A
Rush *	NC					___Y___N___N/A
*Date Required	Other (Specify):					___Y___N___N/A
Rush data emailed/faxed by end of business day on date required. Standard TAT is 7-10 business days.		Received in lab by:		10-24-17	1560	Y___N___N/A

Chain of Custody Page ___ of ___

Sample Temp. Upon Receipt in Lab: 0.3 (°C)

White Copy: Lab original / Canary Copy: File Copy / Pink Copy: Client Copy NOTE: Relinquishing samples via this Chain of Custody document constitutes client acceptance of Access Analytical terms and conditions.

City Of Columbia Quality Assurance Project Plan (QAPP) Data Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP November 2015

Laboratory Report Date: 1/30/18

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Ralana Wilson/QA Manager — Date: 2/6/18

The undersigned validates the data in the above referenced report, per the QAPP requirements.

Michael Jaspers/Project Validator — Date: 2/6/18

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

PROJECT:

WATER QUALITY MONITORING

REPORT DATE:

01.30.18

REPORT APPROVED BY:

Bryant W. Boyd
Laboratory Manager
bryant@axs-inc.com

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.781.4243 or via email at the address listed above.

Access Analytical, Inc. SCDHEC certification #'s: 32571001 (Irmo Lab)
25003001 (Hampton Lab)

Access Analytical, Inc.
15 Thames Valley Rd. ~ Irmo, SC 29063
PHONE: 803.781.4243 ~ FAX: 803.781.4303 ~ WEB: www.axs-inc.com

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 09099-001
Project: WATER QUALITY MONITORING
Sample Name: C-017 BR

Matrix: Waste Water
Collected: 1/22/2018 @ 13:15
Date Received: 1/22/2018 @ 15:45

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	11.55	None	mg/L	SM 4500-O G-2011		1/22/2018 13:15	RC
E. Coli (MPN)	53.8	None	MPN	SM 9223 B-2004		1/22/2018 17:01	BB
Temperature	8.6	None	oC	SM 2550B-2010		1/22/2018 13:15	RC
TSS	3.2	None	mg/L	SM 2540 D-2011		1/25/2018 14:30	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 09099-002
Project: WATER QUALITY MONITORING
Sample Name: C-001 GC

Matrix: Waste Water
Collected: 1/22/2018 @ 12:50
Date Received: 1/22/2018 @ 15:45

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	11.06	None	mg/L	SM 4500-O G-2011		1/22/2018 12:50	RC
E. Coli (MPN)	248.9	None	MPN	SM 9223 B-2004		1/22/2018 17:01	BB
Temperature	8.7	None	oC	SM 2550B-2010		1/22/2018 12:50	RC
TSS	4.0	None	mg/L	SM 2540 D-2011		1/25/2018 14:30	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 09099-003
Project: WATER QUALITY MONITORING
Sample Name: B-280 EP

Matrix: Waste Water
Collected: 1/22/2018 @ 12:25
Date Received: 1/22/2018 @ 15:45

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	10.91	None	mg/L	SM 4500-O G-2011		1/22/2018 12:25	RC
E. Coli (MPN)	59.1	None	MPN	SM 9223 B-2004		1/22/2018 17:01	BB
Temperature	9.9	None	oC	SM 2550B-2010		1/22/2018 12:25	RC
TSS	2.8	None	mg/L	SM 2540 D-2011		1/25/2018 14:30	RDA

ACCESS
ANALYTICAL, INC.

Laboratory Endorsement / Definitions

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency, Standard Methods or other recognized agencies.

Common abbreviations that may be utilized in this report:

ND	Indicates the result was Not Detected at the specified reporting limit
"<"	Indicated the result as less than the indicated amount
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous to Count
SUB	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DF	Dilution Factor
RL	Reporting Limit
MDL	Calculated minimum detection limit
PQL	Practical Quantitation Limit
RE	Re-analysis

Reporting flags that may be utilized in this report:

J	Indicates the result is between the MDL and PQL and considered to be an estimated result
MB	Indicates the analyte was detected in the associated Method Blank
H	Indicates the recommended holding time was exceeded
*****	Indicates a non-compliant or not applicable QC recovery or RPD
A	BOD or CBOD GGA check value for this sample did not meet acceptance criteria.
B	BOD or CBOD blank depletion did not meet acceptance criteria.
C	Indicates the spike % recovery was not acceptable.
D	Indicates the duplicate % difference was not acceptable.
E	Toxicity is apparent in the sample.

Sample receipt at Access Analytical is documented through the attached chain of custody. In accordance with laboratory protocol, this report shall be reproduced only in full and with the written permission of Access Analytical, Inc.. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the attached report and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

ACCESS
ANALYTICAL, INC.

Sample Receipt

Were samples received on ice?	YES
Were samples received within required temperature limits?	YES
Are the number of samples the same as stated on the chain of custody?	YES
Are samples submitted with a correct and complete chain of custody?	YES
Are bottle caps tight and securely in place, coolers and samples intact?	YES
Are the correct sample containers provided?	YES
Were samples within the holding time for requested test(s)?	YES
Is the volume of sample submitted sufficient for the requested test(s)?	YES
Is there sufficient air space in bottle for bacteriological analysis?	YES
Were samples received with applicable preservative?	YES

ACCESS ANALYTICAL, INC.

Chain of Custody

Access Lab Report #: 09099

ACCESS ANALYTICAL, INC.

Access Analytical, Inc. -- Irmo
15 Thames Valley Rd. ~ Irmo, SC 29063
Phone: 803-781-4243 / Fax: 803-781-4303 / Web: www.axs-inc.com
SCDHEC Lab Certification # 32571

Chain of Custody Record

Client:	City of Columbia
Attn:	Mike Jaspers
Address:	1136 Washington Street
City:	Columbia
State:	SC
Zip Code:	29201
Phone:	803-545-0076
Fax:	
Email:	mljaspers@columbiasc.net
Project Name:	Water Quality Monitoring
Sampled By (Signature):	Robin Charles

	TSS	E. Coli	DO, Temperature
Preservatives (see codes):	9	5	NA
Bottle Types (see codes):	P	P	NA

Lab ID:	Sample Name:	Date Collected:	Time Collected:	G=Grab C=Comp	Matrix (see codes)	Program Area (see codes)	Total # Containers	TSS	E. Coli	DO, Temperature	Notes / Comments
001	C-017 BR	1-22-18	1315	G	WW	CWA	2	1	1	NA	DO (mg/L)= 11.55 Temperature (°C)= 8.6
002	C-001 GC	1-22-18	1250	G	WW	CWA	2	1	1	NA	DO (mg/L)= 11.06 Temperature (°C)= 8.7
003	B-280 FP	1-22-18	1225	G	WW	CWA	2	1	1	NA	DO (mg/L)= 10.91 Temperature (°C)= 9.9

**Sample the last week of Jan, April, July & October

PW

Preservation Codes / Bottle Types:

*Preservative Codes:
0 = None, 1 = HCL, 2 = HNO3, 3 = H_2SO_4, 4 = NaOH, 5 = $Na_2S_2O_3$, 6 = Method 5035 set w/ $NaHSO_4$ & CH_3OH, 7 = NaOH/ZnOAC, 8 = H_3PO_4, 9 = cooled to ≤6°C, 10 = cooled to ≤10°C, 11 = Amm.Cl , 12 = Ascorbic Acid / HCL, 13 = EDA

*Matrix Codes:
GW = ground water, WW = waste water, DW = drinking water, SW = surface/storm water, S = soil, SL = sludge, A = air, IW = industrial waste, O = other (specify in comments section)

*Program Area Codes:
CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking water), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type. G = Glass, P = Plastic

Auto Sampler Data (composite samples only): Composite Harvest Temp (°C)= ______

Date/Time Set On: ______ by whom: ______

Date/Time Off: ______ by whom: ______

Meter Reading After: ______

Meter Reading Before: ______

Difference: ______ X ______ (factor):

Turnaround Time Requested:		Project Location:		Relinquished By:	Received By:	Date:	Time (24hr):	Samples Received on Ice:
Standard	✓	SC	✓					__Y __N __N/A
Rush*		NC						__Y __N __N/A
*Date Required		Other (Specify):						__Y __N __N/A
Rush data emailed/faxed by end of business day on date required. Standard TAT is 7-10 business days.				Received in lab by: Robin Charles		1-22-18	1545	✓Y __N __N/A
Chain of Custody Page 1 of 1						Sample Temp. Upon Receipt in Lab: 0.1 (°C)		

White Copy: Lab original / Canary Copy: File Copy / Pink Copy: Client Copy

NOTE: Relinquishing samples via this Chain of Custody document constitutes client acceptance of Access Analytical terms and conditions.

City Of Columbia Quality Assurance Project Plan (QAPP) Data Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP November 2015

Laboratory Report Date: 5/2/18

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Ralana Wilson/QA Manager — Date: 5-7-18

The undersigned validates the data in the above referenced report, per the QAPP requirements.

Michael Jaspers/Project Validator — Date: 5/7/18

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

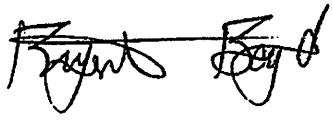
PROJECT:

WATER QUALITY MONITORING

REPORT DATE:

05.02.18

REPORT APPROVED BY:



Bryant W. Boyd
Laboratory Manager
bryant@axs-inc.com

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.781.4243 or via email at the address listed above.

Access Analytical, Inc. SCDHEC certification #'s: 32571001 (Irmo Lab)
25003001 (Hampton Lab)

Access Analytical, Inc.
15 Thames Valley Rd. ~ Irmo, SC 29063
PHONE: 803.781.4243 ~ FAX: 803.781.4303 ~ WEB: www.axs-inc.com

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 11125-001
Project: WATER QUALITY MONITORING
Sample Name: C-017
Client ID #:

Matrix: Waste Water
Collected: 4/24/2018 @ 14:12
Collected by: JRS
Date Received: 4/24/2018 @ 15:58

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	6.07	None	mg/L	SM 4500-O G-2011		4/24/2018 14:12	JRS
E. Coli (MPN)	1553.1	1	MPN	SM 9223 B-2004		4/24/2018 16:44	RDA
Temperature	18.9	None	oC	SM 2550B-2010		4/24/2018 14:12	JRS
TSS	11.2	1	mg/L	SM 2540 D-2011		4/26/2018 15:25	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 11125-002
Project: WATER QUALITY MONITORING
Sample Name: C-001
Client ID #:

Matrix: Waste Water
Collected: 4/24/2018 @ 14:33
Collected by: JRS
Date Received: 4/24/2018 @ 15:58

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	7.36	None	mg/L	SM 4500-O G-2011		4/24/2018 14:33	JRS
E. Coli (MPN)	387.3	1	MPN	SM 9223 B-2004		4/24/2018 16:44	RDA
Temperature	19.7	None	oC	SM 2550B-2010		4/24/2018 14:33	JRS
TSS	12.0	1	mg/L	SM 2540 D-2011		4/26/2018 15:25	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 11125-003
Project: WATER QUALITY MONITORING
Sample Name: B-280
Client ID #:

Matrix: Waste Water
Collected: 4/24/2018 @ 15:20
Collected by: JRS
Date Received: 4/24/2018 @ 15:58

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	8.02	None	mg/L	SM 4500-O G-2011		4/24/2018 15:20	JRS
E. Coli (MPN)	> 2419.6	1	MPN	SM 9223 B-2004		4/24/2018 16:44	RDA
Temperature	20.1	None	oC	SM 2550B-2010		4/24/2018 15:20	JRS
TSS	19.6	1	mg/L	SM 2540 D-2011		4/26/2018 15:25	RDA

ACCESS
ANALYTICAL, INC.

Laboratory Endorsement / Definitions

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency, Standard Methods or other recognized agencies.

Common abbreviations that may be utilized in this report:

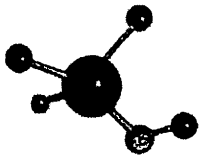
ND	Indicates the result was Not Detected at the specified reporting limit
"<"	Indicated the result as less than the indicated amount
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous to Count
SUB	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DF	Dilution Factor
RL	Reporting Limit
MDL	Calculated minimum detection limit
PQL	Practical Quantitation Limit
RE	Re-analysis

Reporting flags that may be utilized in this report:

J	Indicates the result is between the MDL and PQL and considered to be an estimated result
MB	Indicates the analyte was detected in the associated Method Blank
H	Indicates the recommended holding time was exceeded
*****	Indicates a non-compliant or not applicable QC recovery or RPD
A	BOD or CBOD GGA check value for this sample did not meet acceptance criteria.
B	BOD or CBOD blank depletion did not meet acceptance criteria.
C	Indicates the spike % recovery was not acceptable.
D	Indicates the duplicate % difference was not acceptable.
E	Toxicity is apparent in the sample.

Sample receipt at Access Analytical is documented through the attached chain of custody. In accordance with laboratory protocol, this report shall be reproduced only in full and with the written permission of Access Analytical, Inc.. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the attached report and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.



ACCESS
ANALYTICAL, INC.

Sample Receipt

Were samples received on ice?	YES
Were samples received within required temperature limits?	YES
Are the number of samples the same as stated on the chain of custody?	YES
Are samples submitted with a correct and complete chain of custody?	YES
Are bottle caps tight and securely in place, coolers and samples intact?	YES
Are the correct sample containers provided?	YES
Were samples within the holding time for requested test(s)?	YES
Is the volume of sample submitted sufficient for the requested test(s)?	YES
Is there sufficient air space in bottle for bacteriological analysis?	YES
Were samples received with applicable preservative?	YES

ACCESS ANALYTICAL, INC.

Chain of Custody

Access Lab Report #: 11125

Access Analytical, Inc. ~ Irmo
15 Thames Valley Rd. ~ Irmo, SC 29063
Phone: 803-781-4243 / Fax: 803-781-4303 / Web: www.axs-inc.com
SCDHEC Lab Certification # 32571

Chain of Custody Record

Client:	City of Columbia			
Attn:	Mike Jaspers			
Address:	1136 Washington Street			
City:	Columbia	State: SC	Zip Code:	29201
Phone:	803-545-0076	Fax:		
Email:	mjjaspers@columbiasc.net			
Project Name:	Water Quality Monitoring			
Sampled By (Signature):	[signature]			

	TSS	E. Coli	DO, Temperature
Preservatives (see codes):	9	S	NA
Bottle Types (see codes):	P	P	NA

Preservation Codes / Bottle Types:

*Preservative Codes: 0 = None, 1 = HCL, 2 = HNO3, 3 = H_2SO_4, 4 = NaOH, 5 = $Na_2S_2O_3$, 6 = Method 5035 set w/ $NaHSO_4$ & CH_3OH, 7 = NaOH/ZnOAC, 8 = H_3PO_4, 9 = cooled to ≤6°C, 10 = cooled to ≤10°C, 11 = Amm.Cl , 12 = Ascorbic Acid / HCL, 13 = EDA

*Matrix Codes: GW = ground water, WW = waste water, DW = drinking water, SW = surface/storm water, S = soil, SL = sludge, A = air, IW = industrial waste, O = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking water), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type. G = Glass, P = Plastic

Lab ID:	Sample Name:	Date Collected:	Time Collected:	G=Grab C=Comp	Matrix (see codes)	Program Area (see codes)	Total # Containers	TSS	E. Coli	DO, Temperature	Notes / Comments
001	C-017	4-24-18	1412	G	WW	CWA	2	1	1	NA	DO (mg/L)= 6.07 Temperature (°C)= 18.9
002	C-001	"	1433	G	WW	CWA	2	1	1	NA	DO (mg/L)= 7.36 Temperature (°C)= 19.7
003	B-280	"	1520	G	WW	CWA	2	1	1	NA	DO (mg/L)= 8.02 Temperature (°C)= 20.1
											**Sample the last week of Jan, April, July & October
											PU-

Auto Sampler Data (composite samples only): Composite Harvest Temp (°C)= ______

Date/Time Set On: ______ by whom: ______

Date/Time Off: ______ by whom: ______

Meter Reading After: ______

Meter Reading Before: ______

Difference: ______ X ______ (factor):

Turnaround Time Requested:	Project Location:	Relinquished By:	Received By:	Date:	Time (24hr):	Samples Received on Ice:
Standard	SC					__Y __N __N/A
Rush *	NC					__Y __N __N/A
*Date Required	Other (Specify)					__Y __N __N/A
Rush data emailed/faxed by end of business day on date required. Standard TAT is 7-10 business days.		Received in lab by: [signature]		4-24-18	1555	Y __N __N/A
Chain of Custody Page ____ of ____				Sample Temp. Upon Receipt in Lab: 0.1 (°C)		

White Copy: Lab original / Canary Copy: File Copy / Pink Copy: Client Copy

NOTE: Relinquishing samples via this Chain of Custody document constitutes client acceptance of Access Analytical terms and conditions.

City Of Columbia Quality Assurance Project Plan (QAPP) Data Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP November 2015

Laboratory Report Date: 8/1/18

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Ralana Wilson/QA Manager — Date: 8/10/18

The undersigned validates the data in the above referenced report, per the QAPP requirements.

Michael Jaspers/Project Validator — Date: 8/10/18

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

PROJECT:

WATER QUALITY MONITORING

REPORT DATE:

08.01.18

REPORT APPROVED BY:

Bryant W. Boyd
Laboratory Manager
bryant@axs-inc.com

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.781.4243 or via email at the address listed above.

Access Analytical, Inc. SCDHEC certification #'s: 32571001 (Irmo Lab)
25003001 (Hampton Lab)

Access Analytical, Inc.
15 Thames Valley Rd. ~ Irmo, SC 29063
PHONE: 803.781.4243 ~ FAX: 803.781.4303 ~ WEB: www.axs-inc.com

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 13147-001
Project: WATER QUALITY MONITORING
Sample Name: C-017
Client ID #:

Matrix: Waste Water
Collected: 7/24/2018 @ 14:11
Collected by: JRS
Date Received: 7/24/2018 @ 15:49

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	4.50	None	mg/L	SM 4500-O G-2011		7/24/2018 14:11	JRS
E. Coli (MPN)	1553.1	1	MPN	SM 9223 B-2004		7/24/2018 17:05	RDA
Temperature	25.5	None	oC	SM 2550B-2010		7/24/2018 14:11	JRS
TSS	10.0	1	mg/L	SM 2540 D-2011		7/26/2018 13:30	JRS

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 13147-002
Project: WATER QUALITY MONITORING
Sample Name: C-001
Client ID #:

Matrix: Waste Water
Collected: 7/24/2018 @ 14:45
Collected by: JRS
Date Received: 7/24/2018 @ 15:49

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	4.88	None	mg/L	SM 4500-O G-2011		7/24/2018 14:45	JRS
E. Coli (MPN)	727.0	1	MPN	SM 9223 B-2004		7/24/2018 17:05	RDA
Temperature	29.4	None	oC	SM 2550B-2010		7/24/2018 14:45	JRS
TSS	18.2	1	mg/L	SM 2540 D-2011		7/26/2018 13:30	JRS

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 13147-003
Project: WATER QUALITY MONITORING
Sample Name: B-280
Client ID #:

Matrix: Waste Water
Collected: 7/24/2018 @ 15:14
Collected by: JRS
Date Received: 7/24/2018 @ 15:49

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	6.98	None	mg/L	SM 4500-O G-2011		7/24/2018 15:14	JRS
E. Coli (MPN)	517.2	1	MPN	SM 9223 B-2004		7/24/2018 17:05	RDA
Temperature	26.1	None	oC	SM 2550B-2010		7/24/2018 15:14	JRS
TSS	5.0	1	mg/L	SM 2540 D-2011		7/30/2018 14:25	RDA

ACCESS
ANALYTICAL, INC.

Laboratory Endorsement / Definitions

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency, Standard Methods or other recognized agencies.

Common abbreviations that may be utilized in this report:

ND	Indicates the result was Not Detected at the specified reporting limit
"<"	Indicated the result as less than the indicated amount
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous to Count
SUB	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DF	Dilution Factor
RL	Reporting Limit
MDL	Calculated minimum detection limit
PQL	Practical Quantitation Limit
RE	Re-analysis

Reporting flags that may be utilized in this report:

J	Indicates the result is between the MDL and PQL and considered to be an estimated result
MB	Indicates the analyte was detected in the associated Method Blank
H	Indicates the recommended holding time was exceeded
*****	Indicates a non-compliant or not applicable QC recovery or RPD
A	BOD or CBOD GGA check value for this sample did not meet acceptance criteria.
B	BOD or CBOD blank depletion did not meet acceptance criteria.
C	Indicates the spike % recovery was not acceptable.
D	Indicates the duplicate % difference was not acceptable.
E	Toxicity is apparent in the sample.

Sample receipt at Access Analytical is documented through the attached chain of custody. In accordance with laboratory protocol, this report shall be reproduced only in full and with the written permission of Access Analytical, Inc.. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the attached report and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

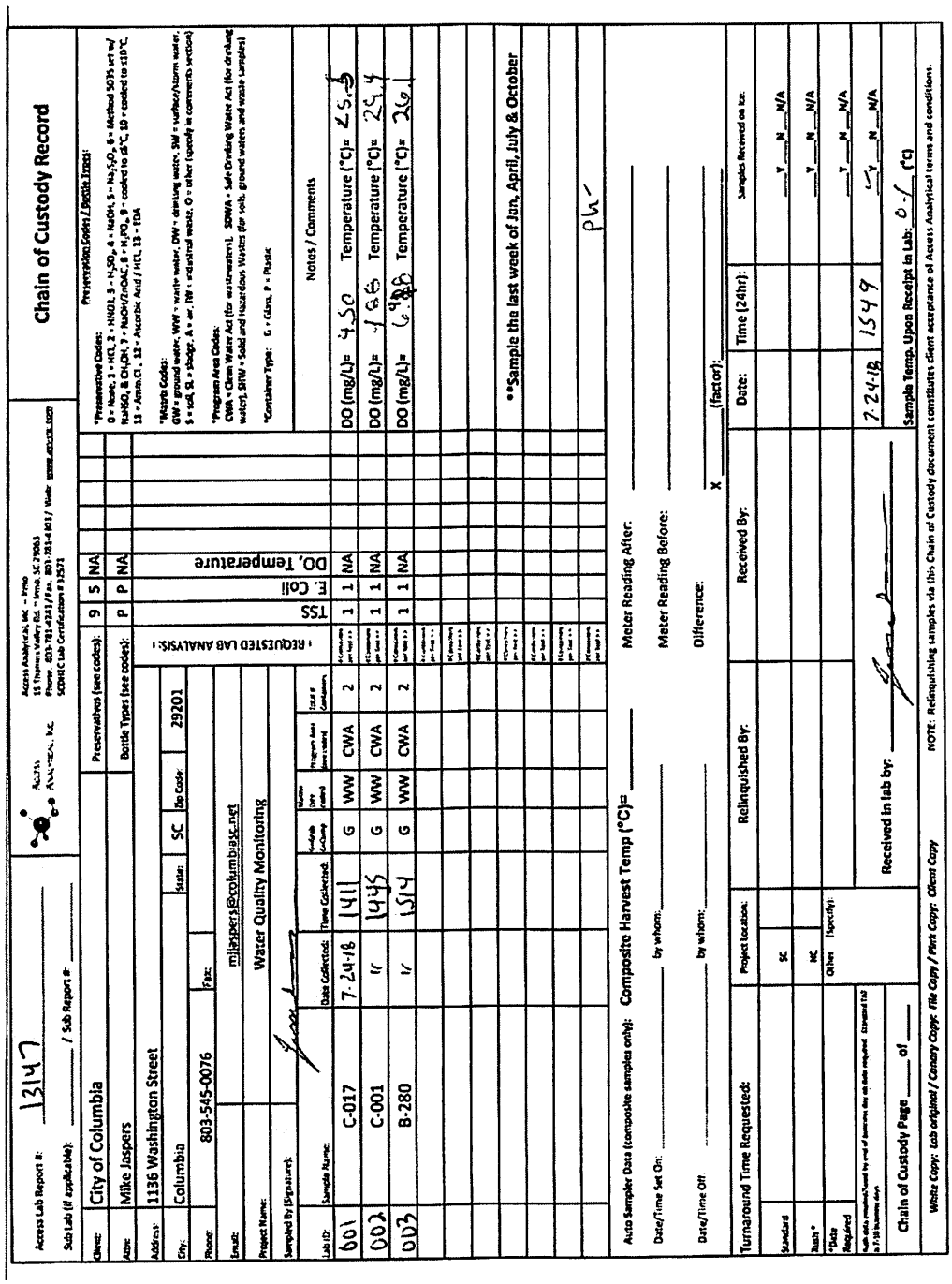
ACCESS
ANALYTICAL, INC.

Sample Receipt

Were samples received on ice?	YES
Were samples received within required temperature limits?	YES
Are the number of samples the same as stated on the chain of custody?	YES
Are samples submitted with a correct and complete chain of custody?	YES
Are bottle caps tight and securely in place, coolers and samples intact?	YES
Are the correct sample containers provided?	YES
Were samples within the holding time for requested test(s)?	YES
Is the volume of sample submitted sufficient for the requested test(s)?	YES
Is there sufficient air space in bottle for bacteriological analysis?	YES
Were samples received with applicable preservative?	YES

ACCESS ANALYTICAL, INC.

Chain of Custody



Access Lab Report #: 13147 / Sub Report #: _____
Sub Lab (if applicable): _____

Access Analytical, Inc. – Irmo
13 Thames Valley Rd. – Irmo, SC 29063
Phone: 803-781-4231 / Fax: 803-781-4911 / Web: www.accesslab.com
SCDHEC Lab Certification # 32571

Chain of Custody Record

Client: City of Columbia
Attn: Mike Jaspers
Address: 1136 Washington Street
City: Columbia State: SC Zip Code: 29201
Phone: 803-545-0076 Fax:
Email: mjaspers@columbiasc.net
Project Name: Water Quality Monitoring
Sampled By (Signature): _____

Preservatives (see codes): 9 S NA
Bottle Types (see codes): P P NA

*Preservative Codes:
0 = None, 1 = HCl, 2 = HNO3, 3 = H_2SO_4, 4 = NaOH, 5 = $Na_2S_2O_3$, 6 = Method 5035 set w/ $NaHSO_4$, 8 CH_3OH, 9 = NaOH/ZnOAC, 8 = H_3PO_4, 9 = cooled to ≤6°C, 10 = cooled to ≤0°C, 11 = Amm.Cl., 12 = Ascorbic Acid / HCl, 13 = EDA

*Waste Codes:
GW = ground water, WW = waste water, DW = drinking water, SW = surface/storm water, S = soil, SL = sludge, A = air, IW = industrial waste, O = other (specify in comments section)

*Program Area Codes:
CWA = Clean Water Act (for wastewater), SDWA = Safe Drinking Water Act (for drinking water), SHW = Solid and Hazardous Wastes (for soil, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

Lab ID:	Sample Name:	Date Collected:	Time Collected:	*Matrix (see codes)	Waste (see codes)	*Program Area (see codes)	# of Containers	TSS	Fl. Coli	DO, Temperature	Notes / Comments
001	C-017	7-24-18	1411	G	WW	CWA	2	1	1	NA	DO (mg/L)= 4.50 Temperature (°C)= 25.3
002	C-001	"	1445	G	WW	CWA	2	1	1	NA	DO (mg/L)= 7.65 Temperature (°C)= 29.4
003	B-280	"	1514	G	WW	CWA	2	1	1	NA	DO (mg/L)= 6.88 Temperature (°C)= 30.1

- REQUESTED LAB ANALYSIS -

**Sample the last week of Jun, April, July & October

Auto Sampler Data (composite samples only): Composite Harvest Temp (°C)= _____ Meter Reading After: _____
Date/Time Set On: _____ by whom: _____ Meter Reading Before: _____
Date/Time Off: _____ by whom: _____ Difference: _____ X _____ (factor): _____

Turnaround Time Requested: Project Location: Relinquished By: Received By: Date: Time (24hr): Samples Received on Ice:

Standard		SC						Y N N/A
Rush*		NC						Y N N/A
*Date Required		Other (Specify):						Y N N/A

Received in lab by: _____ 7.24.18 1549 Y N N/A

Chain of Custody Page ____ of ____

Sample Temp. Upon Receipt in Lab: 0.1 (°C)

White Copy: Lab original / Canary Copy: File Copy / Pink Copy: Client Copy NOTE: Relinquishing samples via this Chain of Custody document constitutes client acceptance of Access Analytical terms and conditions.

City of Columbia Quality Assurance Project Plan (QAPP) Data Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP

November 2015, Revised May 2017, Pending Revision November 2018

Laboratory Report Date: 10/29/2018

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Miranda Chestnut/QA Manager — Date: 11/12/2018

The undersigned validates the data in the above referenced report, per the QAPP requirements.

Alfred Jessee/Project Validator — Date: 11/12/2018

ACCESS ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

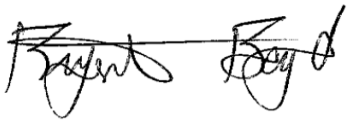
PROJECT:

WATER QUALITY MONITORING

REPORT DATE:

10.29.18

REPORT APPROVED BY:



Bryant W. Boyd
Laboratory Manager
bryant@axs-inc.com

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.781.4243 or via email at the address listed above.

Access Analytical, Inc. SCDHEC certification #'s: 32571001 (Irmo Lab)
25003001 (Hampton Lab)

Access Analytical, Inc.
15 Thames Valley Rd. ~ Irmo, SC 29063
PHONE: 803.781.4243 ~ FAX: 803.781.4303 ~ WEB: www.axs-inc.com

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 15142-001
Project: WATER QUALITY MONITORING
Sample Name: C-017 Bluff
Client ID #:

Matrix: Waste Water
Collected: 10/22/2018 @ 11:40
Collected by: RC
Date Received: 10/22/2018 @ 12:47

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	7.40	None	mg/L	SM 4500-O G-2011		10/22/2018 11:40	RC
E. Coli (MPN)	139.6	1	MPN	SM 9223 B-2004		10/22/2018 15:21	MML
Temperature	15.9	None	oC	SM 2550B-2010		10/22/2018 11:40	RC
TSS	2.3	1	mg/L	SM 2540 D-2011		10/25/2018 8:45	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 15142-002
Project: WATER QUALITY MONITORING
Sample Name: C-001 GF
Client ID #:

Matrix: Waste Water
Collected: 10/22/2018 @ 11:10
Collected by: RC
Date Received: 10/22/2018 @ 12:47

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	8.93	None	mg/L	SM 4500-O G-2011		10/22/2018 11:10	RC
E. Coli (MPN)	248.9	1	MPN	SM 9223 B-2004		10/22/2018 15:21	MML
Temperature	17.3	None	oC	SM 2550B-2010		10/22/2018 11:10	RC
TSS	8.0	1	mg/L	SM 2540 D-2011		10/25/2018 8:45	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 15142-003
Project: WATER QUALITY MONITORING
Sample Name: B-280 Earlwood
Client ID #:

Matrix: Waste Water
Collected: 10/22/2018 @ 10:40
Collected by: RC
Date Received: 10/22/2018 @ 12:47

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	9.30	None	mg/L	SM 4500-O G-2011		10/22/2018 10:40	RC
E. Coli (MPN)	1413.6	1	MPN	SM 9223 B-2004		10/22/2018 15:21	MML
Temperature	14.2	None	oC	SM 2550B-2010		10/22/2018 10:40	RC
TSS	4.3	1	mg/L	SM 2540 D-2011		10/25/2018 8:45	RDA

ACCESS ANALYTICAL, INC.

Laboratory Endorsement / Definitions

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency, Standard Methods or other recognized agencies.

Common abbreviations that may be utilized in this report:

ND	Indicates the result was Not Detected at the specified reporting limit
"<"	Indicated the result as less than the indicated amount
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous to Count
SUB	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DF	Dilution Factor
RL	Reporting Limit
MDL	Calculated minimum detection limit
PQL	Practical Quantitation Limit
RE	Re-analysis

Reporting flags that may be utilized in this report:

J	Indicates the result is between the MDL and PQL and considered to be an estimated result
MB	Indicates the analyte was detected in the associated Method Blank
H	Indicates the recommended holding time was exceeded
*****	Indicates a non-compliant or not applicable QC recovery or RPD
A	BOD or CBOD GGA check value for this sample did not meet acceptance criteria.
B	BOD or CBOD blank depletion did not meet acceptance criteria.
C	Indicates the spike % recovery was not acceptable.
D	Indicates the duplicate % difference was not acceptable.
E	Toxicity is apparent in the sample.

Sample receipt at Access Analytical is documented through the attached chain of custody. In accordance with laboratory protocol, this report shall be reproduced only in full and with the written permission of Access Analytical, Inc.. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the attached report and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

ACCESS ANALYTICAL, INC.

Sample Receipt

Were samples received on ice?	YES
Were samples received within required temperature limits?	YES
Are the number of samples the same as stated on the chain of custody?	YES
Are samples submitted with a correct and complete chain of custody?	YES
Are bottle caps tight and securely in place, coolers and samples intact?	YES
Are the correct sample containers provided?	YES
Were samples within the holding time for requested test(s)?	YES
Is the volume of sample submitted sufficient for the requested test(s)?	YES
Is there sufficient air space in bottle for bacteriological analysis?	YES
Were samples received with applicable preservative?	YES

Access Analytical, Inc.

Access Lab Report #: 15142

Access Analytical, Inc. -- Irmo
15 Thames Valley Rd. ~ Irmo, SC 29063
Phone: 803-781-4243 / Fax: 803-781-4303 / Web: www.axs-inc.com
SCDHEC Lab Certification # 32571

Chain of Custody Record

Client:	City of Columbia
Attn:	Mike Jaspers
Address:	1136 Washington Street
City:	Columbia
State:	SC
Zip Code:	29201
Phone:	803-545-0076
Fax:	
Email:	mjaspers@columbiasc.net
Project Name:	Water Quality Monitoring
Sampled By (Signature):	Robin Clark

Preservatives (see codes): 9 5 NA
Bottle Types (see codes): P P NA

Lab ID:	Sample Name:	Date Collected:	Time Collected:	G=Grab C=Comp	Matrix (see codes)	Program Area (see codes)	Total # Containers	↕ REQUESTED LAB ANALYSIS: ↕ TSS	E. Coli	DO, Temperature	Notes / Comments
001	C-017 BLUFF	10-22-18	1140	G	WW	CWA	2	1	1	NA	DO (mg/L)= 7.40 Temperature (°C)= 15.9
002	C-001 GF	10-22-18	1110	G	WW	CWA	2	1	1	NA	DO (mg/L)= 8.93 Temperature (°C)= 17.3
003	B-280 EARLWOOD	10-22-18	1040	G	WW	CWA	2	1	1	NA	DO (mg/L)= 9.30 Temperature (°C)= 14.2

Preservation Codes / Bottle Types:

***Preservative Codes:**
0 = None, **1** = HCL, **2** = HNO3, **3** = H_2SO_4, **4** = NaOH, **5** = $Na_2S_2O_3$, **6** = Method 5035 set w/ $NaHSO_4$ & CH_3OH, **7** = NaOH/ZnOAC, **8** = H_3PO_4, **9** = cooled to ≤6°C, **10** = cooled to ≤10°C, **11** = Amm.Cl , **12** = Ascorbic Acid / HCL, **13** = EDA

***Matrix Codes:**
GW = ground water, **WW** = waste water, **DW** = drinking water, **SW** = surface/storm water, **S** = soil, **SL** = sludge, **A** = air, **IW** = industrial waste, **O** = other (specify in comments section)

***Program Area Codes:**
CWA = Clean Water Act (for wastewaters), **SDWA** = Safe Drinking Water Act (for drinking water), **SHW** = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

***Container Type:** G = Glass, P = Plastic

**Sample the last week of Jan, April, July & October

PW

Auto Sampler Data (composite samples only): Composite Harvest Temp (°C)= _____
Date/Time Set On: _____ by whom: _____
Date/Time Off: _____ by whom: _____
Meter Reading After: _____
Meter Reading Before: _____
Difference: _____ X _____ (factor): _____

Turnaround Time Requested:		Project Location:		Relinquished By:	Received By:	Date:	Time (24hr):	Samples Received on Ice:
Standard		SC						___Y ___N ___N/A
Rush *		NC						___Y ___N ___N/A
*Date Required		Other (Specify):						___Y ___N ___N/A
Rush data emailed/faxed by end of business day on date required. Standard TAT is 7-10 business days.				Received in lab by: Robin Clark		10-22-18	1247	✓ Y ___N ___N/A
Chain of Custody Page 1 of 1						Sample Temp. Upon Receipt in Lab: 1.0 (°C)		

White Copy: Lab original / Canary Copy: File Copy / Pink Copy: Client Copy

NOTE: Relinquishing samples via this Chain of Custody document constitutes client acceptance of Access Analytical terms and conditions.

City of Columbia Quality Assurance Project Plan (QAPP) Data Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP

November 2015, Revised May 2017, Revised December 2018

Laboratory Report Date: 1/29/19

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Andrea Bolling — Project Verifier/QA Manager

3/8/19 — Date

Andrea Bolling

Printed Name

The undersigned validates the data in the above referenced report, per the QAPP requirements.

AJ Jesse — Project Manager/Project Validator

2/22/19 — Date

AJ Jesse

Printed Name

ACCESS ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

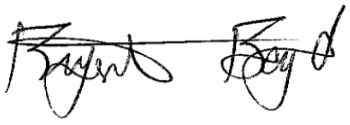
PROJECT:

WATER QUALITY MONITORING

REPORT DATE:

01.29.19

REPORT APPROVED BY:



Bryant W. Boyd
Laboratory Manager
bryant@axs-inc.com

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.781.4243 or via email at the address listed above.

Access Analytical, Inc. SCDHEC certification #: 32571001 (Irmo Lab)

Access Analytical, Inc.
15 Thames Valley Rd. ~ Irmo, SC 29063
PHONE: 803.781.4243 ~ FAX: 803.781.4303 ~ WEB: www.axs-inc.com

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 17228-001
Project: WATER QUALITY MONITORING
Sample Name: C-017
Client ID #:

Matrix: Waste Water
Collected: 1/24/2019 @ 13:30
Date Received: 1/24/2019 @ 15:08

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	9.78	None	mg/L	SM 4500-O G-2011		1/24/2019 13:30	JRS
E. Coli (MPN)	791.5	1	MPN	SM 9223 B-2004		1/24/2019 15:52	MML
Temperature	13.3	None	oC	SM 2550B-2010		1/24/2019 13:30	JRS
TSS	21.7	1	mg/L	SM 2540 D-2011		1/24/2019 11:25	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 17228-002
Matrix: Waste Water
Project: WATER QUALITY MONITORING
Collected: 1/24/2019 @ 14:01
Sample Name: C-001
Date Received: 1/24/2019 @ 15:08
Client ID #:

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	11.42	None	mg/L	SM 4500-O G-2011		1/24/2019 14:01	JRS
E. Coli (MPN)	866.4	1	MPN	SM 9223 B-2004		1/24/2019 15:52	MML
Temperature	12.1	None	oC	SM 2550B-2010		1/24/2019 14:01	JRS
TSS	20.3	1	mg/L	SM 2540 D-2011		1/24/2019 11:25	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 17228-003
Matrix: Waste Water
Project: WATER QUALITY MONITORING
Collected: 1/24/2019 @ 14:32
Sample Name: B-280
Date Received: 1/24/2019 @ 15:08
Client ID #:

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	10.20	None	mg/L	SM 4500-O G-2011		1/24/2019 14:32	JRS
E. Coli (MPN)	1732.9	1	MPN	SM 9223 B-2004		1/24/2019 15:52	MML
Temperature	14.7	None	oC	SM 2550B-2010		1/24/2019 14:32	JRS
TSS	22.3	1	mg/L	SM 2540 D-2011		1/24/2019 11:25	RDA

ACCESS ANALYTICAL, INC.

Laboratory Endorsement / Definitions

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency, Standard Methods or other recognized agencies.

Common abbreviations that may be utilized in this report:

ND	Indicates the result was Not Detected at the specified reporting limit
"<"	Indicated the result as less than the indicated amount
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous to Count
SUB	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DF	Dilution Factor
RL	Reporting Limit
MDL	Calculated minimum detection limit
PQL	Practical Quantitation Limit
RE	Re-analysis

Reporting flags that may be utilized in this report:

J	Indicates the result is between the MDL and PQL and considered to be an estimated result
MB	Indicates the analyte was detected in the associated Method Blank
H	Indicates the recommended holding time was exceeded
*****	Indicates a non-compliant or not applicable QC recovery or RPD
A	BOD or CBOD GGA check value for this sample did not meet acceptance criteria.
B	BOD or CBOD blank depletion did not meet acceptance criteria.
C	Indicates the spike % recovery was not acceptable.
D	Indicates the duplicate % difference was not acceptable.
E	Toxicity is apparent in the sample.

Sample receipt at Access Analytical is documented through the attached chain of custody. In accordance with laboratory protocol, this report shall be reproduced only in full and with the written permission of Access Analytical, Inc.. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the attached report and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

ACCESS ANALYTICAL, INC.

Sample Receipt

Were samples received on ice?	YES
Were samples received within required temperature limits?	YES
Are the number of samples the same as stated on the chain of custody?	YES
Are samples submitted with a correct and complete chain of custody?	YES
Are bottle caps tight and securely in place, coolers and samples intact?	YES
Are the correct sample containers provided?	YES
Were samples within the holding time for requested test(s)?	YES
Is the volume of sample submitted sufficient for the requested test(s)?	YES
Is there sufficient air space in bottle for bacteriological analysis?	YES
Were samples received with applicable preservative?	YES

ACCESS ANALYTICAL, INC.

Chain of Custody Record

Access Lab Report #: 17228
Sub Lab (if applicable): ____ / Sub Report #: ____

Access Analytical, Inc. -- Irmo
15 Thames Valley Rd. ~ Irmo, SC 29063
Phone: 803-781-4243 / Fax: 803-781-4303 / Web: www.axs-inc.com
SCDHEC Lab Certification # 32571

Client:	City of Columbia
Attn:	AJ Jessee
Address:	1136 Washington Street
City:	Columbia — State: SC — Zip Code: 29201
Phone:	803-454-3267 — Fax:
Email:	alfred.jessee@columbiasc.gov
Project Name:	Water Quality Monitoring
Sampled By (Signature):	[signature]

Preservatives (see codes): 9 | 5 | NA
Bottle Types (see codes): P | P | NA

‡ REQUESTED LAB ANALYSIS: ‡

Lab ID:	Sample Name:	Date Collected:	Time Collected:	G=Grab C=Comp	Matrix (see codes)	Program Area (see codes)	Total # Containers		TSS	E. Coli	DO, Temperature						Notes / Comments
001	C-017	1-24-19	1330	G	WW	CWA	2	# Containers per Test >>	1	1	NA						DO (mg/L)= 9.78 Temperature (°C)= 13.3
002	C-001	"	1401	G	WW	CWA	2	# Containers per Test >>	1	1	NA						DO (mg/L)= 11.42 Temperature (°C)= 12.1
003	B-280	"	1432	G	WW	CWA	2	# Containers per Test >>	1	1	NA						DO (mg/L)= 10.20 Temperature (°C)= 14.7
								# Containers per Test >>									
								# Containers per Test >>									
								# Containers per Test >>									
								# Containers per Test >>									**Sample the last week of Jan, April, July & October
								# Containers per Test >>									
								# Containers per Test >>									
								# Containers per Test >>									PU -

Preservation Codes / Bottle Types:

*Preservative Codes:
0 = None, 1 = HCL, 2 = HNO3, 3 = H_2SO_4, 4 = NaOH, 5 = $Na_2S_2O_3$, 6 = Method 5035 set w/ $NaHSO_4$ & CH_3OH, 7 = NaOH/ZnOAC, 8 = H_3PO_4, 9 = cooled to ≤6°C, 10 = cooled to ≤10°C, 11 = Amm.Cl⁻, 12 = Ascorbic Acid / HCL, 13 = EDA

*Matrix Codes:
GW = ground water, WW = waste water, DW = drinking water, SW = surface/storm water, S = soil, SL = sludge, A = air, IW = industrial waste, O = other (specify in comments section)

*Program Area Codes:
CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking water), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

Auto Sampler Data (composite samples only): **Composite Harvest Temp (°C)=** ____
Date/Time Set On: ____ by whom: ____
Date/Time Off: ____ by whom: ____

Meter Reading After: ____
Meter Reading Before: ____
Difference: ____
X ____ (factor): ____

Turnaround Time Requested:		Project Location:		Relinquished By:	Received By:	Date:	Time (24hr):	Samples Received on Ice:
Standard		SC						___Y ___N ___N/A
Rush *		NC						___Y ___N ___N/A
*Date Required		Other (Specify):						___Y ___N ___N/A
Rush data emailed/faxed by end of business day on date required. Standard TAT is 7-10 business days.				Received in lab by: [signature]		1-24-19	1508	✓Y ___N ___N/A
Chain of Custody Page ____ of ____						Sample Temp. Receipt in Lab: 2.4 (°C)		Ref: - 1251 L Ref: - 3173 F

White Copy: Lab original / Canary Copy: File Copy / Pink Copy: Client Copy

NOTE: Relinquishing samples via this Chain of Custody document constitutes client acceptance of Access Analytical terms and conditions.

City of Columbia Quality Assurance Project Plan (QAPP) Data Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP

November 2015, Revised May 2017, Revised December 2018

Laboratory Report Date: 2/27/19

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Andrea Bolling — 3/8/19

Project Verifier/QA Manager — Date

Andrea Bolling

Printed Name

The undersigned validates the data in the above referenced report, per the QAPP requirements.

AJ Jesse — 3/8/19

Project Manager/Project Validator — Date

AJ Jesse

Printed Name

ACCESS ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

PROJECT:

WATER QUALITY MONITORING

REPORT DATE:

02.27.19

REPORT APPROVED BY:

Bryant W. Boyd
Laboratory Manager
bryant@axs-inc.com

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.781.4243 or via email at the address listed above.

- South Carolina DHEC state lab certification #: 32571001
- Florida – DOH national NELAP lab accreditation #: E871145

Access Analytical, Inc.
15 Thames Valley Rd. ~ Irmo, SC 29063
PHONE: 803.781.4243 ~ FAX: 803.781.4303 ~ WEB: www.axs-inc.com

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 17817-001
Project: WATER QUALITY MONITORING
Sample Name: C-017
Client ID #:

Matrix: Waste Water
Collected: 2/21/2019 @ 10:06
Date Received: 2/21/2019 @ 14:52

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	10.28	None	mg/L	SM 4500-O G-2011		2/21/2019 10:06	JRS
E. Coli (MPN)	91.0	1	MPN	SM 9223 B-2004		2/21/2019 15:20	RDA
Temperature	9.9	None	oC	SM 2550B-2010		2/21/2019 10:06	JRS
TSS	2.3	1	mg/L	SM 2540 D-2011		2/22/2019 13:40	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 17817-002
Project: WATER QUALITY MONITORING
Sample Name: C-001
Client ID #:

Matrix: Waste Water
Collected: 2/21/2019 @ 10:36
Date Received: 2/21/2019 @ 14:52

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	10.13	None	mg/L	SM 4500-O G-2011		2/21/2019 10:36	JRS
E. Coli (MPN)	115.3	1	MPN	SM 9223 B-2004		2/21/2019 15:20	RDA
Temperature	10.9	None	oC	SM 2550B-2010		2/21/2019 10:36	JRS
TSS	6.7	1	mg/L	SM 2540 D-2011		2/22/2019 13:40	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 17817-003
Project: WATER QUALITY MONITORING
Sample Name: B-280
Client ID #:

Matrix: Waste Water
Collected: 2/21/2019 @ 11:09
Date Received: 2/21/2019 @ 14:52

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	10.47	None	mg/L	SM 4500-O G-2011		2/21/2019 11:09	JRS
E. Coli (MPN)	>2419.6	1	MPN	SM 9223 B-2004		2/21/2019 15:20	RDA
Temperature	11.8	None	oC	SM 2550B-2010		2/21/2019 11:09	JRS
TSS	15.3	1	mg/L	SM 2540 D-2011		2/21/2019 9:30	RDA

ACCESS ANALYTICAL, INC.

Laboratory Endorsement / Definitions

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency, Standard Methods or other recognized agencies.

Common abbreviations that may be utilized in this report:

ND	Indicates the result was Not Detected at the specified reporting limit
"<"	Indicated the result as less than the indicated amount
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous to Count
SUB	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DF	Dilution Factor
RL	Reporting Limit
MDL	Calculated minimum detection limit
PQL	Practical Quantitation Limit
RE	Re-analysis

Reporting flags that may be utilized in this report:

J	Indicates the result is between the MDL and PQL and considered to be an estimated result
MB	Indicates the analyte was detected in the associated Method Blank
H	Indicates the recommended holding time was exceeded
*****	Indicates a non-compliant or not applicable QC recovery or RPD
A	BOD or CBOD GGA check value for this sample did not meet acceptance criteria.
B	BOD or CBOD blank depletion did not meet acceptance criteria.
C	Indicates the spike % recovery was not acceptable.
D	Indicates the duplicate % difference was not acceptable.
E	Toxicity is apparent in the sample.

Sample receipt at Access Analytical is documented through the attached chain of custody. In accordance with laboratory protocol, this report shall be reproduced only in full and with the written permission of Access Analytical, Inc.. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the attached report and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

ACCESS ANALYTICAL, INC.

Sample Receipt

Were samples received on ice?	YES
Were samples received within required temperature limits?	YES
Are the number of samples the same as stated on the chain of custody?	YES
Are samples submitted with a correct and complete chain of custody?	YES
Are bottle caps tight and securely in place, coolers and samples intact?	YES
Are the correct sample containers provided?	YES
Were samples within the holding time for requested test(s)?	YES
Is the volume of sample submitted sufficient for the requested test(s)?	YES
Is there sufficient air space in bottle for bacteriological analysis?	YES
Were samples received with applicable preservative?	YES

ACCESS ANALYTICAL, INC.

Chain of Custody Record

Access Analytical, Inc. ~ Irmo
15 Thames Valley Rd. ~ Irmo, SC 29063
Phone: 803-781-4243 / Fax: 803-781-4303 / Web: www.axs-inc.com
SCDHEC Lab Certification # 32571

Access Lab Report #: 17817
Sub Lab (if applicable): ______ / Sub Report #: ______

Client:	City of Columbia		
Attn:	AJ Jessee		
Address:	1136 Washington Street		
City:	Columbia	State: SC	Zip Code: 29201
Phone:	803-454-3267	Fax:	
Email:	alfred.jessee@columbiasc.gov		
Project Name:	Water Quality Monitoring		
Sampled By (Signature):	[signature]		

↑ REQUESTED LAB ANALYSIS: ↑

Lab ID:	Sample Name:	Date Collected:	Time Collected:	G=Grab C=Comp	Matrix (see codes)	Program Area (see codes)	Total # Containers		TSS	E. Coli	DO, Temperature	Notes / Comments
								Preservatives (see codes):	9	5	NA	
								Bottle Types (see codes):	P	P	NA	
001	C-017	2-21-19	1006	G	WW	CWA	2	# Containers per Test >>	1	1	NA	DO (mg/L)= 10.28 Temperature (°C)= 9.9
002	C-001	"	1036	G	WW	CWA	2	# Containers per Test >>	1	1	NA	DO (mg/L)= 10.13 Temperature (°C)= 10.9
003	B-280	"	1109	G	WW	CWA	2	# Containers per Test >>	1	1	NA	DO (mg/L)= 10.47 Temperature (°C)= 11.8

**Sample the last week of Jan, April, July & October

PU -

Preservation Codes / Bottle Types:

*Preservative Codes:
0 = None, 1 = HCL, 2 = HNO3, 3 = H_2SO_4, 4 = NaOH, 5 = $Na_2S_2O_3$, 6 = Method 5035 set w/ $NaHSO_4$ & CH_3OH, 7 = NaOH/ZnOAC, 8 = H_3PO_4, 9 = cooled to ≤6°C, 10 = cooled to ≤10°C, 11 = Amm.Cl⁻, 12 = Ascorbic Acid / HCL, 13 = EDA

*Matrix Codes:
GW = ground water, WW = waste water, DW = drinking water, SW = surface/storm water, S = soil, SL = sludge, A = air, IW = industrial waste, O = other (specify in comments section)

*Program Area Codes:
CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking water), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

Auto Sampler Data (composite samples only): **Composite Harvest Temp (°C)=** ______

Date/Time Set On: ______ by whom: ______

Date/Time Off: ______ by whom: ______

Meter Reading After: ______

Meter Reading Before: ______

Difference: ______

X ______ (factor): ______

Turnaround Time Requested:		Project Location:		Relinquished By:	Received By:	Date:	Time (24hr):	Samples Received on Ice:
Standard		SC						__Y __N __N/A
Rush *		NC						__Y __N __N/A
*Date Required		Other (Specify):						__Y __N __N/A
Rush data emailed/faxed by end of business day on date required. Standard TAT is 7-10 business days.				Received in lab by: [signature]		2-21-19	1452	✓ Y __N __N/A
Chain of Custody Page ___ of ___						Sample Temp. Receipt in Lab: 2.6 (°C)	Ref: RT1	Ref: RT2

White Copy: Lab original / Canary Copy: File Copy / Pink Copy: Client Copy

NOTE: Relinquishing samples via this Chain of Custody document constitutes client acceptance of Access Analytical terms and conditions.

City of Columbia Quality Assurance Project Plan (QAPP) Data Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP

November 2015, Revised May 2017, Revised December 2018

Laboratory Report Date: 4/1/19

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Andrea Bolling — Project Verifier/QA Manager

4/5/19 — Date

Andrea Bolling

Printed Name

The undersigned validates the data in the above referenced report, per the QAPP requirements.

AJ Jessee — Project Manager/Project Validator

4/5/19 — Date

AJ Jessee

Printed Name

ACCESS ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

PROJECT:

WATER QUALITY ANALYSIS

REPORT DATE:

04.01.19

REPORT APPROVED BY:

Bryant W. Boyd
Laboratory Manager
bryant@axs-inc.com

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.781.4243 or via email at the address listed above.

- South Carolina DHEC state lab certification #: 32571001
- Florida – DOH national NELAP lab accreditation #: E871145

Access Analytical, Inc.
15 Thames Valley Rd. ~ Irmo, SC 29063
PHONE: 803.781.4243 ~ FAX: 803.781.4303 ~ WEB: www.axs-inc.com

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 18512-001
Project: WATER QUALITY ANALYSIS
Sample Name: C-017
Client ID #:

Matrix: Waste Water
Collected: 3/25/2019 @ 13:46
Date Received: 3/25/2019 @ 15:20

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	7.81	None	mg/L	SM 4500-O G-2011		3/25/2019 13:46	JRS
E. Coli (MPN)	63.8	1	MPN	SM 9223 B-2004		3/25/2019 17:00	MML
Temperature	17.3	None	oC	SM 2550B-2010		3/25/2019 13:46	JRS
TSS	165	1	mg/L	SM 2540 D-2011		3/28/2019 11:20	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 18512-002
Project: WATER QUALITY ANALYSIS
Sample Name: C-001
Client ID #:

Matrix: Waste Water
Collected: 3/25/2019 @ 14:20
Date Received: 3/25/2019 @ 15:20

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	8.91	None	mg/L	SM 4500-O G-2011		3/25/2019 14:20	JRS
E. Coli (MPN)	146	1	MPN	SM 9223 B-2004		3/25/2019 17:00	MML
Temperature	17.0	None	oC	SM 2550B-2010		3/25/2019 14:20	JRS
TSS	12.0	1	mg/L	SM 2540 D-2011		3/28/2019 11:20	RDA

ACCESS ANALYTICAL, INC.

Report of Analysis

Lab ID #: 18512-003
Matrix: Waste Water
Project: WATER QUALITY ANALYSIS
Collected: 3/25/2019 @ 14:48
Sample Name: B-280
Date Received: 3/25/2019 @ 15:20
Client ID #:

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	9.78	None	mg/L	SM 4500-O G-2011		3/25/2019 14:48	JRS
E. Coli (MPN)	648.8	1	MPN	SM 9223 B-2004		3/25/2019 17:00	MML
Temperature	17.3	None	oC	SM 2550B-2010		3/25/2019 14:48	JRS
TSS	3.0	1	mg/L	SM 2540 D-2011		3/28/2019 11:20	RDA

ACCESS ANALYTICAL, INC.

Laboratory Endorsement / Definitions

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency, Standard Methods or other recognized agencies.

Common abbreviations that may be utilized in this report:

ND	Indicates the result was Not Detected at the specified reporting limit
"<"	Indicated the result as less than the indicated amount
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous to Count
SUB	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DF	Dilution Factor
RL	Reporting Limit
MDL	Calculated minimum detection limit
PQL	Practical Quantitation Limit
RE	Re-analysis

Reporting flags that may be utilized in this report:

J	Indicates the result is between the MDL and PQL and considered to be an estimated result
MB	Indicates the analyte was detected in the associated Method Blank
H	Indicates the recommended holding time was exceeded
*****	Indicates a non-compliant or not applicable QC recovery or RPD
A	BOD or CBOD GGA check value for this sample did not meet acceptance criteria.
B	BOD or CBOD blank depletion did not meet acceptance criteria.
C	Indicates the spike % recovery was not acceptable.
D	Indicates the duplicate % difference was not acceptable.
E	Toxicity is apparent in the sample.

Sample receipt at Access Analytical is documented through the attached chain of custody. In accordance with laboratory protocol, this report shall be reproduced only in full and with the written permission of Access Analytical, Inc.. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the attached report and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

ACCESS ANALYTICAL, INC.

Sample Receipt

Were samples received on ice?	YES
Were samples received within required temperature limits?	YES
Are the number of samples the same as stated on the chain of custody?	YES
Are samples submitted with a correct and complete chain of custody?	YES
Are bottle caps tight and securely in place, coolers and samples intact?	YES
Are the correct sample containers provided?	YES
Were samples within the holding time for requested test(s)?	YES
Is the volume of sample submitted sufficient for the requested test(s)?	YES
Is there sufficient air space in bottle for bacteriological analysis?	YES
Were samples received with applicable preservative?	YES

ACCESS ANALYTICAL, INC.

Access Lab Report #: 18512

Sub Lab (if applicable): _____ / Sub Report #: _____

ACCESS ANALYTICAL, INC.
Access Analytical, Inc. -- Irmo
15 Thames Valley Rd. ~ Irmo, SC 29063
Phone: 803-781-4243 / Fax: 803-781-4303 / Web: www.axs-inc.com
SCDHEC Lab Certification # 32571

Chain of Custody Record

Client:	City of Columbia
Attn:	AJ Jessee
Address:	1136 Washington Street
City:	Columbia
State:	SC
Zip Code:	29201
Phone:	803-454-3267
Fax:	
Email:	alfred.jessee@columbiasc.gov
Project Name:	Water Quality Monitoring
Sampled By (Signature):	Jesse Dean

Preservatives (see codes): 9 5 NA
Bottle Types (see codes): P P NA

Lab ID:	Sample Name:	Date Collected:	Time Collected:	G=Grab C=Comp	Matrix (see codes)	Program Area (see codes)	Total # Containers	# Containers per Test >>	TSS	E. Coli	DO, Temperature	Notes / Comments
001	C-017	3-25-19	1346	G	WW	CWA	2		1	1	NA	DO (mg/L)= 7.81 Temperature (°C)= 17.3
002	C-001	"	1420	G	WW	CWA	2		1	1	NA	DO (mg/L)= 8.91 Temperature (°C)= 17.0
003	B-280	"	1448	G	WW	CWA	2		1	1	NA	DO (mg/L)= 9.78 Temperature (°C)= 17.3
												**Sample the last week of Jan, April, July & October
												PH

: REQUESTED LAB ANALYSIS: :

Preservation Codes / Bottle Types:

***Preservative Codes:**
0 = None, **1** = HCL, **2** = HNO_3, **3** = H_2SO_4, **4** = NaOH, **5** = $Na_2S_2O_3$, **6** = Method 5035 set w/ $NaHSO_4$ & CH_3OH, **7** = NaOH/ZnOAC, **8** = H_3PO_4, **9** = cooled to ≤6°C, **10** = cooled to ≤10°C, **11** = Amm.Cl , **12** = Ascorbic Acid / HCL, **13** = EDA

***Matrix Codes:**
GW = ground water, **WW** = waste water, **DW** = drinking water, **SW** = surface/storm water, **S** = soil, **SL** = sludge, **A** = air, **IW** = industrial waste, **O** = other (specify in comments section)

***Program Area Codes:**
CWA = Clean Water Act (for wastewaters), **SDWA** = Safe Drinking Water Act (for drinking water), **SHW** = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

***Container Type:** G = Glass, P = Plastic

Auto Sampler Data (composite samples only): **Composite Harvest Temp (°C)= _____**

Date/Time Set On: _____ by whom: _____

Date/Time Off: _____ by whom: _____

Meter Reading After: _____

Meter Reading Before: _____

Difference: _____

X _____(factor): _____

Turnaround Time Requested:		Project Location:		Relinquished By:	Received By:	Date:	Time (24hr):	Samples Received on Ice:
Standard		SC						___Y ___N ___N/A
Rush *		NC						___Y ___N ___N/A
*Date Required		Other (Specify):						___Y ___N ___N/A
Rush data emailed/faxed by end of business day on date required. Standard TAT is 7-10 business days.				**Received in lab by:** Jesse Dean		3-25-19	1520	✓Y ___N ___N/A
Chain of Custody Page _____ of _____						**Sample Temp. Receipt in Lab:** 1.2 (°C)		**Ref: RT1** **Ref: RT2**

White Copy: Lab original / Canary Copy: File Copy / Pink Copy: Client Copy

NOTE: Relinquishing samples via this Chain of Custody document constitutes client acceptance of Access Analytical terms and conditions.