



- 3.2.6 Inspection by the Owner or Owner's Representative will be continuous.
- 3.2.7 Acceptability of compaction will be established by tests.
- 3.2.8 When the work is interrupted by heavy rain or flooding, fill or backfill operation shall not be resumed until the Owner's Representative indicates that the moisture content and density of the previously placed fill meets the standard requirements.

### **3.3 BACKFILLING FOR STRUCTURES AND PIPE TRENCHES**

- 3.3.1 Subject to Article 1.1 of this standard, material for backfilling shall be excavated material stockpiled for this purpose. All lumber, organic matter or foreign material shall be removed from both the material used for backfill and the area to be backfilled.
- 3.3.2 Excess excavated materials not required for designated backfill areas shall be removed from the Owner's property.



## **PART 1    GENERAL**

### **1.1        SCOPE**

- 1.1.1      This section includes all materials, labor, equipment and services required to accomplish excavation and backfilling for drainage, soil compaction controls, cleaning of the site and preparing subbase and base course for gravel pavement.
- 1.1.2      Digging, segregating, moving, and stockpiling of on-site fill, including finish grading to the extent and elevation shown on the drawings.
- 1.1.3      Placement, spreading, moisture conditions, and compacting off-site fill materials that will be used to shape and contour the subgrade for the final cover.
- 1.1.4      Placement, spreading, moisture conditioning, and compacting off-site general fill and topsoil materials comprising the final cover.
- 1.1.5      Any work required to complete excavation operations required for this project.

### **1.2        REFERENCED PUBLICATIONS**

- 1.2.1      American Society for Testing and Materials (ASTM) Standards
- 1.2.2      Department of Labor, Occupational Safety and Health Administration (OSHA), "29 CFR Part 1926, Safety and Health Regulations for Construction, with 29 CFR Part 1910, General Industry Safety and Health Regulations Identified as Applicable to Construction", dated January 1976.

### **1.3        SUBSURFACE SOIL INFORMATION**

- 1.3.1      Reports of subsurface soil investigations pertaining to this project are available from the owner upon request.

### **1.4        DEFINITIONS**

- 1.4.1      Rock - Stone or hard shale in original ledge, boulders over one-half cubic yards in volume, masonry, or concrete which cannot be broken and removed by a one-half cubic yard power shovel, by a scoop, or by any track vehicle with draw-bar pull equal to or exceeding that of a D-4 Caterpillar equipped with a suitably-sized single-toothed ripper.
- 1.4.2      Backfill - Soil materials suitable to fill an excavation.
- 1.4.3      Base Course - Layer placed between the subbase course and pavement.
- 1.4.4      Borrow - Satisfactory soil imported from remote locations of the site or from off-site for use as fill or backfill.
- 1.4.5      Earth - Any material not classified as rock and which does not require blasting for removal.
- 1.4.6      Excavation - Removal of material encountered above subgrade elevations.
  - 1.4.6.1    Additional Excavation - Excavation below subgrade elevations as directed by Owner's Representative.



- 1.4.6.2 Unauthorized Excavation - Excavation below subgrade elevations or beyond indicated dimensions without direction by Owner's Representative.
- 1.4.7 Fill - Soil materials used to raise existing grades.
- 1.4.8 Subbase Course - Layer placed between the subgrade and base course for pavements.
- 1.4.9 Subgrade - Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- 1.4.10 Testing Laboratory - An independent testing laboratory engaged by the owner to perform testing and inspection services required in this section and to perform any additional such services requested by the Owner's Representative.
- 1.4.11 Degree of Consolidation - The measurement of controlled consolidation of backfill as determined by comparing density of in-place soil to optimum density of the same soil, in percentage terms.
- 1.4.12 Owner's Representative – The Geotechnical Engineering Consultant or his employee who is authorized to instruct the contractor in earthwork, subbase, and base construction matters.

## **1.5 SUBMITTALS**

- 1.5.1 Product Data For The Following:
  - 1.5.1.1 Separation fabric, including 12"x12" sample.
  - 1.5.1.2 30-lb samples, sealed in airtight containers of each proposed soil material from on or off-site borrow pits, if requested by Owner's Representative.
- 1.5.2 Material Test Reports. From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
  - 1.5.2.1 Classification according to ASTM D 2487 of each on-site or borrow soil material proposed for fill and backfill.
  - 1.5.2.2 Laboratory compaction curve according to ASTM 1557 for each on-site or borrow soil material proposed for fill and backfill.

## **1.6 PROJECT CONDITIONS**

- 1.6.1.1 Contact utility-locator service for area where Project is located before excavating.
- 1.6.2 Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

## **1.7 PERMANENT PROPERTY MARKERS**



- 1.7.1 All established boundary markers and benchmarks on the site shall be sufficiently referenced prior to the beginning of the work to keep easy reference to lines and grades intact during the progress of the work. Any such markers disturbed or destroyed shall be replaced by the contractor.

## **PART 2 MATERIALS**

### **2.1 BACKFILL MATERIAL**

- 2.1.1 General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from on-site locations.
- 2.1.2 Satisfactory Soils: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, SM, GC, SC, ML, and CL or a combination of these group symbols. Satisfactory fill materials shall be clean, unfrozen soil, free of all organic matter including roots, and free of rocks or broken pieces of concrete or pavement larger than 3" in any dimension, debris, waste, vegetation, and other deleterious matter. The contractor shall provide a soil testing laboratory report showing the suitability of the fill to meet the compaction requirements.
- 2.1.3 Unsatisfactory Soils: ASTM D 2487 soil classification groups MH, CH, OL, OH, and PT, or a combination of these group symbols. Unsatisfactory soils shall also include satisfactory soils not maintained within 2% of optimum moisture content at time of compaction.
- 2.1.4 Backfill and Fill: Satisfactory soil materials or flowable structural fill.
- 2.1.5 Subbase: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 29410; with at least 90% passing a 1-1/2" sieve and not more than 12% passing a No. 200 sieve. Comply with State Department of Transportation for subbase, base coarse and crushed stone fill materials.
- 2.1.6 Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90% passing a 1-1/2" sieve and not more than 8% passing a No. 200 sieve.
- 2.1.7 Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100% passing a 1" sieve and not more than 8% passing a No. 200 sieve.
- 2.1.8 Filter Material: Narrowly grade mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100% passing a 1" sieve and 0 to 5% passing a No. 4 sieve.
- 2.1.9 Impervious Fill: Clay, clayey silts or clayey sand mixtures capable of compacting to a dense state.
- 2.1.10 Any rocks or broken pieces of concrete and pavement shall not be larger than 3" in any dimension.
- 2.1.11 Recycled Material: Crushed concrete with all metals removed, if suitable and if approved by the owner.

### **2.2 ACCESSORIES**



- 2.2.1 Separation Fabric: Woven Geotextile, specifically manufactured for use as a separation geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods.
  - 2.2.1.1 Grab Tensile Strength: 200 lbf; ASTM D 4632
  - 2.2.1.2 Tear Strength: 75 lbf; ASTM D 4533
  - 2.2.1.3 Puncture Resistance: 90 lbf; ASTM D 4833
  - 2.2.1.4 Water Flow Rate: 4 gpm per sq. ft.: ASTM D 4491
  - 2.2.1.5 Apparent Opening Size: No. 30; ASTM D 4751

### **PART 3 EXECUTION**

#### **3.1 PROTECTION OR REMOVAL OF REMAINING STRUCTURES & UTILITY LINES**

- 3.1.1 Rules and regulations governing the respective utilities shall be observed in executing all work under this section.
- 3.1.2 Notify all area utility companies prior to commencing work in accordance with state and local regulations.
- 3.1.3 Active utilities shown on the drawings shall be adequately protected from damage and removed or relocated only as indicated or specified. Where active utilities are encountered but are not shown on the drawings, the owner's representative shall be advised; existing facilities to remain shall be adequately protected, supported or relocated as directed.
- 3.1.4 Inactive and abandoned utilities encountered in excavating and grading operations shall be reported to the owner's representative and shall be removed, plugged or capped as indicated or as directed.
- 3.1.5 Protect utilities, pavements, and other existing facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- 3.1.6 Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

#### **3.2 PROTECTION OF PROPERTY SURROUNDING WORK**

- 3.2.1 Surrounding property shall be adequately protected from damage resulting from the presence of water, mud and silt during construction. Local, County and State regulations pertaining to storm and wastewater runoff shall be strictly observed.

#### **3.3 EROSION CONTROL**

- 3.3.1 General: The contractor shall conduct site grading and drainage operations in such a manner as to minimize the movement and washing of soil onto pavements, adjacent property and into adjacent drainage courses or structures. He shall determine the areas most susceptible to erosion by excessive rainfall and



shall take necessary temporary measures in sufficient time to minimize the washing away of the site soils. The contractor is responsible for installing and maintaining all erosion control measures for the duration of the project in a satisfactory condition. All erosion control measures shall be in accordance with any Erosion Control Plan that has been approved by the governing state or local agency.

- 3.3.2 **Unclogging of Drainage Structures:** The contractor shall provide means for removal of soil and debris washed into drainage structures, in order to restore proper functioning of these structures.
- 3.3.3 **Temporary Prevention Methods:** Temporary measures to be provided by the contractor at the critical areas may consist of, but not limited to any one (or a combination) of the following:
  - 3.3.3.1 Interceptor or diversion swales and ditches.
  - 3.3.3.2 Sowing oats, rye, Bahia grass, etc. (for quick temporary cover).
  - 3.3.3.3 Using straw or hay bales as diversion filters
  - 3.3.3.4 Sedimentation fabrics
  - 3.3.3.5 Any other approved means

### **3.4 STRIPPING AND STOCKPILING TOPSOIL**

- 3.4.1 **Topsoil Removal:** Excavate or strip topsoil in all cut and fill areas and stockpile for later use in connection with finish grading. Excavate topsoil to the depths directed by the testing agency or owner's representative as required to remove all organic material from the subgrade, but not less than 6".
- 3.4.2 **Stockpiling:** Stockpile excavated topsoil separate from other excavated materials for later use. Keep stockpile free of all unsuitable materials. Make stockpiles neatly shaped and free to drain. Place stockpiles at locations shown on the drawings or as directed by the owner's representative.
- 3.4.3 **Spreading:** Spread topsoil on all newly graded areas. Spread topsoil in 4" thick layers unless otherwise directed by the (engineer) (owner's representative). Areas having received topsoil are to be finish graded, suitable for sowing. Stockpile areas are to be dressed up smooth after topsoil is spread.

### **3.5 ROCK EXCAVATION**

- 3.5.1 **General:** Rock encountered in the cut sections, if any, shall be excavated to a depth of at least 6" below the subgrade level.
- 3.5.2 **Blasting:** If blasting is used for excavating rock, it shall be done with explosives of such quantity and power, fired in such sequence and locations as to not injure personnel and to not damage remaining rock or any property vulnerable to the effects of the blasting. This shall be done in strict accordance with local regulations. Detail blasting plan and monitoring program shall be submitted to the owner for approval prior to starting work.
- 3.5.3 **Excavation:** Excavation shall continue until the rock is worked down to a satisfactory bed or side wall. Only drilling, picking, barring, wedging or similar methods that will leave the foundation rock in an entirely solid and unshattered condition shall be used on rock surfaces to receive concrete.



Approximately level surfaces shall be roughened, and sloped surfaces shall be cut into rough steps or benches to provide a satisfactory bond with concrete. Swales shall be protected from slaking or other erosion resulting from ponding or flow of water.

- 3.5.4 Measurement: Where rock excavation is required, cross sections on a grid approved by the owner's representative shall be taken before and after excavation. Quantity of rock removed shall be accurately determined from calculations based on the cross sections survey notes and calculations of rock volume shall be submitted to the owner's representative.

### **3.6 DEWATERING**

- 3.6.1 General: When the water table is higher than the lowest excavation limits, dewatering shall be coordinated with the scheduled construction work to lower and maintain the water level accordingly, in accordance with the following requirements:

- 3.6.2 Obstructions: Within excavated areas obstruction to construction work shall be minimized.

- 3.6.3 Discharging Water: All water removed by dewatering shall be discharged in areas which are suitable for discharging such water.

- 3.6.4 Preventing Displacement of Soil: All work shall be performed in such manner as to prevent a displacement of soil in the bottoms of the excavations.

- 3.6.5 Water Level Elimination: Under backfill placed on natural or compacted soil, the water level shall be maintained at least 12" below the construction level.

- 3.6.6 Well Points: Well points, if used, shall be equipped with screens, as recommended by the well point Manufacturer for the type of encompassing soil, and the top of the screens shall be set at least 24" below the bottom of the excavation.

### **3.7 EXCAVATION DRAINAGE**

- 3.7.1 Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

- 3.7.2 Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

- 3.7.3 Install a dewatering system, as necessary, to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

### **3.8 APPROVAL OF SUBGRADE**

- 3.8.1 Notify Owner when excavations have reached required subgrade.

- 3.8.2 If Owner's Geotechnical Representative determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or flowable structural fill, as directed.

- 3.8.3 Proof roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding, where indicated on the drawings and where there is reason to suspect deficiencies.



- 3.8.4 Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Owner's Representative.

### **3.9 PLACING AND COMPACTING BACKFILL AND FILL MATERIAL FOR GRAVEL ROAD SUBGRADES**

- 3.9.1 General: A lift of backfill, consisting of one or more layers of compacted material, may have a total maximum thickness of 18" prior to compaction testing. Each additional lift shall be added (up to elevations indicated) after satisfactory test results for the previous lift have been obtained.
- 3.9.2 Placing: At locations indicated, on firm, exposed, clean, unfrozen surfaces, excavated material satisfying requirements of "Backfill Material and Fill Material" shall be uniformly placed in successive horizontal layers of 6 to 8" in loose depth until the intended total compacted thickness has been attained.
- 3.9.3 Compacting: At a moisture content deemed suitable by the owner's representative, each layer shall be compacted with approved power-operated mechanical equipment to at least 95% of the optimum Modified Proctor, laboratory dry-density of a representative soil sample, determined in accordance with ASTM D1557-00, Method A.

### **3.10 AGGREGATE FILL FOR PERIMETER ACCESS ROAD**

- 3.10.1 Aggregate fill material used for the perimeter access road shall meet the Georgia DOT specification for Group 1 Aggregates in accordance with Section 815 of the Georgia DOT Specifications Manual as described below:

<b>SIEVE SIZE</b>	<b>% PASSING BY WEIGHT</b>
2"	100
1-1/2"	97-100
3/4"	60-95
No. 10	25-50
No. 60	10-35
No. 200	7-15

### **3.11 SUBBASE AND BASE COURSES**

- 3.11.1 Install separation fabric on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends where indicated on the drawings.
- 3.11.2 Under pavements, place subbase course on separation fabric according to fabric manufacturers written instructions.

### **3.12 GENERAL FILL FOR REGRADING AND CONTOURING**

- 3.12.1 On-Site non-waste material free from frozen material, refuse, metal, sharp objects, or any material designated as unsuitable shall be used for general fill material.



- 3.12.2 Off-site fill material shall be free from frozen material, refuse, masonry, concrete, metal, sharp objects, demolition material, boulders, or any material designated as unsuitable shall be used for general fill material.

### **3.13 CLAY FILL FOR FINAL COVER INFILTRATION LAYER**

- 3.13.1 Material from an off-site source shall be approved by the ENGINEER prior to importation.
- 3.13.2 Material shall be non-waste material free from frozen material, refuse, masonry, concrete, metal, sharp objects, demolitions material, boulders, organics, or any material designated as unsuitable shall be used for general fill material.
- 3.13.3 No solid material larger than 3/8" diameter.
- 3.13.4 Compacted clay fill shall demonstrate a hydraulic conductivity of less than  $1.0 \times 10^{-5}$  cm/sec.
- 3.13.5 For clay borrow soil, one representative sample from each source shall be tested at a Georgia-certified analytical laboratory for metals, volatile organic constituents and semi-volatile organic constituents and semi-volatile organic constituents. To be considered for use, results must be less than the Notification Concentrations listed in Appendix I of GA 391-3-19.

### **3.14 PLACEMENT AND COMPACTION OF CLAY FILL FOR FINAL COVER INFILTRATION LAYER**

- 3.14.1 Place and spread general fill in list thicknesses as required to obtain the specified levels of compaction.
- 3.14.2 Maximum lift thicknesses of 6 inches before compaction will not be exceeded.
- 3.14.3 Maintain proper moisture content to achieve specified compaction.
- 3.14.4 Compact to a minimum dry density of 95 percent of the maximum dry density as determined by the Standard Proctor Test.

### **3.15 SOIL COMPACTION CONTROL**

- 3.15.1 General: The contractor shall have a testing laboratory obtain a representative sample of each material he proposes to use for fill material, including at least one such sample from the designated borrow area. The test results showing the adequacy of the fill to sustain loads, the proper compaction requirements, and the moisture-density relationship according to ASTM D1557 Method A, shall be submitted in writing to the Engineer for approval before placing and compaction can begin. Each area of the project in which backfill is to be compacted shall be divided into density test areas, each having a maximum dimension of 50' in either direction.
- 3.15.2 Field Density Tests: After a lift of backfill has been compacted in any density test area; field density tests (minimum of 8 per lift) shall be made in accordance with ASTM D1556 or ASTM D6938.



3.15.3 Evaluation of Test Results: Test results in each group of tests shall be averaged to determine if the compaction of the material within the density test area and the lift, which the group of tests represents, is adequate. If the average of any such group of tests indicates less than the compaction specified, the compaction of the materials, which that group of tests represents, is inadequate. The owner's representative shall determine whether or not any unusually high test result shall be replaced with the result of an additional test in calculating this average. On the low side, one test result below 90 is sufficient reason for the compaction of the backfill or fill it represents to be considered inadequate, unless the owner's representative allows the contractor to replace it with the result of an additional test, if higher.

3.15.4 Test Reports: The results of all field density testing shall be submitted in writing to the owner's representative immediately after each day's testing. Each report shall accurately locate each test.

3.15.5 Correction of Compaction

3.15.5.1 If any group of tests shows inadequate compaction for the particular material compacted, the contractor shall remove the material from within the density test area and the lift which the group of tests represent, and shall either attempt to reuse this material or replace it with new material which complies with specified requirements.

3.15.5.2 After recompaction, testing shall be repeated as specified. This procedure shall continue until test results show compliance with the standards.

**3.16 FIELD QUALITY CONTROL FOR GENERAL FILL USED FOR REGRADING AND FOR FINAL COVER INFILTRATION LAYER**

3.16.1 One field density test will be performed for every 1,000 cubic yards of general fill placed, but not less than three tests.

3.16.2 Representative soil samples will be collected for every 10,000 cubic yards of fill placed and when noticeable material changes occur. One P200 grain size test (ASTM D1140), one Atterberg limits test (ASTM D4318), and one moisture content determination (ASTM D2216) shall be performed on each sample obtained. Moisture/density relationships for each sample will be established using Standard Proctor Compaction (ASTM D698).

3.16.3 No compaction testing is required for crushed concrete/asphalt materials or wood debris materials that may be used for the regrading layer. Compaction testing is only required for materials brought in from off-site that are used to meet the grades shown on the Grading Plan and the clay infiltration layer.

3.16.4 Testing of the clay borrow material used in the construction of the infiltration layer of the final cover shall conform to the requirements of the table below:

ITEM	TESTING	FREQUENCY
Borrow Source	Grain Size (ASTM D-442)	2000D <sup>3</sup> <OR=3/4 INCHES
	Moisture Content (ASTM D-2216)	2000D <sup>3</sup>
	Atterberg Limits (ASTM D-4318)	5000D <sup>3</sup>
	Moisture Density Curbe (ASTM D-698 or D-1557)	5000D <sup>3</sup> & ALL CHNGES IN MATERIAL
	Permeability (remold)	10000D <sup>3</sup>
	(EM 1110-2-1906, APPENDIX 7, SECTION 1 OR ASTM D-5084)	<OR=1.0X10 <sup>-5</sup>
Clay Layer	Dry Density	1 TEST/10000 SQ FT/LIFT

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During Construction	(ASTM D-2922 or D-1556)	1 TEST/LIFT/200 LF OR SIDE SLOPE
Clay Layer	Moisture Content (ASTM D-2216)	4 TEST/40000 SQ FT/LIFT
Lab Testing	*Permeability (ASTM D-5084)	1 TEST/40000 SQ FT/LIFT <OR=1.0X10 <sup>-5</sup> CM/SEC
	*Dry Density (ASTM D-2922)	1 TEST/LIFT/800 LF OF SIDE SLOPE
		1 TEST/40000 SQ FT/LIFT
	*Moisture Content (ASTM D-2216)	1 TEST/LIFT/800 LF OF SIDE SLOPE
		1 TEST/40000 SQ FT/LIFT
		1 TEST/LIFT/800 LF OF SIDE SLOPE

\*TEST TO BE PERFORMED ON UNDISTURBED SAMPLES

**3.17 TOPSOIL**

- 3.17.1 Topsoil shall be friable, fertile, loamy soil containing an amount of organic matter normal to the region, capable of sustaining healthy plant life. Topsoil shall be free from refuse, subsoils, rocks larger than one inch diameter, materials toxic to plant growth, and foreign objects. All topsoil materials shall be approved by the ENGINEER.
- 3.17.2 Remove vegetation, foreign materials, unsatisfactory or contaminated soils, obstruction, and matter harmful to plant growth from ground surface before placement.
- 3.17.3 Prepare subsoil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend in slopes into level areas.
- 3.17.4 Scarify subsoil to a depth of 3 inches where topsoil is to be placed. Repeat cultivation in areas where equipment used for hauling and spreading topsoil has compacted the subsoil.
- 3.17.5 Place topsoil to a uniform depth of 6 inches.
- 3.17.6 Topsoil shall have a pH range of 5.5 to 7.
- 3.17.7 Finish grade to within 0.10 foot of elevation shown on drawings.
- 3.17.8 Break down clods and lumps.
- 3.17.9 Testing of topsoil material used in the construction of the final cover shall conform to the requirements of the table below:

<b>ITEM</b>	<b>TESTING</b>	<b>FREQUENCY</b>
Grain Size	ASTM D6913	1 per 2000 Ton
Hydrometer	ASTM D7928	1 per 2000 Ton
Material Classification	ASTM D2487	1 per 2000 Ton
pH	EPA 9045	1 per 2000 Ton
Organic Content	ASTM D2974	1 per 2000 Ton

**3.18 REPAIRING DAMAGE**



- 3.18.1 Settlement, washing or damage of any work performed under this section prior to acceptance of the work shall be repaired and grades shall be reestablished to the required elevations and slopes in the manner herein specified.

**3.19 DISPOSAL OF SURPLUS AND WASTE MATERIALS**

- 3.19.1 Disposal: Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Owner.
- 3.19.2 Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property when so directed by the Owner.



**PART 1    GENERAL**

**1.1        DESCRIPTION**

- 1.1.1        Work included: Excavate, backfill, compact, and grade the site to the elevations shown on the Drawings, as specified herein, and as needed to meet the requirements of the construction shown in the Contract Documents.
- 1.1.2        Related work:
  - 1.1.2.1        Documents affecting work of this Section include, but are not necessarily limited to, General Conditions and Section 01230-001 of these Standards.

**1.2        QUALITY ASSURANCE**

- 1.2.1        Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- 1.2.2        Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.
- 1.2.3        In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the soils engineer.

**PART 2    PRODUCTS**

**2.1        SOIL MATERIALS**

- 2.1.1        Fill and backfill materials:
  - 2.1.1.1        Fill material is subject to the approval of the soil engineer.
  - 2.1.1.2        Do not permit rocks having a dimension greater than 1” in the upper 12” of fill.
  - 2.1.1.3        Only low plasticity clay or granular material is permitted within 3’ of the bottom of the concrete floor slab.

**PART 3    EXECUTION**

**3.1        SURFACE CONDITIONS**

- 3.1.1        Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

**3.2        FINISH ELEVATIONS AND LINES**



3.2.1 Comply with the elevations on the drawings.

### **3.3 PROCEDURES**

#### **3.3.1 Utilities:**

3.3.1.1 Unless shown to be removed, protect active utility lines shown on the Drawings or otherwise made known to the Contractor prior to excavating. If damaged, repair or replace at no additional cost to the Owner.

3.3.1.2 If active utility lines are encountered and are not shown on the Drawings or otherwise made known to the Contractor, immediately notify the Owner's Representative and secure his instructions.

#### **3.3.2 Protection of persons and property**

3.3.2.1 Barricade open holes and depressions occurring as part of this work, and post warning lights on property adjacent to or with public access.

3.3.2.2 Operate warning lights during hours from dusk to dawn each day and as otherwise required.

3.3.2.3 Protect existing pavements and other facilities from damage caused by settlement, lateral movement, washout, and other hazards created by operations under this Section.

#### **3.3.3 Dewatering:**

3.3.3.1 Remove all water, including rainwater, encountered during trench and substructure work to an approved location by pumps, drains, and other approved methods.

3.3.3.2 Keep excavations and site construction area free from water.

3.3.4 Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

### **3.4 GROUND SURFACE PREPARATION**

3.4.1 All surface vegetation shall be stripped from the site.

3.4.2 Excavate all organic soils.

3.4.3 Proofroll the subgrade with heavily-loaded rubber tired construction vehicle such as a tandem axle dump truck to delineate any soft areas.

3.4.4 Such soft areas as designated by the soils engineer shall be overexcavated.

3.4.5 After proofrolling, scarify the subgrade for a minimum depth of 9" with a disc.

3.4.6 The moisture content of the scarified zone shall be adjusted to just slightly above optimum moisture content determined for the subgrade material in accordance with ASTM-D-698.



- 3.4.7 The scarified zone shall be compacted to a minimum of 95% standard Proctor density.

**3.5 FILLING TO ELEVATION**

- 3.5.1 Place fill materials in layers not more than 8” in loose depth.
- 3.5.2 Before compacting, moisten or aerate each layer as necessary to provide the optimum moisture content.
- 3.5.3 Compact each layer to 95% standard Proctor density.
- 3.5.4 Do not place backfill or fill material on surfaces that are muddy, frozen, or containing frost or ice.

**3.6 FILLING TO ELEVATION**

- 3.6.1 Use a low plasticity clay or a granular material which has been approved by the soils engineer.
- 3.6.2 Compact to 95% standard Proctor density at optimum moisture content.

**3.7 MOISTURE CONTROL**

- 3.7.1 Where subgrade or layer of soil material must be moisture-conditioned before compacting, uniformly apply water to surface of subgrade or layer of soil material to prevent free water appearing on surface during or subsequent to compacting operations.
- 3.7.2 Remove and replace, or scarify and air dry, soil material that is too wet to permit compacting to the specified density.
- 3.7.3 Soil material that has been removed because it is too wet to permit compacting may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value as determined by moisture-density relation tests approved by the soils engineer.

**3.8 FIELD QUALITY CONTROL**

- 3.8.1 Secure the soils engineer’s inspection and approval of subgrades and fill layers before subsequent construction is permitted thereon.
- 3.8.2 Any subgrade or fill layer which after testing by the soils engineer are determined to be below specified density, provide additional compacting or removal to achieve the specified compaction at no additional cost to the owner.



## **PART 1   GENERAL**

### **1.1      SUMMARY**

#### **1.1.1      Section includes:**

- 1.1.1.1      Equipment and materials for erosion and sediment control to minimize erosion and siltation during construction.
- 1.1.1.2      Erosion and sediment control provisions detailed on Drawings and specified herein are minimum requirement for erosion control program.
- 1.1.1.3      Contractor to provide additional erosion and sediment control materials and methods required by state or local ordinances, whichever is more stringent.

### **1.2      REFERENCES**

#### **1.2.1      ASTM International (American Society for Testing and Materials)**

- 1.2.1.1      ASTM D3786 – Hydraulic Bursting Strength of Textile Fabrics – Diaphragm Bursting Strength Tester Method.
- 1.2.1.2      ASTM D4491 – Water Permeability of Geotextiles by Permittivity.
- 1.2.1.3      ASTM D4533 – Trapezoid Tearing Strength of Geotextiles.
- 1.2.1.4      ASTM D4632 – Grab Breaking Load and Elongation of Geotextiles.
- 1.2.1.5      ASTM D4833 – Index Puncture Resistance of Geotextiles, Geo-membranes, and Related Products.

### **1.3      SUBMITTALS**

#### **1.3.1      Submittals to be provided in accordance with Division 1.**

#### **1.3.2      Provide erosion control plan indicating proposed methods, materials, and schedule for effecting erosion and siltation control to prevent erosion damage to site and adjacent area.**

#### **1.3.3      Plan shall include following:**

- 1.3.3.1      Proposed methods for erosion and siltation control.
- 1.3.3.2      Erosion plan scale of 1" equals 40', indicating location of erosion control materials.
- 1.3.3.3      Schedule for implementation of plan.
- 1.3.3.4      Provision for maintenance and upkeep of erosion control and siltation materials, identifying persons responsible for said maintenance.

**1.4 REGULATORY REQUIREMENTS**

- 1.4.1 Erosion control work shall comply with city ordinance for construction site erosion control.
- 1.4.2 Contractor shall comply with applicable state and federal rules and regulations governing erosion and siltation on construction sites.

**1.5 EROSION CONTROL PRINCIPLES**

- 1.5.1 Keep disturbed area small.
- 1.5.2 Stabilize disturbed areas with mechanical or structural and vegetative methods.
- 1.5.3 Keep runoff low through use of short slopes, low gradients, and preservation of natural vegetative cover.
- 1.5.4 Protect disturbed areas from storm water runoff.
- 1.5.5 Retain sediment within site boundaries.
- 1.5.6 Implement thorough maintenance and follow-up program

**PART 2 PRODUCTS****2.1 MATERIALS**

- 2.1.1 Geotextile Fabric: The textile shall be polyethylene fabric with properties as follows:

<b>Property</b>	<b>Property Value</b>
Grab Tensile Strength	120 lb. min. ASTM D4632
Elongation	15% × 15% max. per ASTM D4632
Mullen Burst Strength	260 psi min. ASTM D3786
Puncture	60 lb min. per ASTM D4833
Trapezoidal Tear	60 lb min per ASTM D4833
Apparent Size Opening	U.S. 30 sieve per ASTM D4751
Water Flow Rate	10 gal/min/sq.ft. max. per ASTM D4491
Ultraviolet radiation stability	70% min. per ASTM D4355

- 2.1.2 Fabric shall be reinforced with an industrial polypropylene netting with ¾" spacing and heavy duty nylon top support cord or equivalent.
- 2.1.3 Support Posts: Wood or steel construction, minimum length 5', supply staple, cord or other suitable means to attach geotextile to support posts.
- 2.1.4 Riprap and Breaker Run Stone: Riprap and breaker run stone shall conform to the following classifications:

**2.1.4.1 Heavy Riprap Rock:**

Average Dimension Range (Inches)	% of Gross Volume
>25	0
18-20	10-14
14-18	15-21
6½-14	20-28
<6½	5.7
<1	2 or less

**2.1.4.2 Light Riprap Rock:**

Average Dimension Range (Inches)	% of Gross Volume
>16	0
11-13	10-14
9-11	15-21
4-9	20-28
<4	5.7
<1	2 or less

**2.1.4.3 Breaker Run Rock or 6" Crushed Rock:**

Sieve Size by weight (Inches)	% Passing By Weight
7	100
6	90
4	75
3	10

**2.1.5 Construction Entrance:****2.1.5.1 Aggregate:** Washed, angular rock, size range 2" to 3"**2.1.5.2 Geotextile:** Woven Polypropylene, Mirafi 600X or approved equal**2.1.6 Temporary Vegetative Cover:** Temporary seed mixture components as follows:

Species	Minimum % Purity	Minimum % Germination	Pounds per Acre
Oats	98	90	80
Annual Rye	98	85	100

**2.1.6.1** Use rye grass when permanent seeding is to follow within one (1) year.**2.1.6.2** For other erosion control materials, refer to drawing or reference documents noted above for characteristic and performance requirements.**PART 3 EXECUTION****3.1 INSTALLATION****3.1.1 Filter Fabric Fencing**



- 3.1.1.1 Filter fence shall be installed to maximum height of 24”.
- 3.1.1.2 Install support posts on downstream side of fencing to depth that is adequate to insure stability of fence with maximum spacing of 8’.
- 3.1.1.3 Excavate 4” by 4” trench up-slope along line of support posts to anchor fabric.
- 3.1.1.4 Staple filter material to up-slope side of posts and extend fabric into trench.
- 3.1.1.5 Backfill and compact filter fabric in trench.
- 3.1.1.6 Provide silt fence surrounding existing catch and inlet basins affected by site work.

### **3.1.2 Riprap**

- 3.1.2.1 Furnish and install riprap to thickness and lateral extent necessary to prevent erosion and/or control sedimentation.

### **3.1.3 Construction Entrance**

- 3.1.3.1 Grade area minimum of 50’ long and 20’ wide with slope into construction site.
- 3.1.3.2 Install geotextile fabric over entire area of entrance.
- 3.1.3.3 Place aggregate to a minimum depth of 6”.

### **3.1.4 Mulch**

- 3.1.4.1 Mulch shall be installed within seven days of active disturbance of soil surface.
- 3.1.4.2 Area to be mulched shall be reasonably free of sticks, stones larger than 3” in diameter, and rills and gullies.

- 3.1.4.3 Mulch shall be applied at following rates:

Straw	70-90 lbs.	per 1000 sq. ft.
Wood Chips	275-425 lbs.	per 1000 sq. ft.
Wood Fiber	35-50 lbs.	per 1000 sq. ft.

- 3.1.4.4 Mulch shall be anchored by one of the following methods at the time of spreading or immediately after spreading.
  - Punch mulch into soil with weighted disc or similar implement to a depth of 2”
  - Application of emulsified asphalt or synthetic binder material intended for mulch retention purposed.
    - Emulsified asphalt shall be placed at a rate of 75-100 gallons per ton of mulch.
    - Synthetic materials shall be applied in accordance with manufacturer’s instructions.

### **3.1.5 Erosion Nets and Mats**

3.1.5.1 Erosion nets and mats include excelsior retention blankets, jute matting, and polypropylene netting.

3.1.5.2 Erosion nets and matting shall be installed in accordance with manufacturer's instructions.

**3.1.6 Vegetative Cover**

3.1.6.1 Vegetative cover shall be installed in accordance with manufacturer's instructions.

**3.2 MAINTENANCE**

3.2.1 Erosion control devices shall be inspected within 24 hours after each rainfall or daily during periods of prolonged rainfall.

3.2.2 Repair or replacement of damaged or defective materials or installation shall be made immediately.

3.2.3 Sediment deposits shall be removed within 24 hours after each storm event or when deposits reach 1/2 height of fence or barrier, whichever occurs first.

3.2.4 Replacement bales, additional mulch, netting or matting shall be applied immediately to maintain suitable cover.

3.2.5 Where vegetative cover has been placed, inspections shall be made until vegetative cover is established and functioning as intended.

**3.3 REMOVAL OF EROSION CONTROL DEVICES**

3.3.1 Erosion control measures shall be maintained until disturbed earth has been paved or vegetated.

3.3.2 Erosion control devices shall be removed prior to final inspection and acceptance of Project Site by Owner.

3.3.3 Areas disturbed or damaged by removal of erosion control devices shall be restored or replaced by Contractor to satisfaction of Owner's Representative.

## **ATTACHMENT 2 – MARSH DEBRIS ASSESSMENT REPORT**





Wood Environment & Infrastructure Solutions, Inc.  
1075 Big Shanty Road  
Suite 100  
Kennesaw, Georgia 30144  
USA  
T: 770-421-3400  
[www.woodplc.com](http://www.woodplc.com)

February 25, 2020

Mr. Jason Metzger, Program Manager  
Georgia Department of Natural Resources  
Environmental Protection Division – Land Protection Branch  
2 Martin Luther King, Jr. Drive  
Suite 1054, East Tower  
Atlanta, Georgia 30334

**Re: Marsh Line Survey and Marsh Debris Assessment Report  
Former T Street Landfill  
Brunswick, Georgia  
Wood Project 6123191266**

Dear Mr. Metzger,

In response to the Georgia Environmental Protection Division (EPD) letter of December 20, 2019, the attached Marsh Line Survey and Marsh Debris Assessment Report is being provided to Georgia EPD and the Georgia Coastal Resources Division (CRD). Wood Environment & Infrastructure Solutions, Inc. (Wood) is providing this information on behalf of our client, the T Street Landfill Steering Group (Georgia-Pacific, LLC, Hercules, LLC, and the City of Brunswick), to assist with the closure of the Former T Street Landfill in Brunswick, Georgia.

## **BACKGROUND**

Georgia EPD approved implementation of the Hazardous Site Response Act Corrective Action Plan (HSRA CAP) for the T Street Landfill in 2015. During site preparation for construction of the HSRA CAP, it became apparent that the waste material extended into the marsh area, and the footprint of the proposed CAP extended into marsh/wetlands. This condition was previously unknown and necessitated the re-evaluation of the regulatory strategy required to bring the T Street Landfill into compliance with appropriate regulatory requirements. The T Street Landfill Group met with EPD on October 23, 2019 to discuss the project and the range of options for advancing the landfill closure. The team suggested a working group comprised of one representative from the pertinent stakeholders (EPD and CRD) and the T Street Landfill Group representatives. This working group would be responsible for facilitating communications within the stakeholder agencies to streamline processes, presenting a unified regulatory position, and enabling continuation of the CAP implementation. EPD concurred that a working group would be beneficial and indicated they would identify personnel and have internal discussions in preparation for receiving a strategy from the T Street Landfill Group. The group agreed to reconvene after a site visit and development of anticipated path forward.

Subsequent to the October 23, 2019 meeting, the T Street Landfill Group received a letter from EPD, dated December 20, 2019, that requested additional information be submitted to assist with the marsh line verification at the T Street Landfill. These items included additional topographic information as well as an estimate of the amount and type of fill/debris along the marsh line. This submittal provides the requested information for the topographic survey and information related to the amount and type of fill/debris along the marsh line.



## MARSH LINE SURVEY

As requested by EPD, the marsh line topographic survey was provided to Paul Tobler and Jill Andrews of CRD on February 7, 2020, via e-mail from Garrow Alberson, Brunswick City Engineer. The due date of February 7, 2020 was confirmed by Bill Williams of EPD via e-mail of January 21, 2020. This survey is also included as Attachment 1 to this letter.

## MARSH DEBRIS ASSESSMENT REPORT

The marsh debris assessment report is provided to EPD and CRD as Attachment 2 to this letter.

On behalf of the T Street Landfill Steering Group, Wood appreciates the opportunity to provide this supplemental information to EPD and CRD. After your review, we would like to have a brief meeting (or conference call) with EPD to confirm authorization to move forward with closure plan modifications and discuss schedule. Once we have EPD's confirmation, Wood will coordinate finalization of the landfill drawings referenced in the marsh debris assessment report. After the drawings are updated, we would expect to release these drawings and instructions to the contractor for resumption of the closure of the T Street Landfill.

If you have any questions regarding this submittal, please contact Heidi Fogell at (770) 421-3387 or Dan Grogan at (770) 547-7141. Wood looks forward to the opportunity to continue to assist the T Street Landfill Steering Group with this very important project to expedite final closure.

Sincerely,

**Wood Environment & Infrastructure Solutions, Inc.**



Jonathan A. Bourdeau, PWS  
Senior Scientist 1



Heidi E. Fogell, FP-C  
Associate Project Manager



CC: Mr. Paul Tobler, CRD  
Ms. Jill Andrews, CRD  
Mr. Bill Williams, EPD  
Ms. Shannon Betts, Georgia-Pacific, LLC  
Mr. Tim Hassett, Hercules, LLC  
Mr. Garrow Alberson, City of Brunswick



## **ATTACHMENT 1 – MARSH LINE SURVEY**

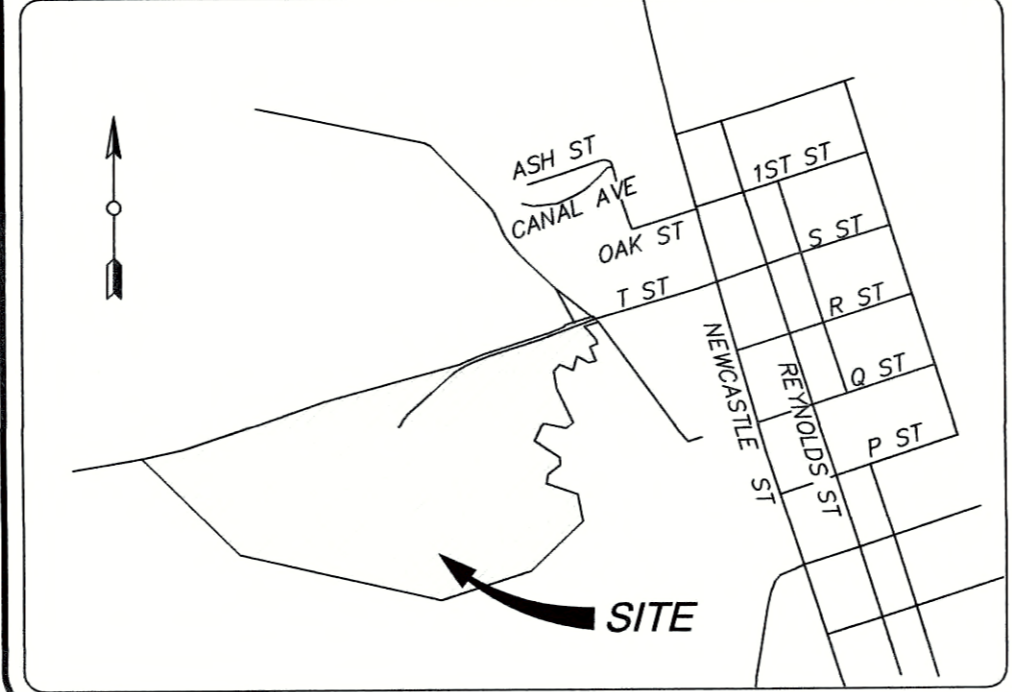


THIS BLOCK RESERVED FOR THE CLERK  
OF THE SUPERIOR COURT.

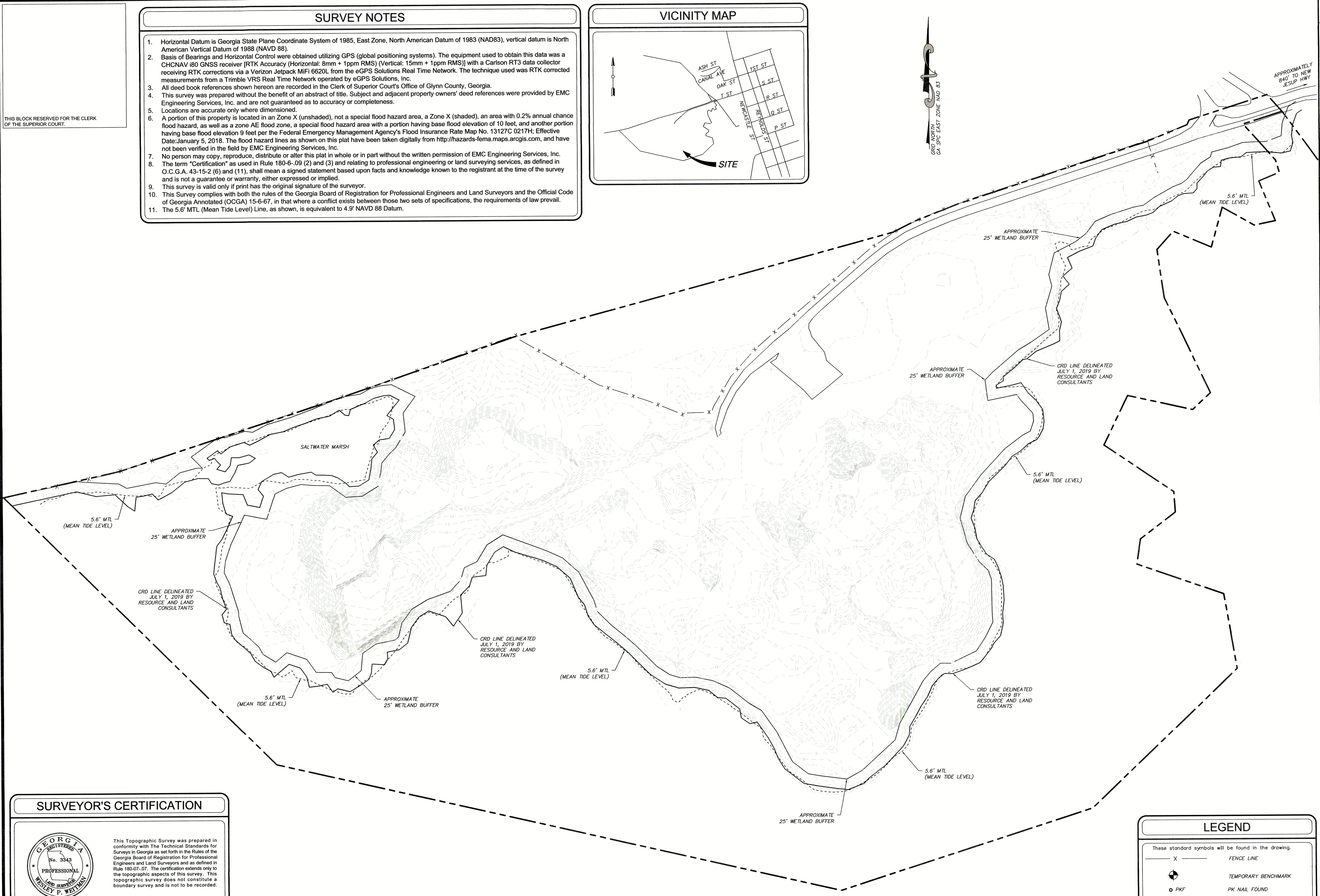
SURVEY NOTES

- Horizontal Datum is Georgia State Plane Coordinate System of 1985, East Zone, North American Datum of 1983 (NAD83), vertical datum is North American Vertical Datum of 1988 (NAVD 88).
- Basis of Bearings and Horizontal Control were obtained utilizing GPS (global positioning systems). The equipment used to obtain this data was a CHCNAV i80 GNSS receiver [RTK Accuracy (Horizontal: 8mm + 1ppm RMS) (Vertical: 15mm + 1ppm RMS)] with a Carlson RT3 data collector receiving RTK corrections via a Verizon Jetpack MiFi 6620L from the eGPS Solutions Real Time Network. The technique used was RTK corrected measurements from a Trimble VRS Real Time Network operated by eGPS Solutions, Inc.
- All deed book references shown hereon are recorded in the Clerk of Superior Court's Office of Glynn County, Georgia.
- This survey was prepared without the benefit of an abstract of title. Subject and adjacent property owners' deed references were provided by EMC Engineering Services, Inc. and are not guaranteed as to accuracy or completeness.
- Locations are accurate only where dimensioned.
- A portion of this property is located in an Zone X (unshaded), not a special flood hazard area, a Zone X (shaded), an area with 0.2% annual chance flood hazard, as well as a zone AE flood zone, a special flood hazard area with a portion having base flood elevation of 10 feet, and another portion having base flood elevation 9 feet per the Federal Emergency Management Agency's Flood Insurance Rate Map No. 13127C 0217H; Effective Date: January 5, 2018. The flood hazard lines as shown on this plat have been taken digitally from <http://hazards-fema.maps.arcgis.com>, and have not been verified in the field by EMC Engineering Services, Inc.
- No person may copy, reproduce, distribute or alter this plat in whole or in part without the written permission of EMC Engineering Services, Inc.
- The term "Certification" as used in Rule 180-6-.09 (2) and (3) and relating to professional engineering or land surveying services, as defined in O.C.G.A. 43-15-2 (6) and (11), shall mean a signed statement based upon facts and knowledge known to the registrant at the time of the survey and is not a guarantee or warranty, either expressed or implied.
- This survey is valid only if print has the original signature of the surveyor.
- This Survey complies with both the rules of the Georgia Board of Registration for Professional Engineers and Land Surveyors and the Official Code of Georgia Annotated (OCGA) 15-6-67, in that where a conflict exists between those two sets of specifications, the requirements of law prevail.
- The 5.6' MTL (Mean Tide Level) Line, as shown, is equivalent to 4.9' NAVD 88 Datum.

VICINITY MAP



CRD MOUNTAIN  
GA 24C EAST ZONE NAD 83



NO.	REVISION DESCRIPTION	DATE
1	ADD 5.6' MTL LINE (SAC)	2020.02.05



100' 50' 0' 100'  
GRAPHIC SCALE: 1" = 100'

**EMC ENGINEERING SERVICES, INC.**  
504 Gloucester Street  
Brunswick, GA 31520  
Ph: (912) 265-7636  
Fax: (912) 233-4580  
[brunswick@emc-eng.com](mailto:brunswick@emc-eng.com)  
[www.emc-eng.com](http://www.emc-eng.com)

CIVIL  
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ENVIRONMENTAL

ALBANY • ATLANTA • AUGUSTA • BRUNSWICK • COLUMBUS  
SAVANNAH • STATESBORO • THOMASTON • VALDOSTA • WARNER ROBINS

TOPOGRAPHIC SURVEY  
**T STREET LANDFILL**  
26TH G.M. DISTRICT  
BRUNSWICK, GLYNN COUNTY, GEORGIA  
Prepared for:  
**LONE WOLF RESOURCES, LLC**

SURVEYOR'S CERTIFICATION



This Topographic Survey was prepared in conformity with The Technical Standards for Surveys in Georgia as set forth in the Rules of the Georgia Board of Registration for Professional Engineers and Land Surveyors and as defined in Rule 180-07-.07. The certification extends only to the topographic aspects of this survey. This topographic survey does not constitute a boundary survey and is not to be recorded.

*Wesley P. Weitzman*  
GA REG. L.S. LIC. NO. 3343

2/6/20  
DATE

LEGEND

These standard symbols will be found in the drawing.

- |          |                       |
|----------|-----------------------|
| X        | FENCE LINE            |
| ⊕        | TEMPORARY BENCHMARK   |
| PKF      | PK NAIL FOUND         |
| MNS      | MAGNETIC NAIL SET     |
| 5/8" RBF | 5/8" IRON REBAR FOUND |
| 1/2" RBF | 1/2" IRON REBAR FOUND |

PROJECT NO.: 19-5020  
DRAWN BY: KLO  
DESIGNED BY: -  
SURVEYED BY: JH  
SURVEY DATE: 8/22/2019  
CHECKED BY: WPM  
SCALE: 1" = 100'  
DATE: 8/26/2019

SHEET

1

OF 1

## **ATTACHMENT 2 – MARSH DEBRIS ASSESSMENT REPORT**





# **Marsh Debris Assessment Report**

Former T Street Landfill  
Brunswick, Georgia  
Project No. 6123191266

February 2020



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## **LIST OF ABBREVIATIONS AND ACRONYMS**

CAP	Corrective Action Plan
CRD	Coastal Resources Division
EPD	Environmental Protection Division
HSRA	Hazardous Site Response Act
MSW	Mixed Solid Waste
MTL	Mean Tide Level (MTL)
Wood	Wood Environment & Infrastructure Solutions, Inc.



## **1.0 INTRODUCTION**

The Georgia Environmental Protection Division (EPD) approved implementation of the Hazardous Site Response Act Corrective Action Plan (HSRA CAP) for the T Street Landfill in 2015. During site preparation for construction of the HSRA CAP, it became apparent that a limited amount of waste material extended into the marsh area, and a portion of the footprint of the proposed CAP extended into marsh/wetlands.

The T Street Landfill Group met with EPD on October 23, 2019 to discuss the project and the range of options for advancing the landfill closure. The team suggested a working group comprised of one representative from the pertinent stakeholders (EPD and Coastal Resources Division [CRD]) and the T Street Landfill Group representatives. This working group would be responsible for facilitating communications within the stakeholder agencies to streamline processes, presenting a unified regulatory position, and enabling continuation of the CAP implementation. EPD concurred that a working group would be beneficial and indicated they would identify personnel and have internal discussions in preparation for receiving a strategy from the T Street Landfill Group. The group agreed to reconvene after a site visit and development of anticipated path forward.

Subsequent to the October 23, 2019 meeting, the T Street Landfill Group received a letter from EPD, dated December 20, 2019, that requested additional information be submitted to assist with the marsh line verification at the T Street Landfill. The additional information requested included additional topographic information as well as an estimate of the amount and type of fill/debris along the marsh line.

As requested by EPD, the marsh line topographic survey identifying the 5.6 foot mean tide level (MTL) was provided to Paul Tobler and Jill Andrews of CRD on February 7, 2020, via e-mail from Garrow Alberson, Brunswick City Engineer. The due date of February 7, 2020 was confirmed by Bill Williams of EPD via e-mail of January 21, 2020.



Also as requested by EPD, this marsh debris assessment report serves as the estimate of amount and type of fill/debris along the marsh line.



## **2.0 MARSH DEBRIS ASSESSMENT**

The project team conducted a site visit on January 16, 2020. Attending team members included Ms. Shannon Betts and Mr. David Massengill with Georgia-Pacific, Mr. Garrow Alberson, City Engineer for the City of Brunswick, Mr. Josh Johnson with Lone Wolf Resources, LLC, Mr. Kip Goodbread with EMC Engineering Services, Inc. (providing surveying services to the T Street Landfill Group), and Mr. Jonathan Bourdeau with Wood Environment & Infrastructure Solutions, Inc. (Wood). The purpose of the site visit was for Wood and the contractor (Lone Wolf Resources, LLC) estimate the extent and disposition of debris along and within the 25-foot marsh buffer, to estimate if the debris could be removed or could be left in place, and to describe techniques and equipment that would likely be used to remove debris from the 25-foot buffer and adjacent marsh.

During construction initiation in summer 2019, a 25-foot buffer from the flagged marsh boundary was staked along the landfill perimeter. Subsequently, two rows of silt fencing were installed on the landfill side of the 25-foot marsh buffer, outside of the larger vegetation growing along the toe of the landfill. The result of the silt fence installation is that some isolated areas of landfill debris were observed outside the silt fence within the 25-foot buffer along the landfill edge, and debris was also noted at a few locations extending beyond the marsh boundary flagging into the marsh. In general, the debris consisted of concrete, brick, and asphalt rubble, wood construction materials, various metal debris, and other mixed solid waste (MSW, which includes household trash, bottles, plastic debris, etc.).

A summary table of debris areas is provided as Table 1, and the location of these debris areas are shown in Figure 1. Photos of selected debris locations are shown in the attached Photo Log (Appendix A).

Based on the contractor's opinion, the majority of the debris within the 25-foot marsh buffer can be removed without significantly disturbing vegetation using equipment setup



outside the buffer. The contractor proposes several methods of removal, including a long-reach excavator, an excavator with a “thumb” for heavier items, and hand picking loose debris. Some areas would require that equipment operate within the 25 foot buffer to safely remove debris, which could be done by removing portions of the silt fence and operating on sturdy ground within the buffer, or operating on wooden mats in areas with unstable ground. The debris would be relocated into the landfill outside of the buffer.

Wood identified a number of areas where concrete materials could remain in the buffer, and the contractor concurred with these recommendations. These areas either contain inert materials (concrete) that serve to protect the landfill base from tidal erosion, or are hindered by access or disturbance and/or would require clearing portions of the vegetative buffer. Also, portions of the 25-foot buffer have soils containing MSW (the contractor estimated approximately 20%) and would likely need to remain undisturbed except for removing loose debris from the surface likely by hand.

Equipment use would not occur in the marsh area, as debris in the marsh is generally located immediately adjacent to the marsh line and could be reached by equipment operating from the adjacent upland areas. The exception to this condition is at Areas 14 and 15, where two areas of debris are located within the marsh (Photos 11 and 12). These areas may require equipment to enter the marsh on mats to facilitate debris removal. If the equipment operates during a dry period on mats and avoids clearing and/or disturbing vegetation and soils, this removal could be done in a short time with minimal surficial impact.

Also, during the site visit, the team observed areas of filter cake material that have been deposited within the landfill (around Area 44 on Figure 1, and shown on Photo 36). This material was piled from 15 to 20 feet high, and its unstable steep slopes directly abut the marsh boundary. Approximately 200 linear feet of filter cake material is located within the 25-foot marsh buffer. These areas are proposed to be graded to a more gradual slope to match the rest of the landfill area.



A revised drawing reflecting the items discussed above will be prepared related to the previously approved closure plan by EPD for the T Street Landfill. This will specifically include:

1. The closure plan drawings will be updated to identify the wetland marsh area in the northwest corner of the landfill, and the landfill cap limits will be modified to avoid this wetland marsh area.
2. A 25-foot marsh buffer variance would not be required to operate machinery and remove debris within the buffer as long as vegetation is not removed, ground surface disturbance resulting from removal of debris is minimized, and erosion and sediment control fencing is replaced as soon as practicable after access.
3. Where areas either contain inert materials (concrete) that serve to protect the landfill base from tidal erosion, or are hindered by access or disturbance and/or would require clearing portions of the vegetative buffer, debris would be left in place and the area would be hand-cleared or cleared from outside the 25-foot buffer as is feasible.
4. No equipment will operate in the marsh, with one exception – if soil/marsh conditions allow, an excavator on mats will be used to remove two areas of debris from within the marsh (Areas 14 and 15 on Figure 1 and Table 1). No vegetation clearing would be done, and ground surface disturbance would be minimized.
5. The 200 linear feet area of filter cake material within the 25-foot marsh buffer (Area 44 on Figure 1 and Table 1) would need to be graded to a stable slope and covered with suitable cap material to match the rest of the landfill area.



## TABLES

**Table 1**  
**T Street Landfill**  
**Description of Debris Locations**

2/25/2020

Location Number	Debris Description	Estimated Quantity (cu yds)	Proposed Status	Quantity to Remain	Equipment Required	Comments
1	Concrete, tires, asphalt, bricks, metal	100	Remove	0	LR Excavator	
2	Railroad ties, few roofing tiles, MSW	300	Remove	0	LR Excavator, hand pick	
3	Tires, metal bed frame	50	Remove	0	LR Excavator	
4	Concrete rubble, bricks, asphalt, few pieces of metal debris	250	Remove	0	Excavator with thumb	May require mats, unstable soil (equipment in buffer)
5	Metal, asphalt, concrete	50	Remove	0	Excavator with thumb	
6	Railroad ties, concrete, culvert rubble, asphalt	0	Partially Remove	0	LR Excavator, excavator with thumb	Leave concrete rubble
7	Railroad ties, concrete, asphalt	0	Remove	0	LR Excavator, excavator with thumb	
8	Woody debris (railroad ties, poles), concrete <i>(includes 8, 7, 6)</i>	2,200	Partially Remove	300	LR Excavator, excavator with thumb	May require mats, unstable soil (equipment in buffer); leave concrete rubble. Located at end of creek, some woody debris floated from creek. Work immediately adjacent to marsh.
9	Woody debris (railroad ties, poles), concrete	700	Partial Remove	100	LR Excavator, excavator with thumb	Leave concrete rubble as is feasible.
10	Asphalt, brick, metal, rubber, MSW	3,600	Remove	0	LR Excavator, excavator with thumb	May require mats, unstable soil (equipment in buffer)
11	Concrete, brick, tires, roofing tiles	2,500	Remove	400	LR Excavator, excavator with thumb, hand pick	May require mats, unstable soil (equipment in buffer); work immediately adjacent to marsh.
12	Tires, metal, MSW	50	Remove	0	Excavator with thumb, hand pick	
13	Concrete, metal, brick, MSW	50	Remove	0	Excavator with thumb, hand pick	Area extends along treatment pond berm
14	Metal car parts, tires, MSW	125	Remove	0	Excavator with thumb	May require mats, unstable soil (equipment in buffer and adjacent to marsh)
15	Metal, MSW	50	Remove	0	Excavator with thumb, hand pick	May require mats, unstable soil (equipment in buffer and adjacent to marsh)
16	Concrete, MSW	750	Partially Remove	500	Excavator with thumb, hand pick	Leave concrete rubble as is feasible.
17	Woody debris, tires, concrete, tank	600	Partially Remove	300	Excavator with thumb, hand pick	Leave concrete rubble as is feasible.
18	Concrete, MSW	150	Partially Remove	100	Hand pick	Leave concrete rubble as is feasible.
19	Concrete, appliance, MSW	850	Partially Remove	600	Hand pick	Remove appliance in wetland; leave concrete rubble as is feasible.

**Table 1**  
**T Street Landfill**  
**Description of Debris Locations**

2/25/2020

Location Number	Debris Description	Estimated Quantity (cu yds)	Proposed Status	Quantity to Remain	Equipment Required	Comments
20	Concrete, MSW	250	Partially Remove	100	Hand pick	Leave concrete rubble as is feasible.
21	Concrete, asphalt, MSW	2,000	Partially Remove	1,500	LR Excavator, excavator with thumb, hand pick	Leave concrete rubble as is feasible.
22	Concrete, MSW	1,500	Remove	0	Excavator with thumb, hand pick	Pull back concrete debris into landfill as is feasible.
23	Concrete, asphalt, metal	600	Remove	0	LR Excavator	
24	Tires, metal, MSW	300	Remove	0	LR Excavator	
25	Concrete, tires, metal, saphaly	1,000	Remove	0	Excavator with thumb	
26	Concrete, brick, MSW	680	Partially Remove	300	Excavator with thumb, hand pick	Leave concrete rubble as is feasible. Soil mixed with debris, area difficult to clear without disturbing soil or vegetation.
27	Concrete, MSW	150	Remove	0	LR Excavator	
28	MSW	25	Remove	0	Hand pick	
29	Concrete, asphalt, tires, culverts, railroad ties, MSW	2,000	Partially Remove	100	LR Excavator, excavator with thumb, hand pick	Difficult area-- mounded debris within buffer. Removal may require buffer disturbance.
30	Concrete, asphalt, MSW	250	Partially Remove	50	Excavator with thumb, hand pick	Leave concrete rubble as is feasible.
31	Concrete, MSW	30	Partially Remove	20	LR Excavator, hand pick	Leave concrete rubble as is feasible.
32	Metal tanks, piping	80	Remove	0	Excavator with thumb	Piping may be difficult to remove, may require vegetation removal
33	MSW, one auto battery	500	Remove	0	Hand pick	
34	Concrete, woody debris, MSW	450	Partially Remove	50	Hand pick	Leave concrete rubble as is feasible.
35	Concrete, asphalt, metal, MSW	1,050	Partially Remove	500	Excavator with thumb, hand pick	Leave concrete rubble as is feasible.
36	Metal, MSW	1,000	Remove	0	LR Excavator, excavator with thumb, hand pick	
37	Concrete, brick, railroad ties, rebar, MSW	1,500	Partially Remove	1,000	LR Excavator, hand pick	Leave concrete rubble as is feasible. Rubble pile is roughly 5 ft high, making area difficult to clear without disturbing soil or vegetation.
38	Metal-sided trailer in wetland	10	Remove	0	LR Excavator	
39	Concrete, MSW	100	Partially Remove	100	Hand pick	Leave rubble, hand pick limited amount of MSW.
40	Concrete, tires, appliance, MSW	380	Partially Remove	100	Excavator with thumb, hand pick	May require mats, unstable soil (equipment in buffer and adjacent to marsh); some debris in marsh.
41	MSW, filter cake material	20	Remove	0	LR Excavator, hand pick	

**Table 1**  
**T Street Landfill**  
**Description of Debris Locations**

Location Number	Debris Description	Estimated Quantity (cu yds)	Proposed Status	Quantity to Remain	Equipment Required	Comments
42	Tires, MSW	80	Remove	0	Hand pick	
43	No debris	0	N/A	0	N/A	No significant debris observed along interior marsh line
44	Filter cake material	2,500	Partially Remove	500	LR Excavator	Large pile of filter cake material abuts marsh and is located within 25-foot marsh buffer. Steep slopes will likely require grading.

Approximate total volume of material	28,830	cu yd
Total volume to remove	22,210	cu yd
Total volume to remain	6,620	cu yd

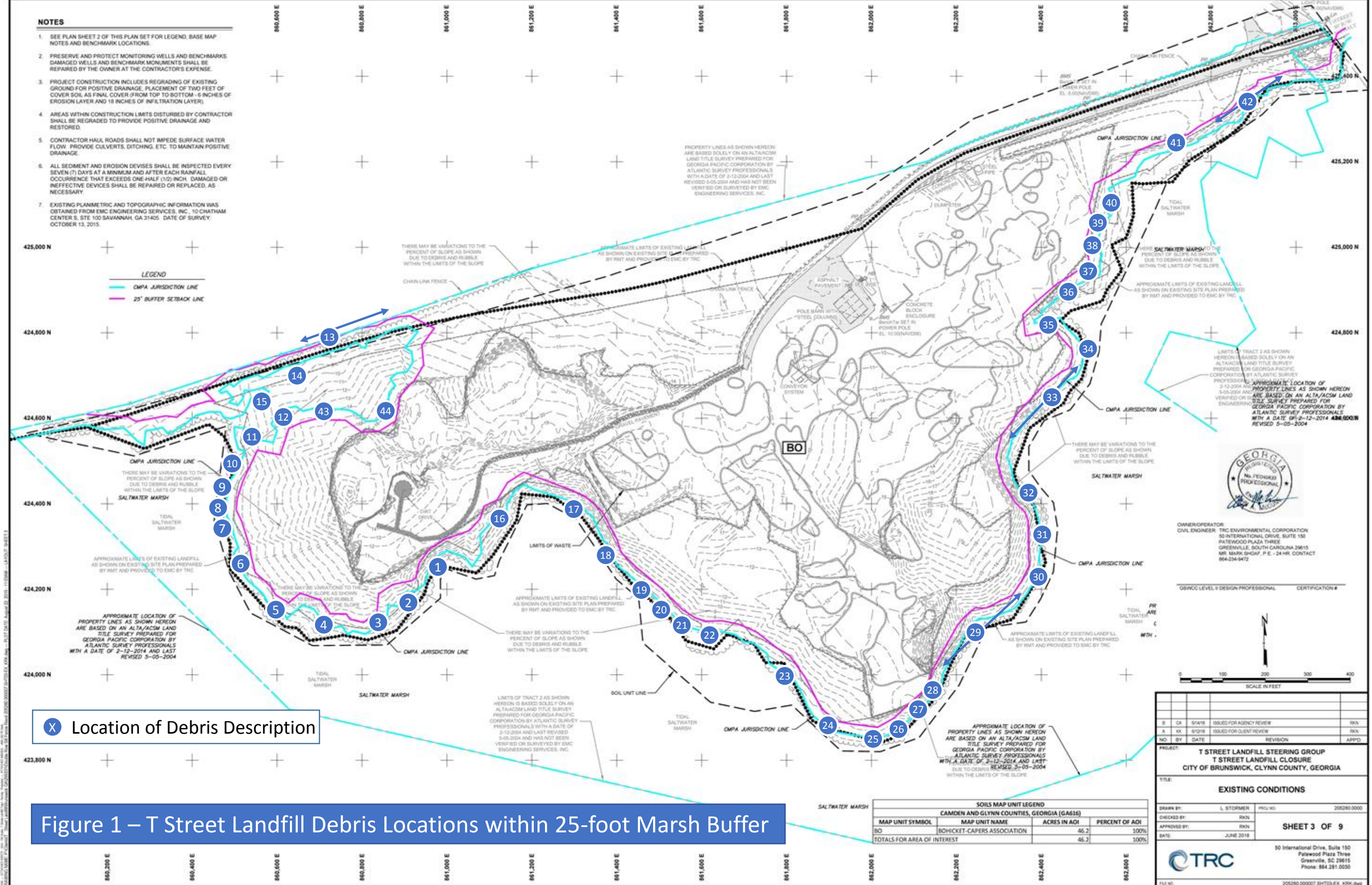
**LEGEND**

LR	Long Reach (boom on excavator)
MSW	Mixed Solid Waste (household trash, bottles, plastic debris, etc.)

Prepared By: JAB 01/21/20  
 Checked By: KPH 01/21/20  
 Revised By: WJJ (LWR) 01/22/20

## FIGURES





- NOTES**
1. SEE PLAN SHEET 2 OF THIS PLAN SET FOR LEGEND, BASE MAP NOTES AND BENCHMARK LOCATIONS.
  2. PRESERVE AND PROTECT MONITORING WELLS AND BENCHMARKS. DAMAGED WELLS AND BENCHMARK MONUMENTS SHALL BE REPAIRED BY THE OWNER AT THE CONTRACTOR'S EXPENSE.
  3. PROJECT CONSTRUCTION INCLUDES REGRADING OF EXISTING GROUND FOR POSITIVE DRAINAGE. PLACEMENT OF TWO FEET OF COVER SOIL AS FINAL COVER (FROM TOP TO BOTTOM - 6 INCHES OF EROSION LAYER AND 18 INCHES OF INFILTRATION LAYER).
  4. AREAS WITHIN CONSTRUCTION LIMITS DISTURBED BY CONTRACTOR SHALL BE REGRADED TO PROVIDE POSITIVE DRAINAGE AND RESTORED.
  5. CONTRACTOR SHALL NOT IMPEDE SURFACE WATER FLOW. PROVIDE CULVERTS, DITCHING, ETC. TO MAINTAIN POSITIVE DRAINAGE.
  6. ALL SEDIMENT AND EROSION DEVICES SHALL BE INSPECTED EVERY SEVEN (7) DAYS AT A MINIMUM AND AFTER EACH RAINFALL OCCURRENCE THAT EXCEEDS ONE-HALF (1/2) INCH. DAMAGED OR INEFFECTIVE DEVICES SHALL BE REPAIRED OR REPLACED, AS NECESSARY.
  7. EXISTING PLANIMETRIC AND TOPOGRAPHIC INFORMATION WAS OBTAINED FROM EMC ENGINEERING SERVICES, INC., 10 CHATHAM CENTER S. STE 100 SAVANNAH, GA 31405. DATE OF SURVEY: OCTOBER 13, 2015.

**LEGEND**

— CMPA JURISDICTION LINE  
— 25' BUFFER SETBACK LINE

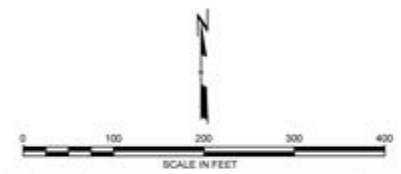
X Location of Debris Description

Figure 1 – T Street Landfill Debris Locations within 25-foot Marsh Buffer



OWNER/OPERATOR: TRC ENVIRONMENTAL CORPORATION  
CIVIL ENGINEER: TRC ENVIRONMENTAL CORPORATION  
50 INTERNATIONAL DRIVE, SUITE 150  
PATEWOOD PLAZA THREE  
GREENVILLE, SOUTH CAROLINA 29615  
MR. MARK SHOOP, P.E. - 24 HR. CONTACT  
864-234-9472

GSVACC LEVEL II DESIGN PROFESSIONAL CERTIFICATION #



SOILS MAP UNIT LEGEND			
CAMDEN AND GLYNN COUNTIES, GEORGIA (GA616)			
MAP UNIT SYMBOL	MAP UNIT NAME	ACRES IN AOI	PERCENT OF AOI
BO	BOHICKET-CAPERS ASSOCIATION	46.2	100%
TOTALS FOR AREA OF INTEREST		46.2	100%

B	CA	6/14/18	ISSUED FOR AGENCY REVIEW					RKN	
A	KK	6/12/18	ISSUED FOR CLIENT REVIEW					RKN	
NO.	BY	DATE	REVISION					APP'D.	
PROJECT: T STREET LANDFILL STEERING GROUP T STREET LANDFILL CLOSURE CITY OF BRUNSWICK, GLYNN COUNTY, GEORGIA									
TITLE: EXISTING CONDITIONS									
DRAWN BY: L. STORMER			PROJ. NO: 205280.0000			SHEET 3 OF 9			
CHECKED BY: RKN			50 International Drive, Suite 150 Patewood Plaza Three Greenville, SC 29615 Phone: 864.281.0030						
APPROVED BY: RKN									
DATE: JUNE 2018			FILE NO: 205280.000007.SHT323-EX_KRK.dwg						

**APPENDIX A**

**PHOTO LOG**



**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020

Photo No.:  
1

Photographer:  
JAB

Description: Area 2



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020

Photo No.:  
2

Photographer:  
JAB

Description: Area 4

**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020

Photo No.:  
3

Photographer:  
JAB

Description: Area 7



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020

Photo No.:  
4

Photographer:  
JAB

Description: Area 8

**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020

Photo No.:  
5

Photographer:  
JAB

Description: Area 9



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020

Photo No.:  
6

Photographer:  
JAB

Description: Area 10

**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020

Photo No.:  
7

Photographer:  
JAB

Description: Area 11 (looking NE)



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020



Photo No.:  
8

Photographer:  
JAB

Description: Area 11 (looking SW)



**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**

<div><div>SWWNN</div><div>2102402703003300</div><div>☼ 286°W (T)    ● 31.165863°N, 81.512631°W ±16ft    ▲ 6ft</div><div></div><div>T Street LandfillArea 1216 Jan 2020 09:56:02</div></div>	<div>Client: T Street Landfill Group</div> <div>Location: T Street Landfill, Brunswick, GA</div> <div>Project No.: 6123191266</div> <div>Date: 1-16-2020</div> <div>Photo No.: 9</div> <div>Photographer: JAB</div> <div>Description: Area 12</div>
<div><div>ESSESSWV</div><div>90120150180210240270</div><div>☼ 175°S (T)    ● 31.166026°N, 81.513547°W ±16ft    ▲ -9ft</div><div></div><div>T Street LandfillArea 1316 Jan 2020 10:29:16</div></div>	<div>Client: T Street Landfill Group</div> <div>Location: T Street Landfill, Brunswick, GA</div> <div>Project No.: 6123191266</div> <div>Date: 1-16-2020</div> <div>Photo No.: 10</div> <div>Photographer: JAB</div> <div>Description: Area 13</div>

**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**

<div><div><div>E90SE120150180SW240</div><div>☼ 146°SE (T)    ● 31.166074°N, 81.513211°W ±16ft    ▲ 11ft</div><div><div>T Street Landfill</div><div>Area 14 16 Jan 2020, 10:24:22</div></div></div></div>	<div><div>Client: T Street Landfill Group</div><div>Location: T Street Landfill, Brunswick, GA</div><div>Project No.: 6123191266</div><div>Date: 1-16-2020</div><div>Photo No.: 11</div><div>Photographer: JAB</div><div>Description: Area 14</div></div>
<div><div><div>E90SE120150180SW240</div><div>☼ 160°S (T)    ● 31.165750°N, 81.513616°W ±32ft    ▲ 9ft</div><div><div>T Street Landfill</div><div>Area 15 16 Jan 2020, 10:32:41</div></div></div></div>	<div><div>Client: T Street Landfill Group</div><div>Location: T Street Landfill, Brunswick, GA</div><div>Project No.: 6123191266</div><div>Date: 1-16-2020</div><div>Photo No.: 12</div><div>Photographer: JAB</div><div>Description: Area 15</div></div>

**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020

Photo No.:  
13

Photographer:  
JAB

Description: Area 16



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020



Photo No.:  
14

Photographer:  
JAB

Description: Area 17



**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**

<div>SE150180210240270300NW</div> <div>☼ 227°SW (T)    ● 31.164893°N, 81.510492°W ±32ft ▲ 5ft</div> <div></div> <div>T Street Landfill</div> <div>Area 18</div> <div>16 Jan 2020, 11:27:21</div>	<div>Client: T Street Landfill Group</div> <div>Location: T Street Landfill, Brunswick, GA</div> <div>Project No.: 6123191266</div> <div>Date: 1-16-2020</div> <div>Photo No.: 15</div> <div>Photographer: JAB</div> <div>Description: Area 18</div>
<div>SE150180210240270300N</div> <div>☼ 219°SW (T)    ● 31.164832°N, 81.510261°W ±16ft ▲ 19ft</div> <div></div> <div>T Street Landfill</div> <div>Area 19</div> <div>16 Jan 2020, 11:28:40</div>	<div>Client: T Street Landfill Group</div> <div>Location: T Street Landfill, Brunswick, GA</div> <div>Project No.: 6123191266</div> <div>Date: 1-16-2020</div> <div>Photo No.: 16</div> <div>Photographer: JAB</div> <div>Description: Area 19</div>



**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**

<p><b>Brunswick GA 31520, United States</b></p> <p>☼ 204°SW (T) ● 31.164602°N, 81.510068°W ±16ft ▲ 8ft</p>  <p>T Street Landfill Area 21 16 Jan 2020, 11:31:30</p>	<p>Client: T Street Landfill Group</p> <p>Location: T Street Landfill, Brunswick, GA</p> <p>Project No.: 6123191266</p> <p>Date: 1-16-2020</p> <p>Photo No.: 17</p> <p>Photographer: JAB</p> <p>Description: Area 20</p>
<p>SW W NW N</p> <p>210 240 270 300 330 0</p> <p>☼ 275°W (T) ● 31.164529°N, 81.509821°W ±16ft ▲ 21ft</p>  <p>T Street Landfill Area 21 16 Jan 2020, 11:33:11</p>	<p>Client: T Street Landfill Group</p> <p>Location: T Street Landfill, Brunswick, GA</p> <p>Project No.: 6123191266</p> <p>Date: 1-16-2020</p> <p>Photo No.: 18</p> <p>Photographer: JAB</p> <p>Description: Area 21</p>


**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**

 <p>SE S SW W 0 120 150 180 210 240 270</p> <p>☉ 185°S (T) ☉ 31.164295°N, 81.509197°W ±32ft ▲ 12ft</p> <p>T Street Landfill Area 22 16 Jan 2020 11:36:49</p>	<table><tr><td>Client: T Street Landfill Group</td></tr><tr><td>Location: T Street Landfill, Brunswick, GA</td></tr><tr><td>Project No.: 6123191266</td></tr><tr><td>Date: 1-16-2020</td></tr><tr><td>Photo No.: 19</td></tr><tr><td>Photographer: JAB</td></tr><tr><td>Description: Area 22</td></tr></table>	Client: T Street Landfill Group	Location: T Street Landfill, Brunswick, GA	Project No.: 6123191266	Date: 1-16-2020	Photo No.: 19	Photographer: JAB	Description: Area 22
Client: T Street Landfill Group								
Location: T Street Landfill, Brunswick, GA								
Project No.: 6123191266								
Date: 1-16-2020								
Photo No.: 19								
Photographer: JAB								
Description: Area 22								
 <p>SE S SW W NW 150 180 210 240 270 300</p> <p>☉ 221°SW (T) ☉ 31.163896°N, 81.508511°W ±16ft ▲ 5ft</p> <p>T Street Landfill Area 24 16 Jan 2020 11:43:01</p>	<table><tr><td>Client: T Street Landfill Group</td></tr><tr><td>Location: T Street Landfill, Brunswick, GA</td></tr><tr><td>Project No.: 6123191266</td></tr><tr><td>Date: 1-16-2020</td></tr><tr><td>Photo No.: 20</td></tr><tr><td>Photographer: JAB</td></tr><tr><td>Description: Area 24</td></tr></table>	Client: T Street Landfill Group	Location: T Street Landfill, Brunswick, GA	Project No.: 6123191266	Date: 1-16-2020	Photo No.: 20	Photographer: JAB	Description: Area 24
Client: T Street Landfill Group								
Location: T Street Landfill, Brunswick, GA								
Project No.: 6123191266								
Date: 1-16-2020								
Photo No.: 20								
Photographer: JAB								
Description: Area 24								

**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**

 <p>Area 25 T Street Landfill 16 Jan 2020, 11:42:34</p>	<p>Client: T Street Landfill Group</p> <p>Location: T Street Landfill, Brunswick, GA</p> <p>Project No.: 6123191266</p> <p>Date: 1-16-2020</p> <p>Photo No.: 21</p> <p>Photographer: JAB</p> <p>Description: Area 25</p>
 <p>Area 29 T Street Landfill 16 Jan 2020, 11:50:02</p>	<p>Client: T Street Landfill Group</p> <p>Location: T Street Landfill, Brunswick, GA</p> <p>Project No.: 6123191266</p> <p>Date: 1-16-2020</p> <p>Photo No.: 22</p> <p>Photographer: JAB</p> <p>Description: Area 29</p>

**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020

Photo No.:  
23

Photographer:  
JAB

Description: Area 29



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020

Photo No.:  
24

Photographer:  
JAB

Description: Area 30

**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

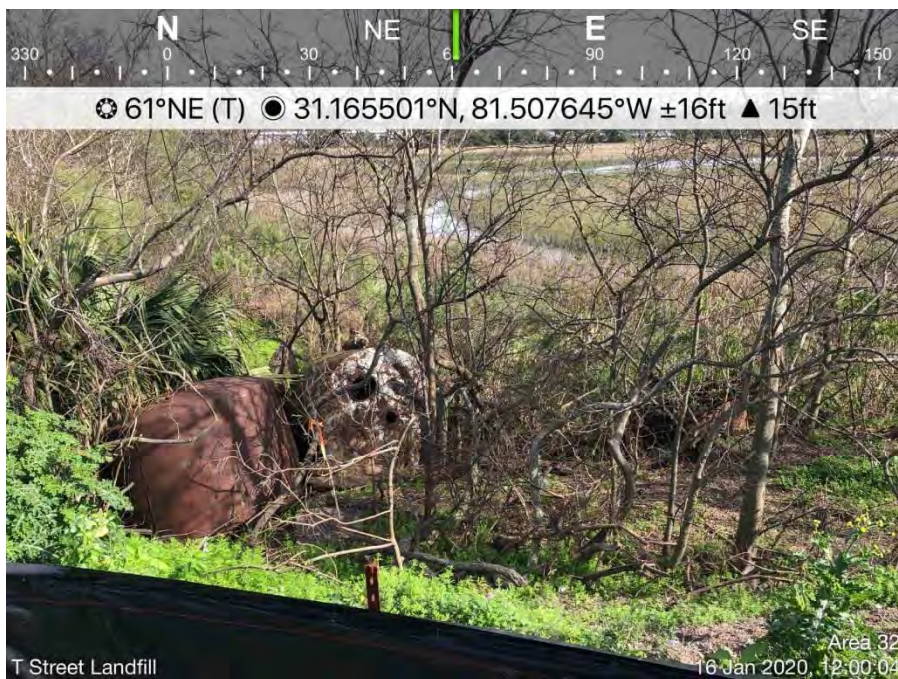
Project No.:  
6123191266

Date:  
1-16-2020

Photo No.:  
25

Photographer:  
JAB

Description: Area 31



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020

Photo No.:  
26

Photographer:  
JAB

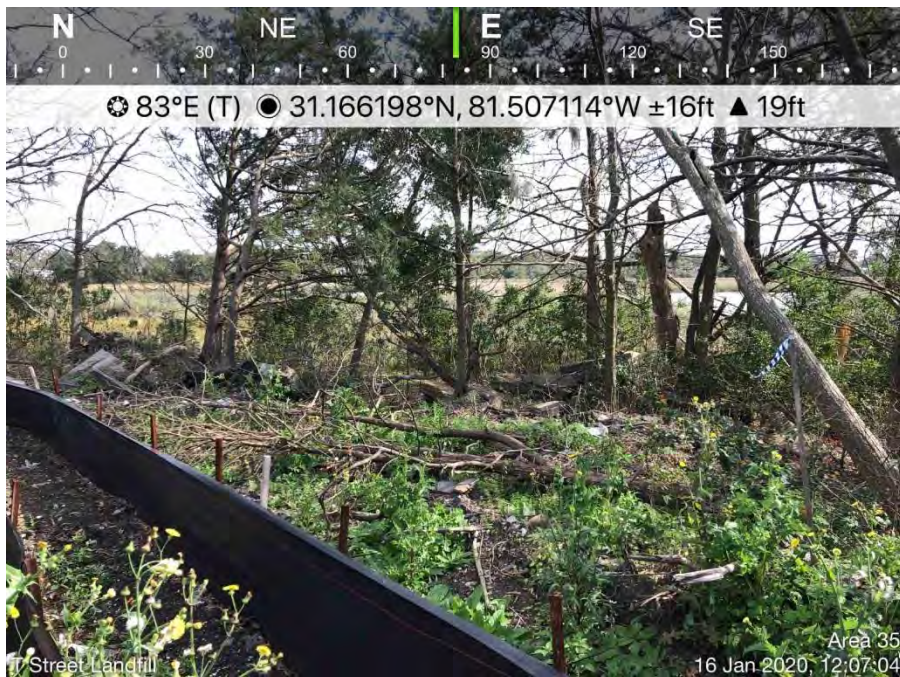
Description: Area 32

**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**



Client: T Street Landfill Group
Location: T Street Landfill, Brunswick, GA
Project No.: 6123191266
Date: 1-16-2020
Photo No.: 27
Photographer: JAB
Description: Area 33



Client: T Street Landfill Group
Location: T Street Landfill, Brunswick, GA
Project No.: 6123191266
Date: 1-16-2020
Photo No.: 28
Photographer: JAB
Description: Area 35

**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020

Photo No.:  
29

Photographer:  
JAB

Description: Area 36



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020



Photo No.:  
30

Photographer:  
JAB

Description: Area 37



**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**

<div><div><div>N0306090120150180</div><div>NEE</div><div>SE</div><div>S</div></div><div>☼ 93°E (T)    ● 31.167173°N, 81.506810°W ±16ft    ▲ 13ft</div><div><div>T Street Landfill</div><div>Area 38 trailer 16 Jan 2020, 12:21:40</div></div></div>	<div>Client: T Street Landfill Group</div> <div>Location: T Street Landfill, Brunswick, GA</div> <div>Project No.: 6123191266</div> <div>Date: 1-16-2020</div> <div>Photo No.: 31</div> <div>Photographer: JAB</div> <div>Description: Area 38 (trailer in wetland)</div>
<div><div><div>120SE150180S210SW240270W</div><div>☼ 196°S (T)    ● 31.167433°N, 81.506769°W ±16ft    ▲ 4ft</div><div><div>T Street Landfill</div><div>Area 39 16 Jan 2020, 12:24:00</div></div></div></div>	<div>Client: T Street Landfill Group</div> <div>Location: T Street Landfill, Brunswick, GA</div> <div>Project No.: 6123191266</div> <div>Date: 1-16-2020</div> <div>Photo No.: 32</div> <div>Photographer: JAB</div> <div>Description: Area 39</div>

**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**

 <p>Area 40 T Street Landfill 16 Jan 2020, 12:25:34</p>	<p>Client: T Street Landfill Group</p> <p>Location: T Street Landfill, Brunswick, GA</p> <p>Project No.: 6123191266</p> <p>Date: 1-16-2020</p> <p>Photo No.: 33</p> <p>Photographer: JAB</p> <p>Description: Area 40</p>
 <p>Area 42 T Street Landfill 16 Jan 2020, 12:32:20</p>	<p>Client: T Street Landfill Group</p> <p>Location: T Street Landfill, Brunswick, GA</p> <p>Project No.: 6123191266</p> <p>Date: 1-16-2020</p> <p>Photo No.: 34</p> <p>Photographer: JAB</p> <p>Description: Area 42</p>

**T Street Landfill Debris Site Visit  
Brunswick, Glynn County, Georgia**

**Photographic Log**



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020

Photo No.:  
35

Photographer:  
JAB

Description: Area 43 (no debris)



Client:  
T Street Landfill Group

Location:  
T Street Landfill, Brunswick, GA

Project No.:  
6123191266

Date:  
1-16-2020

Photo No.:  
36

Photographer:  
JAB

Description: Area 44, showing area of filter cake material at edge of 25-foot marsh buffer. Stake is midway up steep slope, with bottom of the slope and marsh line along top of photo.