



3195 Pine Hall Road
Belews Creek, NC 27009
336-445-0610

Permit No.	Scan Date	DIN
7906-INDUS-2016	May 23, 2016	26123

RECEIVED
May 18, 2016
Solid Waste Section
Asheville Regional Office

May 17, 2016

North Carolina Department of Environmental Quality
Division of Waste Management
Solid Waste Section
2090 U.S. Highway 70
Swannanoa, North Carolina 28778

Attn: Mr. Larry Frost

Re: Industrial Landfill Permit to Construct Application Submittal Supplement
Permit No.: TBD
Dan River Steam Station
Rockingham County
Eden, North Carolina 27009

Dear Mr.Frost,

Attached you will find a supplement to the initial Dan River Steam Station Landfill Permit to Construct (PTC) application submitted to your office on December 31, 2015.

This supplement consists of leachate storage tank and secondary containment drawings, technical specification section 221363 – Leachate Storage Tank, and Dan River plant boundary survey prepared by Amec Foster Wheeler under the direction of Duke Energy.

This supplement is being submitted to fulfill the requirements of Title 15A Subchapter 13B of the North Carolina Administrative Code (NCAC) to meet the requirements of Section .0500 for industrial landfills and substantive requirements of Section .1600 for municipal solid waste (MSW) landfills for compliance with Senate Bill 729.

The storage tank and appurtenant facilities (leachate storage facility) will have the dual purpose of conveying contact water from stormwater diversion activities and leachate from the proposed Dan River Landfill . This work does not solely support the Dan River Landfill. With this submittal, Duke Energy requests approval to begin work on the leachate storage facility prior to receipt of the PTC.

Please contact me at melonie.martin@duke-energy.com or (336) 445-0610 if you have any questions or concerns.

Respectfully submitted,



Melonie Martin
Environmental Services

Attachments: (2) AMECFW cover letter
(2) Drawings - Leachate Tank and Secondary Containment
(2) Technical Specification Section 221363 – Leachate Storage Tank
(2) Dan River Plant Boundary Survey
(1) Electronic Copy of submittal

cc (letter only, via e-mail): Ed Mussler, NCDEQ
Henry Taylor, Duke Energy
Ed Sullivan, Duke Energy
Cedric Ruhl, Amec Foster Wheeler



amec
foster
wheeler

May 17, 2016

Duke Energy
526 South Church Street
Charlotte, North Carolina 28202

Attention: Ms. Kimberlee Witt, P.E.

**Subject: Leachate Tank and Secondary Containment Plan
Proposed Dan River Landfill**

Duke Energy – Dan River Steam Station
Eden, North Carolina
Amec Foster Wheeler Project No. 7810140065

Dear Ms. Witt:

Amec Foster Wheeler is pleased to provide this Leachate Tank and Secondary Containment Plan to Duke Energy (Duke) for the proposed Dan River Landfill at Duke's Dan River Steam Station. Amec Foster Wheeler is also attaching the Dan River Steam Station legal property description which was prepared for Duke by ESP Associates, P.A. We understand that Duke will provide these documents to the North Carolina Department of Environmental Quality (NCDEQ) Solid Waste Section (SWS).

The Leachate Tank and Secondary Containment Plan drawings included with this submittal address the design of the leachate storage tank, secondary containment facility, leachate force main piping, and tie-in into the City of Eden sanitary sewer system. Development of a leachate discharge agreement between Duke and the City of Eden is in progress. Additional information regarding the proposed leachate tank and secondary containment is provided as follows.

Leachate Tank

The proposed leachate tank will consist of a ModuTank MS110-17 modular-style galvanized steel uncovered tank, or equivalent as approved by the Engineer. Containment will be provided by a geomembrane within the tank. The geomembrane will be anchored at the top of the tank and ballasted at the bottom of the tank; therefore, there is no minimum required depth of water needed to maintain the tank. The tank will have a capacity of 1,000,000 gallons at the service elevation, with an additional two feet of freeboard in accordance with North Carolina solid waste rules for uncovered storage tanks at municipal landfills generally referred to as the .1600 rules.

Modular Tank Anticipated Service

A typical landfill is designed, permitted, and constructed to serve as a facility to contain a consistently generated waste stream; therefore, a typical landfill may have an active lifespan on the order of several decades. The proposed Dan River Landfill modular tank is anticipated to have a relatively short service life on the order of ten years due to the following factors:

- The Dan River Landfill will not accept waste materials from other steam stations or other off-site sources.
- The Dan River Landfill will contain waste materials due to closure of the existing inactive on-site coal combustion residual (CCR) units.
- The Dan River Station no longer produces energy by burning coal; therefore, the waste stream is of a finite quantity and no new CCR waste is being generated.
- North Carolina's Coal Ash Management Act (CAMA) requires closure and remediation of the Dan River Station CCR surface impoundments by August 1, 2019.
- The Dan River Landfill will be closed upon closure and remediation of on-site CCR units.
- Leachate generation is anticipated to decrease following closure of the Dan River Landfill as shown in the "Leachate Generation Calculation" provided in the "Engineering and Facility Plan – Dan River Landfill", Amec Foster Wheeler, December 24, 2015.
- The proposed modular storage tank will be replaced by a smaller storage device with secondary containment upon a demonstration of a sustained decrease in leachate generation and approval by the NCDEQ-SWS.

The proposed modular storage tank will be disassembled upon incorporation of the smaller storage device.

Modular Tank Liner

The proposed ModuTank MS110-17 modular tank will incorporate a 45-mil reinforced polypropylene geomembrane liner, or as proposed by the tank Manufacturer and approved by the Engineer. As previously discussed, the modular tank and tank liner is anticipated to be in service on the order of ten years. During service, the proposed geomembrane tank liner will be inspected, repaired, and replaced in accordance with the Manufacturer's recommendations.

Modular Tank Performance History

ModuTank Inc. has been manufacturing above-ground modular storage tanks since 1970 for a variety of applications, and has sold more than 30 modular storage tanks in North Carolina since 1987. Modular storage tanks have been successfully used at the following municipal solid waste (MSW) landfill facilities:

- CSS Landfill, Republic Services, Avalon, TX, installed December 2010.
- Arlington Landfill, Republic Services, Evless, TX, installed December 2010.
- Galveston Landfill, Republic Services, Santa Fe, TX, installed March 2012.
- Ellis County Landfill, Republic Services, Ennis, TX, installed May 2013.
- Itaska Landfill, Republic Services, Taska, TX, installed May 2013.
- McCarty Road Landfill, Republic Services, Houston, TX, installed September 2014.

Secondary Containment

A soil berm will provide storage capacity for the leachate tank secondary containment area. The secondary containment area storage volume was designed to be in excess of 1,100,000 gallons, or 110 percent of the leachate tank storage volume as required by the .1600 rules.

Containment will be provided by a 60-mil high density polyethylene (HDPE) geomembrane with an anchor trench at the top of the soil berm. The geomembrane will be overlain by an 8 oz/sy non-woven geotextile and at least 12 inches of aggregate to protect the geomembrane.

The secondary containment area will be graded to drain to a sump in the southern portion of the containment area. Liquids collected in the sump will either drain to the landfill perimeter channel by gravity via an HDPE pipe if leachate is not present or will be pumped back to the storage tank if leachate is present. Gravity flow through the HDPE pipe will be controlled by a butterfly valve which will be maintained in the closed condition until it can be determined via visual observation that leachate is not present in liquids collected in the secondary containment area sump.

Force Main

The proposed leachate force main will be located on Duke property and will consist of approximately 2,269 linear feet of dual-contained solid-walled HDPE pipe. The force main will begin at the pump pad on the northeast side of the secondary containment facility. Approximate Stations 0+00 to 2+00 will be located along the outside edge of the proposed landfill perimeter access road. Approximate Stations 2+00 to 5+00 will be located through a wooded area west of the proposed Dan River Landfill. Approximate Stations 5+00 to 20+00 will be located along an existing dirt road near the northern boundary of the Dan River Station property. The proposed leachate force main will cross Edgewood Road between approximate stations 20+00 to 20+50. The force main will cross Edgewood Road on Duke property beyond the limits of the North Carolina Department of Transportation (NCDOT) right-of-way (ROW). Approximate Stations 20+50 to 22+69 will be located along the western side of Edgewood Road on Duke property outside of the NCDOT ROW. The proposed tie-in to the City of Eden sanitary sewer system will be at approximate station 22+69. The force main will include at least one air release valve at a high point along the alignment and one witness manhole at a low point along the alignment.

Tie-In to City of Eden Sanitary Sewer System

The proposed leachate force main will tie in to the City of Eden sanitary sewer system on Duke property near an existing air release valve on the west side of Edgewood Road approximately 375 feet north of the gated entrance to the Dan River Station. A check valve, gate valve, and flanged outlet tapping sleeve will be utilized at the tie-in between the proposed leachate pipe and the existing City of Eden sanitary sewer force main. The location and configuration of the tie-in was discussed with the City of Eden and their consultants. A manhole will facilitate access, inspection, and maintenance of the tie-in.

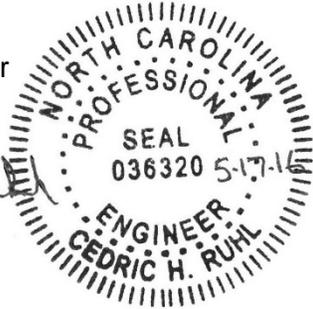
Closing

Amec Foster Wheeler appreciates the opportunity to provide these reports to Duke. Please contact us at your convenience with questions.

Sincerely,

Amec Foster Wheeler


Cedric H. Ruhl
Senior Engineer




Chris Jordan
Technical Professional

Attachments:

Technical Specification Section 221363 – Leachate Storage Tank
Leachate Tank and Secondary Containment Plan drawings
Legal Property Description

TECHNICAL SPECIFICATION

SECTION 221363 – LEACHATE STORAGE TANK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes leachate storage tank and sight tube.
 - 1. Leachate storage tank shall be Modutank MS110-17 or approved equivalent.
 - 2. Leachate storage tank shall have a minimum operating capacity of 1,000,000 gallons as measured at the High elevation.
 - 3. The top of the leachate storage tank shall be a minimum of two feet above the High elevation.
 - 4. Sight tube shall be Varec 6700 liquid level indicator or approved equivalent.
- B. Related Sections.
 - 1. Section 033000 “Cast-in-Place Concrete.”
 - 2. Section 334110 “HDPE Pipe and Pipe Fittings.”

1.2 REFERENCES

- A. American Welding Society (AWS):
 - 1. AWS D1.1 – Structural Welding Code – Steel.
 - 2. AWS D1.3 – Structural Welding Code – Sheet Steel.
 - 3. AWS D1.4 – Structural Welding Code – Reinforced Steel.
- B. American Water Works Association (AWWA):
 - 1. AWWA D100 – Welded Carbon Steel Tanks for Water Storage.

1.3 SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for storage tanks and sight tubes.
 - 2. Include rated capacities, operating characteristics, and furnished specialties and accessories.
- B. Shop Drawings:
 - 1. Include plans, elevations, sections, and mounting details.
 - 2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

3. Detail fabrication and assembly of tank and components.
- C. Welding certificates.
- D. Maintenance Data: For storage tanks to include in maintenance manuals.
- E. Manufacturer's tank warranty to be free from defects and material workmanship. Warranty shall be valid for a minimum one year from date of shipment.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employ a qualified structural engineer to prepare calculations, Shop Drawings, and other structural data for fabrication and erection of surface water-storage tanks.
 1. Engineering Responsibility: Preparation of data for surface water-storage tanks, accessories, specified appurtenances, and concrete supports and foundations, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."
 3. AWS D1.4/D1.4M, "Structural Welding Code - Reinforced Steel."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Surface water-storage tank, including structural reinforcement and foundation, shall be capable of withstanding the effects of dead and live gravity loads and winds of 100 mph.

2.2 MODULAR, NONPRESSURE, STORAGE TANKS

- A. Description: Modular, vertical, nonpressure-rated tank with cylindrical sidewalls.
- B. Construction: Steel or as otherwise approved by the Engineer, constructed with nontoxic welded joints.
- C. Liners
 1. 45 mil reinforced polypropylene liner, shop fabricated in one piece for drop in installation
 2. As specified by the Manufacturer and approved by the Engineer.
- D. Inlet and Outlet connections: Factory-fabricated, as indicated on the Drawings.
- E. Vertical Tank Supports: Factory-fabricated steel legs or steel skirt, welded to tank.

- F. Exterior Coating: As specified by the Manufacturer and approved by the Engineer.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install water storage tanks on concrete bases, level and plumb, firmly anchored. Arrange so devices needing servicing are accessible.
- B. Vertical Water Storage Tanks:
 - 1. Install on cast-in-place concrete equipment base(s).
- C. Install the following devices on tanks:
 - 1. Inlet and outlet connections to appurtenances and for over-the-wall and through-wall piping.
 - 2. OSHA approved galvanized steel or aluminum ladder with cage
- D. After installing tanks with factory finish, inspect finishes and repair damages to finishes.

3.2 FIELD QUALITY CONTROL

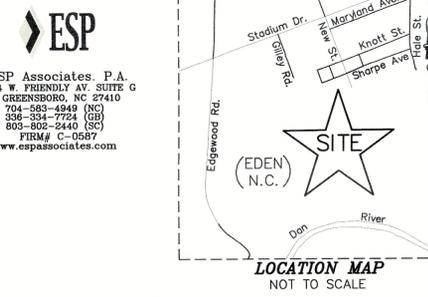
- A. Perform the following tests and inspections:
 - 1. Tank Weld Test: Use radiographic method according to AWWA D100. Repair failures and retest.
 - 2. Leak Test: Comply with AWWA D100 or as approved by the Engineer. Fill tanks with water and test for leaks after installation. Repair leaks and retest until no leaks exist.
 - a. Water will be furnished by Owner.
 - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- B. Water storage tanks will be considered defective if they do not pass test and inspections.
- C. Prepare test and inspection reports.
- D. Obtain and submit tank manufacturer warranty to Owner.

END OF SECTION 221363

LEGAL PROPERTY DESCRIPTION



AREA TABLE: DAN RIVER PLANT SITE
 CONSISTING OF THE FOLLOWING LAND UNIT #S
 LU 0041465; LU 0042771; LU 0043620; LU 0043621
 371.05 AC +/-
 LU 0043625: SOUTH SIDE OF RIVER
 9.08 AC +/-
 TOTAL AREA IN SURVEY: 380.13 AC +/-



ADJOINING PROPERTY OWNERSHIP TABLE

PARCEL	PID#	OWNER	DEED BOOK	PAGE	PLAT BOOK	PAGE
A	708020815859	JOHN ATKINSON COMPANY	1483	1792	-	-
B	708020814794	EANES MARTHA MEEKS L/E	1487	0778	-	-
C	708020814743	GENTRY MICHAEL D L/E	1350	1057	-	-
D	708020814516	JAMIE BUFFKIN	1218	733	-	-
E	708020814301	JOHN CECL WHITE	-	-	-	-
F	708020814101	VIRGINIA RITCHEY E L/E	1004	1129	-	-
G	708020803895	BOBBY RAY RITCHEY	731	791	-	-
H	708020801757	JOSE J AGUIRRE	1175	965	-	-
I	708020709625	SUSAN R. ARRINGTON	1183	245	-	-
J	708020706613	MEADOW GREENS PLACE	1018	1722	44	82
K	708020705538	MEADOW GREENS PLACE	1018	1722	44	82
L	798907691887	HOMER E WRIGHT JR	1454	2410	60	24
M	798907692179	HOMER E WRIGHT JR	1454	2410	60	24
N	798907692516	HOMER E WRIGHT JR	1454	2410	60	24
O	798907691541	HOMER E WRIGHT JR	1454	2410	60	24
P	798907691139	CITY OF EDEN	-	-	9	109
Q	798907673829	OSBORNE INVESTMENTS LLC	1012	1958	41	83
R	798916749150	PLOMARITIS TITUS JR TRUSTEE	1278	519	28	152
S	798916947057	ROBERT H KLUITZ	-	-	-	-
T	709000014426	DUKE ENERGY CAROLINAS LLC	1491	276	-	-
U	709000001784	DUKE ENERGY CAROLINAS LLC	1491	2728	-	-

Parcel Line Table	Parcel Line Table	Parcel Line Table						
Line #	Length	Direction	Line #	Length	Direction	Line #	Length	Direction
L58	81.73	S41° 41' 10"E	L123	136.37	S66° 34' 09"W	L188	25.92	N4° 32' 34"W
L59	97.07	N69° 52' 13"E	L124	105.85	S65° 19' 39"W	L189	49.84	N9° 15' 07"E
L60	180.01	N20° 20' 33"W	L125	129.71	S73° 10' 27"W	L190	57.66	N16° 19' 54"E
L61	54.79	N69° 41' 52"E	L126	56.95	S66° 40' 22"W	L191	21.96	N1° 36' 18"W
L62	87.15	N69° 26' 20"E	L127	27.35	S88° 46' 54"W	L192	39.27	N8° 47' 33"E
L63	161.92	N79° 21' 12"E	L128	50.57	N85° 38' 08"W	L193	42.78	N30° 32' 14"E
L64	11.51	S39° 20' 48"W	L129	81.16	S74° 53' 48"W	L194	38.40	N12° 53' 10"W
L65	62.83	S55° 43' 33"W	L130	76.35	S69° 28' 29"W	L195	29.74	N19° 15' 20"W
L66	77.16	S69° 16' 43"W	L131	55.07	S70° 03' 42"W	L196	16.51	N57° 17' 13"W
L67	50.14	S60° 11' 36"W	L132	38.02	S82° 43' 39"W	L197	15.23	N12° 13' 08"W
L68	133.83	S54° 58' 51"W	L133	54.30	N18° 17' 03"W	L198	18.86	N11° 26' 16"E
L69	141.30	S49° 18' 45"W	L134	110.09	N18° 39' 56"W	L199	32.24	N38° 47' 28"E
L70	116.54	S38° 46' 26"W	L135	96.68	S56° 47' 02"W	L200	29.12	N9° 32' 31"W
L71	83.27	S34° 05' 55"W	L136	69.89	N20° 32' 27"W	L201	35.48	N27° 44' 56"E
L72	145.71	S33° 35' 10"W	L137	127.72	N41° 34' 31"W	L202	30.79	S72° 26' 22"E
L73	64.58	S23° 51' 53"W	L138	31.28	N26° 57' 34"W	L203	25.53	N65° 59' 22"E
L74	99.07	S33° 07' 41"W	L139	39.46	N51° 39' 19"W	L204	78.56	N2° 49' 10"W
L75	77.26	S30° 51' 23"W	L140	8.50	N39° 32' 29"E	L205	30.33	N28° 30' 11"W
L76	104.87	S26° 19' 30"W	L141	57.11	N39° 57' 45"W	L206	38.28	N0° 55' 20"W
L77	104.74	S24° 46' 04"W	L142	10.53	N34° 45' 04"E	L207	17.49	N15° 00' 45"E
L78	116.19	S29° 03' 49"W	L143	55.17	N59° 01' 35"W	L208	37.54	N48° 35' 19"E
L79	137.62	S26° 31' 36"W	L144	35.76	N71° 00' 10"W	L209	31.51	N0° 43' 08"E
L80	51.11	S33° 39' 26"W	L145	48.63	N48° 30' 20"W	L210	44.54	N10° 14' 28"E
L81	93.59	S25° 10' 32"W	L146	38.96	N15° 26' 04"W	L211	26.39	S61° 58' 02"E
L82	81.94	S32° 42' 40"W	L147	36.09	N21° 36' 18"W	L212	10.59	S83° 42' 49"E
L83	68.59	S35° 20' 13"W	L148	51.50	N38° 41' 14"W	L213	31.89	N33° 46' 53"E
L84	77.64	S35° 51' 59"W	L149	58.92	N8° 21' 13"W	L214	43.72	N4° 47' 38"W
L85	42.86	S44° 43' 05"W	L150	66.88	N39° 37' 53"E	L215	41.92	N42° 35' 00"E
L86	137.00	S49° 22' 40"W	L151	86.78	N31° 59' 56"E	L216	52.75	N0° 00' 55"W
L87	146.71	S56° 07' 29"W	L152	42.30	N22° 37' 00"E	L217	32.01	N11° 31' 22"E
L88	135.55	S55° 40' 53"W	L153	18.20	N23° 05' 59"W	L218	13.91	N15° 45' 41"W
L89	63.48	S58° 54' 57"W	L154	19.73	N77° 00' 25"W	L219	336.44	N70° 12' 07"E
L90	100.24	S64° 19' 43"W	L155	20.99	N59° 00' 48"W	L220	115.10	N70° 04' 07"E
L91	138.98	S60° 51' 34"W	L156	57.05	N20° 26' 01"W	L221	154.50	N79° 33' 07"E
L92	115.61	S68° 03' 03"W	L157	78.80	N19° 28' 18"W	L222	85.40	S33° 51' 07"W
L93	59.60	S58° 31' 51"W	L158	94.82	N22° 49' 22"W	L223	80.00	S58° 00' 07"W
L94	71.65	S52° 38' 53"W	L159	38.60	N55° 01' 57"W	L224	51.10	S31° 08' 07"W
L95	57.52	S65° 45' 32"W	L160	20.40	N50° 38' 27"W	L225	36.70	S14° 11' 53"E
L96	88.75	S70° 29' 26"W	L161	21.80	N34° 45' 40"W	L226	74.30	S43° 28' 53"E
L97	110.86	S67° 50' 17"W	L162	28.89	N12° 53' 46"W	L227	72.20	S1° 43' 07"W
L98	92.41	S69° 52' 52"W	L163	7.66	N16° 15' 35"E	L228	155.29	S6° 40' 15"W
L99	89.14	S73° 06' 38"W	L164	34.63	N82° 48' 49"E	L229	190.89	S42° 58' 56"W
L100	15.77	S80° 58' 48"W	L165	19.24	N47° 17' 00"E	L230	36.90	S31° 23' 07"W
L101	133.02	S75° 44' 48"W	L166	21.56	N15° 52' 32"W	L231	72.80	S15° 22' 53"E
L102	159.40	S75° 11' 10"W	L167	71.67	N0° 49' 51"W	L232	52.50	S31° 20' 07"W
L103	104.58	S75° 56' 40"W	L168	66.45	N11° 49' 04"W	L233	44.30	S24° 20' 53"E
L104	32.73	N81° 33' 32"W	L169	65.41	N10° 31' 09"E	L234	94.60	S24° 21' 07"W
L105	1.95	S16° 02' 06"W	L170	103.50	N0° 22' 38"E	L235	35.10	S7° 27' 07"W
L106	12.50	N48° 28' 17"W	L171	63.85	N17° 00' 43"E	L236	71.50	S36° 41' 53"E
L107	53.24	N21° 08' 05"W	L172	28.40	N16° 46' 50"W	L237	395.30	S72° 23' 07"W
L108	33.73	S58° 32' 23"W	L173	10.70	N53° 18' 47"W	L238	111.60	N2° 37' 07"E
L109	7.44	S20° 15' 42"E	L174	21.27	N44° 14' 52"E	L239	737.28	N2° 37' 07"E
L110	61.58	N68° 46' 50"E	L175	32.02	S4° 28' 18"W	L240	68.31	N2° 37' 07"E
L111	58.46	S68° 33' 33"W	L176	14.58	S56° 34' 50"W			
L112	48.24	S69° 11' 13"W	L177	20.00	N81° 35' 37"W			
L113	22.97	S21° 50' 22"E	L178	9.69	N34° 26' 20"W			
L114	20.65	S21° 14' 48"E	L179	52.44	N3° 57' 17"W			
L115	39.46	S20° 05' 38"E	L180	141.12	N3° 25' 40"E			
L116	7.21	S24° 15' 24"W	L181	43.56	N15° 50' 57"W			
L117	4.35	S88° 02' 48"W	L182	61.77	N11° 21' 30"W			
L118	3.34	N55° 19' 41"W	L183	20.49	N26° 22' 53"W			
L119	60.31	S75° 49' 14"W	L184	38.09	N65° 52' 02"W			
L120	71.08	S79° 45' 53"W	L185	37.64	N32° 20' 59"W			
L121	107.36	S68° 01' 59"W	L186	49.10	N11° 23' 31"W			
L122	114.13	S70° 47' 46"W	L187	81.73	N28° 56' 47"W			

- NOTES:
- SURVEYED & MAPPED FOR: DUKE ENERGY CAROLINAS, LLC
 - SURVEYED & MAPPED BY: ESP ASSOCIATES, P.A.
 - ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES UNLESS OTHERWISE NOTED.
 - AREA BY COORDINATE COMPUTATION.
 - PROPERTY SUBJECT TO ANY VALID & ENFORCEABLE EASEMENTS, RESTRICTIONS & RIGHTS OF WAY OF RECORD.
 - SURVEY IS BASED ON PHYSICAL EVIDENCE AND EXISTING MONUMENTS FOUND DURING THE SURVEY AND RECORDS AS NOTED.
 - PROPERTY CORNER PIPE SIZES AS SHOWN ARE NOMINAL INSIDE DIAMETER.
 - DATE OF SURVEY: _____ THRU _____
 - THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS ESTABLISHED BY VRS-RTK GPS METHOD UTILIZING TRIMBLE R10 UNIT AND CONVENTIONAL TRAVERSE FROM THE GPS CONTROL POINTS. PROJECT COORDINATES ARE LOCALIZED ON PT# 328(100 NAIL) WHICH HAS A STATE PLANE VALUE OF N:1,000,492,970; E:1,789,158,05 WITH A CGF: 1.000087851 (GROUND TO GRID). VERTICAL DATUM IS BASED ON NAVD 88. HORIZONTAL GRID TIE FROM PT# 328 TO NORTH WEST CORNER A FOUND 1" PIPE = N8°43'44"W, 2,323.30(GROUND).
 - ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL(GROUND) DISTANCES VERTICAL DATUM IS NAVD 88. COORDINATES AS SHOWN ARE NC GRID NAD 83(2011)
 - SUBJECT PROPERTY IS LOCATED WITHIN "ZONE AE", "X SHADDED" AND "Y UNSHADDED" SPECIAL FLOOD HAZARD AREAS AS SHOWN ON FEMA FIRM MAP NUMBER 3710799900J, EFFECTIVE DATE JULY 03, 2007.
 - FLOOD LINES AND DATA AS SHOWN PER SHAPE FILES DOWNLOADED FROM NCFLOODMAPS.COM.
 - SPECIAL NOTES:
 - GAS LINES AND EASEMENTS, TRANSMISSION LINES AND EASEMENTS, FIBER LINES AND EASEMENTS, WATERLINES AND EASEMENTS, SANITARY SEWER FORCE MAIN AND EASEMENTS, PUBLIC R/W OF EDGEWOOD ROAD AND OTHER ITEMS SHOWN HEREON WERE NOT FILED LOCATED BY ESP. THEY WERE ALL PLOTTED FROM INFORMATION AS PROVIDED BY DUKE ENERGY INCLUDING HARD COPY DOCUMENTS AS WELL AS CADD FILES SUPPLIED AND INCLUDED FOR GENERAL INFORMATION FOR DUKE ENERGY.
 - INTERIOR PARCEL LINES AND LAND UNIT NUMBERS PLOTTED FROM INFORMATION PROVIDED BY DUKE ENERGY.
 - INTERIOR FEATURES SUCH AS PONDS, ASH POND, LANDFILLS, GAS PLANT POWER ISLAND, SUBSTATIONS, BUILDINGS, ROADS, GRAVEL LAYDOWN YARDS AND OTHER ITEMS AND HAVE NOT BEEN PHYSICALLY LOCATED BY ESP. THEY WERE TRACED FROM AVAILABLE AERIAL PHOTOS DOWNLOADED FROM THE NCONMAP AND INCLUDED FOR GENERAL SITE ORIENTATION ONLY AND ARE PLUS OR MINUS IN NATURE.
 - FOR MORE ACCURATE LOCATION OF ANY AND ALL OF THE UNDERGROUND UTILITIES ON ANY OF THE SITES, COMPLETE SUE INVESTIGATION SHOULD BE CONDUCTED TO INCLUDE CONVENTIONAL UNDERGROUND DETECTION, GROUND PENETRATING RADAR AND SUBSURFACE VACUUM EXCAVATION FOR DETERMINATION OF DEPTHS.

LEGEND

- LINES SURVEYED
- - - LINES NOT SURVEYED
- - - TIE LINES
- - - NATURAL GAS LINE
- - - SANITARY SEWER GRAVITY LINE
- - - SANITARY SEWER FORCEMAIN
- - - OVDH DISTRIBUTION LINE (OVERHEAD)
- ⊗ TRANSMISSION TOWER
- ⊙ CONCRETE MONUMENT (F)
- ⊙ CORNER(F) (SEE DESCRIPTION)
- ⊙ PK(S) (F)
- ⊙ #5 REBAR(S)
- ⊙ #5 REBAR(F)
- (F) - FOUND (S) - SET (T) - TOTAL
- R.O.P. - RATIO OF PRECISION
- DB - DEED BOOK
- PG - PAGE
- PB - PLAT BOOK
- PID# - TAX PARCEL IDENTIFICATION NUMBER
- LU# - LAND UNIT NUMBER
- WWD - WET WEATHER DRAIN
- BFE - BASE FLOOD ELEVATION
- R/W - RIGHT OF WAY
- ⊙ RETAIL POWER POLE
- (NTS) - NOT TO SCALE
- oPt POINT NOT SET
- GUY ANCHOR
- ⊙ SANITARY SEWER MANHOLE
- FLOODPLAIN PER FEMA FIRM MAP 3710799900J DATED 7-03-07
- - - 1% ANNUAL FLOOD LINE PER FEMA FIRM MAP 3710799900J DATED 7-03-07
- - - .2% ANNUAL CHANCE FLOOD LINE PER FEMA FIRM MAP 3710799900J DATED 7-03-07
- 1359 - FEMA CROSS SECTION#
- - - FLOODPLAIN PER FEMA FIRM MAP 3710799900J DATED 7-03-07
- - - REGULATORY FLOODWAY PER FEMA FIRM MAP 3710799900J DATED 7-03-07

CERTIFICATE OF GPS SURVEY

I, JOHN P. SCOVILLE III, CERTIFY THAT THIS MAP WAS DRAWN UNDER MY SUPERVISION IN PART FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

- (1) CLASS OF SURVEY: "A"
- (2) POSITIONAL ACCURACY: "0.07"
- (3) DATES OF SURVEY: OCTOBER 4, 2014
- (4) DATUM/EPOCH: NAD83(2011)
- (5) COMBINED GRID FACTOR: RTK NETWORK
- (6) GEOD MODEL: 2012
- (7) COMBINED GRID FACTOR: 1.000087851 (GROUND TO GRID)
- (8) UNITS: US SURVEY FEET

CERTIFICATION OF G.S. 47-30(f)(1)(c)(1)

I, JOHN P. SCOVILLE III, PLS CERTIFY TO ONE OR MORE OF THE FOLLOWING AS INDICATED

X - c: THAT THIS PLAT IS OF A SURVEY OF AN EXISTING PARCEL OR PARCELS OF LAND AND DOES NOT CREATE A NEW STREET OR CHANGE AND EXISTING STREET.

JOHN P. SCOVILLE III, PLS L-3343

CERTIFICATE OF SURVEY

I, JOHN P. SCOVILLE III, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION (DEED DESCRIPTION RECORDED IN BOOK 1030, PAGE 673, MAP BOOK _____, D-616A, D.B. 380 PG 415)

JOHN P. SCOVILLE III, PLS L-3343

SITE: 003018

FOR SOURCE OF TITLE REFER TO DB 1411 PG 2100, DB 380 PG 415, DB 658 PG 765, DB 736 PG 320, & DB 370 PG 118

SURVEY FOR
 DUKE ENERGY CAROLINAS, LLC

DAN RIVER PLANT BOUNDARY SURVEY

CITY OF EDEN, LEAKSVILLE TOWNSHIP
 ROCKINGHAM COUNTY, NORTH CAROLINA

BOOK: 005.834 150 0 150 300 450 CREW: KJ/JD
 DATE: 2-17-16 DRAWN BY: PB/UPS
 SCALE: 1" = 300' SCALE IN FEET R.O.P. = 1:10,000+
 LAND UNIT: MULTIPLE SEE MAP MAP: 003018-451251

400 S. TRYON STREET
 PO BOX 1007
 CHARLOTTE, N.C. 28201-1007
 TELEPHONE NO. (704)382-6658



DRAWINGS



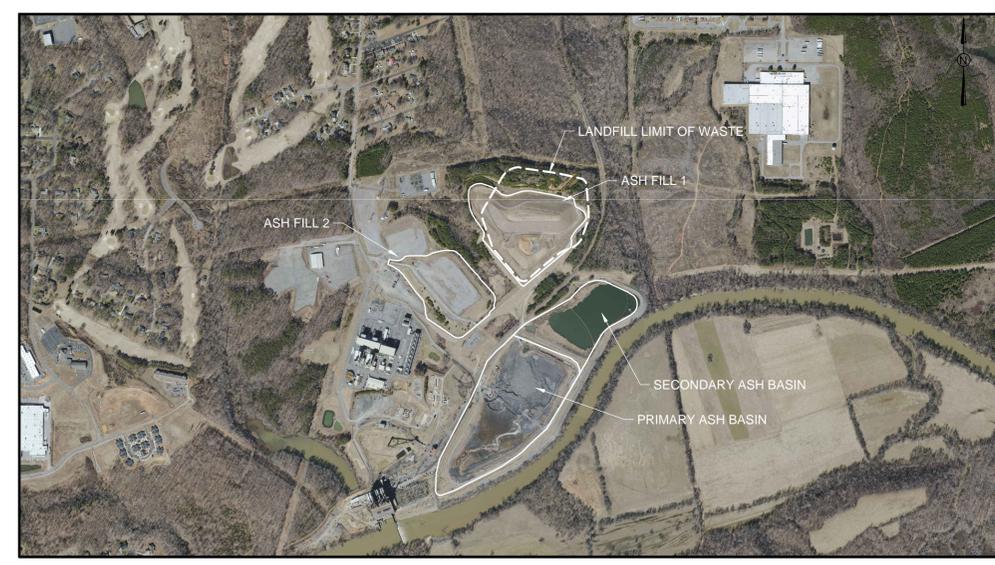
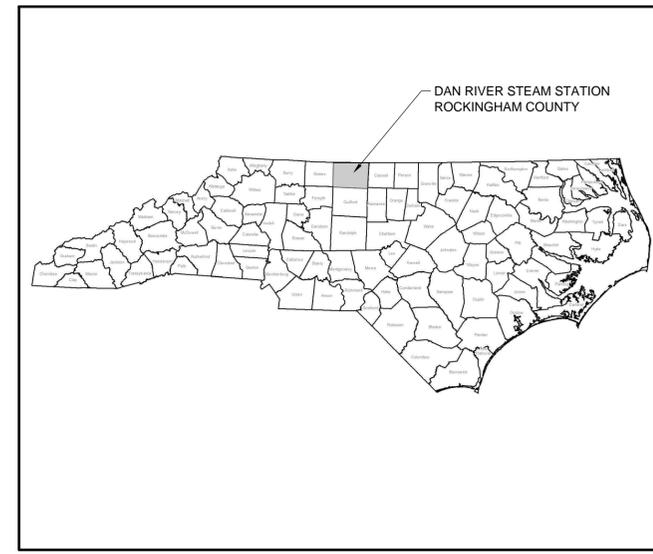
LEACHATE TANK AND SECONDARY CONTAINMENT

DAN RIVER LANDFILL

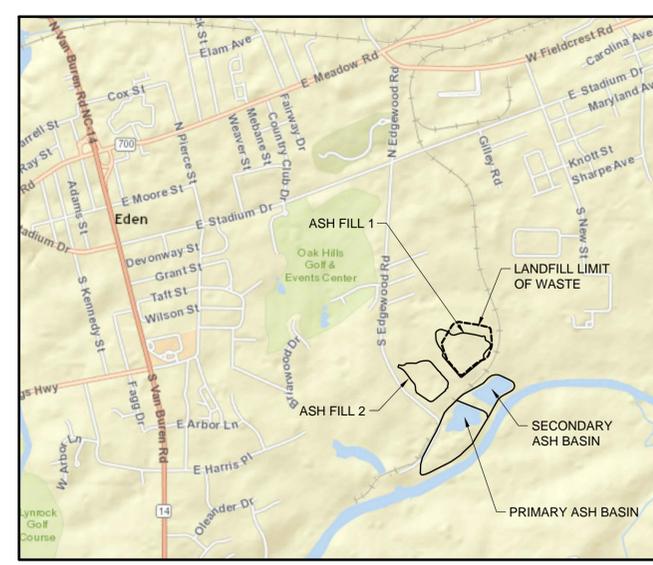
DUKE ENERGY - DAN RIVER STEAM STATION

ROCKINGHAM COUNTY, NORTH CAROLINA

PREPARED FOR:
DUKE ENERGY CAROLINAS, LLC



SITE AERIAL IMAGE
 1"=1000'



SITE VICINITY MAP
 NOT TO SCALE

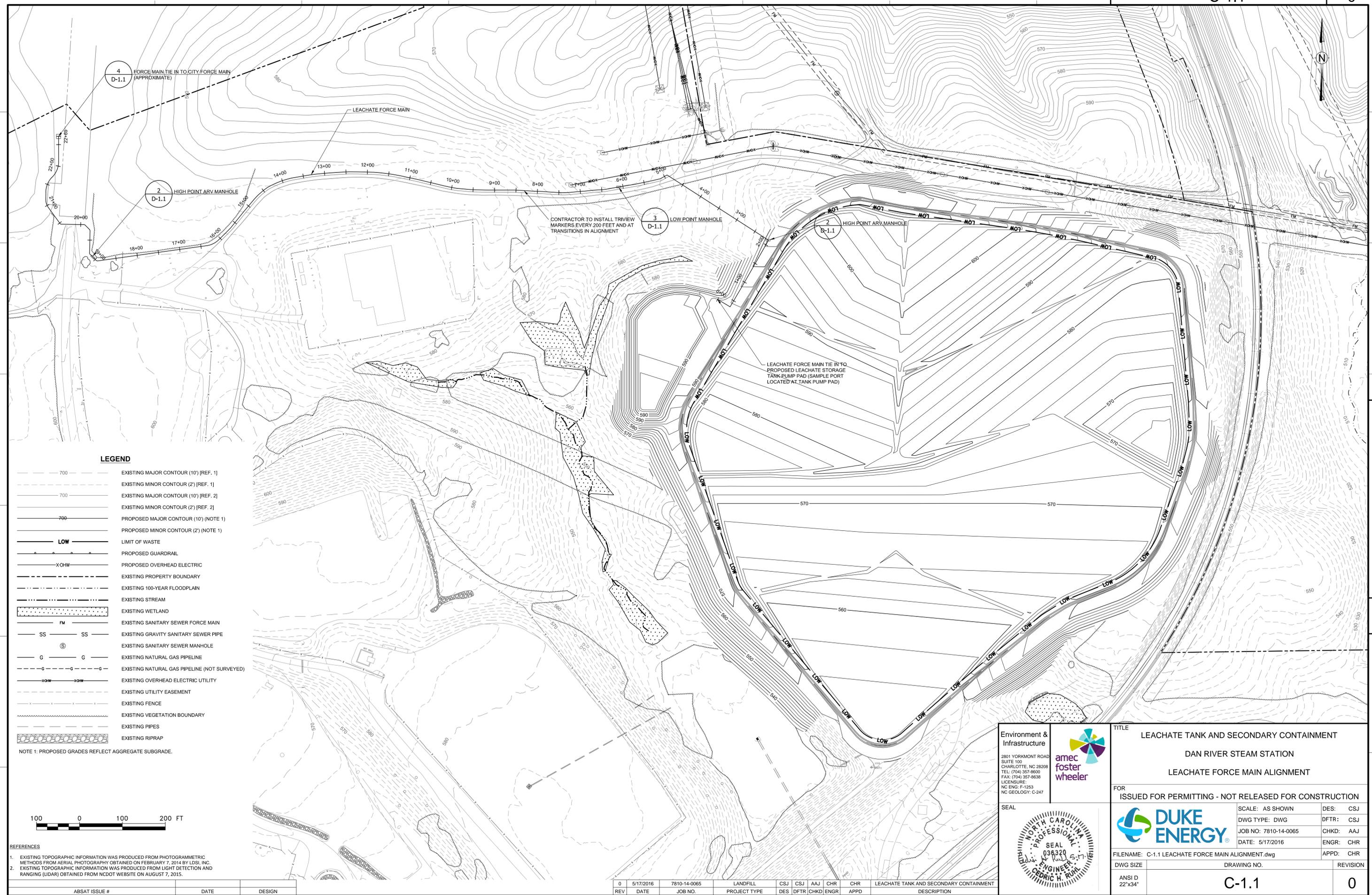
Sheet List Table	
Sheet Number	Sheet Title
C-0.0	COVER SHEET
C-1.1	LEACHATE FORCE MAIN ALIGNMENT
C-1.2	LEACHATE STORAGE AREA GRADING PLAN
C-1.3	LEACHATE STORAGE TANK LAYOUT
C-1.4	LEACHATE FORCE MAIN PROFILE
D-1.1	LCRS DETAILS
D-2.1	LEACHATE STORAGE FACILITY DETAILS 1
D-2.2	LEACHATE STORAGE FACILITY DETAILS 2
D-2.3	LEACHATE STORAGE FACILITY DETAILS 3
D-2.4	LEACHATE STORAGE FACILITY DETAILS 4
D-2.5	LEACHATE STORAGE FACILITY DETAILS 5

Environment & Infrastructure 2801 YORKMONT ROAD SUITE 100 CHARLOTTE, NC 28208 TEL: (704) 357-8600 FAX: (704) 357-8638 LICENSURE: NC ENGR. F-1253 NC GEOLOGY: C-247		TITLE LEACHATE TANK AND SECONDARY CONTAINMENT DAN RIVER STEAM STATION COVER SHEET	
		FOR ISSUED FOR PERMITTING - NOT RELEASED FOR CONSTRUCTION	
		SCALE: AS SHOWN DWG TYPE: DWG JOB NO: 7810-14-0065 DATE: 5/17/2016	DES: CSJ DFTR: CSJ CHKD: AAJ ENGR: CHR APPD: CHR
		FILENAME: C-0.0 COVER SHEET.dwg DWG SIZE: ANSI D 22"x34"	DRAWING NO.: C-0.0 REVISION: 0

REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD	DESCRIPTION
0	5/17/2016	7810-14-0065	LANDFILL	CSJ	CSJ	AAJ	CHR	CHR	LEACHATE TANK AND SECONDARY CONTAINMENT

ABSAT ISSUE #	DATE	DESIGN

Plotted By: Jordan, Chris Sheet Set: DEC Leachate Update Layout: C-0.0 COVER SHEET May 17, 2016 03:21:30pm G:\Duke\DanRiver\7810140065_ABSAT_Dan River Off Site LP\Plansheets\DEC Leachate\C-0.0 COVER SHEET.dwg



LEGEND

- 700 --- EXISTING MAJOR CONTOUR (10') [REF. 1]
- 700 --- EXISTING MINOR CONTOUR (2') [REF. 1]
- 700 --- EXISTING MAJOR CONTOUR (10') [REF. 2]
- 700 --- EXISTING MINOR CONTOUR (2') [REF. 2]
- 700 --- PROPOSED MAJOR CONTOUR (10') (NOTE 1)
- 700 --- PROPOSED MINOR CONTOUR (2') (NOTE 1)
- **LOW** --- LIMIT OF WASTE
- --- PROPOSED GUARDRAIL
- XOHW- PROPOSED OVERHEAD ELECTRIC
- --- EXISTING PROPERTY BOUNDARY
- --- EXISTING 100-YEAR FLOODPLAIN
- --- EXISTING STREAM
- --- EXISTING WETLAND
- FM EXISTING SANITARY SEWER FORCE MAIN
- SS SS EXISTING GRAVITY SANITARY SEWER PIPE
- ⊙ EXISTING SANITARY SEWER MANHOLE
- G G EXISTING NATURAL GAS PIPELINE
- G-G- EXISTING NATURAL GAS PIPELINE (NOT SURVEYED)
- XOHW-XOHW- EXISTING OVERHEAD ELECTRIC UTILITY
- --- EXISTING UTILITY EASEMENT
- --- EXISTING FENCE
- --- EXISTING VEGETATION BOUNDARY
- --- EXISTING PIPES
- --- EXISTING RIPRAP

NOTE 1: PROPOSED GRADES REFLECT AGGREGATE SUBGRADE.

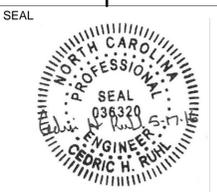


- REFERENCES**
1. EXISTING TOPOGRAPHIC INFORMATION WAS PRODUCED FROM PHOTOGRAHMETRIC METHODS FROM AERIAL PHOTOGRAPHY OBTAINED ON FEBRUARY 7, 2014 BY LSI, INC.
 2. EXISTING TOPOGRAPHIC INFORMATION WAS PRODUCED FROM LIGHT DETECTION AND RANGING (LIDAR) OBTAINED FROM NCDOT WEBSITE ON AUGUST 7, 2015.

ABSAT ISSUE #	DATE	DESIGN
0	5/17/2016	7810-14-0065

REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD	DESCRIPTION
0	5/17/2016	7810-14-0065	LANDFILL	CSJ	CSJ	AAJ	CHR	CHR	LEACHATE TANK AND SECONDARY CONTAINMENT

Environment & Infrastructure
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 CHARLOTTE, NC 28208
 TEL: (704) 357-8600
 FAX: (704) 357-8638
 LICENSURE
 NC ENG. F-1253
 NC GEOLOGY: C-247



TITLE
 LEACHATE TANK AND SECONDARY CONTAINMENT
 DAN RIVER STEAM STATION
 LEACHATE FORCE MAIN ALIGNMENT

FOR
 ISSUED FOR PERMITTING - NOT RELEASED FOR CONSTRUCTION

SCALE: AS SHOWN	DES: CSJ
DWG TYPE: DWG	DFTR: CSJ
JOB NO: 7810-14-0065	CHKD: AAJ
DATE: 5/17/2016	ENGR: CHR
FILENAME: C-1.1 LEACHATE FORCE MAIN ALIGNMENT.dwg	APPD: CHR

DWG SIZE	DRAWING NO.	REVISION
ANSI D 22"x34"	C-1.1	0



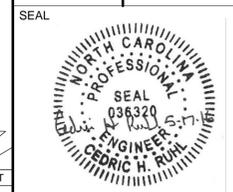
- LEGEND**
- 700 ——— EXISTING MAJOR CONTOUR (10') [REF. 1]
 - 700 - - - - - EXISTING MINOR CONTOUR (2') [REF. 1]
 - 700 ——— PROPOSED MAJOR CONTOUR (10') (NOTE 1)
 - 700 - - - - - PROPOSED MINOR CONTOUR (2') (NOTE 1)
 - LOW ——— LIMIT OF WASTE
 - PROPOSED GUARDRAIL
 - X—X— PROPOSED OVERHEAD ELECTRIC
 - EXISTING PROPERTY BOUNDARY
 - EXISTING 100-YEAR FLOODPLAIN
 - EXISTING STREAM
 - EXISTING WETLAND
 - FM ——— EXISTING SANITARY SEWER FORCE MAIN
 - SS — SS — EXISTING GRAVITY SANITARY SEWER PIPE
 - Ⓢ — EXISTING SANITARY SEWER MANHOLE
 - G — G — EXISTING NATURAL GAS PIPELINE
 - - - - - EXISTING NATURAL GAS PIPELINE (NOT SURVEYED)
 - X—X— EXISTING OVERHEAD ELECTRIC UTILITY
 - EXISTING UTILITY EASEMENT
 - EXISTING FENCE
 - EXISTING VEGETATION BOUNDARY
 - EXISTING PIPES
 - EXISTING RIPRAP
- NOTE 1: PROPOSED GRADES REFLECT AGGREGATE SUBGRADE.



REFERENCES

1. EXISTING TOPOGRAPHIC INFORMATION WAS PRODUCED FROM PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY OBTAINED ON FEBRUARY 7, 2014 BY LDSI, INC.

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 2801 YORKMONT ROAD
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 LICENSURE:
 NC ENG: F-1253
 NC GEOLOGY: C-247



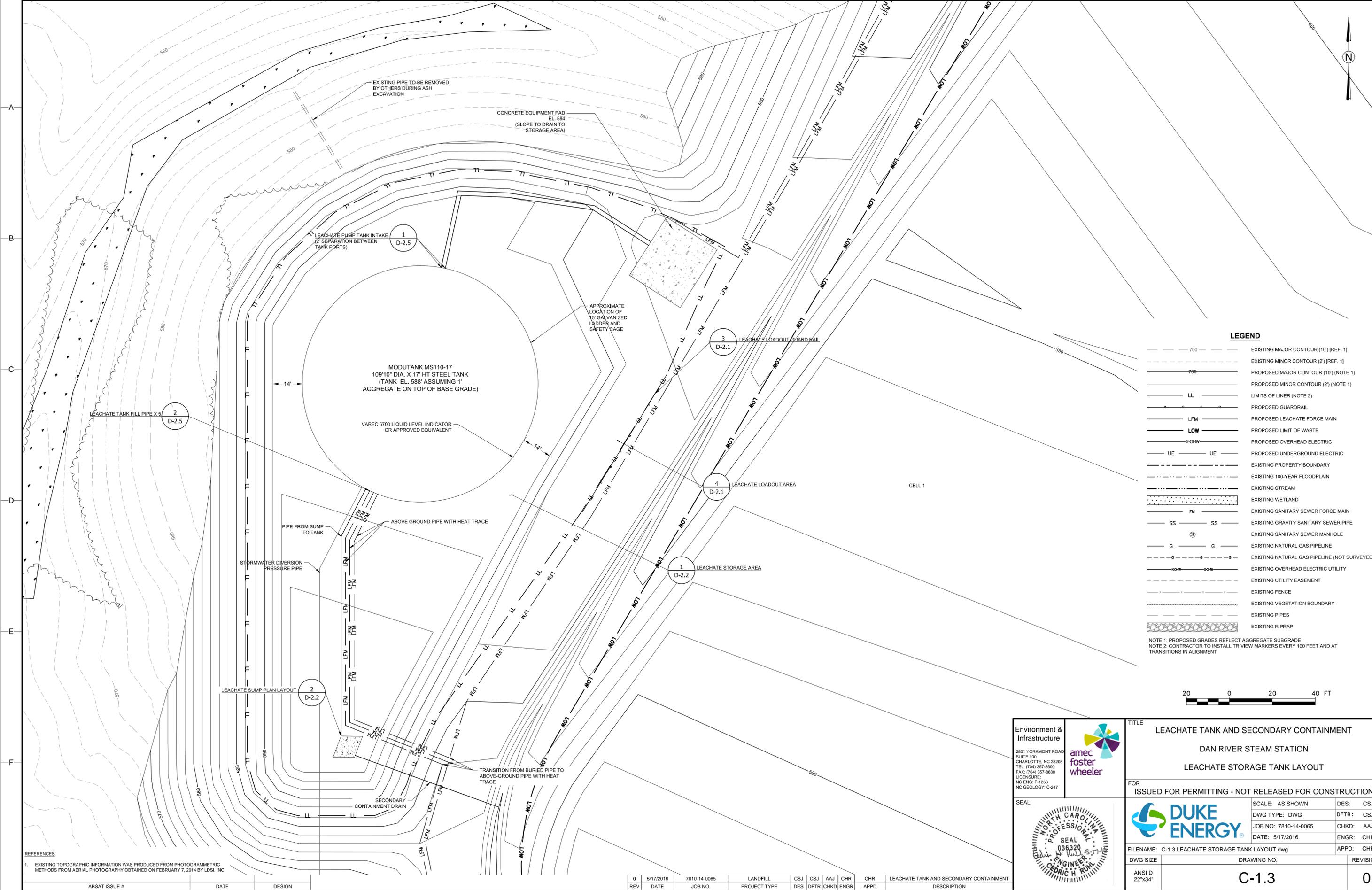
TITLE
LEACHATE TANK AND SECONDARY CONTAINMENT
DAN RIVER STEAM STATION
LEACHATE STORAGE AREA GRADING PLAN

FOR
ISSUED FOR PERMITTING - NOT RELEASED FOR CONSTRUCTION

SCALE: AS SHOWN	DES: CSJ
DWG TYPE: DWG	DFTR: CSJ
JOB NO: 7810-14-0065	CHKD: AAJ
DATE: 5/17/2016	ENGR: CHR
APPD: CHR	

FILENAME: C-1.2 LEACHATE STORAGE AREA GRADING PLAN.dwg	DRAWING NO. C-1.2	REVISION 0
DWG SIZE ANS I D 22"x34"		

REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD	DESCRIPTION
0	5/17/2016	7810-14-0065	LANDFILL	CSJ	CSJ	AAJ	CHR	CHR	LEACHATE TANK AND SECONDARY CONTAINMENT



LEGEND

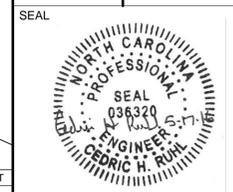
- 700 --- EXISTING MAJOR CONTOUR (10') (REF. 1)
- 700 --- EXISTING MINOR CONTOUR (2') (REF. 1)
- 700 --- PROPOSED MAJOR CONTOUR (10') (NOTE 1)
- 700 --- PROPOSED MINOR CONTOUR (2') (NOTE 1)
- LL --- LIMITS OF LINER (NOTE 2)
- --- PROPOSED GUARDRAIL
- LFM --- PROPOSED LEACHATE FORCE MAIN
- LOW --- PROPOSED LIMIT OF WASTE
- X-OHW --- PROPOSED OVERHEAD ELECTRIC
- UE --- UE --- PROPOSED UNDERGROUND ELECTRIC
- --- EXISTING PROPERTY BOUNDARY
- --- EXISTING 100-YEAR FLOODPLAIN
- --- EXISTING STREAM
- FM --- EXISTING WETLAND
- SS --- SS --- EXISTING SANITARY SEWER FORCE MAIN
- Ⓢ --- EXISTING SANITARY SEWER MANHOLE
- G --- G --- EXISTING NATURAL GAS PIPELINE
- G -G - EXISTING NATURAL GAS PIPELINE (NOT SURVEYED)
- X-OHW --- X-OHW --- EXISTING OVERHEAD ELECTRIC UTILITY
- --- EXISTING UTILITY EASEMENT
- --- EXISTING FENCE
- --- EXISTING VEGETATION BOUNDARY
- --- EXISTING PIPES
- --- EXISTING RIPRAP

NOTE 1: PROPOSED GRADES REFLECT AGGREGATE SUBGRADE
 NOTE 2: CONTRACTOR TO INSTALL TRIVIEW MARKERS EVERY 100 FEET AND AT TRANSITIONS IN ALIGNMENT



REFERENCES
 1. EXISTING TOPOGRAPHIC INFORMATION WAS PRODUCED FROM PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY OBTAINED ON FEBRUARY 7, 2014 BY LDSI, INC.

Environment & Infrastructure
 2801 YORKMONT ROAD
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 CHARLOTTE, NC 28208
 TEL: (704) 357-8600
 FAX: (704) 357-8638
 LICENSURE:
 NC ENGR. F-1253
 NC GEOLOGY: C-247



TITLE
 LEACHATE TANK AND SECONDARY CONTAINMENT
 DAN RIVER STEAM STATION
 LEACHATE STORAGE TANK LAYOUT

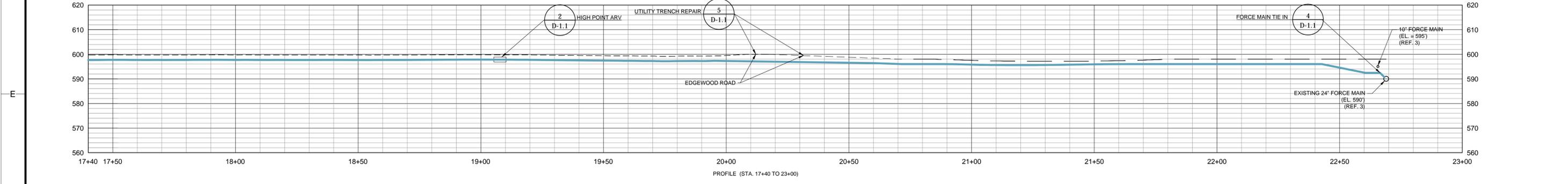
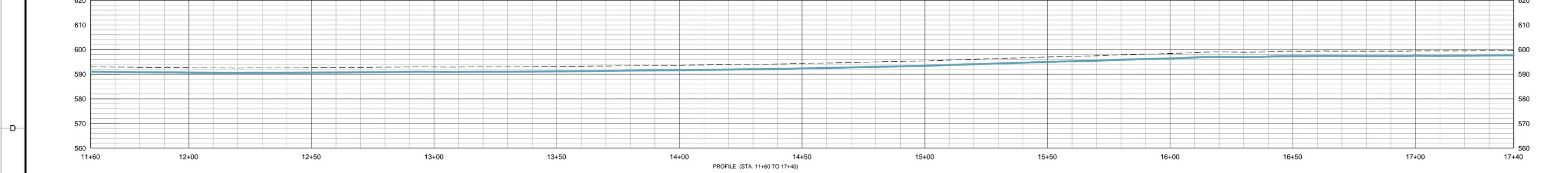
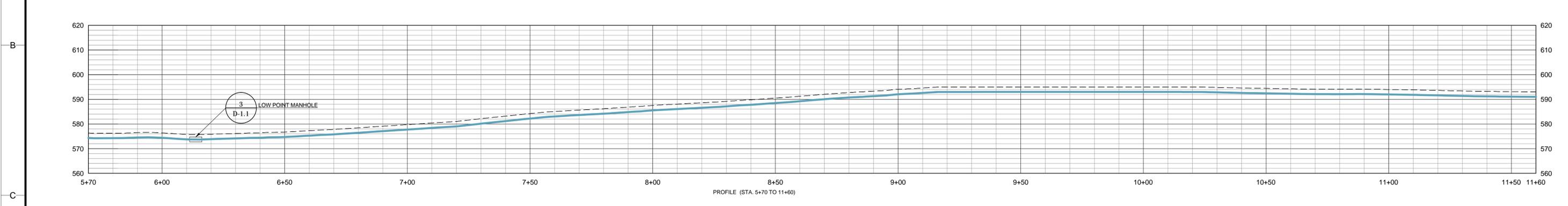
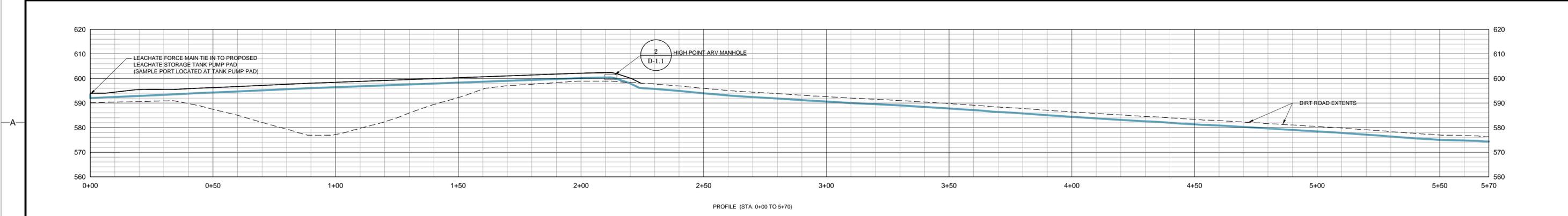
FOR
 ISSUED FOR PERMITTING - NOT RELEASED FOR CONSTRUCTION

SCALE: AS SHOWN
 DWG TYPE: DWG
 JOB NO: 7810-14-0065
 DATE: 5/17/2016

DES: CSJ
 DFTR: CSJ
 CHKD: AAJ
 ENGR: CHR
 APPD: CHR

FILENAME: C-1.3 LEACHATE STORAGE TANK LAYOUT.dwg
 DWG SIZE: ANSI D 22"x34"
 DRAWING NO.: C-1.3
 REVISION: 0

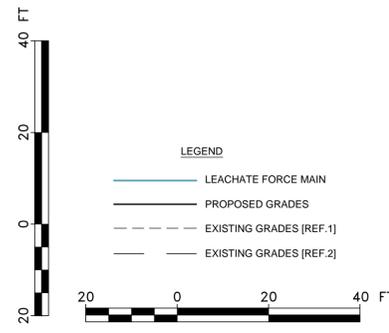
REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	CHR	APPD	DESCRIPTION
0	5/17/2016	7810-14-0065	LANDFILL	CSJ	CSJ	AAJ	CHR	CHR		LEACHATE TANK AND SECONDARY CONTAINMENT



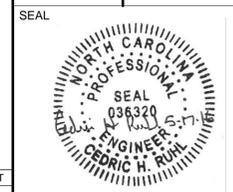
- REFERENCES
- EXISTING TOPOGRAPHIC INFORMATION WAS PRODUCED FROM PHOTOGAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY OBTAINED ON FEBRUARY 7, 2014 BY LDI, INC.
 - EXISTING TOPOGRAPHIC INFORMATION WAS PRODUCED FROM LIGHT DETECTION AND RANGING (LIDAR) OBTAINED FROM NCDOT WEBSITE ON AUGUST 7, 2015.
 - FORCE MAIN SIZE AND LOCATION PROVIDED BY CITY OF EDEN.

ABSAT ISSUE #	DATE	DESIGN
0	5/17/2016	

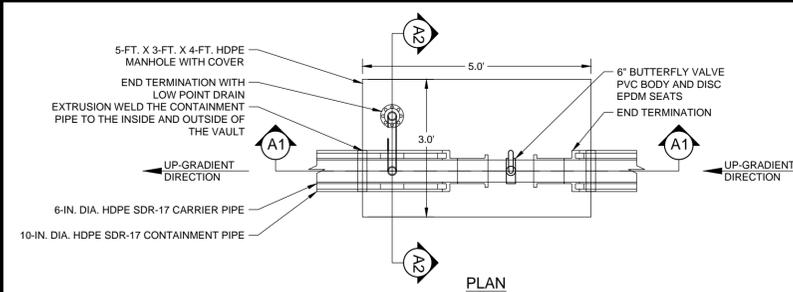
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0	5/17/2016	7810-14-0065	LANDFILL	CSJ	CSJ	AAJ	CHR	CHR	LEACHATE TANK AND SECONDARY CONTAINMENT



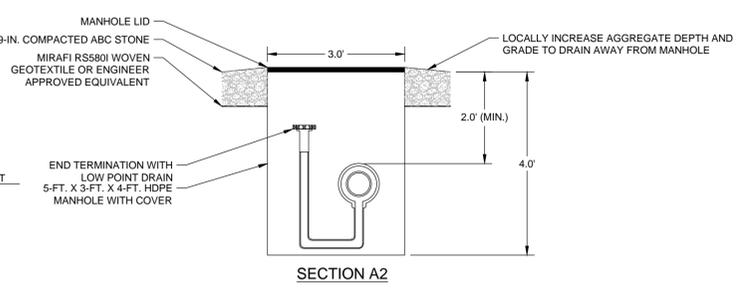
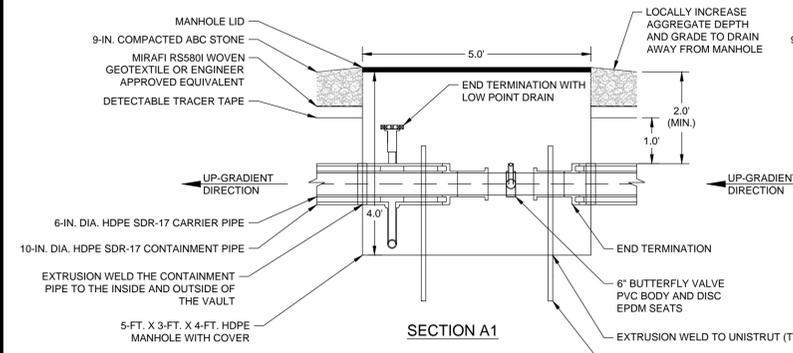
Environment & Infrastructure
 2801 YORKMONT ROAD
 SUITE 100
 CHARLOTTE, NC 28208
 TEL: (704) 357-8600
 FAX: (704) 357-8638
 LICENSURE:
 NC ENG. F-1253
 NC GEOLOGY: C-247



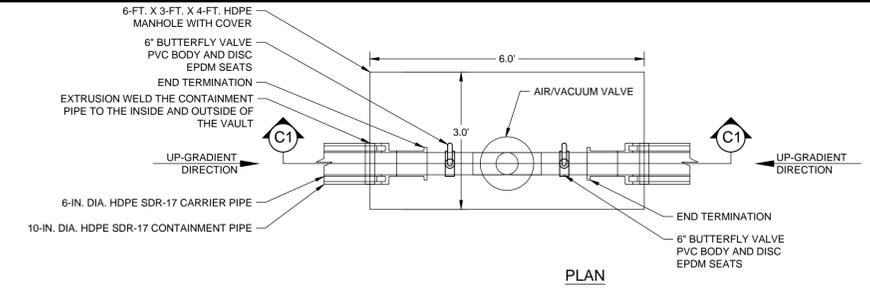
TITLE LEACHATE TANK AND SECONDARY CONTAINMENT DAN RIVER STEAM STATION LEACHATE FORCE MAIN PROFILE		
FOR ISSUED FOR PERMITTING - NOT RELEASED FOR CONSTRUCTION		
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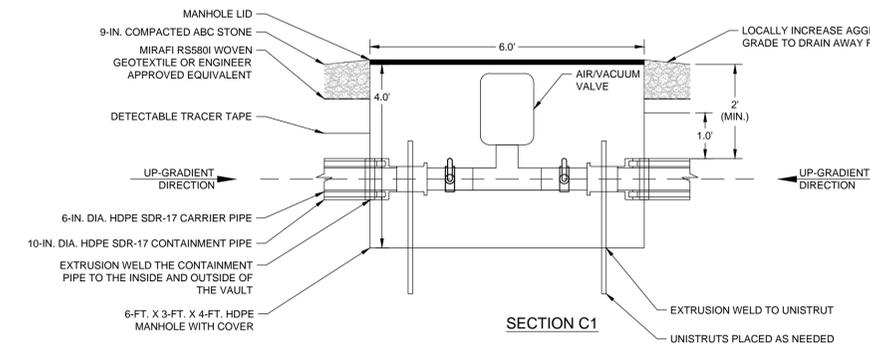
NOTES:
 1. INSTALL SPACERS TO MANUFACTURER'S SPECIFIED DISTANCE. CONFIGURATION AND FITTINGS SUBJECT TO CHANGE BASED ON MANUFACTURER'S RECOMMENDATIONS AND DIMENSIONS OF SELECTED PRODUCTS.



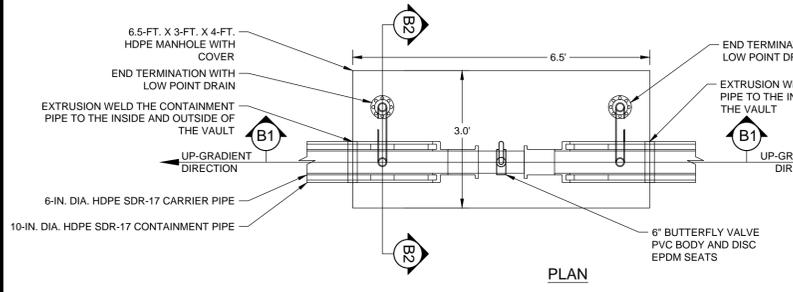
1 BUTTERFLY VALVE MANHOLE
 D-1.1 SCALE: 1" = 2'



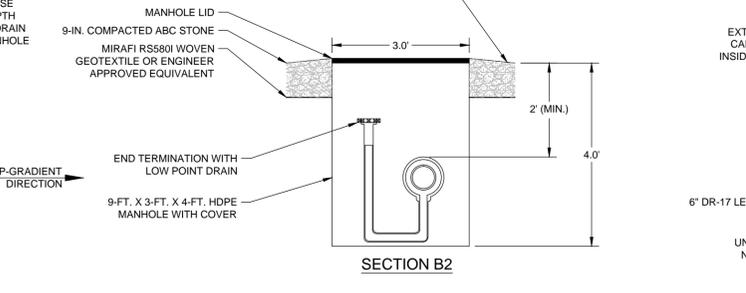
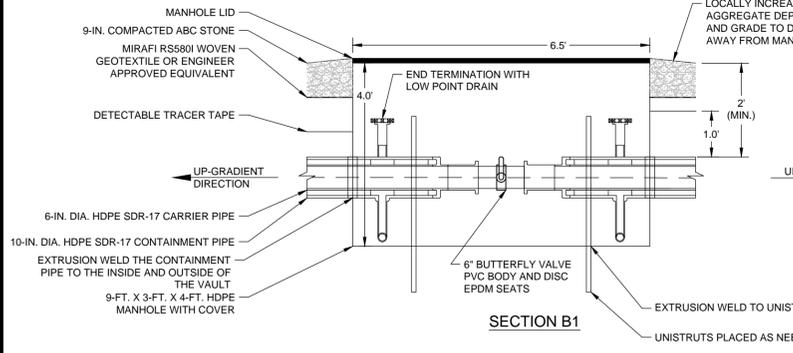
NOTES:
 1. INSTALL SPACERS TO MANUFACTURER'S SPECIFIED DISTANCE. CONFIGURATION AND FITTINGS SUBJECT TO CHANGE BASED ON MANUFACTURER'S RECOMMENDATIONS AND DIMENSIONS OF SELECTED PRODUCTS.



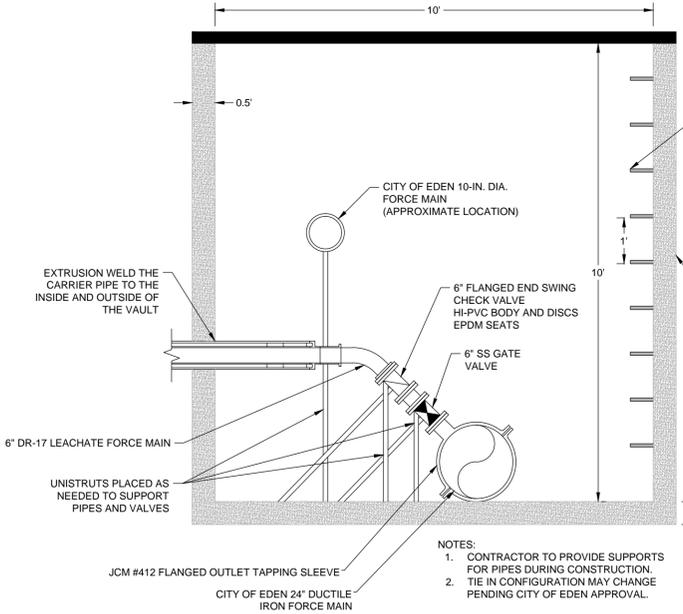
2 HIGH POINT ARV MANHOLE
 D-1.1 SCALE: 1" = 2'



NOTES:
 1. INSTALL SPACERS TO MANUFACTURER'S SPECIFIED DISTANCE. CONFIGURATION AND FITTINGS SUBJECT TO CHANGE BASED ON MANUFACTURER'S RECOMMENDATIONS AND DIMENSIONS OF SELECTED PRODUCTS.

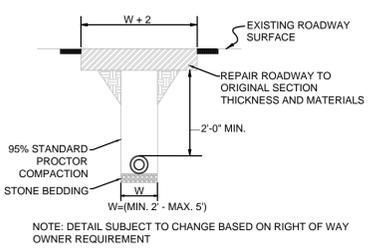


3 LOW POINT MANHOLE
 D-1.1 SCALE: 1" = 2'



NOTES:
 1. CONTRACTOR TO PROVIDE SUPPORTS FOR PIPES DURING CONSTRUCTION.
 2. TIE IN CONFIGURATION MAY CHANGE PENDING CITY OF EDEN APPROVAL.

4 FORCE MAIN TIE IN TO CITY FORCE MAIN
 D-1.1 NTS

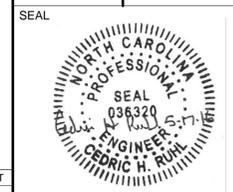


5 UTILITY TRENCH REPAIR DETAIL
 D-1.1 NTS

DETAIL LEGEND

- SOIL SUBGRADE
- COMPACTED SOIL LINER
- RE-COMPACTED SOIL LINER (NO PERMEABILITY REQUIREMENT)
- PROTECTIVE COVER - CCR OR SOIL
- PROTECTIVE COVER - SOIL ONLY
- WASTE
- INTERIM SOIL COVER
- FINAL SOIL COVER
- VEGETATIVE SOIL COVER
- NC DOT 78M DRAINAGE AGGREGATE
- ASTM C-33 CONCRETE SAND
- RIPRAP
- CONCRETE
- COMPACTED ABC STONE
- GEOSYNTHETIC CLAY LINER (GCL)
- 60-MIL DOUBLE-SIDED TEXTURED HDPE GEOMEMBRANE
- GEOCOMPOSITE DRAINAGE LAYER
- GEOTEXTILE
- LINER SYSTEM
- PIPE (HIDDEN)
- PIPE (EXPOSED)

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 NC GEOLOGY: C-247

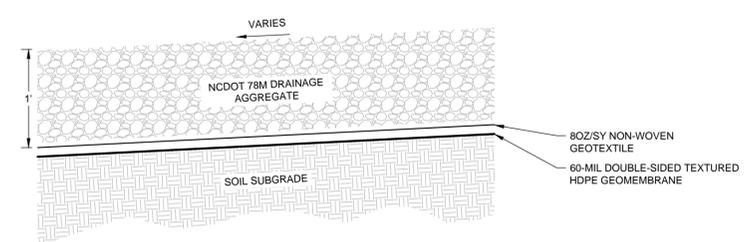


TITLE LEACHATE TANK AND SECONDARY CONTAINMENT DAN RIVER STEAM STATION LCRS DETAILS	
FOR ISSUED FOR PERMITTING - NOT RELEASED FOR CONSTRUCTION	
SCALE: AS SHOWN	DES: CSJ
DWG TYPE: DWG	DFTR: CSJ
JOB NO: 7810-14-0065	CHKD: AAJ
DATE: 5/17/2016	ENGR: CHR
APPD: CHR	
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DWG SIZE ANSI D 22"x34"	DRAWING NO. D-1.1
	REVISION 0

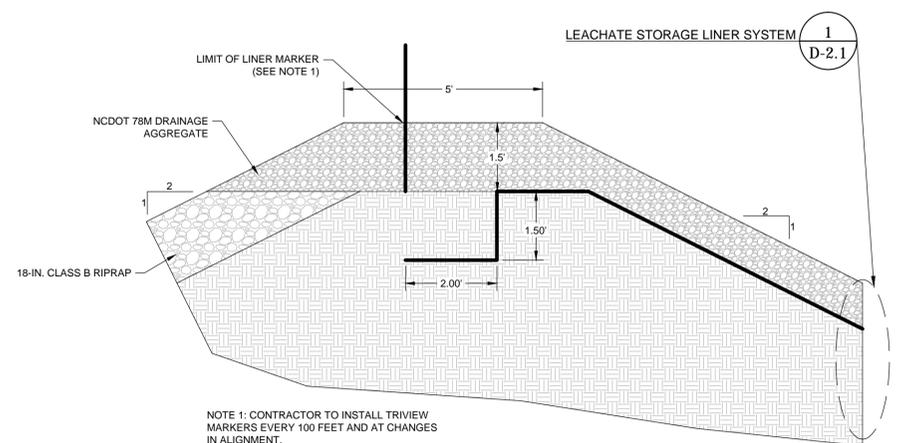
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REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD	DESCRIPTION

Plotted By: Jordan, Chris Sheet Set: DEQ Leachate Update Layout: D-1.1 LCRS DETAILS May 17, 2016 03:25:15pm Q:\Duke\DanRiver\7810140065_ABSAT Dan River Off Site LF\Plansheets\DEQ Leachate\D-1.1 LCRS DETAILS.dwg

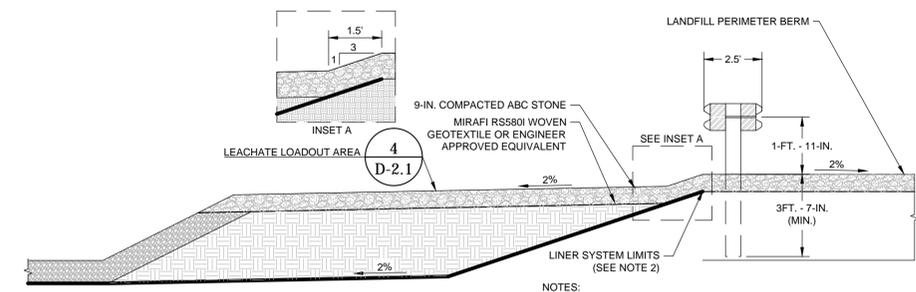
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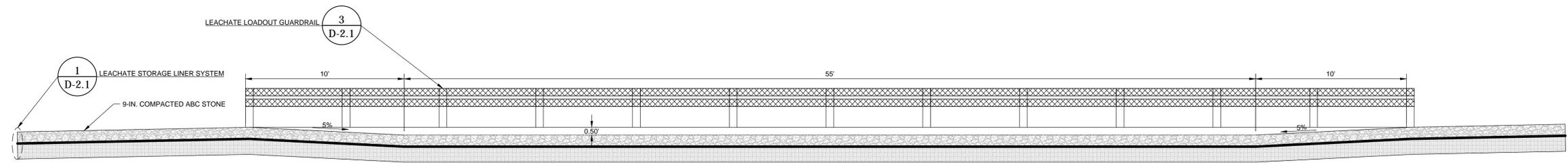
NOTES:
1. GEOSYNTHETIC COMPONENTS SHOWN AT EXAGGERATED SCALE.
1 LEACHATE STORAGE LINER SYSTEM
D-2.1



2 LEACHATE STORAGE ANCHOR TRENCH
D-2.1



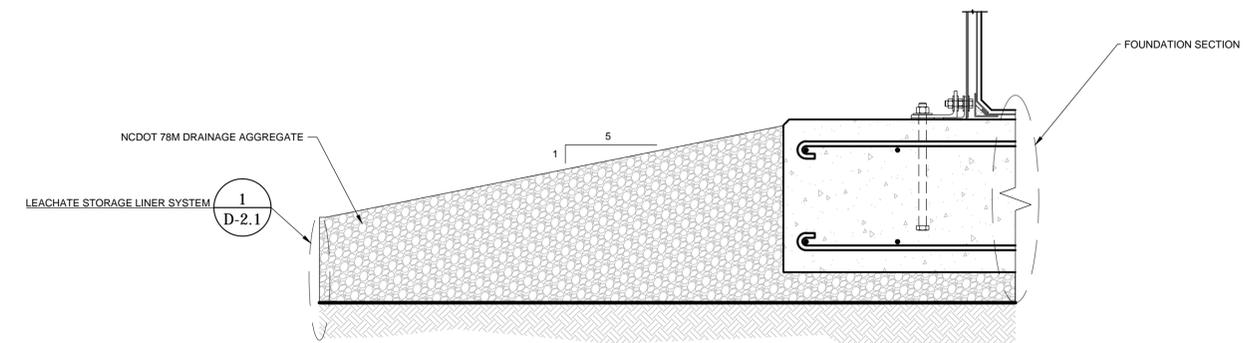
3 LEACHATE LOADOUT GUARD RAIL
D-2.1



4 LEACHATE LOADOUT AREA
D-2.1

DETAIL LEGEND

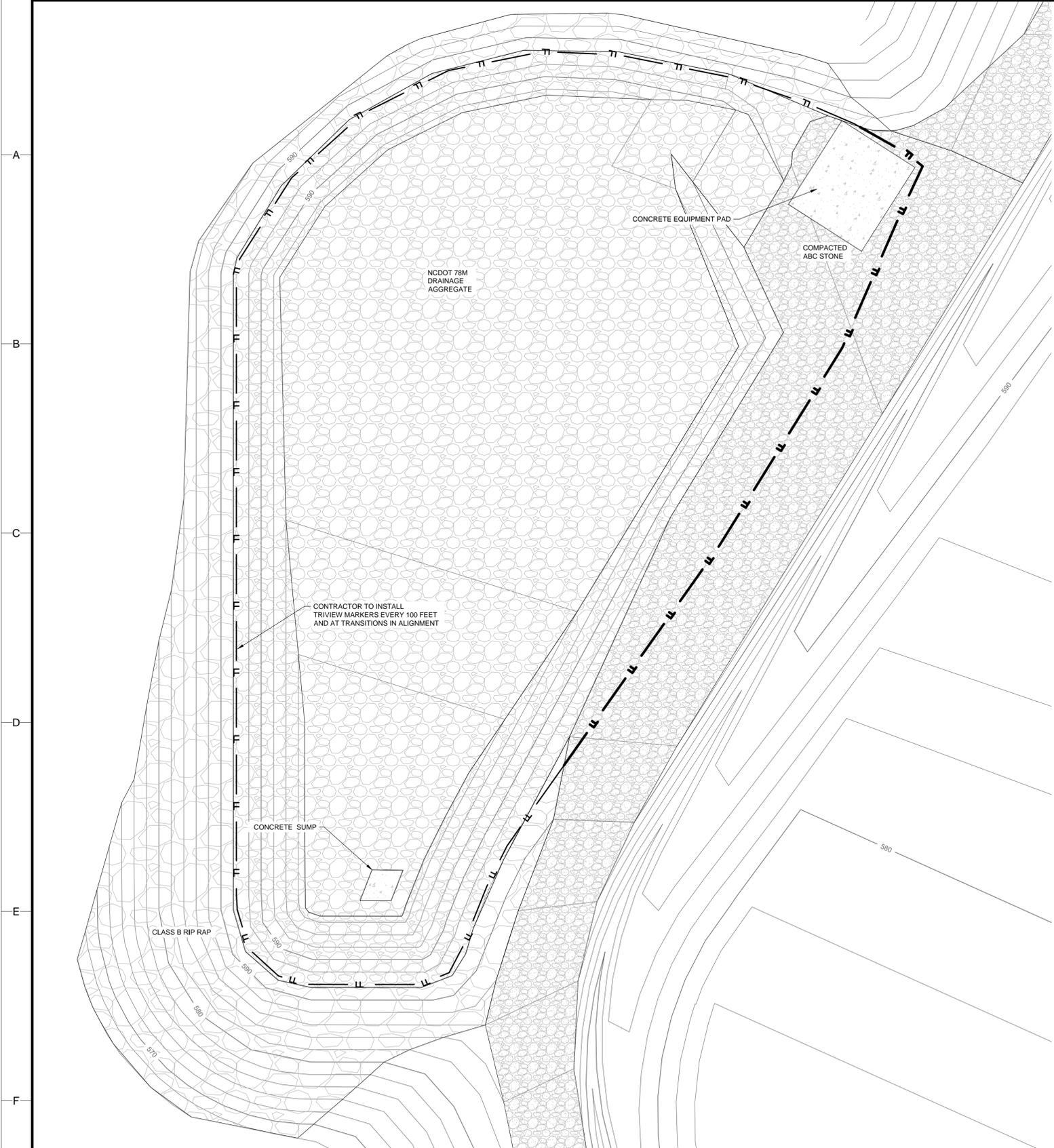
- SOIL SUBGRADE
- COMPACTED SOIL LINER
- RE-COMPACTED SOIL LINER (NO PERMEABILITY REQUIREMENT)
- PROTECTIVE COVER - CCR OR SOIL
- PROTECTIVE COVER - SOIL ONLY
- WASTE
- INTERIM SOIL COVER
- FINAL SOIL COVER
- VEGETATIVE SOIL COVER
- NCDOT 78M DRAINAGE AGGREGATE
- ASTM C-33 CONCRETE SAND
- RIPRAP
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- GEOCOMPOSITE DRAINAGE LAYER
- GEOTEXTILE
- LINER SYSTEM
- PIPE (HIDDEN)
- PIPE (EXPOSED)



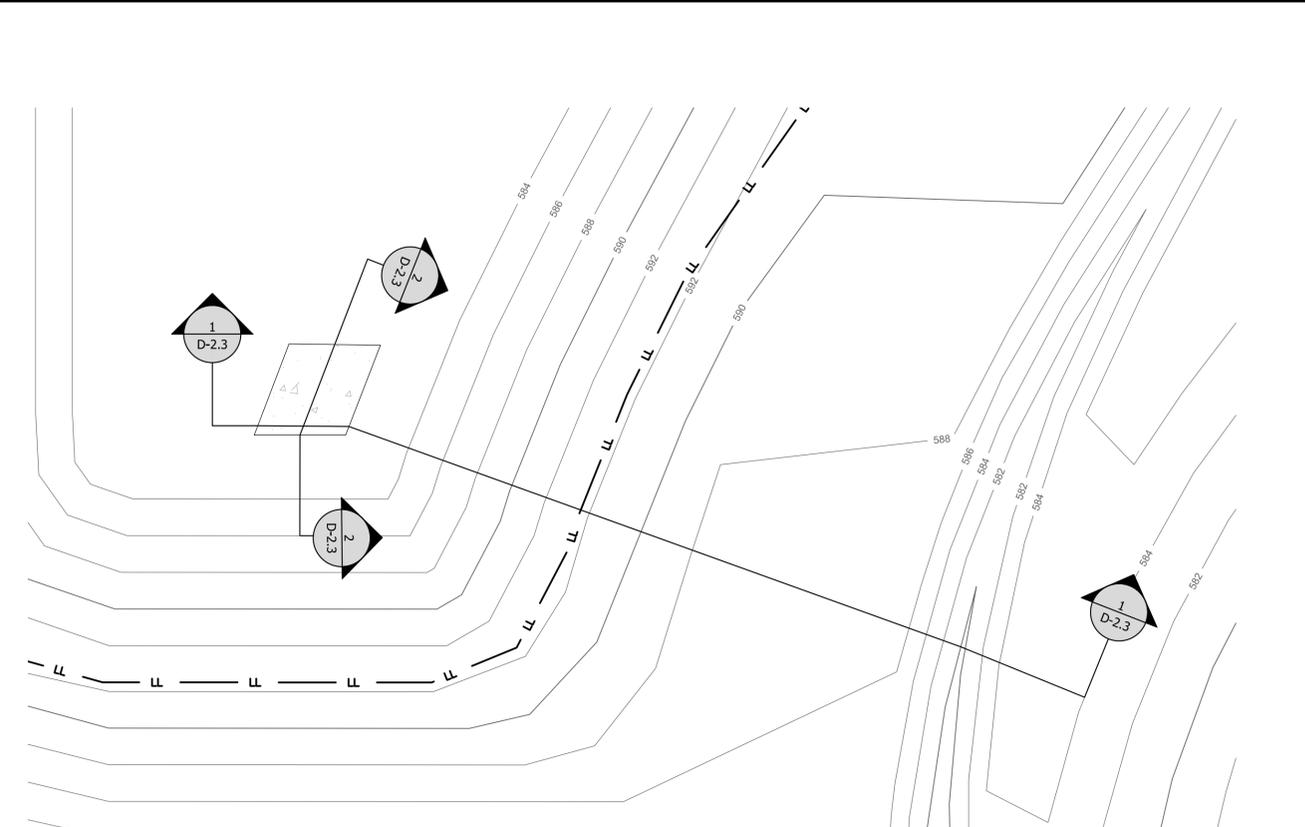
5 LEACHATE LINER SYSTEM TRANSITION
D-2.1

Environment & Infrastructure 2801 YORKMONT ROAD SUITE 100 CHARLOTTE, NC 28208 TEL: (704) 357-8600 FAX: (704) 357-8638 LICENSURE: NC ENG: F-1253 NC GEOLOGY: C-247		TITLE LEACHATE TANK AND SECONDARY CONTAINMENT DAN RIVER STEAM STATION LEACHATE STORAGE FACILITY DETAILS 1	
		FOR ISSUED FOR PERMITTING - NOT RELEASED FOR CONSTRUCTION	
		SCALE: AS SHOWN DWG TYPE: DWG JOB NO: 7810-14-0065 DATE: 5/17/2016	DES: CSJ DFTR: CSJ CHKD: AAJ ENGR: CHR
		FILENAME: D-2.1 LEACHATE STORAGE FACILITY DETAILS 1.dwg DWG SIZE: 22"x34"	DRAWING NO. D-2.1

REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	CHR	APPD	DESCRIPTION
0	5/17/2016	7810-14-0065	LANDFILL	CSJ	CSJ	AAJ	CHR	CHR		LEACHATE TANK AND SECONDARY CONTAINMENT



1 LEACHATE STORAGE FACILITY SURFACING DETAIL
D-2.2
SCALE: 1" = 10'

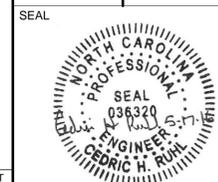


2 LEACHATE SUMP PLAN LAYOUT
D-2.2
SCALE: 1" = 10'

- LEGEND**
- PROPOSED MAJOR CONTOUR (10')
 - PROPOSED MINOR CONTOUR (2')
 - LL — LIMIT OF LINER (SEE NOTE 1)
 - LL — LIMIT OF LINER (SEE NOTE 2)
 - [Pattern] NCDOT 78M DRAINAGE AGGREGATE
 - [Pattern] RIPRAP
 - [Pattern] COMPACTED ABC STONE
 - [Pattern] CONCRETE

- NOTES:**
- 1: SEE DETAIL 2 ON SHEET D-5.1 FOR ANCHOR TRENCH
 - 2: SEE DETAIL 3 ON SHEET D-5.1 FOR LINER LAYOUT

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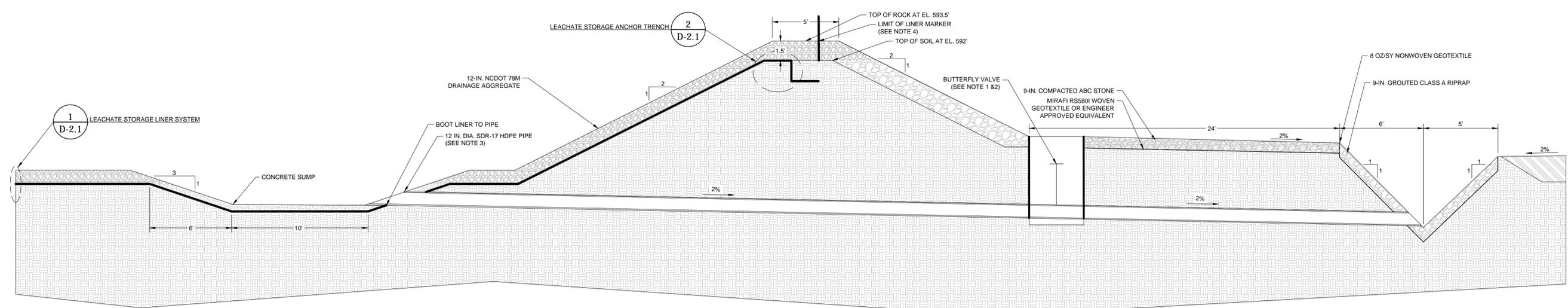
TITLE
LEACHATE TANK AND SECONDARY CONTAINMENT
DAN RIVER STEAM STATION
LEACHATE STORAGE FACILITY DETAILS 2

FOR
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SCALE: AS SHOWN	DES: CSJ
DWG TYPE: DWG	DFTR: CSJ
JOB NO: 7810-14-0065	CHKD: AAJ
DATE: 5/17/2016	ENGR: CHR
FILENAME: D-2.2 LEACHATE STORAGE FACILITY DETAILS 2.dwg	APPD: CHR

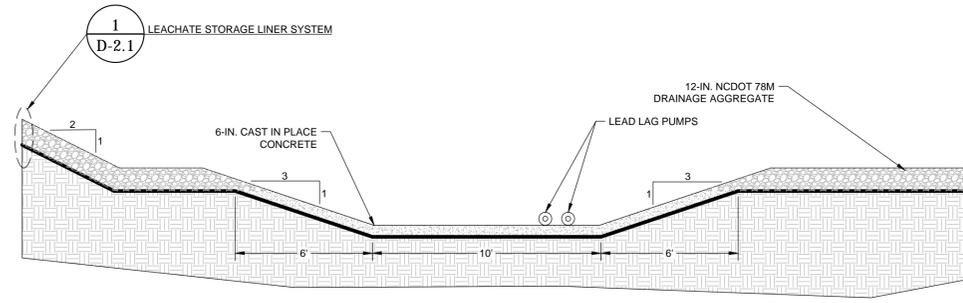
DWG SIZE ANSI D 22"x34"	DRAWING NO. D-2.2	REVISION 0
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REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD	DESCRIPTION
0	5/17/2016	7810-14-0065	LANDFILL	CSJ	CSJ	AAJ	CHR	CHR	LEACHATE TANK AND SECONDARY CONTAINMENT



NOTES:
 1. CONTRACTOR SHALL INSTALL SIGNAGE IN ACCORDANCE WITH NCDOT DETAIL 904.50.
 2. CONTRACTOR SHALL INSTALL 4-FT. DIA. TRAFFIC LOAD RATED MANHOLE.
 3. CONTRACTOR SHALL INSTALL METAL PIPE DEBRIS SCREEN.
 4. CONTRACTOR TO INSTALL TRIVIEW MARKER EVERY 100 FEET AND AT CHANGES IN ALIGNMENT.

1
D-2.3
SUMP SECTION 1
SCALE: 1"=4'



2
D-2.3
SUMP SECTION 2
SCALE: 1"=4'

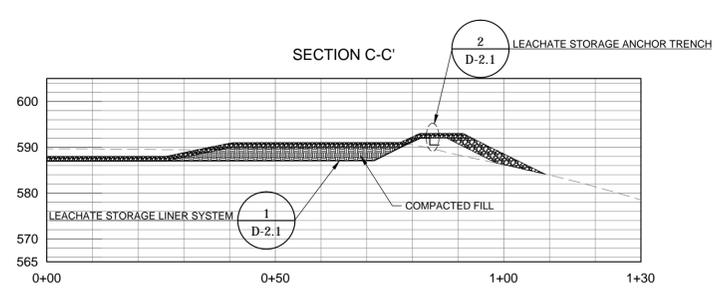
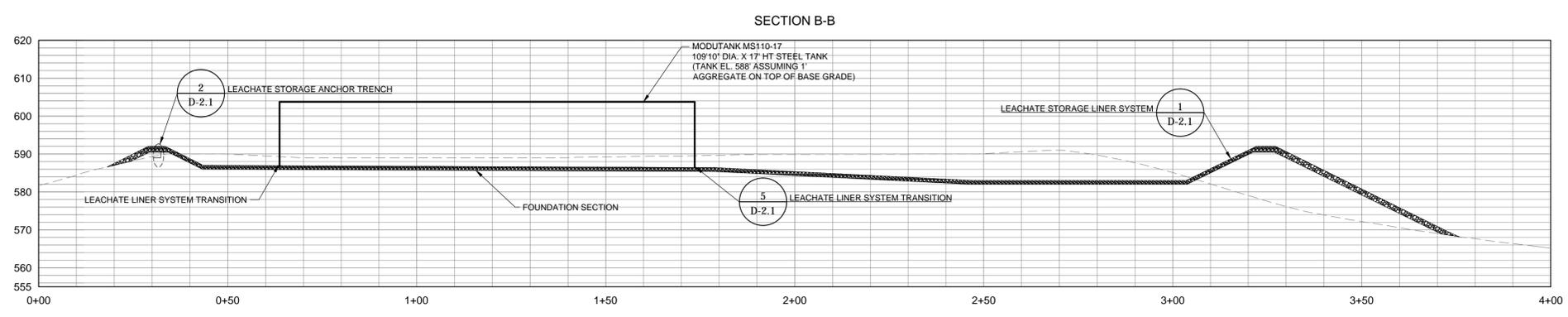
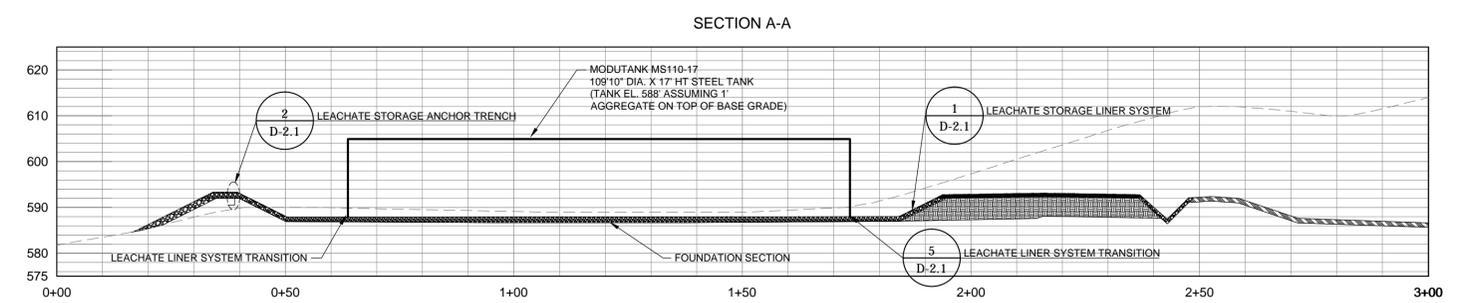
DETAIL LEGEND

[Symbol]	SOIL SUBGRADE
[Symbol]	COMPACTED SOIL LINER
[Symbol]	RE-COMPACTED SOIL LINER (NO PERMEABILITY REQUIREMENT)
[Symbol]	PROTECTIVE COVER - CCR OR SOIL
[Symbol]	PROTECTIVE COVER - SOIL ONLY
[Symbol]	WASTE
[Symbol]	INTERIM SOIL COVER
[Symbol]	FINAL SOIL COVER
[Symbol]	VEGETATIVE SOIL COVER
[Symbol]	NCDOT 78M DRAINAGE AGGREGATE
[Symbol]	ASTM C-33 CONCRETE SAND
[Symbol]	RIPRAP
[Symbol]	CONCRETE
[Symbol]	COMPACTED ABC STONE
[Symbol]	GEOSYNTHETIC CLAY LINER (GCL)
[Symbol]	60-MIL DOUBLE-SIDED TEXTURED HDPE GEOMEMBRANE
[Symbol]	GEOCOMPOSITE DRAINAGE LAYER
[Symbol]	GEOTEXTILE
[Symbol]	LINER SYSTEM
[Symbol]	PIPE (HIDDEN)
[Symbol]	PIPE (EXPOSED)

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		FOR ISSUED FOR PERMITTING - NOT RELEASED FOR CONSTRUCTION	
	SCALE: AS SHOWN DWG TYPE: DWG JOB NO: 7810-14-0065 DATE: 5/17/2016	DES: CSJ DFTR: CSJ CHKD: AAJ ENGR: CHR	FILENAME: D-2.3 LEACHATE STORAGE FACILITY DETAILS 3.dwg DWG SIZE: ANS I D 22"x34"
	DRAWING NO. D-2.3	REVISION 0	

REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD	DESCRIPTION
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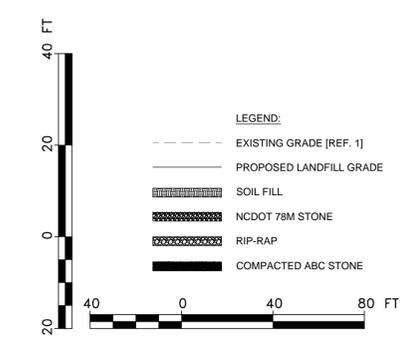
ABSAT ISSUE #	DATE	DESIGN



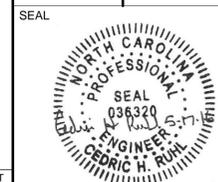
REFERENCES
 1. EXISTING TOPOGRAPHIC INFORMATION WAS PRODUCED FROM PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY OBTAINED ON FEBRUARY 7, 2014 BY LDSI, INC.

ABSAT ISSUE #	DATE	DESIGN
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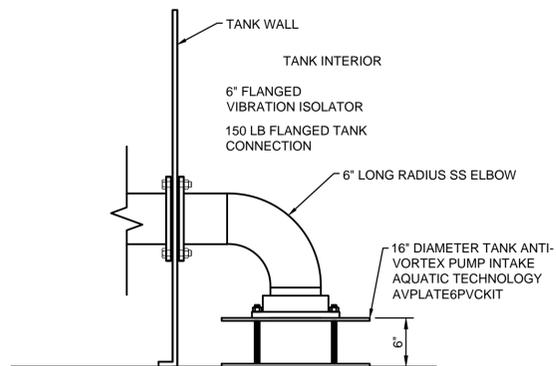
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0	5/17/2016	7810-14-0065	LANDFILL	CSJ	CSJ	AAJ	CHR	CHR	LEACHATE TANK AND SECONDARY CONTAINMENT



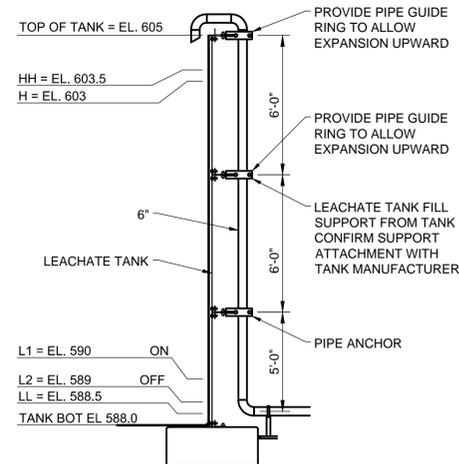
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 LICENSURE:
 NC ENG: F-1253
 NC GEOLOGY: C-247



TITLE LEACHATE TANK AND SECONDARY CONTAINMENT DAN RIVER STEAM STATION LEACHATE STORAGE FACILITY DETAILS 4		
FOR ISSUED FOR PERMITTING - NOT RELEASED FOR CONSTRUCTION		
SCALE: AS SHOWN DWG TYPE: DWG JOB NO: 7810-14-0065 DATE: 5/17/2016	DES: CSJ DFTR: CSJ CHKD: AAJ ENGR: CHR APPD: CHR	FILENAME: D-2.4 LEACHATE STORAGE FACILITY DETAILS 4.dwg DWG SIZE: ANS I D 22"x34" DRAWING NO.: D-2.4 REVISION: 0



1 LEACHATE PUMP TANK INTAKE
D-2.5 NOT TO SCALE



2 TYPICAL LEACHATE TANK FILL PIPE
D-2.5 NOT TO SCALE

ABSAT ISSUE #	DATE	DESIGN
0	5/17/2016	

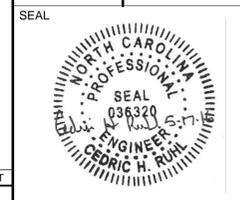
REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD	DESCRIPTION
0	5/17/2016	7810-14-0065	LANDFILL	CSJ	CSJ	AAJ	CHR	CHR	LEACHATE TANK AND SECONDARY CONTAINMENT

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TITLE
LEACHATE TANK AND SECONDARY CONTAINMENT
DAN RIVER STEAM STATION
LEACHATE STORAGE FACILITY DETAILS 5

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SCALE: AS SHOWN	DES: CSJ
DWG TYPE: DWG	DFTR: CSJ
JOB NO: 7810-14-0065	CHKD: AAJ
DATE: 5/17/2016	ENGR: CHR
APPD: CHR	
ANSI D 22"x34"	REVISION
D-2.5	0