

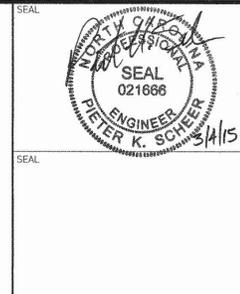
JOHNSTON COUNTY, NORTH CAROLINA
DEPARTMENT OF SOLID WASTE SERVICES

JOHNSTON COUNTY MSW LANDFILL PHASE 4A

PERMIT AMENDMENT DRAWINGS

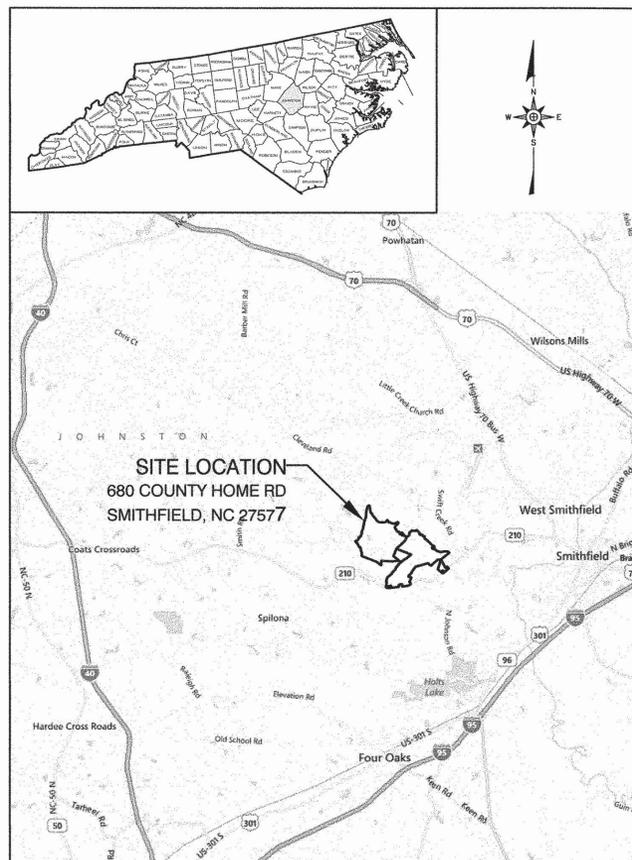
JUNE 2007
REVISED: FEBRUARY 2015

APPROVED DOCUMENT
Division of Waste Management
Solid Waste Section
Approved May 27, 2015
By D. Wilson
Facility ID 5103-MSWLF
Doc ID 24159 (permit)
Doc ID 24165 (applic)
Doc ID 24166 (drawings)



REV.	DATE	DESCRIPTION
1	11/08	RESPONSE TO NCDENR
		COMMENTS - ADDITIONAL CHANGES
2	2/2/15	REVISED PER DWM COMMENTS

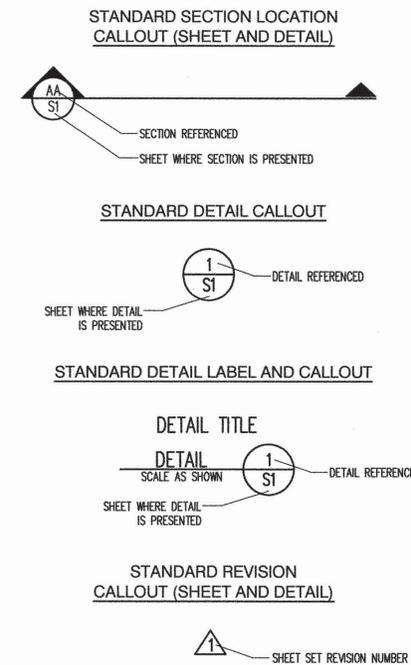
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SITE LOCATION MAP
NOT TO SCALE

RIVER BASIN: NEUSE

SHEET NO.	DRAWING NO.	DRAWING TITLE	REVISION
1		TITLE - COVER SHEET	△
2	S1	EXISTING CONDITIONS	△
3	S2	PHASE 4A LINER GRADING PLAN	△
4	S3	PHASE 4A PROTECTIVE COVER GRADING AND DRAINAGE PLAN	△
5	S4	LEACHATE MANAGEMENT SYSTEMS LEAK DETECTION PIPING	△
6	S5	LEACHATE MANAGEMENT SYSTEMS LEACHATE COLLECTION PIPING	△
7	L1	LINER AND BERM DETAILS (SHEET 1 OF 2)	△
8	L2	LINER AND BERM DETAILS (SHEET 2 OF 2)	△
9	LM1	LEACHATE MANAGEMENT SYSTEM DETAILS (SHEET 1 OF 2)	△
10	LM2	LEACHATE MANAGEMENT SYSTEM DETAILS (SHEET 2 OF 2)	△
11	EC1	EROSION AND SEDIMENTATION DETAILS (SHEET 1 OF 2)	△
12	EC2	EROSION AND SEDIMENTATION DETAILS (SHEET 2 OF 2)	△
13	FC1	PHASE 4A FINAL COVER GRADING AND DRAINAGE PLAN	△
14	FC2	FINAL COVER DETAILS (SHEET 1 OF 2)	△
15	FC3	FINAL COVER DETAILS (SHEET 2 OF 2)	△
16	LFG1	PHASE 4A LANDFILL GAS MANAGEMENT SYSTEM	△
17	LFG2	LANDFILL GAS MANAGEMENT DETAILS (SHEET 1 OF 3)	△
18	LFG3	LANDFILL GAS MANAGEMENT DETAILS (SHEET 2 OF 3)	△
19	LFG4	LANDFILL GAS MANAGEMENT DETAILS (SHEET 3 OF 3)	△
20	EX1	ENGINEERING CROSS SECTIONS (SHEET 1 OF 2)	△
21	EX2	ENGINEERING CROSS SECTIONS (SHEET 2 OF 2)	△
22	P1	MSW LANDFILL PHASING PLAN (SHEET 1 OF 2)	△
23	P2	MSW LANDFILL PHASING PLAN (SHEET 2 OF 2)	△
24	P3	C&D LANDFILL PHASING PLAN	△



NC LIC. NO. C-0828 [ENGINEERING]

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

PREPARED FOR:

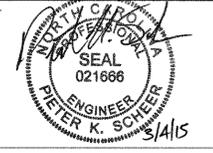
**JOHNSTON COUNTY
NORTH CAROLINA
DEPARTMENT OF
SOLID WASTE SERVICES**

PREPARED BY:

NC LIC. NO. C-0828 (ENGINEERING)

**SMITH+
GARDNER**
ENGINEERS

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577



REV.	DATE	DESCRIPTION
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		COMMENTS + ADDITIONAL CHANGES
2	2/15	REVISED PER DWM COMMENTS

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PROJECT TITLE:

**JOHNSTON COUNTY
MSW LANDFILL FACILITY
PHASE 4A
PERMIT AMENDMENT DRAWINGS**

DRAWING TITLE:

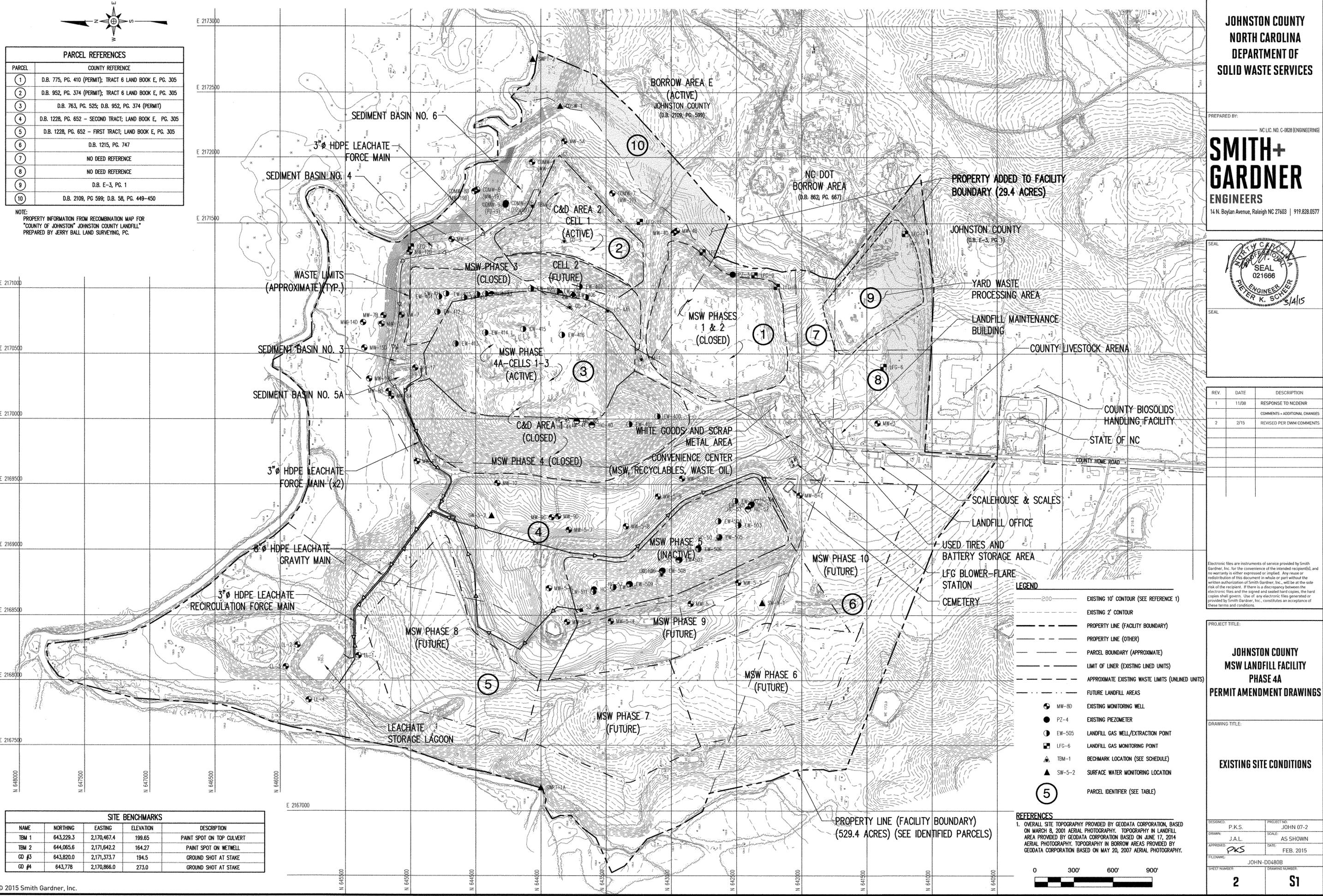
EXISTING SITE CONDITIONS

DESIGNED:	P.K.S.	PROJECT NO.:	JOHN 07-2
DRAWN:	J.A.L.	SCALE:	AS SHOWN
APPROVED:	P.K.S.	DATE:	FEB. 2015
FILENAME:	JOHN-D0480B	DRAWING NUMBER:	
SHEET NUMBER:	2		S1

PARCEL REFERENCES

PARCEL	COUNTY REFERENCE
1	D.B. 775, PG. 410 (PERMIT); TRACT 6 LAND BOOK E, PG. 305
2	D.B. 952, PG. 374 (PERMIT); TRACT 6 LAND BOOK E, PG. 305
3	D.B. 783, PG. 525; D.B. 952, PG. 374 (PERMIT)
4	D.B. 1228, PG. 652 - SECOND TRACT; LAND BOOK E, PG. 305
5	D.B. 1228, PG. 652 - FIRST TRACT; LAND BOOK E, PG. 305
6	D.B. 1215, PG. 747
7	NO DEED REFERENCE
8	NO DEED REFERENCE
9	D.B. E-3, PG. 1
10	D.B. 2109, PG. 599; D.B. 58, PG. 449-450

NOTE:
PROPERTY INFORMATION FROM RECOMBINATION MAP FOR "COUNTY OF JOHNSTON" JOHNSTON COUNTY LANDFILL"
PREPARED BY JERRY BALL LAND SURVEYING, PC.

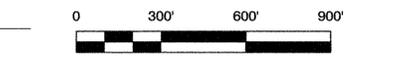


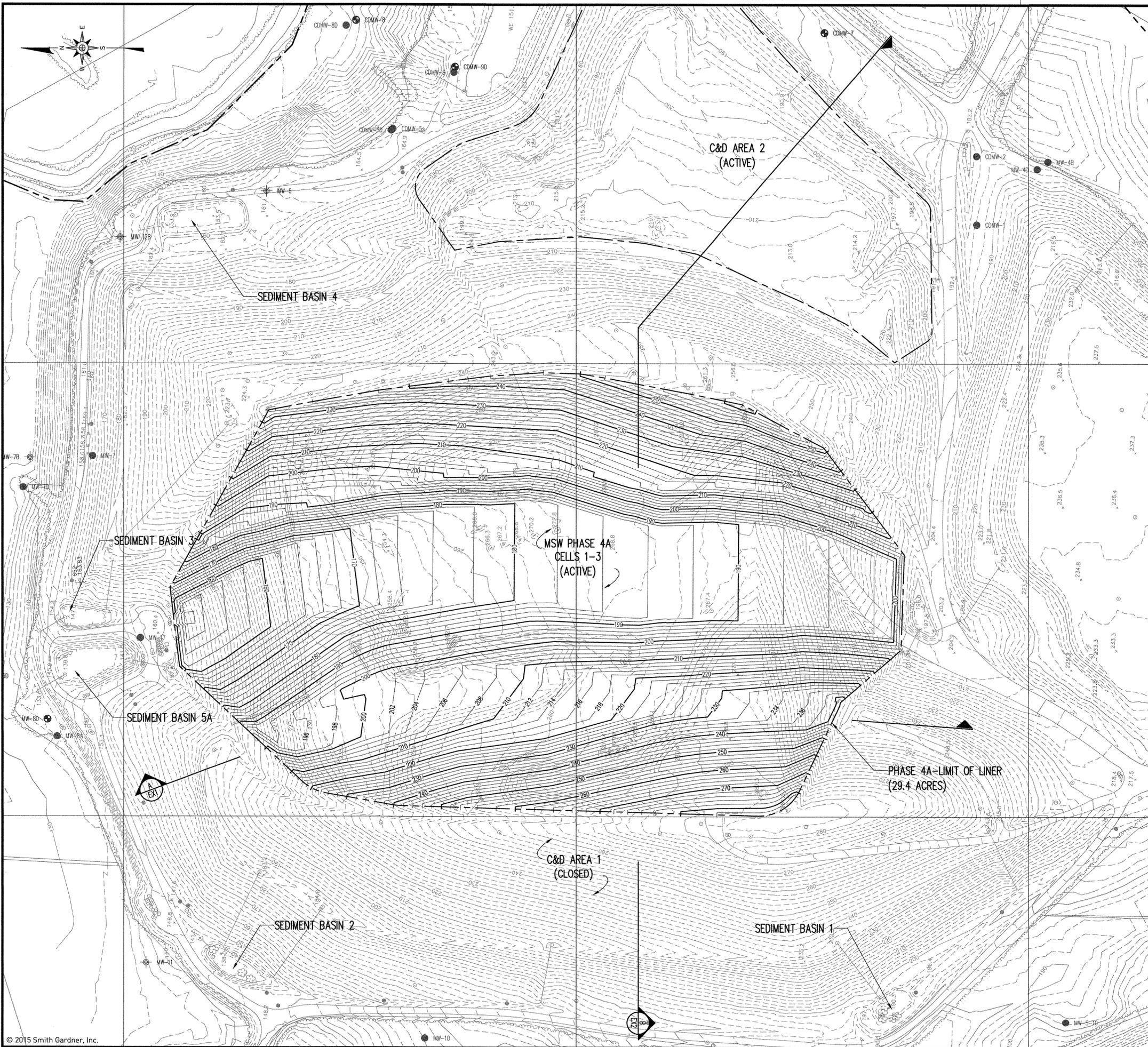
SITE BENCHMARKS

NAME	NORTHING	EASTING	ELEVATION	DESCRIPTION
TBM 1	643,229.3	2,170,467.4	199.65	PAINT SPOT ON TOP CULVERT
TBM 2	644,065.6	2,171,642.2	164.27	PAINT SPOT ON METWELL
GD #3	643,820.0	2,171,373.7	194.5	GROUND SHOT AT STAKE
GD #4	643,778	2,170,866.0	273.0	GROUND SHOT AT STAKE

- LEGEND
- 200 — EXISTING 10' CONTOUR (SEE REFERENCE 1)
 - - - EXISTING 2' CONTOUR
 - PROPERTY LINE (FACILITY BOUNDARY)
 - - - - - PROPERTY LINE (OTHER)
 - - - - - PARCEL BOUNDARY (APPROXIMATE)
 - LIMIT OF LINER (EXISTING LINED UNITS)
 - - - - - APPROXIMATE EXISTING WASTE LIMITS (UNLINED UNITS)
 - - - - - FUTURE LANDFILL AREAS
 - MW-80 EXISTING MONITORING WELL
 - PZ-4 EXISTING PIEZOMETER
 - EW-505 LANDFILL GAS WELL/EXTRACTION POINT
 - LFG-6 LANDFILL GAS MONITORING POINT
 - ▲ TBM-1 BENCHMARK LOCATION (SEE SCHEDULE)
 - ▲ SW-5-2 SURFACE WATER MONITORING LOCATION
 - ⑤ PARCEL IDENTIFIER (SEE TABLE)

- REFERENCES
- OVERALL SITE TOPOGRAPHY PROVIDED BY GEODATA CORPORATION, BASED ON MARCH 8, 2001 AERIAL PHOTOGRAPHY. TOPOGRAPHY IN LANDFILL AREA PROVIDED BY GEODATA CORPORATION BASED ON JUNE 17, 2014 AERIAL PHOTOGRAPHY. TOPOGRAPHY IN BORROW AREAS PROVIDED BY GEODATA CORPORATION BASED ON MAY 20, 2007 AERIAL PHOTOGRAPHY.





PREPARED FOR:
JOHNSTON COUNTY
NORTH CAROLINA
DEPARTMENT OF
SOLID WASTE SERVICES

PREPARED BY:
 NC LIC. NO. C-8828 (ENGINEERING)
SMITH+
GARDNER
ENGINEERS
 14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577



REV.	DATE	DESCRIPTION
1	11/08	RESPONSE TO NCDENR
		COMMENTS + ADDITIONAL CHANGES
2	2/15	REVISED PER DWM COMMENTS

LEGEND

- EXISTING 10' CONTOUR (SEE REFERENCE 1)
- EXISTING 2' CONTOUR
- APPROXIMATE PROPERTY LINE
- LIMITS OF EXISTING LINER
- CELL 3 LIMIT OF LINER
- AREA 1 CLOSURE - LIMIT OF GEOSYNTHETICS
- PROPOSED 10' CONTOUR (SEE NOTE 1)
- PROPOSED 2' CONTOUR
- EXISTING MONITORING WELL
- EXISTING PIEZOMETER
- MONITORING WELL FOR C&D LANDFILL (UNSURVEYED LOCATION)
- CONTROL POINT (SEE TABLE)

NOTES

- GRADES SHOWN REPRESENT TOP OF LINER GRADES.

REFERENCES

- OVERALL SITE TOPOGRAPHY PROVIDED BY GEODATA CORPORATION, BASED ON JUNE 17, 2014.

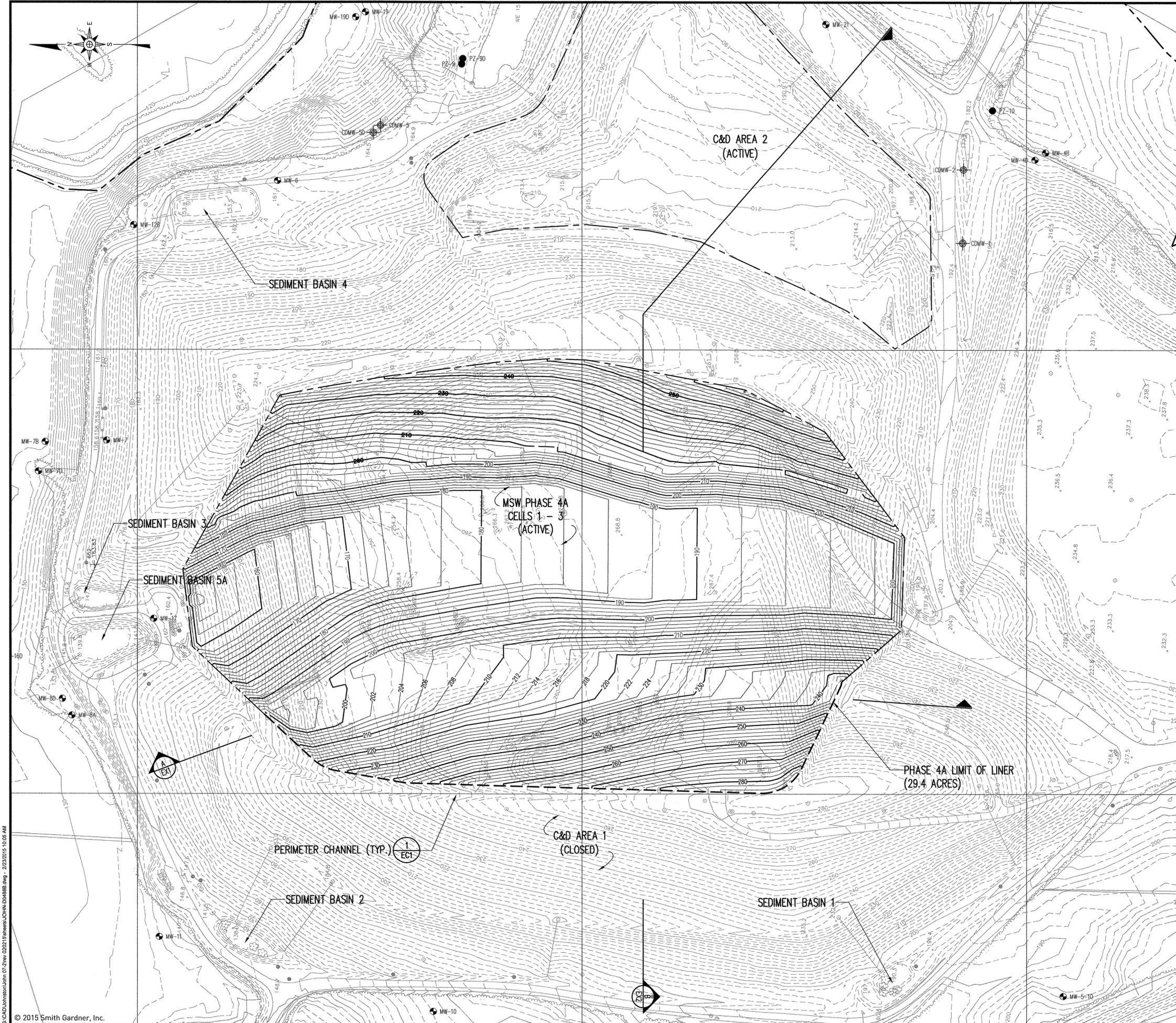
GENERAL EROSION AND SEDIMENTATION CONTROL NOTES

- ALL EROSION AND SEDIMENTATION CONTROL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL AS WELL AS APPLICABLE REGULATIONS.
- EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE ESTABLISHED PRIOR TO, OR AS SOON AS PRACTICAL THEREAFTER, ANY LAND CLEARING OR CONSTRUCTION ACTIVITIES MAY BEGIN.
- ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CONSTRUCTED ACCORDING TO THE CONTRACT DRAWINGS AND SPECIFICATIONS.
- ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT OF GREATER THAN 0.5 INCHES OF RAIN PER 24 HOUR PERIOD AND APPROPRIATE MAINTENANCE CONDUCTED. MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO:
 - THE REMOVAL AND SATISFACTORY DISPOSAL OF TRAPPED OR DEPOSITED SEDIMENTS FROM BASINS, TRAPS, BARRIERS, FILTERS, AND/OR DRAINAGE FEATURES/DEVICES;
 - REPLACEMENT OF FILTER FABRICS USED FOR SILT FENCES UPON LOSS OF EFFICIENCY; AND
 - REPLACEMENT OF ANY OTHER COMPONENTS WHICH ARE DAMAGED OR CANNOT SERVE THE INTENDED USE.
- THE CONTRACTOR SHALL PROVIDE TEMPORARY OR PERMANENT GROUND COVER (OR OTHER ACCEPTABLE MEASURES) ADEQUATE TO RESTRAIN EROSION ON ERODIBLE SLOPES OR OTHER AREAS WITHIN 21 CALENDAR DAYS FOLLOWING COMPLETION OF ANY PHASE OF GRADING. THE CONTRACTOR SHALL PROVIDE PERMANENT GROUND COVER FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR 90 CALENDAR DAYS (WHICHEVER IS SHORTER) FOLLOWING THE COMPLETION OF CONSTRUCTION.

PROJECT TITLE:
JOHNSTON COUNTY
MSW LANDFILL FACILITY
PHASE 4A
PERMIT AMENDMENT DRAWINGS

DRAWING TITLE:
PHASE 4A LINER
GRADING PLAN

DESIGNED:	P.K.S.	PROJECT NO.:	JOHN 07-2
DRAWN:	J.A.L.	SCALE:	AS SHOWN
APPROVED:	P.K.S.	DATE:	FEB. 2015
FILENAME:	JOHN-DD481B		
SHEET NUMBER:	3	DRAWING NUMBER:	S2

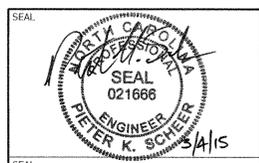


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PREPARED BY:
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**SMITH+
 GARDNER**
 ENGINEERS
 14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577



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2	2/15	REVISED PER DWM COMMENTS

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PROJECT TITLE:
**JOHNSTON COUNTY
 MSW LANDFILL FACILITY
 PHASE 4A
 PERMIT AMENDMENT DRAWINGS**

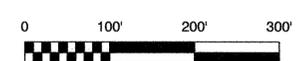
DRAWING TITLE:
**CELL 3
 PROTECTIVE COVER GRADING
 AND DRAINAGE PLAN**

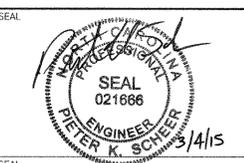
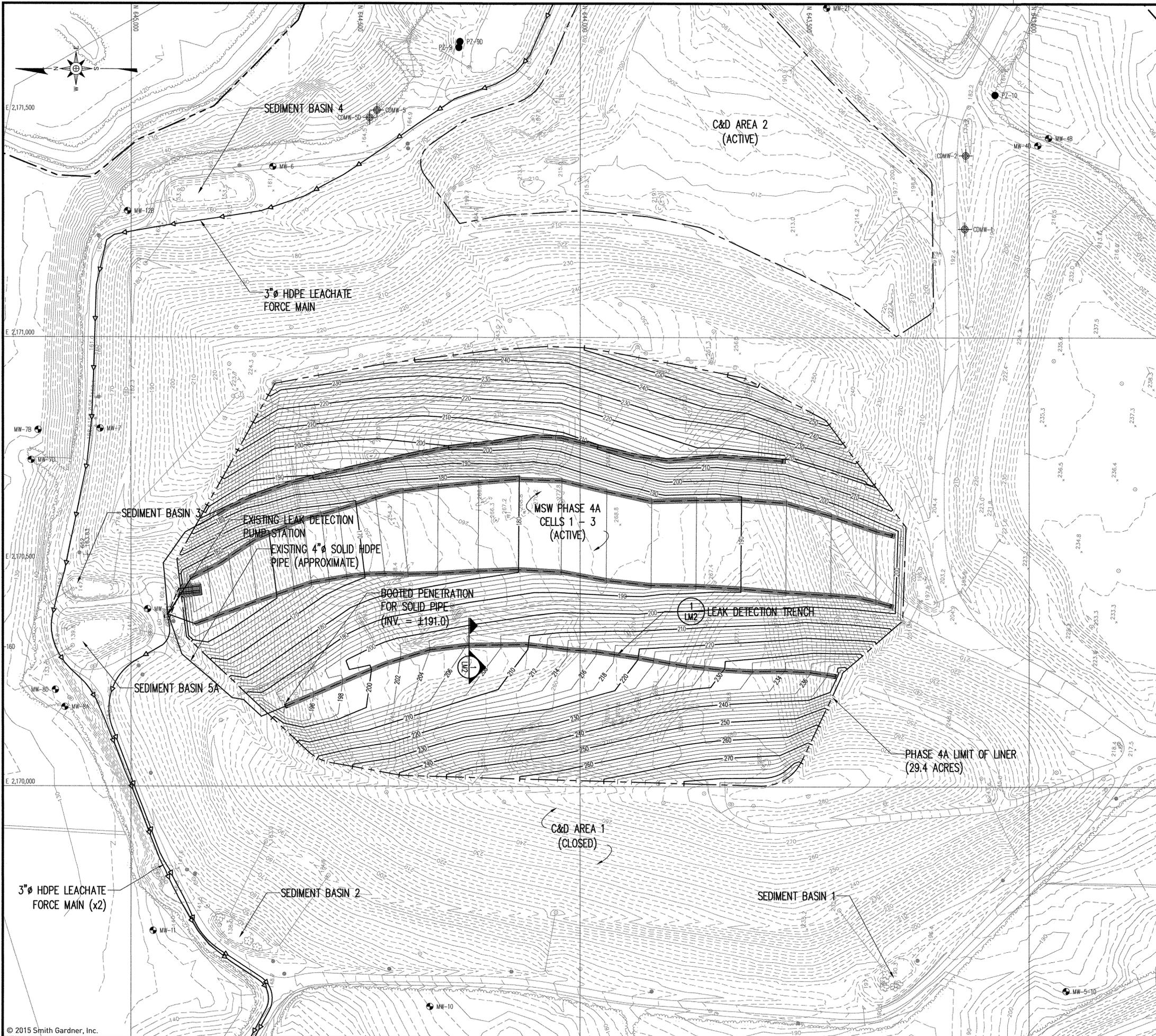
DESIGNED: P.K.S.	PROJECT NO: JOHN 07-2
DRAWN: J.A.L.	SCALE: AS SHOWN
APPROVED: PKS	DATE: JUNE 2007
FILENAME: JOHN-D0488B	DRAWING NUMBER: 4 S3

- LEGEND**
- EXISTING 10' CONTOUR (SEE REFERENCE 1)
 - EXISTING 2' CONTOUR
 - APPROXIMATE PROPERTY LINE
 - LIMITS OF EXISTING LINER
 - CELL 3 LIMIT OF LINER
 - AREA 1 CLOSURE - LIMIT OF GEOSYNTHETICS
 - PROPOSED 10' CONTOUR (SEE NOTE 1)
 - PROPOSED 2' CONTOUR
 - EXISTING MONITORING WELL
 - EXISTING PIEZOMETER
 - MONITORING WELL FOR C&D LANDFILL (UNSURVEYED LOCATION)

NOTES
 1. GRADES SHOWN REPRESENT TOP OF PROTECTIVE COVER.

REFERENCES
 1. OVERALL SITE TOPOGRAPHY PROVIDED BY GEODATA CORPORATION, BASED ON JUNE 17, 2014.





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		COMMENTS - ADDITIONAL CHANGES
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- LEGEND**
- 150 — EXISTING 10' CONTOUR (SEE REFERENCE 1)
 - - - - - EXISTING 2' CONTOUR
 - - - - - APPROXIMATE PROPERTY LINE
 - - - - - LIMITS OF EXISTING LINER
 - - - - - CELL 3 LIMIT OF LINER
 - - - - - AREA 1 CLOSURE - LIMIT OF GEOSYNTHETICS
 - - - - - PROPOSED 10' CONTOUR (SEE NOTE 1)
 - - - - - PROPOSED 2' CONTOUR
 - ▬ PERFORATED PIPING/STONE TRENCH
 - SOLID PIPING
 - EXISTING MONITORING WELL
 - EXISTING PIEZOMETER
 - ⊕ MONITORING WELL FOR C&D LANDFILL (UNSURVEYED LOCATION)

NOTES

- GRADES SHOWN REPRESENT TOP OF LINER GRADES.

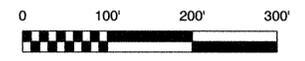
REFERENCES

- OVERALL SITE TOPOGRAPHY PROVIDED BY GEODATA CORPORATION, BASED ON JUNE 17, 2014.

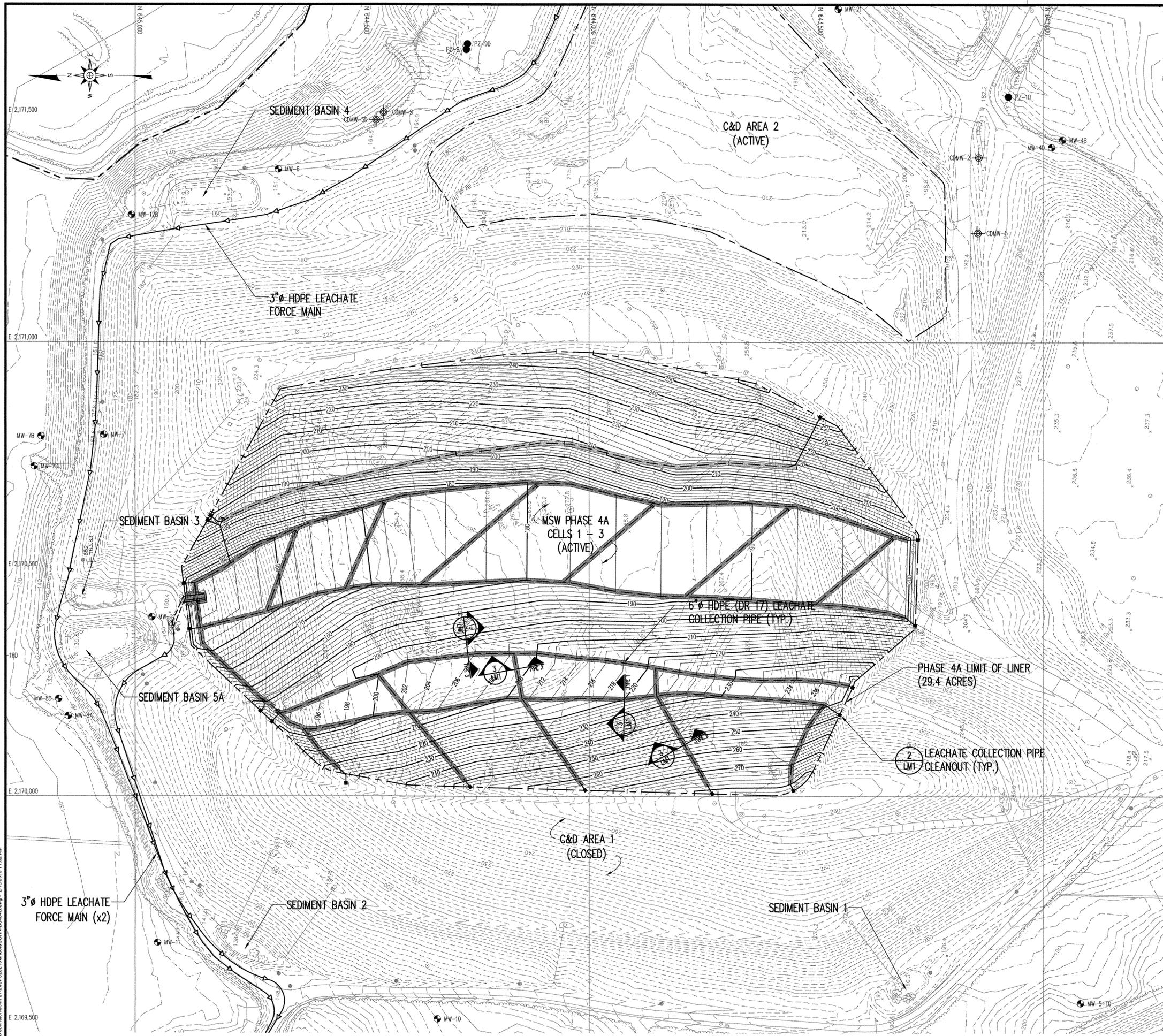
PROJECT TITLE:
**JOHNSTON COUNTY
 MSW LANDFILL FACILITY
 PHASE 4A
 PERMIT AMENDMENT DRAWINGS**

DRAWING TITLE:
**LEACHATE MANAGEMENT SYSTEMS
 LEAK DETECTION PIPING**

DESIGNED: P.K.S.	PROJECT NO: JOHN 07-2
DRAWN: T.R.S.	SCALE: AS SHOWN
APPROVED: PKS	DATE: FEB. 2015
FILENAME: JOHN-D0483B	SHEET NUMBER: 5
SHEET NUMBER: 5	DRAWING NUMBER: S4

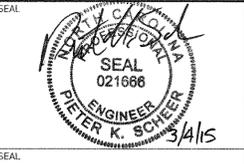


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PREPARED BY:
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PROJECT TITLE:
**JOHNSTON COUNTY
 MSW LANDFILL
 PHASE 4A
 PERMIT AMENDMENT DRAWINGS**

DRAWING TITLE:
**LEACHATE MANAGEMENT SYSTEMS
 LEACHATE COLLECTION PIPING**

DESIGNED:	P.K.S.	PROJECT NO.:	JOHN 07-2
DRAWN:	T.R.S.	SCALE:	AS SHOWN
APPROVED:	PKS	DATE:	FEB. 2015
FILENAME:	JOHN-00484B		
SHEET NUMBER:	6	DRAWING NUMBER:	S5

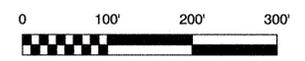
- LEGEND**
- 150 --- EXISTING 10' CONTOUR (SEE REFERENCE 1)
 - 200 --- EXISTING 2' CONTOUR
 - - - - - APPROXIMATE PROPERTY LINE
 - - - - - LIMITS OF EXISTING LINER
 - - - - - CELL 3 LIMIT OF LINER
 - - - - - AREA 1 CLOSURE - LIMIT OF GEOSYNTHETICS
 - 300 --- PROPOSED 10' CONTOUR (SEE NOTE 1)
 - 200 --- PROPOSED 2' CONTOUR
 - PERFORATED PIPING/STONE TRENCH
 - SOLID PIPING
 - CLEANOUT
 - EXISTING MONITORING WELL
 - EXISTING PIEZOMETER
 - MONITORING WELL FOR C&D LANDFILL (UNSURVEYED LOCATION)

NOTES

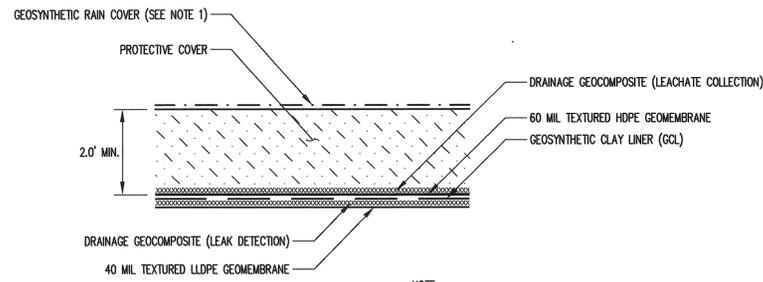
1. GRADES SHOWN REPRESENT TOP OF LINER GRADES.

REFERENCES

1. OVERALL SITE TOPOGRAPHY PROVIDED BY GEODATA CORPORATION, BASED ON JUNE 17, 2014.



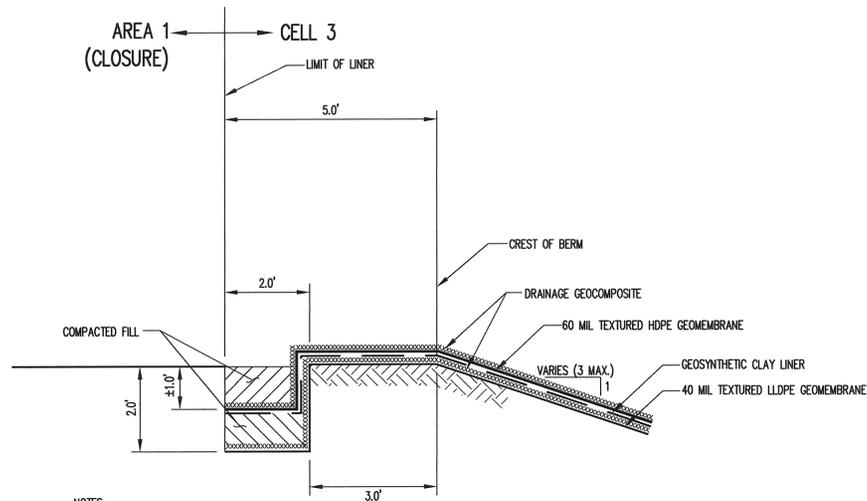
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NOTE:
1. FOR ANCHORAGE OF GEOSYNTHETIC RAIN COVER AGAINST WIND UPLIFT, SEE DETAIL 1/12

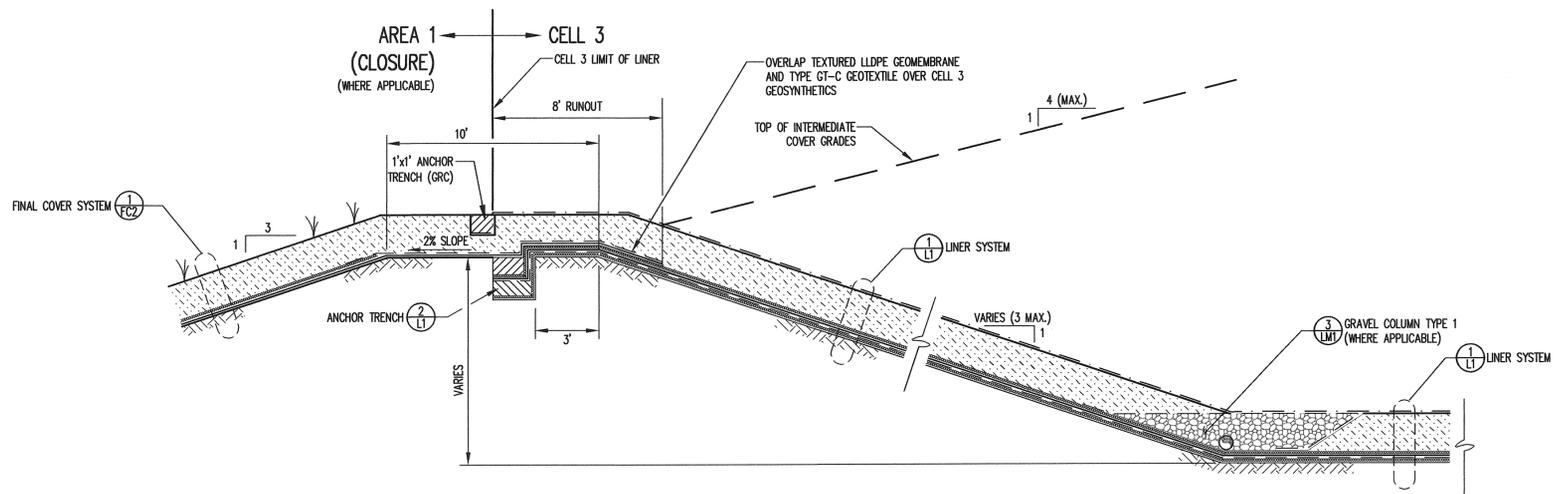
LINER AND LEACHATE COLLECTION SYSTEM CROSS SECTIONS

DETAIL 1
NOT TO SCALE L1



NOTES:
1. SOME LAYERS NOT SHOWN FOR CLARITY.

ANCHOR TRENCH
DETAIL 2
NOT TO SCALE L1



PERIMETER BERM
DETAIL 3
NOT TO SCALE L1

NO.	DATE	REVISION
1	11/08	RESPONSE TO NCDENR COMMENTS AND ADDITIONAL CHANGES

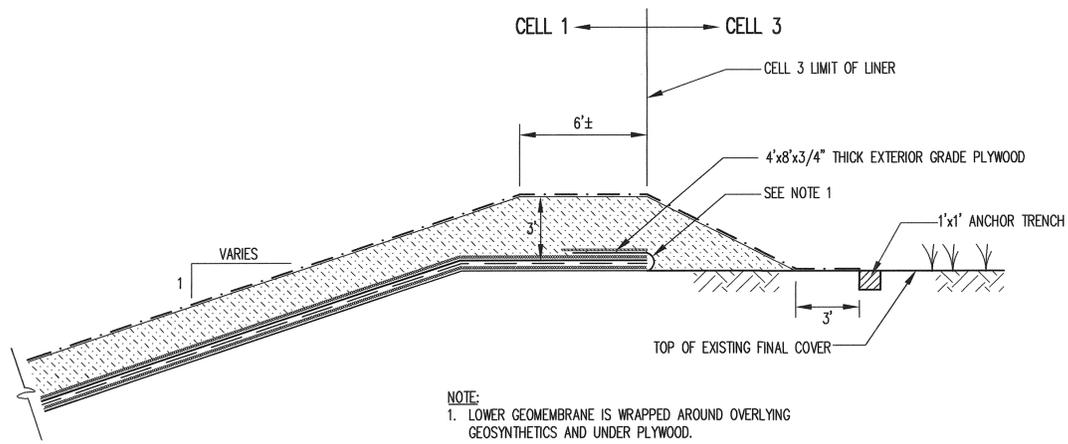
RICHARDSON SMITH GARDNER & ASSOCIATES
Engineering and Geological Services
14 N. Beaufort Ave.
Raleigh, N.C. 27603
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ph: 919-828-9577
fax: 919-828-3889

SEAL
P.K.S.
REGISTERED PROFESSIONAL ENGINEER
STATE OF NORTH CAROLINA
02/0308
PETER K. STOKES
12/24/08

PROJECT TITLE:
**JOHNSTON COUNTY MSW LANDFILL
PHASE 4A - CELL 3
PERMIT AMENDMENT DRAWINGS**

DRAWING TITLE:
**LINER AND BERM DETAILS
(SHEET 1 OF 2)**

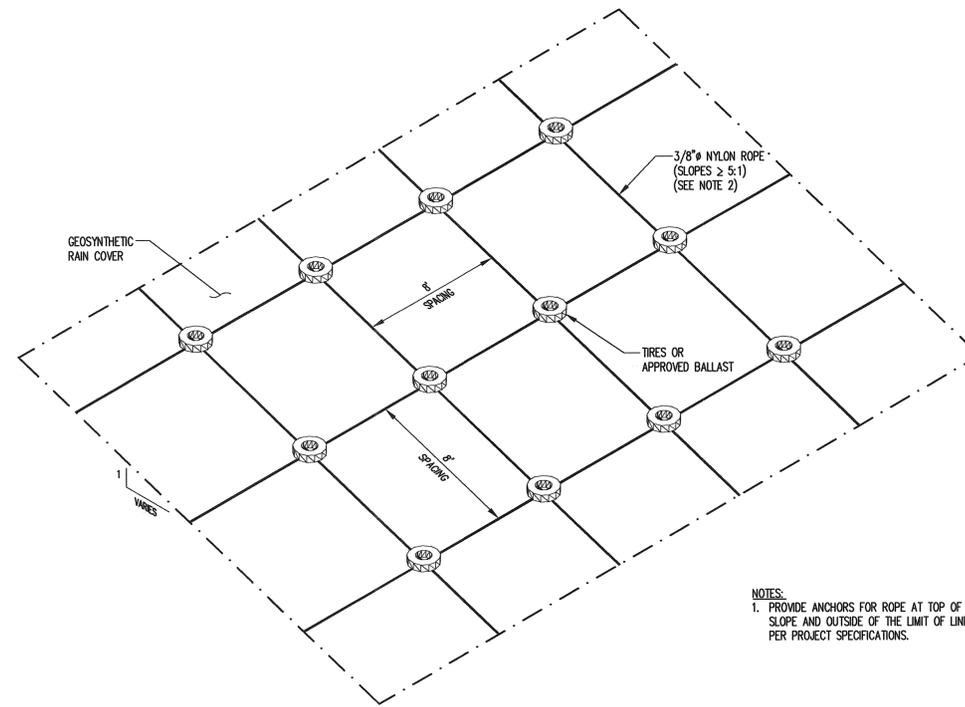
DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY:	PROJECT NO.: JOHN 07-2
SCALE: AS SHOWN	DATE: JUNE 2007
FILE NAME: JOHN-00496A	
SHEET NO. 7	DRAWING NO. L1



NOTE:
1. LOWER GEOMEMBRANE IS WRAPPED AROUND OVERLYING GEOSYNTHETICS AND UNDER PLYWOOD.

TYPICAL EXISTING LINER TERMINATION

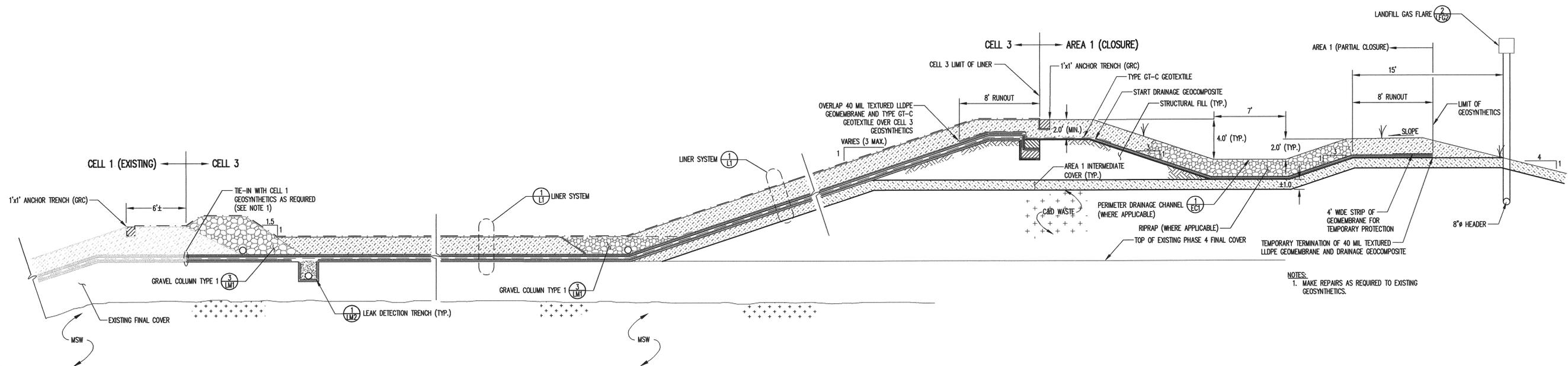
DETAIL 1
NOT TO SCALE L2



NOTES:
1. PROVIDE ANCHORS FOR ROPE AT TOP OF SLOPE AND OUTSIDE OF THE LIMIT OF LINER PER PROJECT SPECIFICATIONS.

ANCHORAGE OF GEOSYNTHETIC RAIN COVER

DETAIL 3
NOT TO SCALE L2



NOTES:
1. MAKE REPAIRS AS REQUIRED TO EXISTING GEOSYNTHETICS.

TYPICAL CELL 3 LINER AND LEACHATE COLLECTION SYSTEM CROSS SECTION

DETAIL 2
NOT TO SCALE L2

NO.	DATE	REVISION
1	11/08	RESPONSE TO NOBID COMMENTS AND ADDITIONAL CHANGES

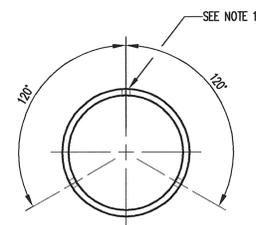
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Engineering and Geological Services
14 N. Boylan Ave.
Raleigh, N.C. 27603
www.rsgengineers.com
ph: 919-826-0877
fax: 919-826-5889

SEAL
P.K.S.
Professional Engineer
No. 021688
State of North Carolina
12/14/08

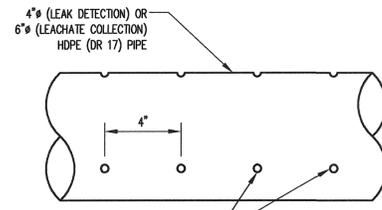
PROJECT TITLE:
**JOHNSTON COUNTY MSW LANDFILL
PHASE 4A - CELL 3
PERMIT AMENDMENT DRAWINGS**

DRAWING TITLE:
**LINER AND BERM DETAILS
(SHEET 2 OF 2)**

DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY:	PROJECT NO.: JOHN 07-2
SCALE: AS SHOWN	DATE: JUNE 2007
FILE NAME: JOHN-D0487A	
SHEET NO. 8	DRAWING NO. L2



NOTE:
1. ORIENT PIPE AS SHOWN.

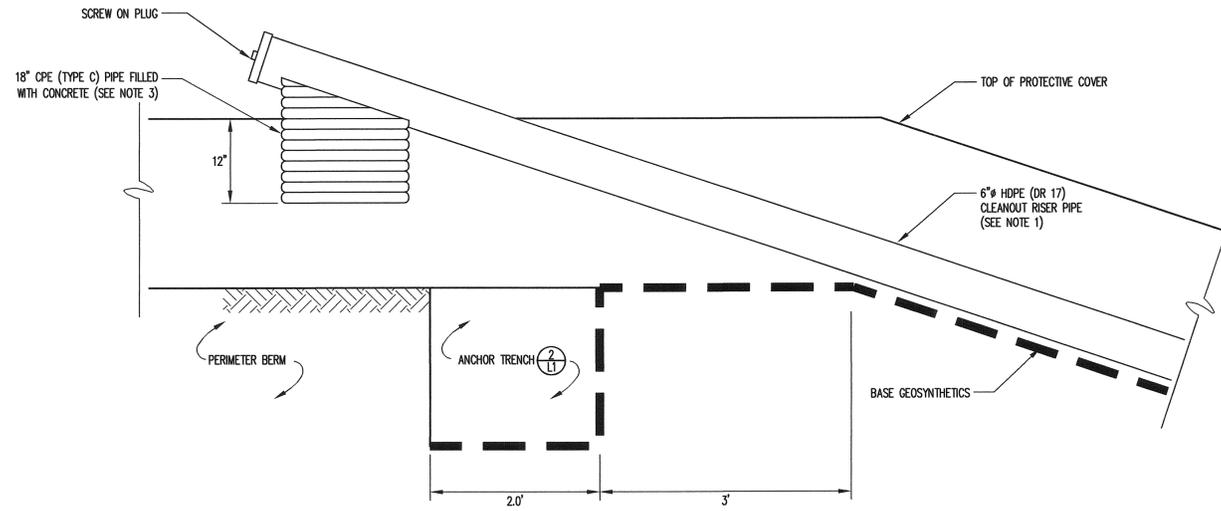


ALL HOLES ARE 1/2" (LEACHATE COLLECTION) OR 1/4" (LEAK DETECTION) AT 4" MIN. O.C.

LEAK DETECTION / LEACHATE COLLECTION PIPING

HDPE PIPE PERFORATIONS

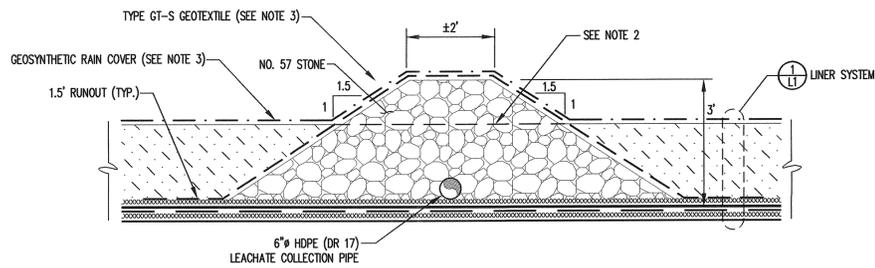
DETAIL 1 LM1 NOT TO SCALE



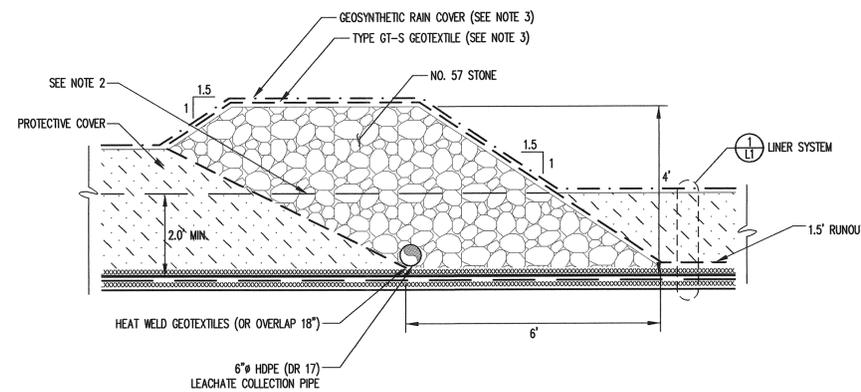
NOTES:
1. RISER PIPE TO BE CONSTRUCTED OF SAME PIPE MATERIAL AS LEACHATE COLLECTION PIPE EXCEPT THAT RISER PIPE IS SOLID WALL.
2. SOME LAYERS NOT SHOWN FOR CLARITY.
3. FORM CRADLE AT TOP OF 18" PIPE TO HOLD CLEANOUT RISER PIPE.

LEACHATE COLLECTION PIPE CLEANOUT AT CREST OF SLOPE

DETAIL 2 LM1 NOT TO SCALE

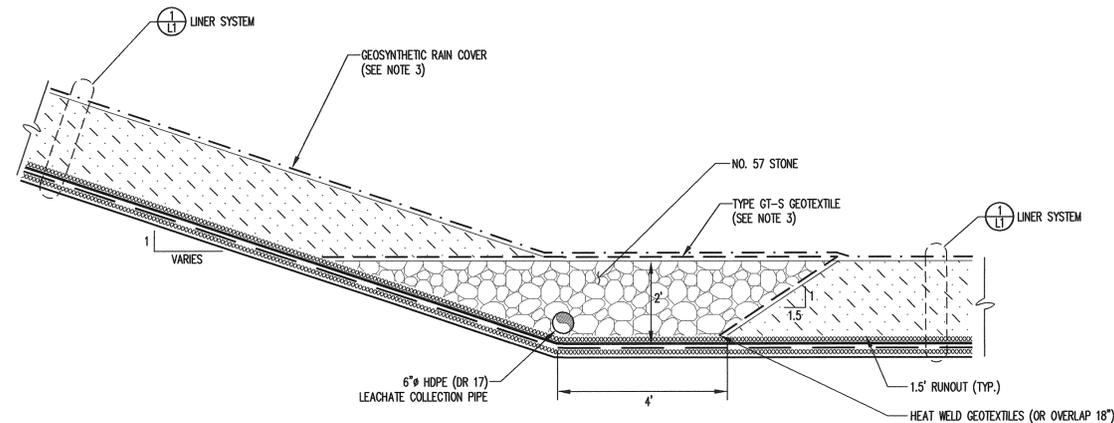


TYPE 2



TYPE 3

NOTES:
1. SOME LAYERS OF LINER SYSTEM AND LEAK DETECTION TRENCHES (WHERE APPLICABLE) NOT SHOWN FOR CLARITY.
2. AT THE LOW END OF TYPE 2 GRAVEL COLUMNS, LEAVE THE LAST 5 TO 10 FEET FLUSH WITH THE TOP OF PROTECTIVE COVER TO ALLOW STORMWATER TO FLOW TO THE LOW END OF THE CELL. AT THE LOW END OF TYPE 3 GRAVEL COLUMNS, LEAVE THE LAST 10 FEET FLUSH WITH THE TOP OF THE PROTECTIVE COVER TO ALLOW FOR RUNOFF OF STORMWATER.
3. OPERATIONS:
PRIOR TO ACTIVATION OF AN AREA DRAINING TO A PARTICULAR GRAVEL COLUMN, OR PORTION THEREOF, THE OWNER SHALL REMOVE ALL GEOSYNTHETIC RAIN COVER FROM THE AREA TO BE ACTIVATED, INCLUDING FROM GRAVEL COLUMNS. SUBSEQUENTLY, THE EXPOSED TYPE GT-S GEOTEXTILE SHALL BE REMOVED PRIOR TO THE PLACEMENT OF WASTE OVER THAT PORTION OF THE GRAVEL COLUMN.



TYPE 1

GRAVEL COLUMN CROSS SECTIONS

DETAIL 3 LM1 NOT TO SCALE

NO.	DATE	REVISION
1	11/08	RESPONSE TO NCDENR COMMENTS AND ADDITIONAL CHANGES

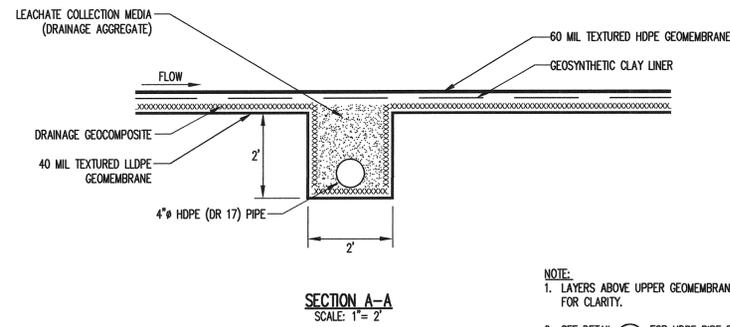
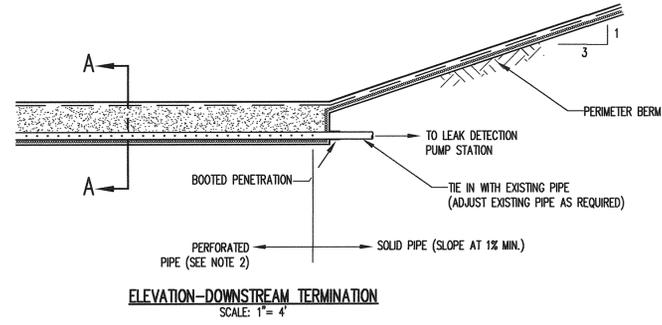
RICHARDSON SMITH GARDNER & ASSOCIATES
Engineering and Geological Services
14 N. Boylan Ave
Raleigh, N.C. 27603
www.rsgengineers.com
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JOHNSTON COUNTY MSW LANDFILL
PHASE 4A - CELL 3
PERMIT AMENDMENT DRAWINGS

LEACHATE MANAGEMENT
SYSTEM DETAILS
(SHEET 1 OF 2)

DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY:	PROJECT NO.: JOHN 07-2
SCALE: AS SHOWN	DATE: JUNE 2007
FILE NAME: JOHN-D0490A	
SHEET NO. 9	DRAWING NO. LM1



NOTE:
1. LAYERS ABOVE UPPER GEOMEMBRANE ARE NOT SHOWN FOR CLARITY.
2. SEE DETAIL **LM1** FOR HDPE PIPE PERFORATIONS.

LEAK DETECTION TRENCH
DETAIL **1**
NOT TO SCALE **LM2**

NO.	DATE	REVISION

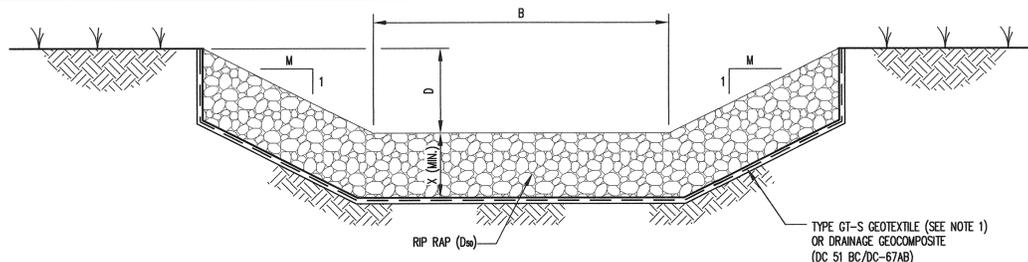
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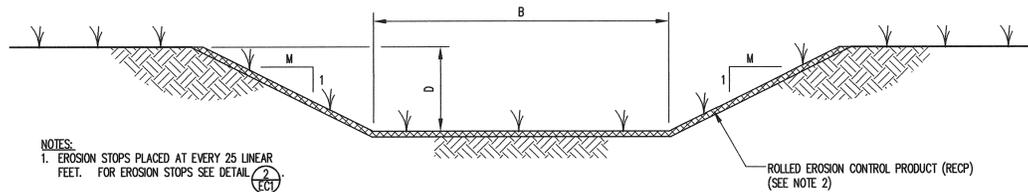
PROJECT TITLE:
**JOHNSTON COUNTY MSW LANDFILL
PHASE 4A - CELL 3
PERMIT AMENDMENT DRAWINGS**

DRAWING TITLE:
**LEACHATE MANAGEMENT
SYSTEM DETAILS
(SHEET 2 OF 2)**

DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY:	PROJECT NO.: JOHN 07-2
SCALE: AS SHOWN	DATE: JUNE 2007
FILE NAME: JOHN-DO491	
SHEET NO. 10	DRAWING NO. LM2



RIP RAP LINED CHANNELS



RECP LINED CHANNELS

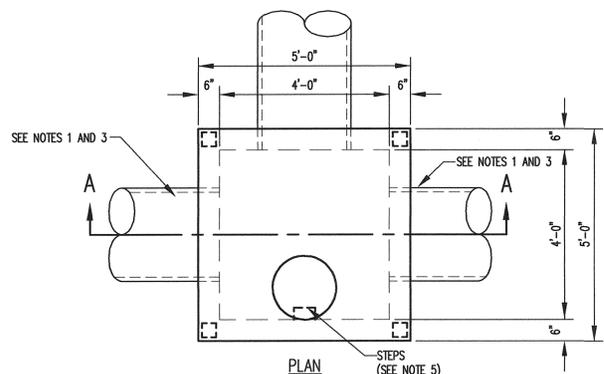
- NOTES:
1. EROSION STOPS PLACED AT EVERY 25 LINEAR FEET. FOR EROSION STOPS SEE DETAIL 2 (EC1)
 2. FOR ANCHORAGE OF RECP, SEE DETAIL 1 (EC2)

DRAINAGE CHANNEL DETAILS

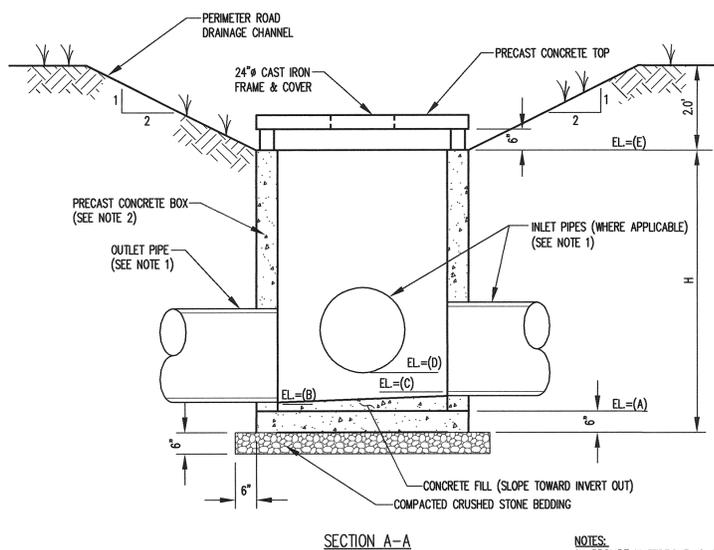
DETAIL 1 (EC1)
NOT TO SCALE

DRAINAGE CHANNEL NO.	LINING	B (FEET)	D (FEET)	M	D ₈₀ (INCHES)	X (FEET)
DC-21AB	TRM*	4.0	2.0	3	-	-
DC-21BC	RIP RAP	6.0	2.0	3	12	2.0
DC-41AB	TRM	6.0	2.0	3	-	-
DC-51AB	TRM	7.0	2.0	3	-	-
DC-51BC	RIP RAP	7.0	2.0	3	12	2.0
DC-64AB	TRM	4.0	2.0	3	-	-
DC-66AB	TRM	6.0	2.0	3	-	-
DC-67AB	RIP RAP	7.0	2.0	3	12	2.0

*TRM - TURF REINFORCEMENT MATTING



PLAN



SECTION A-A

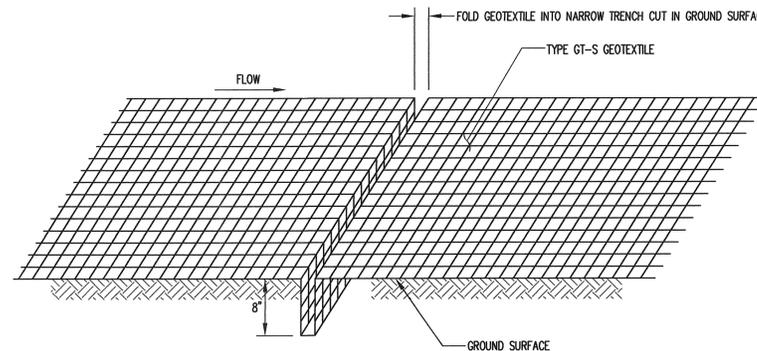
DROP INLET	A (FEET)	B (FEET)	C (FEET)	D (FEET)	E (FEET)	H (FEET)
DI-51	151.5	152.0	154.0	N/A	157.0	6.0

DROP INLET SCHEDULE

DROP INLET DETAILS

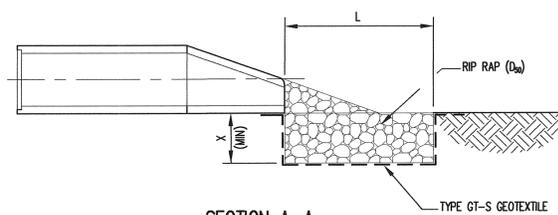
DETAIL 3 (EC1)
NOT TO SCALE

- NOTES:
1. PROVIDE WATERTIGHT JOINTS ON ALL PIPING.
 2. PRECAST CONCRETE BOXES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
A. CONCRETE: COMPRESSIVE STRENGTH 4000 PSI
B. REINFORCING: ASTM A-615, GRADE 60
C. MEETS H-20 LOADING.
 3. PIPES MAY BE ORIENTED DIFFERENTLY WITH RESPECT TO THE CHANNEL THAN DISPLAYED HERE. SEE DRAWING EC1 FOR PROPER ORIENTATION.
 4. THE CONTRACTOR SHALL PROVIDE ADEQUATE PROTECTION FROM SEDIMENTATION FOR ALL DROP INLETS USING GRVEL AND WIRE MESH FILTERS OR OTHER METHOD AS APPROVED BY THE ENGINEER.
 5. PROVIDE STEPS FOR DROP INLETS WITH H>4.5'. STEPS SHALL HAVE A 16" SPACING THE FULL HEIGHT OF THE DROP INLET. START FIRST STEP 6" BELOW TOP.



EROSION STOP DETAIL

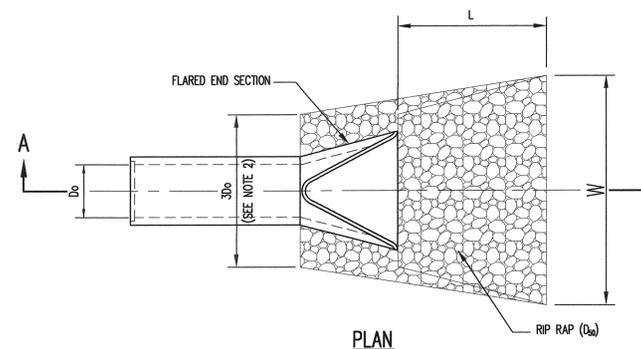
DETAIL 2 (EC1)
NOT TO SCALE



SECTION A-A

PIPE	D ₈₀	L	W	X	D ₈₀
C-41	18"	10'	10'	12"	6"

RIP RAP OUTLET PROTECTION SCHEDULE

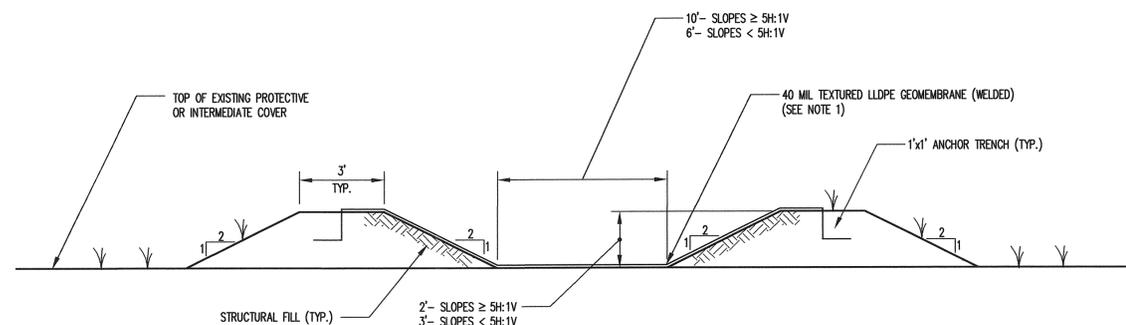


PLAN

- NOTES:
1. D₈₀ REFERS TO THE MINIMUM REQUIRED AVERAGE STONE SIZE.
 2. FOR MORE THAN ONE PIPE, EXTEND RIP RAP 1.0' MIN. BEYOND OUTSIDE EDGES OF PIPES.

RIP RAP OUTLET PROTECTION (OUTLET TO FLAT AREA)

DETAIL 4 (EC1)
NOT TO SCALE



TEMPORARY DOWN CHUTE

DETAIL 5 (EC1)
NOT TO SCALE

- NOTES:
1. EXTEND LLDPGE GEOMEMBRANE UNDER GEOSYNTHETIC RAIN COVER (GRC) PAST LOCATION OF GRAVEL COLUMN. ATTACH GRC TO LLDPGE GEOMEMBRANE USING METHOD APPROVED BY THE ENGINEER.
 2. TERMINATE DOWN CHUTE INTO EXISTING RIP RAP LINED DRAINAGE CHANNEL. TUCK GEOMEMBRANE UNDER EDGE OF RIP RAP.

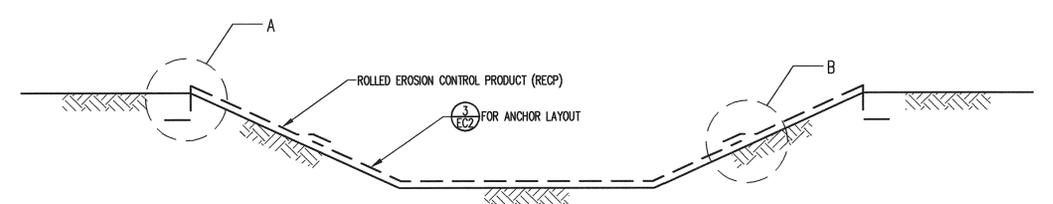
NO.	DATE	REVISION	RESPONSE TO NOISE COMMENTS AND ADDITIONAL CHANGES
1	11/08		

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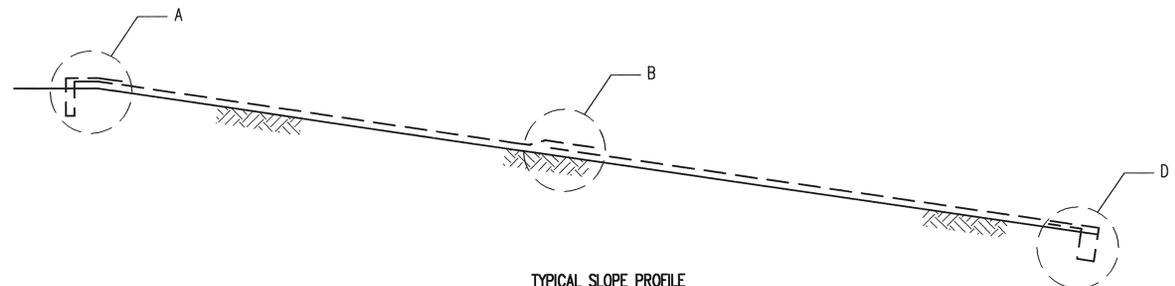
JOHNSTON COUNTY MSW LANDFILL
 PHASE 4A - CELL 3
 PERMIT AMENDMENT DRAWINGS

EROSION AND SEDIMENTATION
 DETAILS
 (SHEET 1 OF 2)

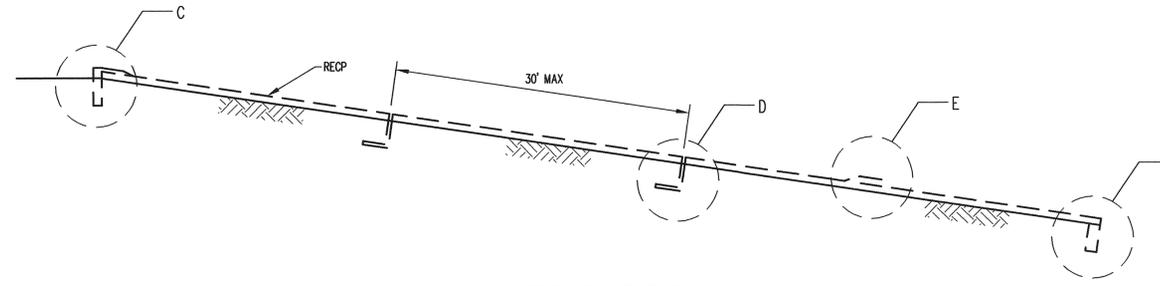
DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY:	PROJECT NO.: JOHN 07-2
SCALE: AS SHOWN	DATE: JUNE 2007
FILE NAME: JOHN-D0492A	DRAWING NO.:
SHEET NO. 11	DRAWING NO. EC1



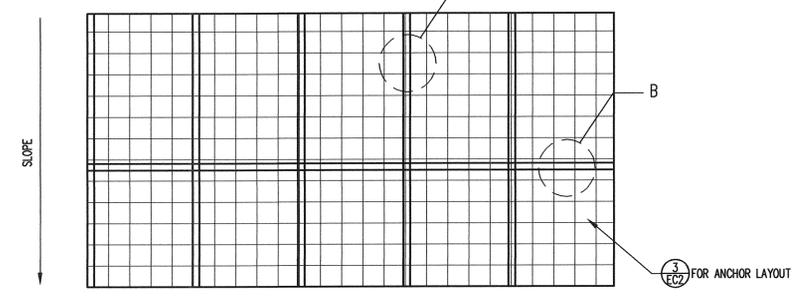
TYPICAL CHANNEL CROSS SECTION



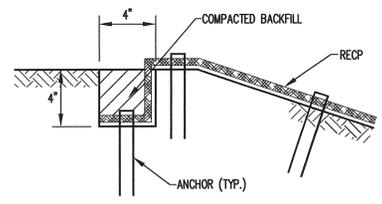
TYPICAL SLOPE PROFILE



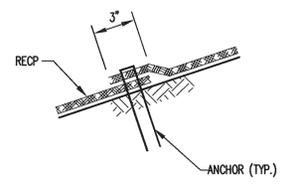
TYPICAL CHANNEL PROFILE



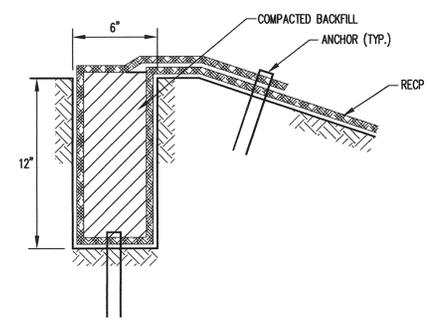
TYPICAL SLOPE PLAN VIEW



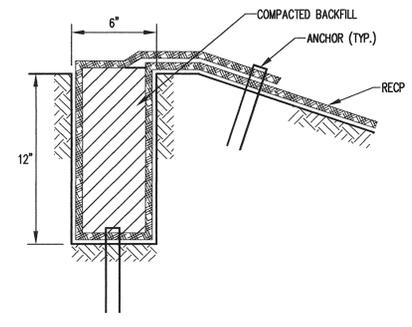
A. LONGITUDINAL ANCHOR TRENCH



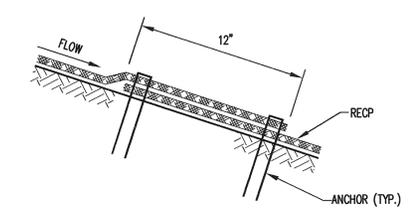
B. OVERLAP AT ADJACENT EDGES



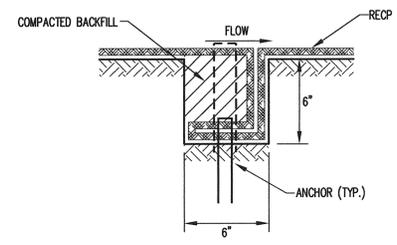
C. UPSTREAM TERMINAL ANCHOR TRENCH



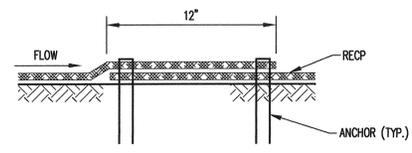
A. UPSLOPE TERMINAL ANCHOR TRENCH



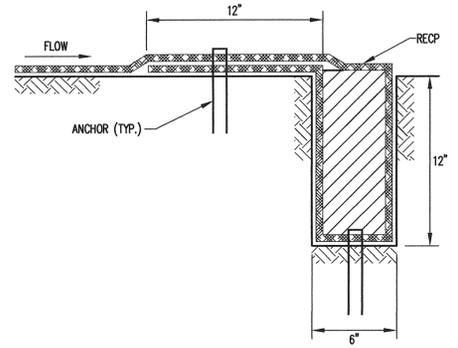
B. OVERLAP AT ROLL ENDS



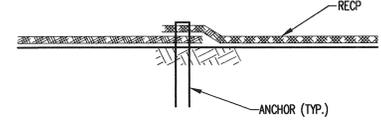
D. INTERMITTENT CHECK SLOT



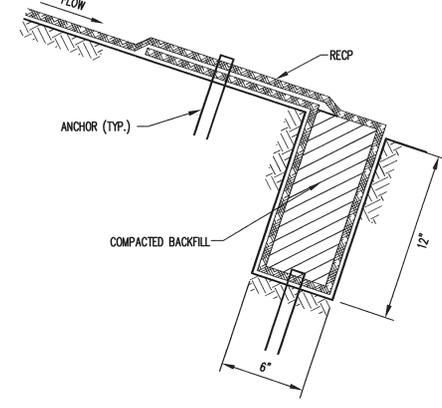
E. OVERLAP AT ROLL ENDS



F. DOWNSTREAM TERMINAL ANCHOR TRENCH



C. OVERLAP AT ADJACENT EDGES



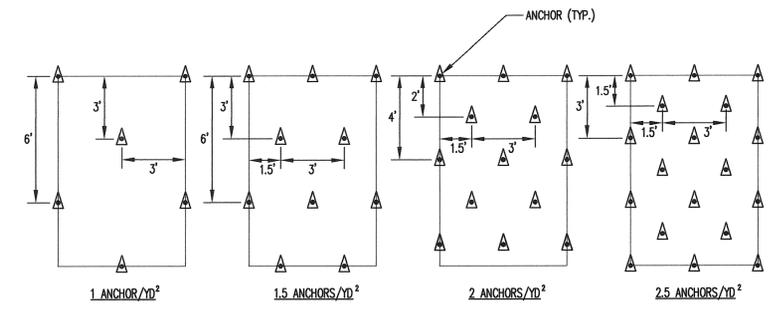
D. DOWNSLOPE TERMINAL ANCHOR TRENCH

NOTES:
 1. PLACE ANCHORS AT ANCHOR TRENCHES, OVERLAPS, AND CHECK SLOTS ON 1 FOOT CENTERS.
 IF APPLICABLE, STAGGER ANCHOR SPACING BETWEEN MULTIPLE ROWS OF ANCHORS.

INSTALLATION OF ROLLED EROSION CONTROL PRODUCTS (CHANNELS)

DETAIL 1 EC2
 NOT TO SCALE

LOCATION	REQUIRED ANCHOR SPACING (ANCHORS/YD ²)
ALL CHANNELS	2.5
1.5H:1V SLOPES	2.0
2H:1V SLOPES	2.0
2.5H:1V SLOPES	1.5
3H:1V SLOPES	1.5
3.5H:1V SLOPES	1.0
4H:1V SLOPES	1.0



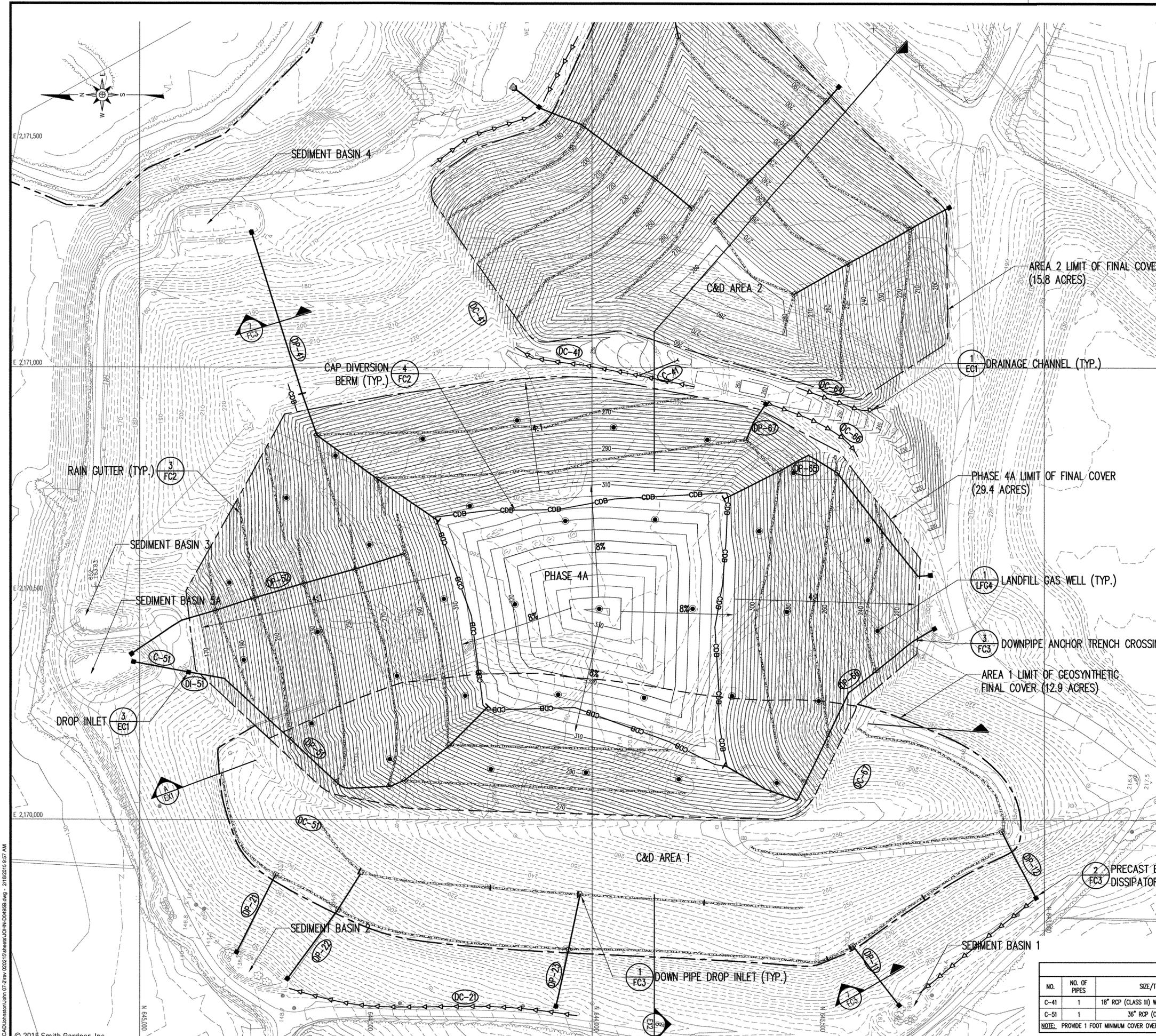
ANCHOR LAYOUT

DETAIL 3 EC2
 NOT TO SCALE

INSTALLATION OF ROLLED EROSION CONTROL PRODUCTS (SLOPES)

DETAIL 2 EC2
 NOT TO SCALE

NOTE:
 1. PLACE ANCHORS AT ANCHOR TRENCHES, OVERLAPS, AND CHECK SLOTS ON 1 FOOT CENTERS.
 IF APPLICABLE, STAGGER ANCHOR SPACING BETWEEN MULTIPLE ROWS OF ANCHORS.



RAIN GUTTERS & DOWN PIPES SCHEDULE	
RAIN GUTTERS	
PIPE DIAMETER (INCHES)	MAX DRAINAGE AREA (ACRES)
6	0.32
8	0.67
10	1.18
12	1.89

DOWN PIPE DROP INLETS	
PIPE DIAMETER (INCHES)	MAX DRAINAGE AREA (ACRES)
8	0.52
10	0.80
12	1.14
14	1.37
16	1.80
18	2.27

DOWN PIPES	
PIPE DIAMETER (INCHES)	MAX DRAINAGE AREA (ACRES)
8	1.02
10	1.80
12	2.88
14	3.65
16	5.27
18	7.15

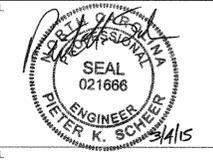
- LEGEND**
- 150 — EXISTING 10' CONTOUR (SEE REFERENCE 1)
 - — — EXISTING 2' CONTOUR
 - APPROXIMATE PROPERTY LINE
 - - - LIMITS OF FINAL COVER
 - 300 — PROPOSED 10' CONTOUR (SEE NOTE 1)
 - — — PROPOSED 2' CONTOUR
 - ← ← ← DRAINAGE CHANNEL
 - - - DIVERSION BERM
 - x - x - SILT FENCE
 - CULVERT/DROP INLET
 - CDB — CAP DIVERSION BERM
 - DP-3 — DOWN PIPE
 - ← DC-1 — DRAINAGE CHANNEL
 - C-1 — CULVERT NUMBER
 - DI-1 — DROP INLET NUMBER
 - DOWN PIPE DROP INLET
 - PRECAST ENERGY DISSIPATOR
 - RAIN GUTTER
 - DOWN PIPE WITH TEE INLET
 - LANDFILL GAS WELL

NOTES
1. GRADES SHOWN FOR PHASE 4A AND AREA 2 REPRESENT TOP OF FINAL COVER. GRADES SHOWN FOR AREA 1 REPRESENT TOP OF INTERMEDIATE COVER.

REFERENCES
1. OVERALL SITE TOPOGRAPHY PROVIDED BY GEODATA CORP., BASED ON JUNE 17, 2014 AERIAL PHOTOGRAPHY.

PREPARED FOR:
**JOHNSTON COUNTY
NORTH CAROLINA
DEPARTMENT OF
SOLID WASTE SERVICES**

PREPARED BY:
NC LIC. NO. C-0828 (ENGINEERING)
**SMITH+
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ENGINEERS
14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577



REV.	DATE	DESCRIPTION
1	11/08	RESPONSE TO INCNDR
		COMMENTS - ADDITIONAL CHANGES
2	2/15	REVISED PER DMW COMMENTS

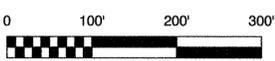
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PROJECT TITLE:
**JOHNSTON COUNTY
MSW LANDFILL
PHASE 4A
PERMIT AMENDMENT DRAWINGS**

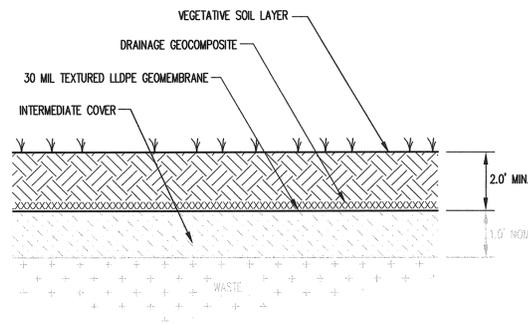
DRAWING TITLE:
**PHASE 4A FINAL COVER
GRADING AND DRAINAGE PLAN**

CULVERT SCHEDULE							
NO.	NO. OF PIPES	SIZE/TYPE	LENGTH (FEET)	SLOPE (%)	INV. IN (FEET)	INV. OUT (FEET)	REMARKS
C-41	1	18" RCP (CLASS III) W/FES (BOTH ENDS)	84	2.4	253.0	251.0	-
C-51	1	36" RCP (CLASS III)	120	10.0	152.0	140.0	INLET IN DI-51

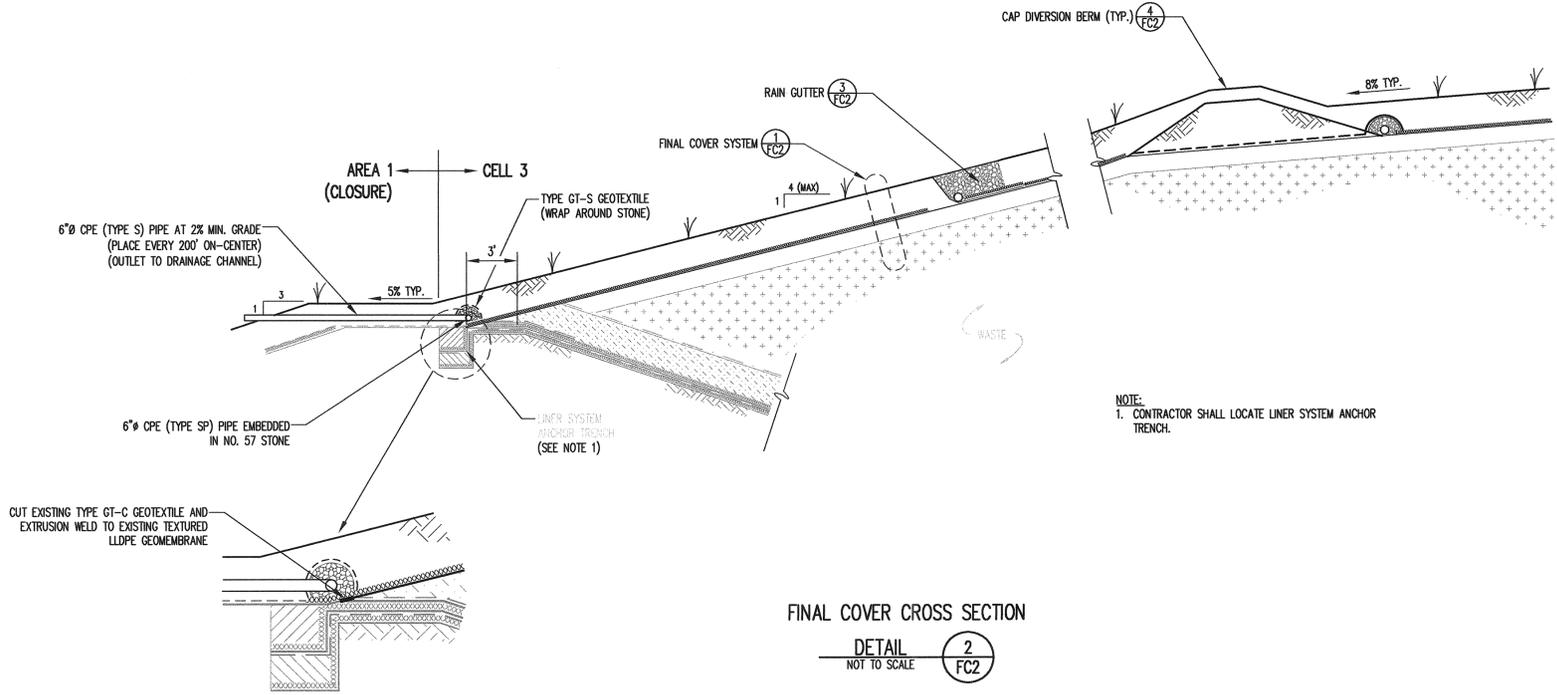
NOTE: PROVIDE 1 FOOT MINIMUM COVER OVER ALL CULVERTS UNLESS OTHERWISE APPROVED BY THE ENGINEER.



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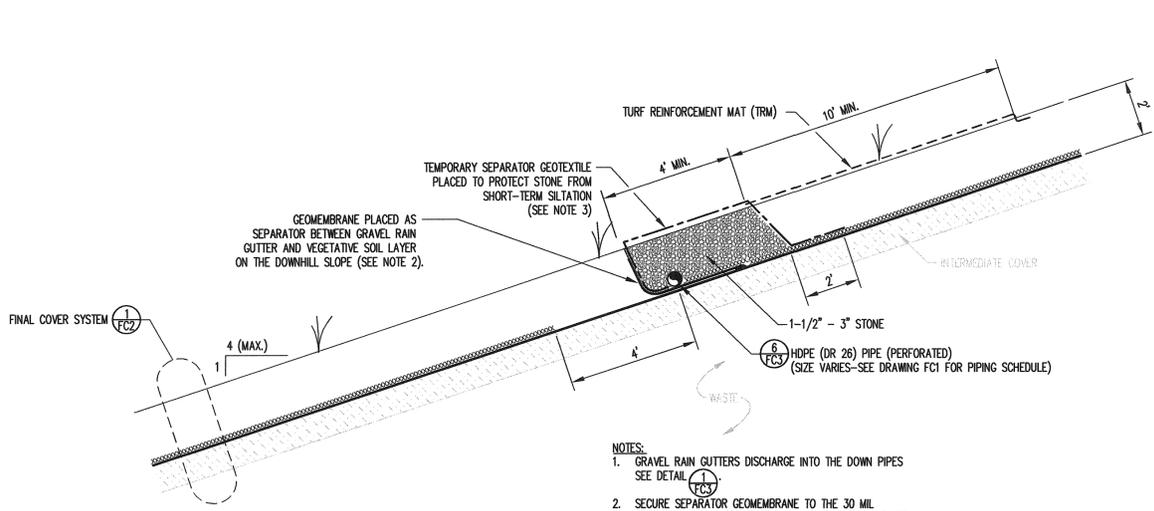


FINAL COVER
DETAIL 1
NOT TO SCALE



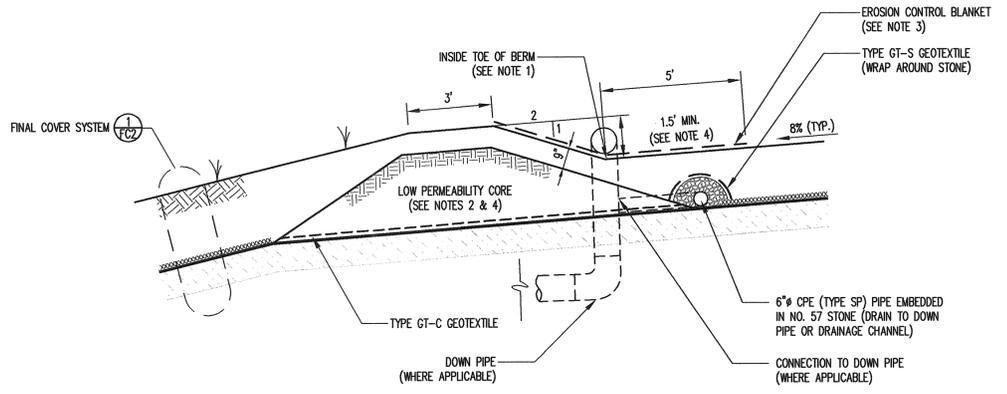
FINAL COVER CROSS SECTION
DETAIL 2
NOT TO SCALE

NOTE:
1. CONTRACTOR SHALL LOCATE LINER SYSTEM ANCHOR TRENCH.



RAIN GUTTER
DETAIL 3
NOT TO SCALE

- NOTES:
- GRAVEL RAIN GUTTERS DISCHARGE INTO THE DOWN PIPES SEE DETAIL 1.
 - SECURE SEPARATOR GEOMEMBRANE TO THE 30 MIL TEXTURED LLDPE GEOMEMBRANE BY EXTRUSION WELD, OR WITH TAPECOAT 9-25 (2\"), OR EQUAL.
 - 4 OZ / SY NON-WOVEN GEOTEXTILE SHALL BE USED.



CAP DIVERSION BERM
DETAIL 4
NOT TO SCALE

- NOTES:
- GRADE INSIDE TOE OF BERM TOWARD DOWN CHUTE OR DOWN PIPE AT 0.5% MIN. SLOPE.
 - CONSTRUCT CORE FROM TYPE CH, CL, MH, ML, SC, OR SM MATERIALS (USCS CLASSIFICATION).
 - ANCHOR OF EROSION CONTROL BLANKET, ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
 - TAPER BERM HEIGHT UP TO 3' AT DOWN PIPE LOCATION.

NO.	DATE	REVISION
1	11/08	RESPONSE TO INQUIRY COMMENTS AND ADDITIONAL CHANGES

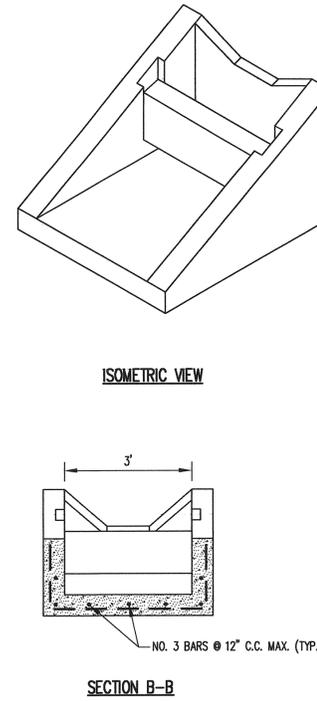
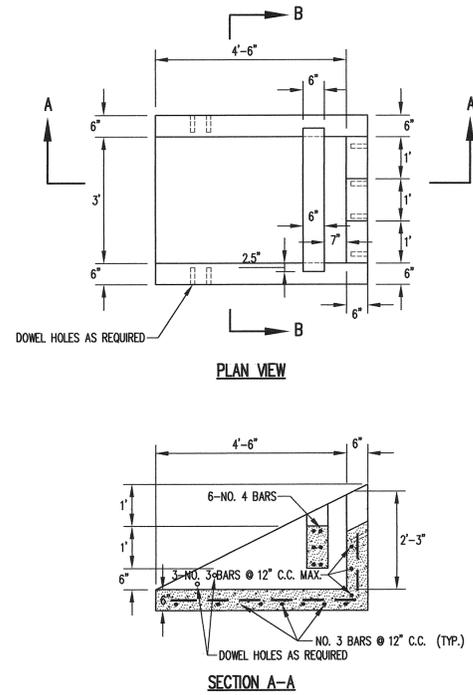
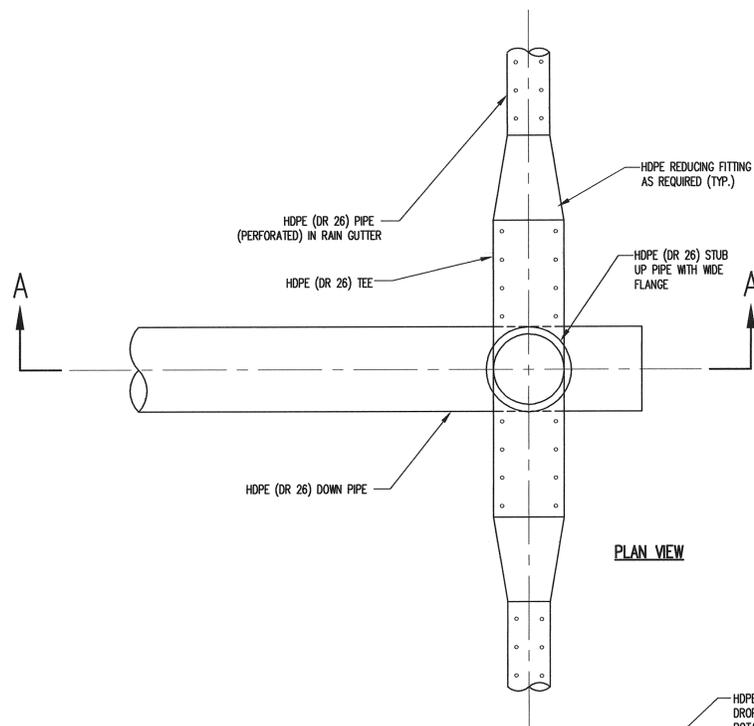
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JOHNSTON COUNTY MSW LANDFILL
PHASE 4A - CELL 3
PERMIT AMENDMENT DRAWINGS

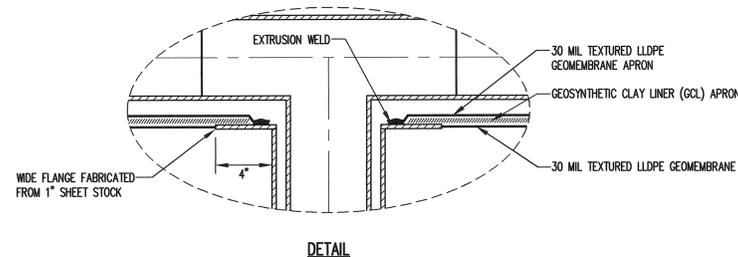
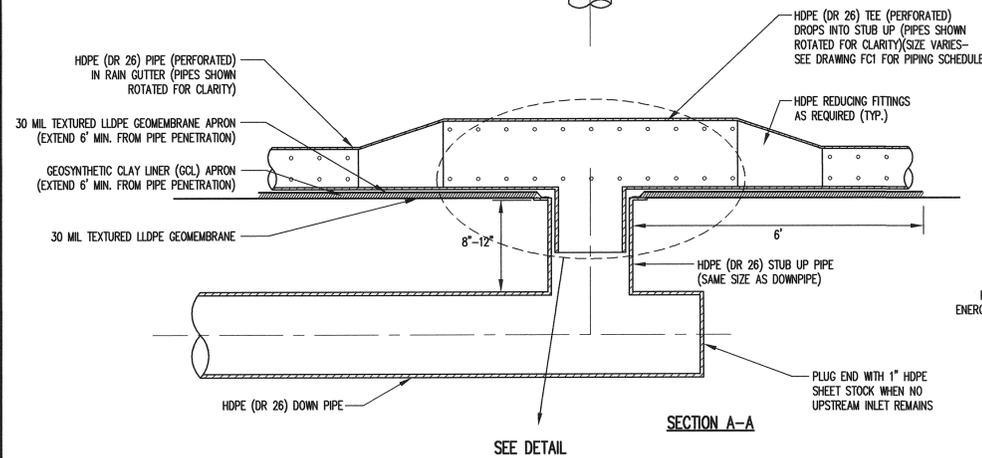
FINAL COVER DETAILS
(SHEET 1 OF 2)

DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY:	PROJECT NO.: JOHN 07-2
SCALE: AS SHOWN	DATE: JUNE 2007
FILE NAME: JOHN-DO-496A	DRAWING NO.:
SHEET NO. 14	DRAWING NO. FC2

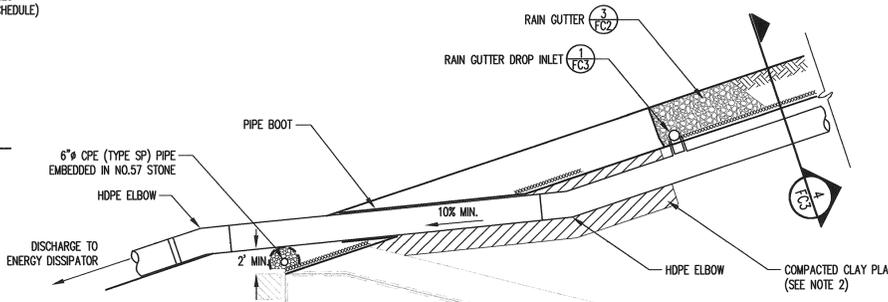


PRECAST ENERGY DISSIPATOR
DETAIL 2 FC3
NOT TO SCALE

NOTES:
1. CONCRETE STRENGTH 4000 PSI MINIMUM.
2. REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 40.
3. DIMENSIONS SHOWN FOR CONCRETE THICKNESS ARE MINIMUMS. ACTUAL MEASUREMENTS MAY VARY WITH MANUFACTURER'S TOLERANCES.

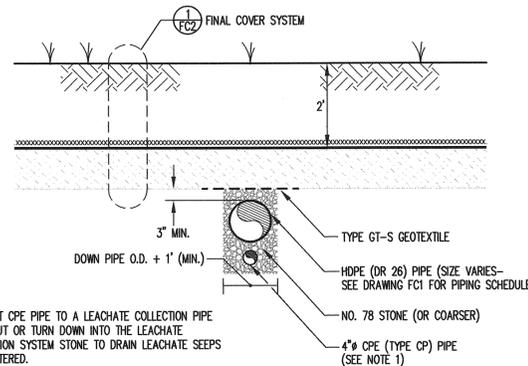


RAIN GUTTER DROP INLET
DETAIL 1 FC3
NOT TO SCALE



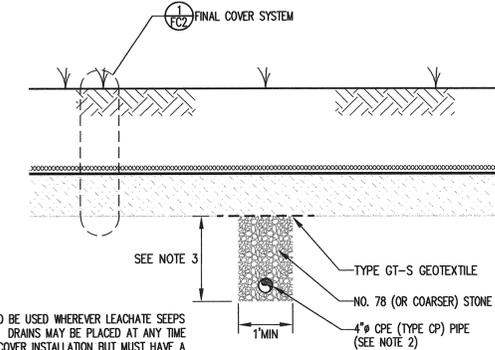
NOTES:
1. SEE SCHEDULE ON DRAWING FC1 FOR PIPE SIZES.
2. PLACE COMPACTED CLAY PLUG ALONG LAST 20 FEET OF PIPE AND APPROXIMATELY 12 INCH THICKNESS AROUND PIPE.

DOWN PIPE AT ANCHOR TRENCH CROSSING
DETAIL 3 FC3
NOT TO SCALE



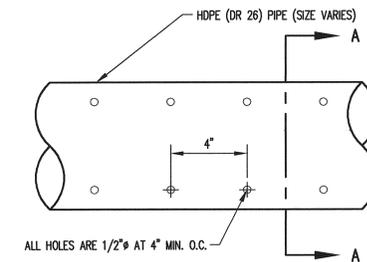
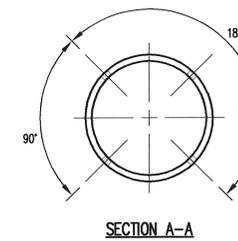
NOTE:
1. CONNECT CPE PIPE TO A LEACHATE COLLECTION PIPE CLEANOUT OR TURN DOWN INTO THE LEACHATE COLLECTION SYSTEM STONE TO DRAIN LEACHATE SEEPS ENCOUNTERED.

TYPICAL DOWN PIPE SECTION
DETAIL 4 FC3
NOT TO SCALE



NOTES:
1. THIS DETAIL IS TO BE USED WHEREVER LEACHATE SEEPS ARE A PROBLEM. DRAINS MAY BE PLACED AT ANY TIME PRIOR TO FINAL COVER INSTALLATION BUT MUST HAVE A MINIMUM OF 12" OF INTERMEDIATE COVER SOIL.
2. CONNECT CPE PIPE TO A LEACHATE COLLECTION PIPE CLEANOUT OR TURN DOWN INTO THE LEACHATE COLLECTION SYSTEM STONE TO DRAIN SEEP COLLECTION TRENCH.
3. DEPTH OF TRENCH IS AS REQUIRED TO DRAIN SEEP(S).

SEEP COLLECTION TRENCH
DETAIL 5 FC3
NOT TO SCALE



RAIN GUTTER PIPE PERFORATIONS
DETAIL 6 FC3
NOT TO SCALE

TYPICAL DOWN PIPE SECTION (SOIL-ONLY FINAL COVER)
DETAIL 7 FC3
NOT TO SCALE

RESPONSE TO NOBIDDER COMMENTS AND ADDITIONAL CHANGES

NO. DATE

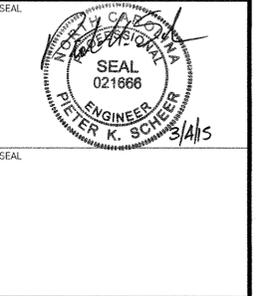
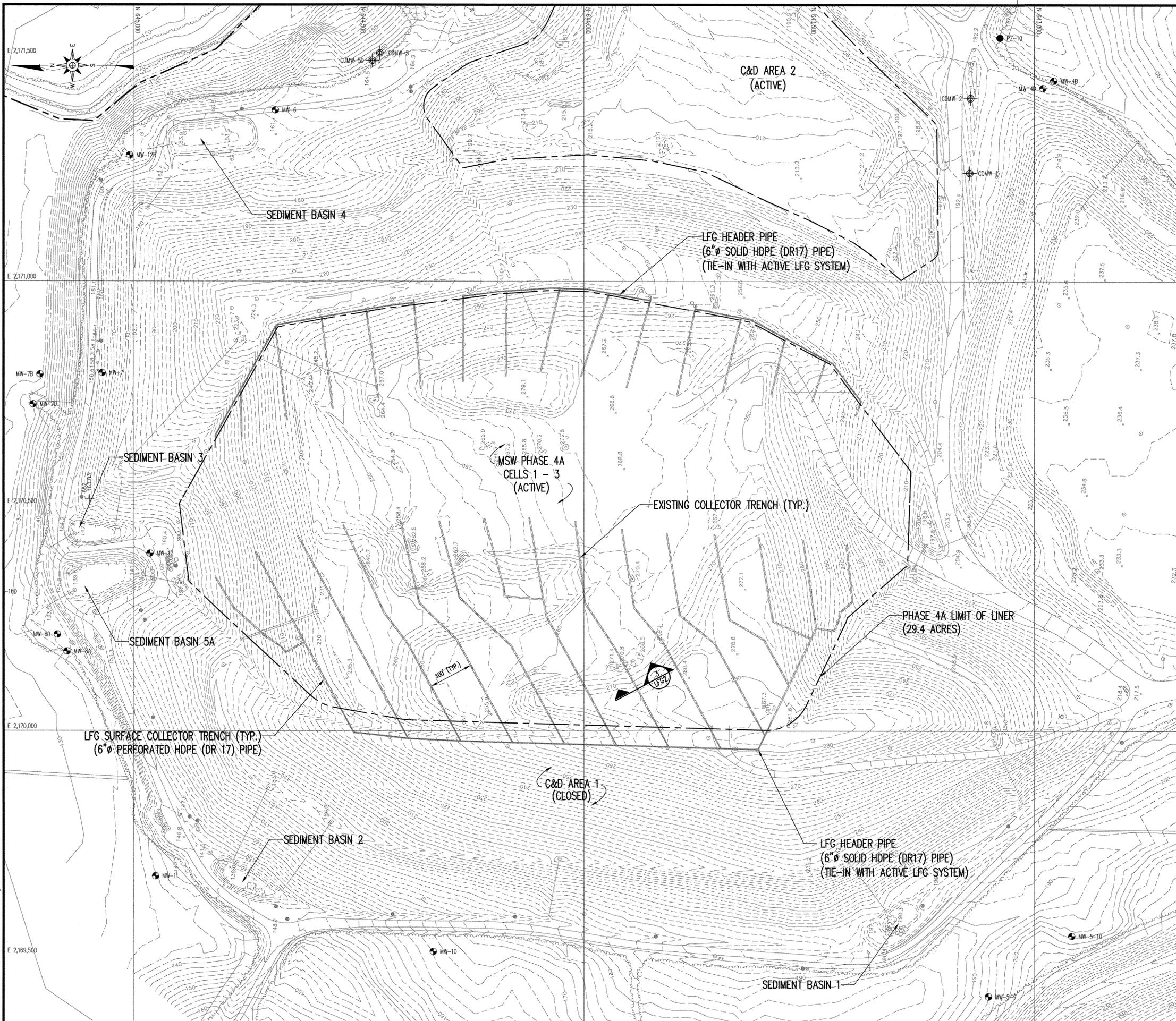
11/08

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Raleigh, N.C. 27603
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fax: 919.828.9899

JOHNSTON COUNTY MSW LANDFILL
PHASE 4A - CELL 3
PERMIT AMENDMENT DRAWINGS

DESIGNED BY: J.A.L.
DRAWN BY: J.A.L.
CHECKED BY: PROJECT NO.: JOHN 07-2
SCALE: AS SHOWN DATE: JUNE 2007
FILE NAME: JOHN-0497A
SHEET NO.: DRAWING NO.:
15 FC3

G:\CAD\johnston\john 07 2\new 102108\mshu\DRH\DWG0897A.dwg - 12/4/2006 1:31 PM



REV.	DATE	DESCRIPTION
1	11/08	RESPONSE TO NCCDR
2	2/15	REVISED PER DWM COMMENTS

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PROJECT TITLE:
**JOHNSTON COUNTY
 MSW LANDFILL FACILITY
 PHASE 4A
 PERMIT AMENDMENT DRAWINGS**

DRAWING TITLE:
**PHASE 4A LANDFILL GAS
 MANAGEMENT SYSTEM**

DESIGNED BY: P.K.S.	PROJECT NO.:
DRAWN BY: T.R.S.	SCALE:
APPROVED BY: PKS	DATE:
FILENAME:	FILE NUMBER:
SHEET NUMBER:	DRAWING NUMBER:

JOHN 07-2
 AS SHOWN
 FEB. 2015
 JOHN-D0485B
 16 LFG1

LEGEND

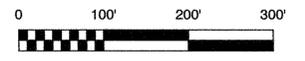
(Dashed line)	EXISTING 10' CONTOUR (SEE REFERENCE 1)
(Dotted line)	EXISTING 2' CONTOUR
(Long dashed line)	APPROXIMATE PROPERTY LINE
(Short dashed line)	LIMITS OF EXISTING LINER
(Dash-dot line)	AREA 1 CLOSURE - LIMIT OF GEOSYNTHETICS
(Double line)	LFG SURFACE COLLECTOR TRENCH/ PERFORATED PIPING
(Single line)	SOLID PIPING

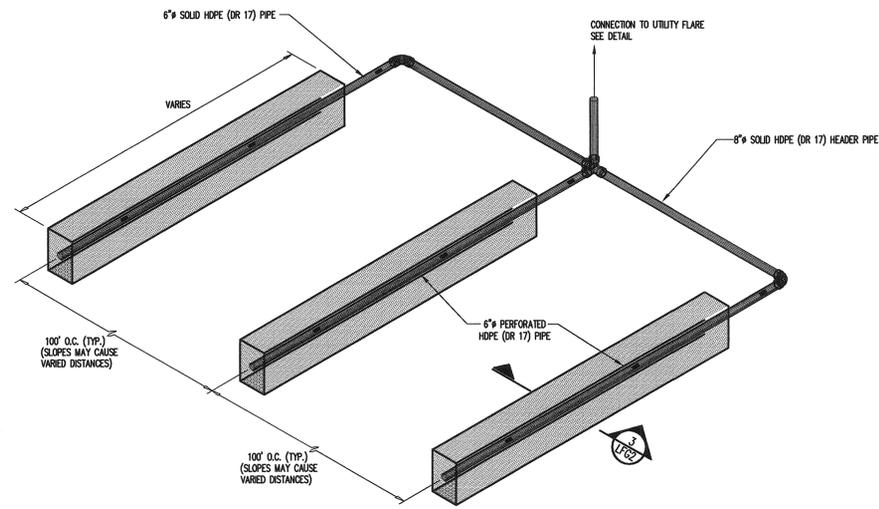
NOTES

- GRADES SHOWN REPRESENT TOP OF SUBGRADE.
- REFER TO CURRENT LFG MANAGEMENT PLAN FOR LOCATION OF OTHER LFG COLLECTION AND CONTROL DEVICES IN AND AROUND PHASE 4A.

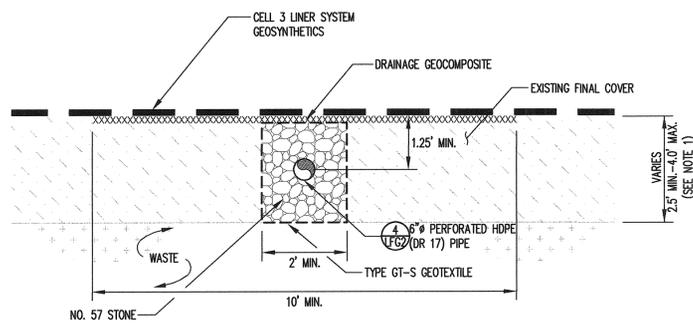
REFERENCES

- OVERALL SITE TOPOGRAPHY PROVIDED BY GEODATA CORP., BASED ON JUNE 17, 2014 AERIAL PHOTOGRAPHY.



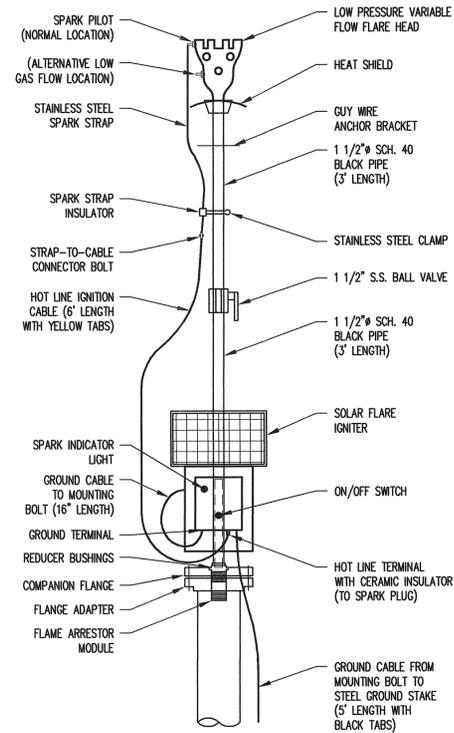


GAS COLLECTION NETWORK
 DETAIL 1 LFG2
 NOT TO SCALE

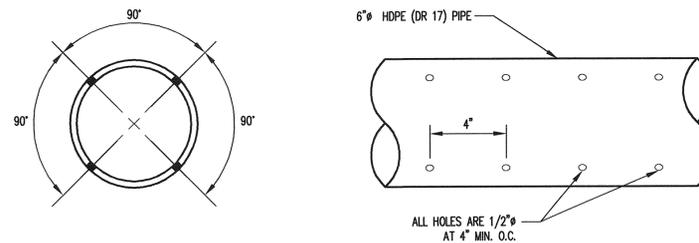


LFG SURFACE COLLECTOR TRENCH CROSS SECTION
 DETAIL 3 LFG2
 NOT TO SCALE

NOTE:
 1. EXCAVATE TRENCH SUCH THAT EXISTING COVER IS BREACHED OR TO A MAXIMUM DEPTH OF 4 FEET.



LFG UTILITY FLARE
 DETAIL 2 LFG2
 NOT TO SCALE



LANDFILL GAS PIPING
 DETAIL 4 LFG2
 NOT TO SCALE

NO.	DATE	REVISION
1	11/08	RESPONSE TO INDEAR COMMENTS AND ADDITIONAL CHANGES

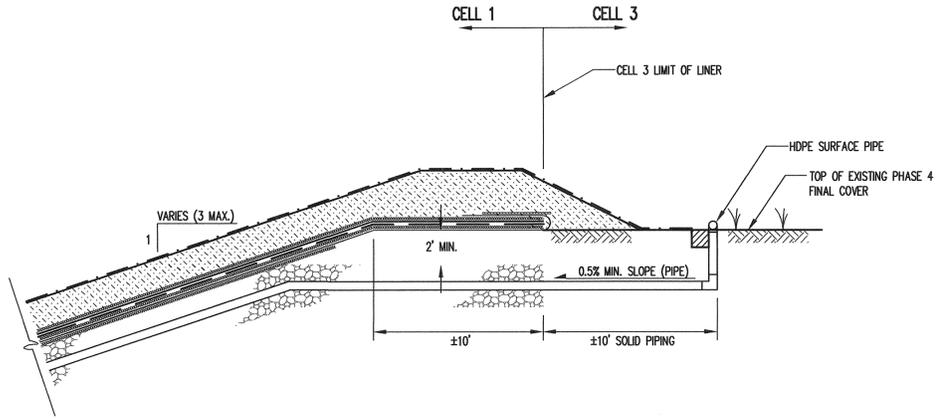
RICHARDSON SMITH GARDNER & ASSOCIATES
 Engineering and Geological Services
 14 N. Boylan Ave.
 Raleigh, N.C. 27603
 www.rsgengineers.com
 ph: 919-826-0677
 fax: 919-826-3699

SEAL
P. K. Smith
 REGISTERED PROFESSIONAL ENGINEER
 STATE OF NORTH CAROLINA
 PETER K. SMITH
 020605

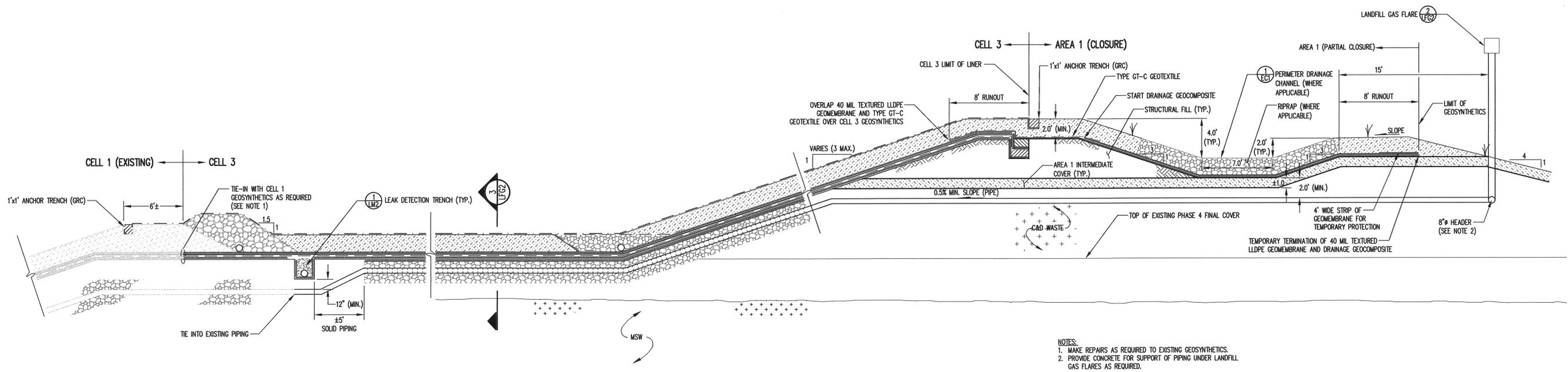
PROJECT TITLE:
**JOHNSTON COUNTY MSW LANDFILL
 PHASE 4A - CELL 3
 PERMIT AMENDMENT DRAWINGS**

DRAWING TITLE:
**LANDFILL GAS MANAGEMENT
 DETAILS
 (SHEET 1 OF 3)**

DESIGNED BY: P.K.S.	DRAWN BY: J.A.L.
CHECKED BY:	PROJECT NO.: JOHN 07-2
SCALE: AS SHOWN	DATE: JUNE 2007
FILE NAME: JOHN-DO498A	
SHEET NO. 17	DRAWING NO. LFG2



TYPICAL EXISTING LFG PIPING
 DETAIL 1
 NOT TO SCALE
 LFG3



LFG PIPING CROSS SECTION
 DETAIL 2
 NOT TO SCALE
 LFG3

NOTES:
 1. MAKE REPAIRS AS REQUIRED TO EXISTING GEOSYNTHETICS.
 2. PROVIDE CONCRETE FOR SUPPORT OF PIPING UNDER LANDFILL GAS FLARES AS REQUIRED.

RESPONSE TO INCREASE COMMENTS AND ADDITIONAL CHANGES	
NO.	DATE

RICHARDSON SMITH GARDNER & ASSOCIATES
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 14 N. Boylan Ave.
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 www.rsgengineers.com
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 fax: 919-826-5899

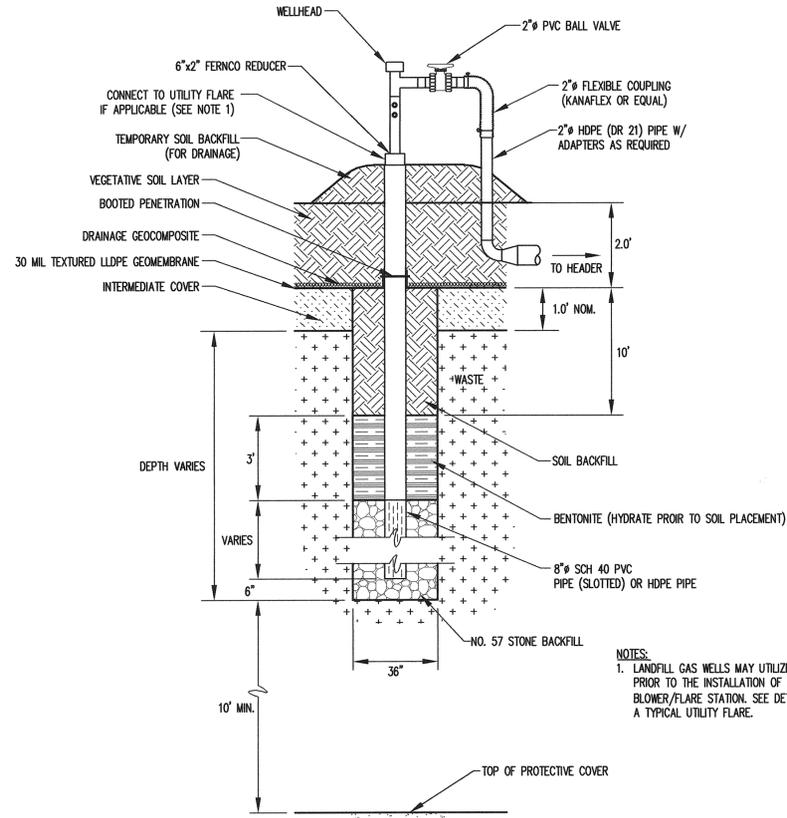
SEAL
[Signature]
 SEAL
 REGISTERED PROFESSIONAL ENGINEER
 STATE OF NORTH CAROLINA
 PAUL K. SMITH
 12/14/08

PROJECT TITLE:
 JOHNSTON COUNTY MSW LANDFILL
 PHASE 4A - CELL 3
 PERMIT AMENDMENT DRAWINGS

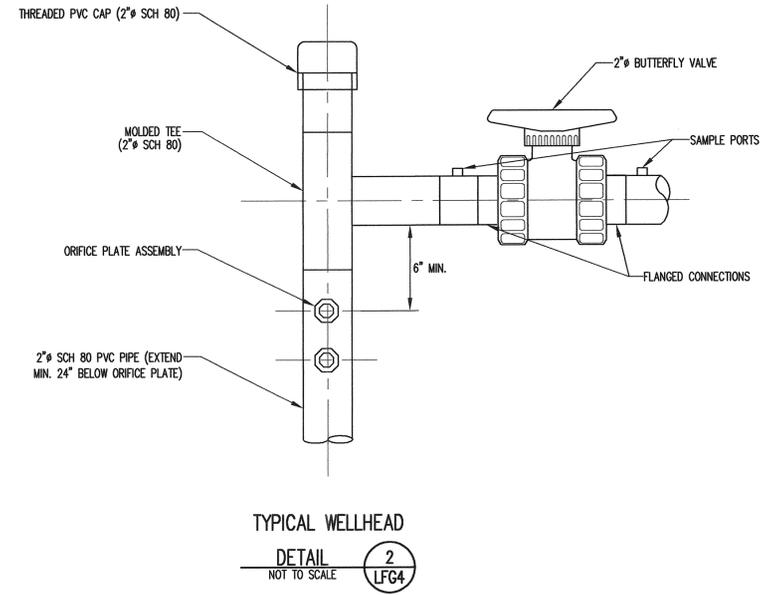
DRAWING TITLE:
 LANDFILL GAS MANAGEMENT
 DETAILS
 (SHEET 2 OF 3)

DESIGNED BY: P.K.S.	DRAWN BY: J.A.L.
CHECKED BY:	PROJECT NO.: JOHN 07-2
SCALE: AS SHOWN	DATE: JUNE 2007
FILE NAME: JOHN-D0499A	DRAWING NO.:
SHEET NO. 18	DRAWING NO. LFG3

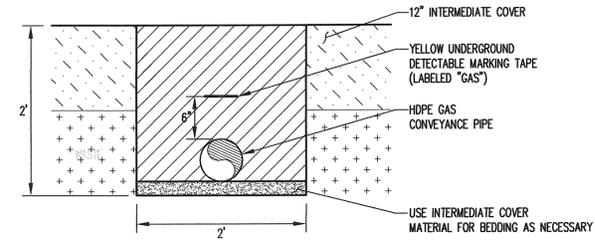
C:\CAD\substation\john_07_2.dwg - 12/16/2006 11:41 AM



TYPICAL LANDFILL GAS WELL
DETAIL 1
NOT TO SCALE LFG4



TYPICAL WELLHEAD
DETAIL 2
NOT TO SCALE LFG4



GAS CONVEYANCE PIPE TRENCH
DETAIL 3
NOT TO SCALE LFG4

REVISION	NO.	DATE

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Raleigh, N.C. 27603
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fax: 919-828-3899



PROJECT TITLE:
**JOHNSTON COUNTY MSW LANDFILL
PHASE 4A - CELL 3
PERMIT AMENDMENT DRAWINGS**

DRAWING TITLE:
**LANDFILL GAS MANAGEMENT
DETAILS
(SHEET 3 OF 3)**

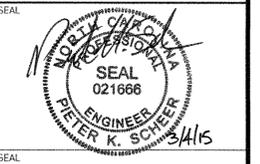
DESIGNED BY: P.K.S.	DRAWN BY: J.A.L.
CHECKED BY:	PROJECT NO.: JOHN 07-2
SCALE: AS SHOWN	DATE: JUNE 2007
FILE NAME: JOHN-D0500	
SHEET NO. 19	DRAWING NO. LFG4

PREPARED FOR:

**JOHNSTON COUNTY
NORTH CAROLINA
DEPARTMENT OF
SOLID WASTE SERVICES**

PREPARED BY:
NC LIC. NO. C-0828 (ENGINEERING)

**SMITH+
GARDNER
ENGINEERS**
14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577



SEAL

REV.	DATE	DESCRIPTION
1	11/09	RESPONSE TO NCDENR
		COMMENTS + ADDITIONAL CHANGES
2	2/15	REVISED PER DWM COMMENTS

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PROJECT TITLE:

**JOHNSTON COUNTY
MSW LANDFILL FACILITY
PHASE 4A
PERMIT AMENDMENT DRAWINGS**

DRAWING TITLE:

**ENGINEERING CROSS SECTIONS
(SHEET 1 OF 2)**

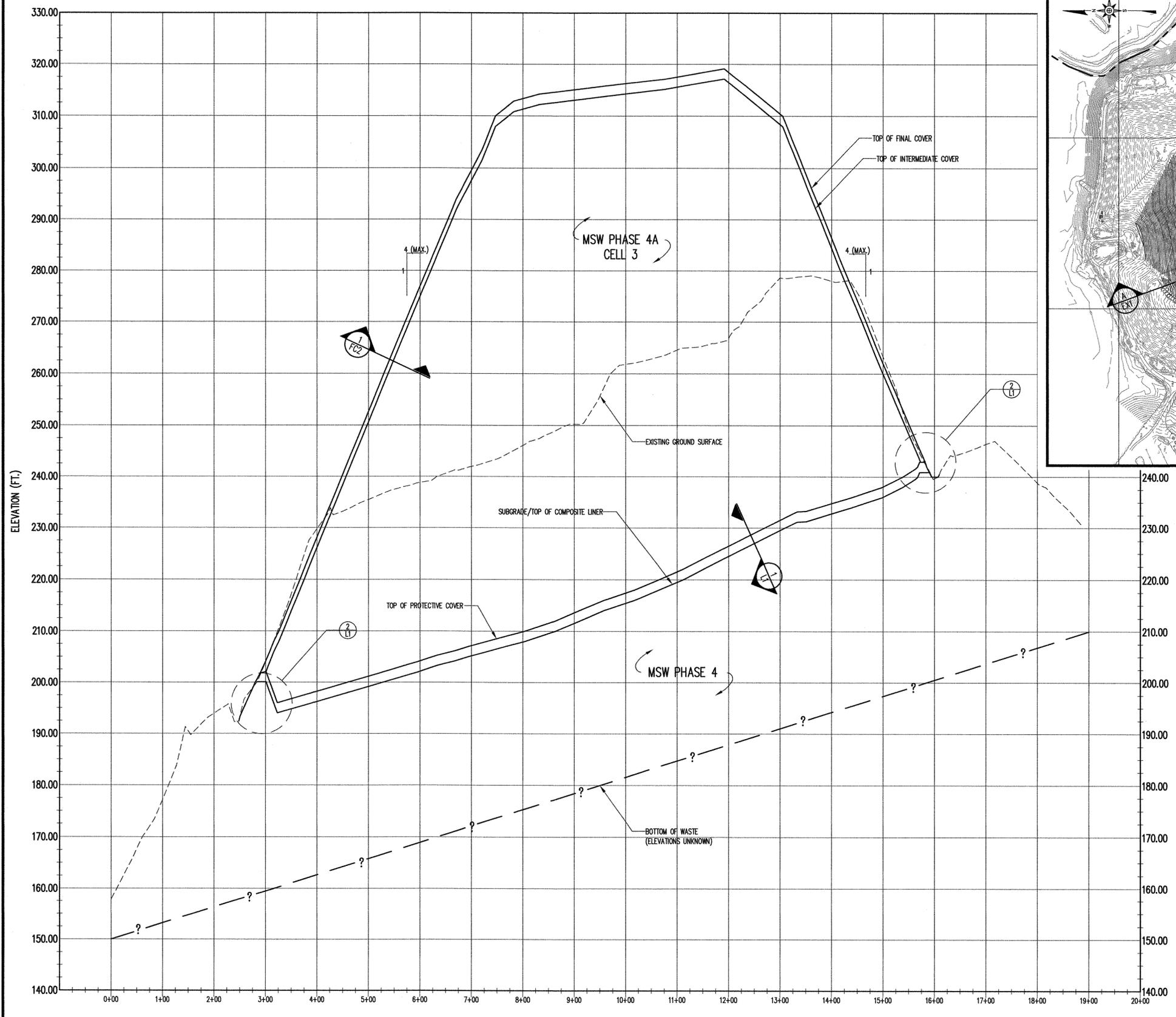
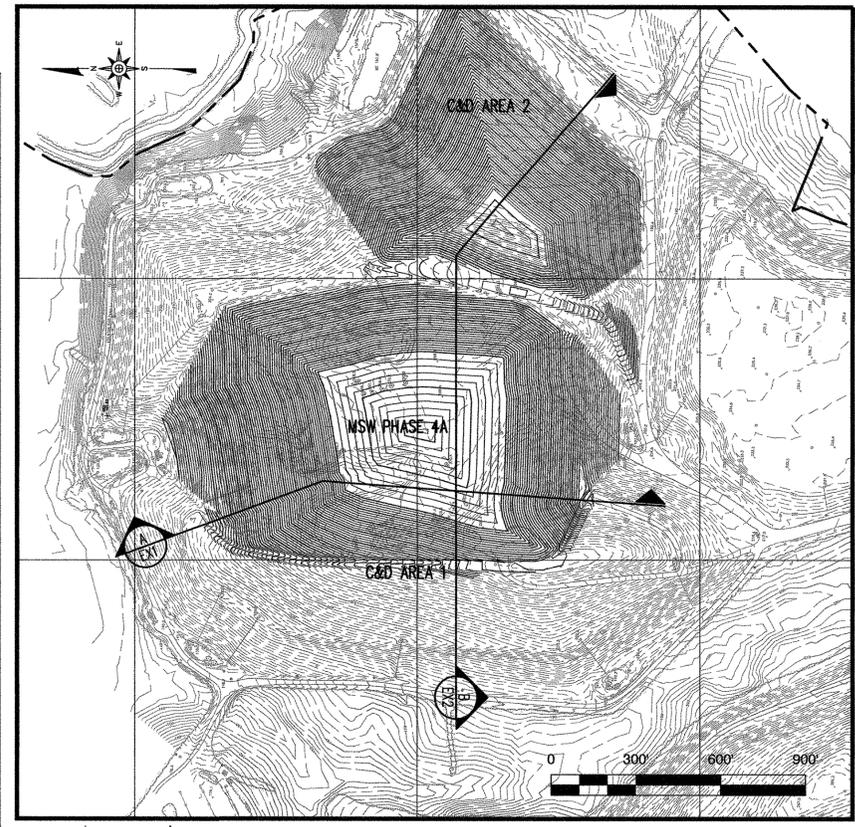
DESIGNED: P.K.S. PROJECT NO: JOHN 07-2

DRAWN: T.R.S. SCALE: AS SHOWN

APPROVED: DATE: FEB. 2015

FILENAME: JOHN-D0501B

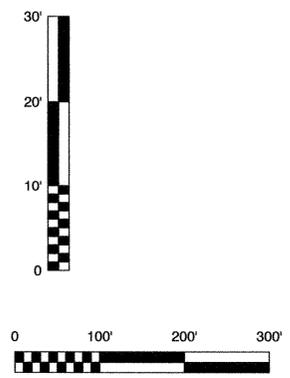
SHEET NUMBER: 20 DRAWING NUMBER: EX1



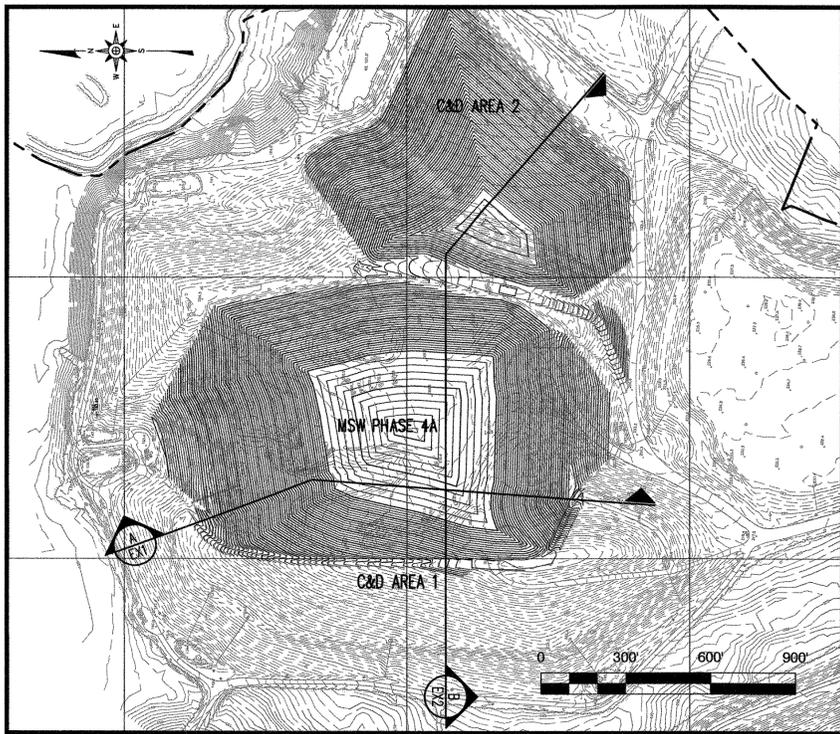
LEGEND

— 200 —	EXISTING 10' CONTOUR
- - - - -	EXISTING 2' CONTOUR
— 150 —	PROPOSED 10' CONTOUR
- - - - -	PROPOSED 2' CONTOUR
— — — — —	PROPERTY LINE

REFERENCES
1. OVERALL SITE TOPOGRAPHY PROVIDED BY GEODATA CORP., BASED ON JUNE 17, 2014 AERIAL PHOTOGRAPHY.



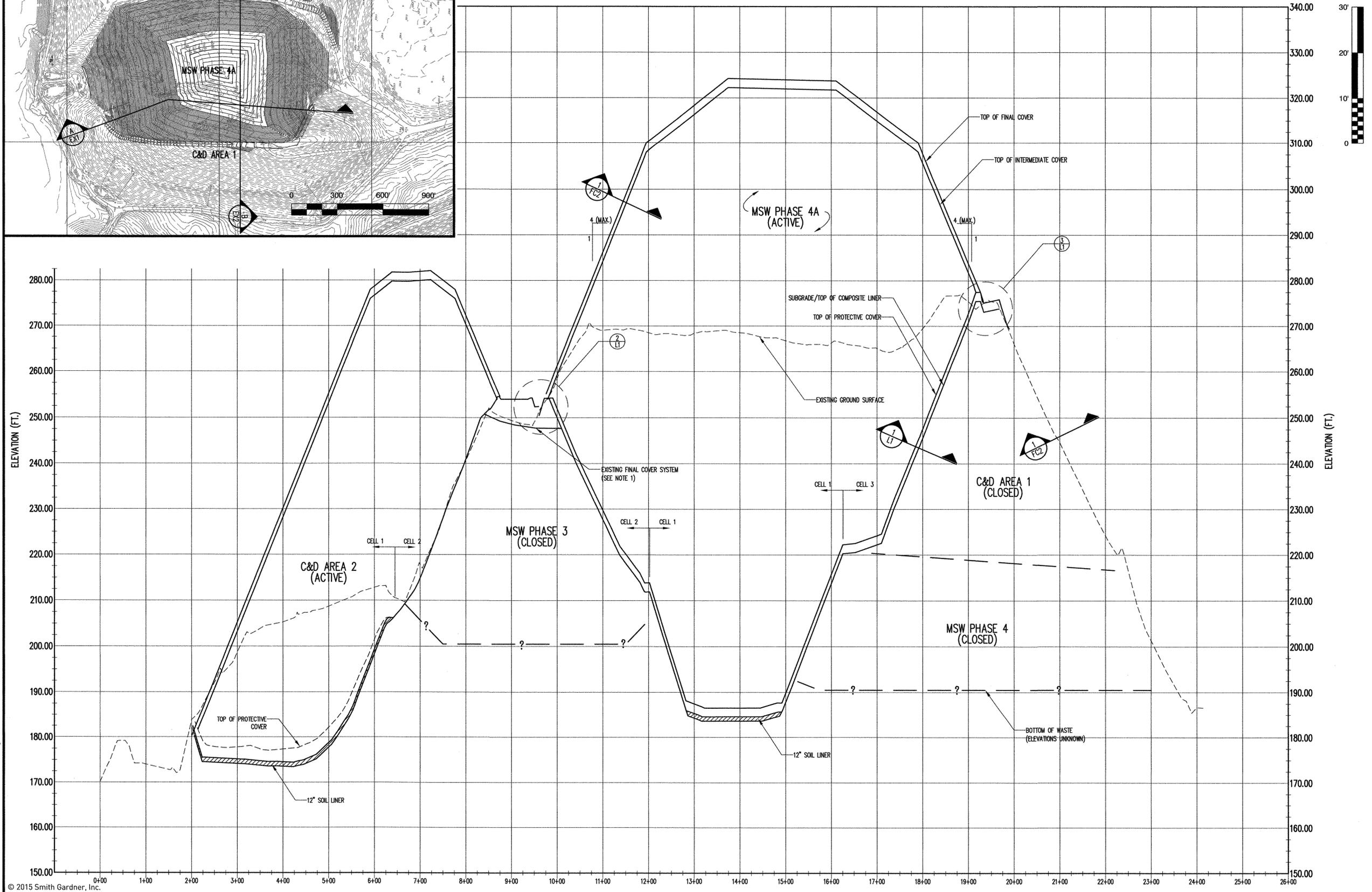
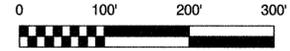
SECTION A
SECTION NOT TO SCALE
A
EX1



SECTION B
SECTION NOT TO SCALE

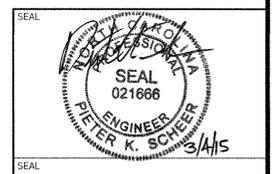
- LEGEND**
- 200 — EXISTING 10' CONTOUR
 - - - 2' CONTOUR
 - 150 — PROPOSED 10' CONTOUR
 - - - 2' CONTOUR
 - — — — — PROPERTY LINE

- NOTES**
- EXISTING FINAL COVER SYSTEM AT TOP OF PHASE 3 CONSISTS OF 18" MIN. VEGETATIVE SOIL LAYER OVER DRAINAGE GEOTEXTILE AND GCL.
- REFERENCES**
- OVERALL SITE TOPOGRAPHY PROVIDED BY GEODATA CORP., BASED ON JUNE 17, 2014 AERIAL PHOTOGRAPHY.



PREPARED FOR:
**JOHNSTON COUNTY
NORTH CAROLINA
DEPARTMENT OF
SOLID WASTE SERVICES**

PREPARED BY:
NC LIC. NO. C-0828 (ENGINEERING)
**SMITH+
GARDNER
ENGINEERS**
14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577



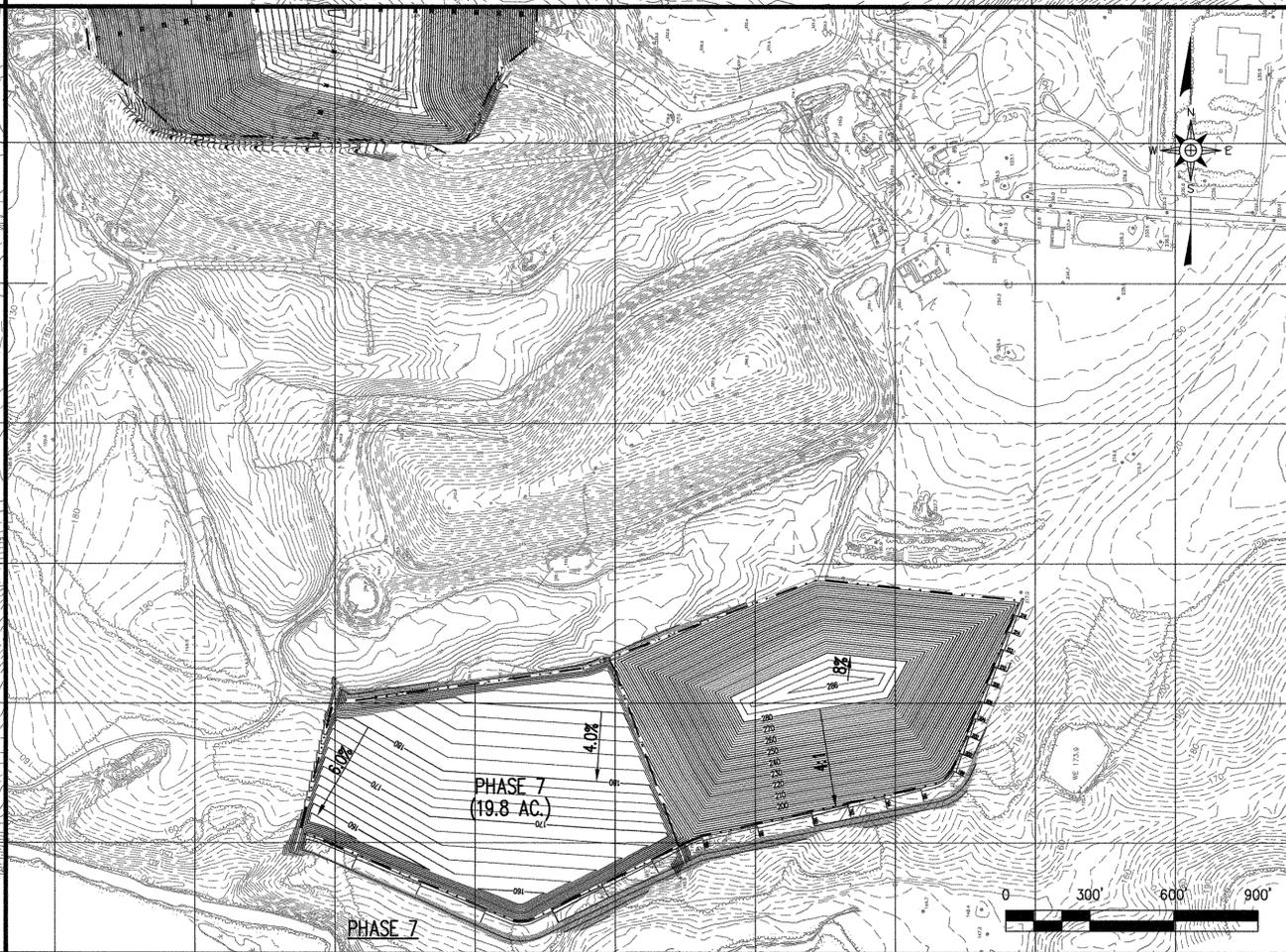
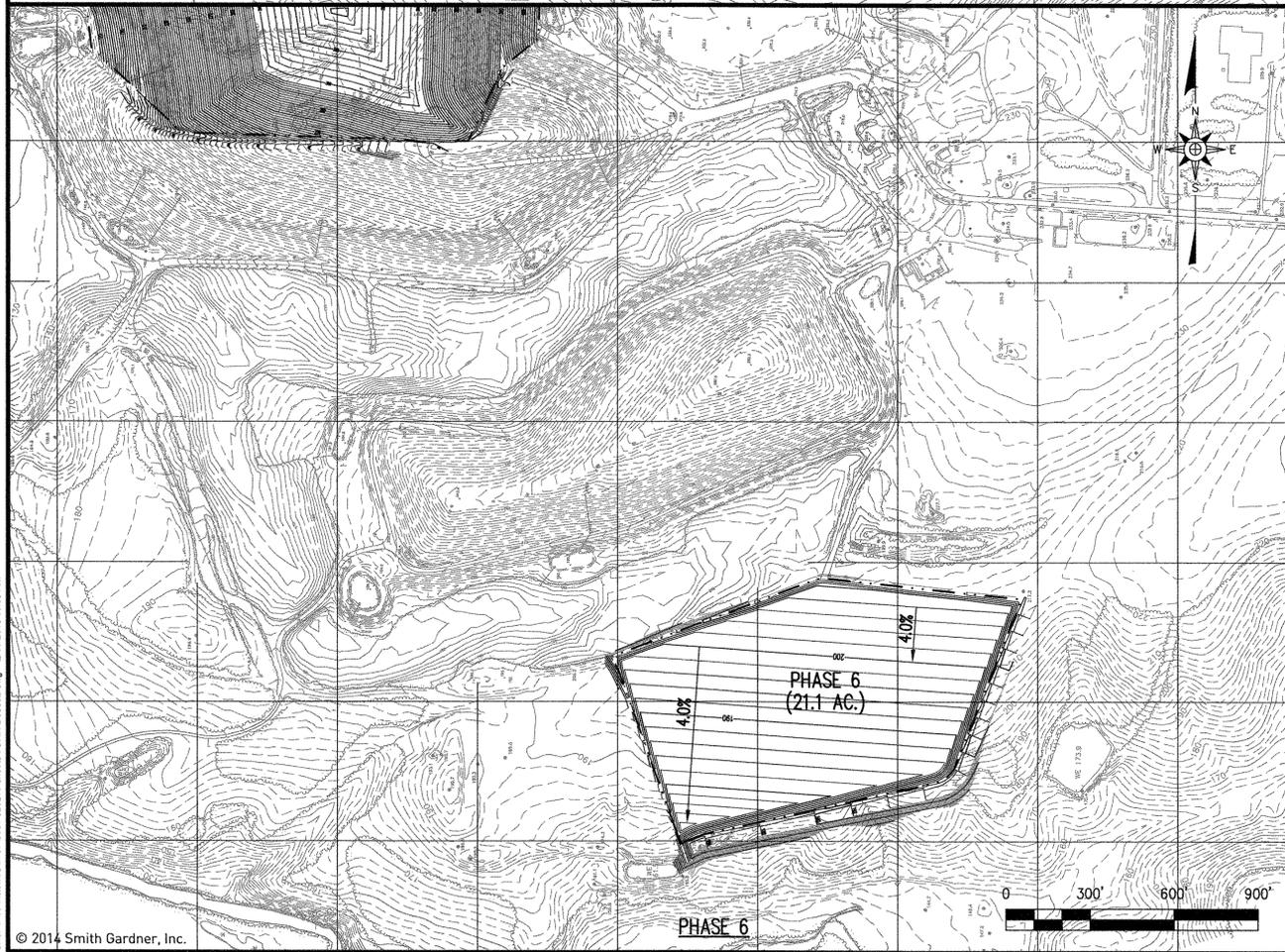
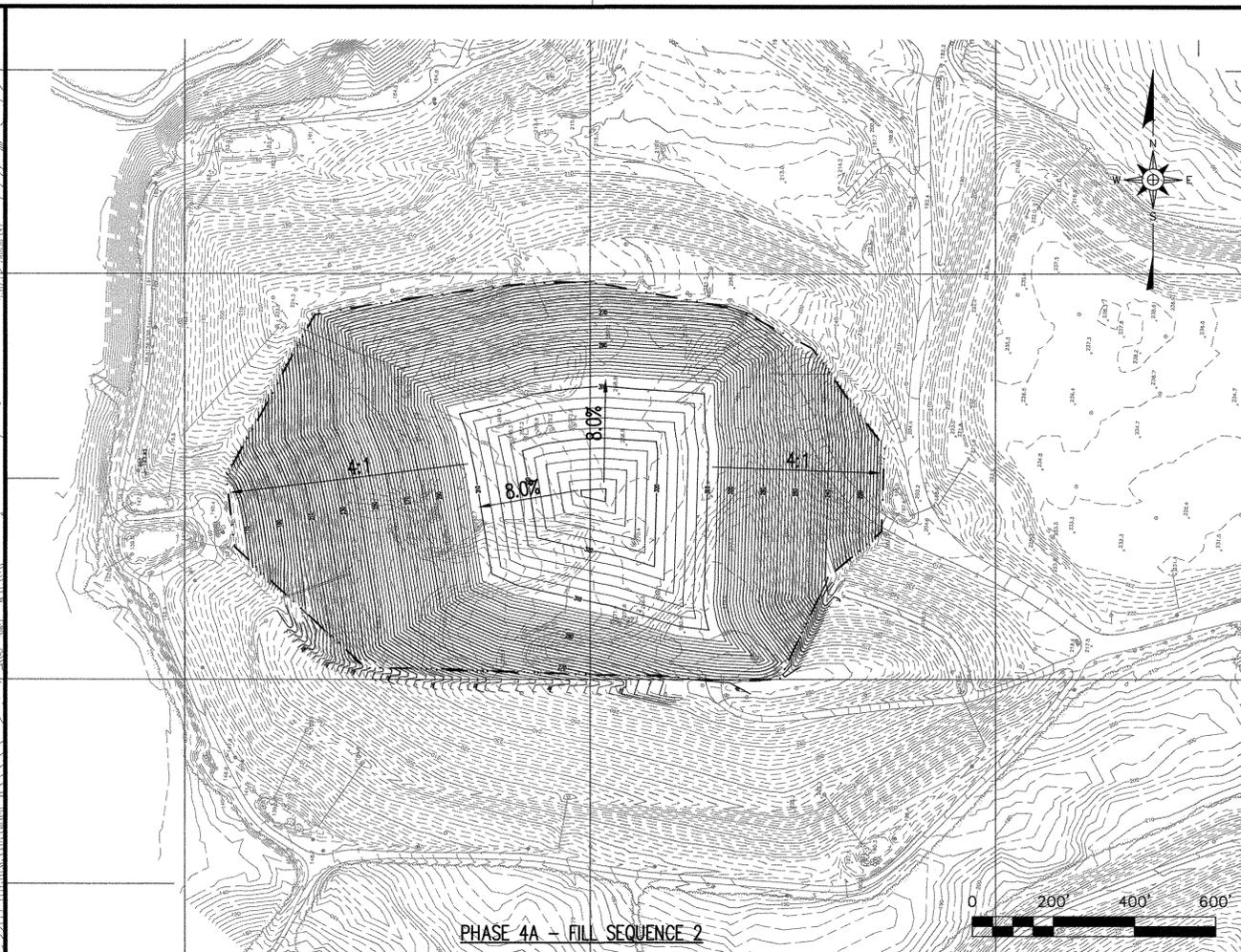
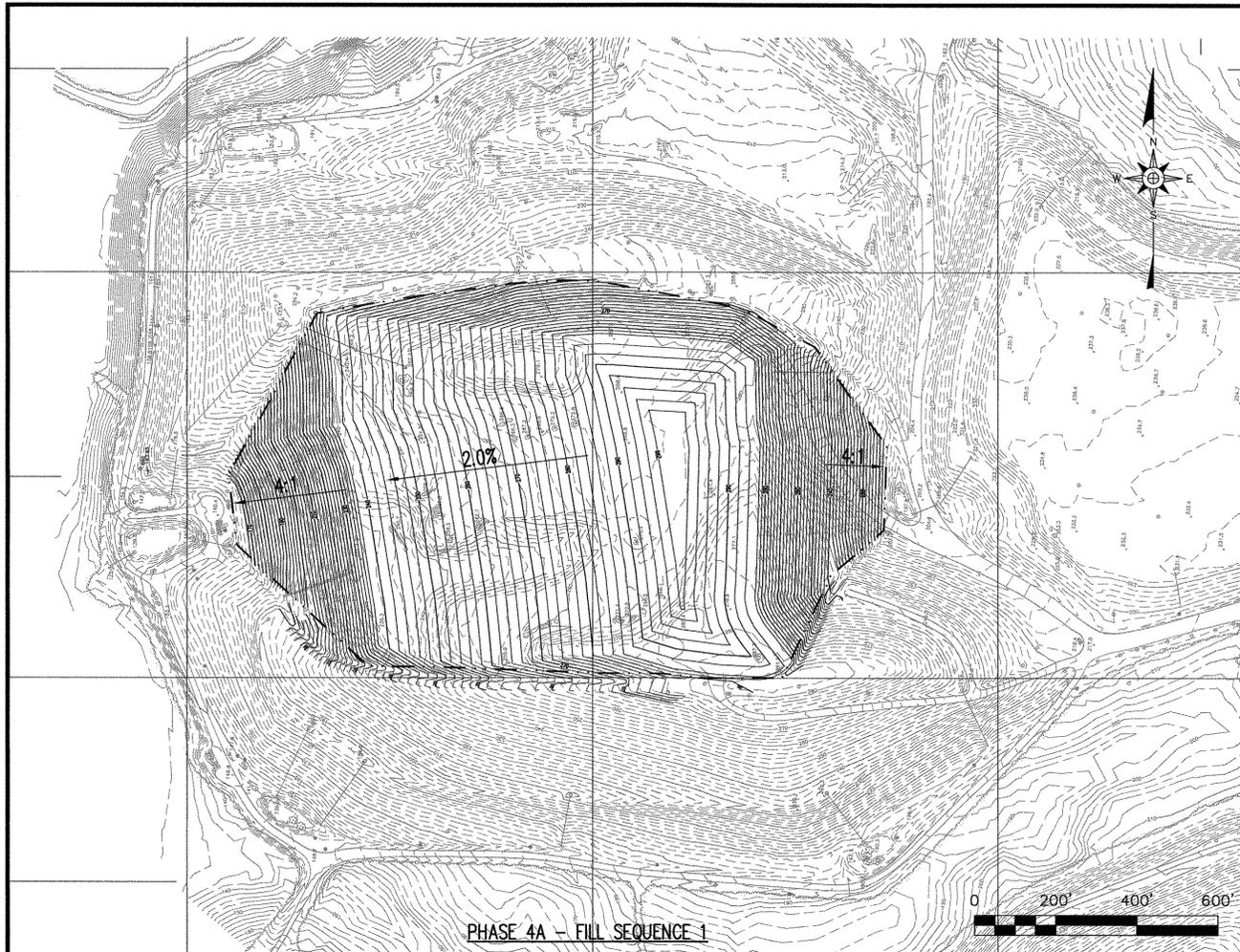
REV.	DATE	DESCRIPTION
1	11/08	RESPONSE TO NCDENR
		COMMENTS - ADDITIONAL CHANGES
2	2/15	REVISED PER DWM COMMENTS

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PROJECT TITLE:
**JOHNSTON COUNTY
MSW LANDFILL FACILITY
PHASE 4A
PERMIT AMENDMENT DRAWINGS**

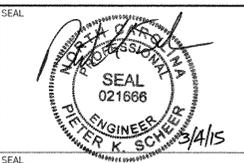
DRAWING TITLE:
**ENGINEERING CROSS SECTIONS
(SHEET 2 OF 2)**

DESIGNED: P.K.S.	PROJECT NO: JOHN 07-2
DRAWN: T.R.S.	SCALE: AS SHOWN
APPROVED: PKS	DATE: FEB. 2015
FILENAME: JOHN-D0502B	DRAWING NUMBER: 21 EX2



PREPARED FOR:
**JOHNSTON COUNTY
 NORTH CAROLINA
 DEPARTMENT OF
 SOLID WASTE SERVICES**

PREPARED BY:
 NC LIC. NO. C-0828 (ENGINEERING)
**SMITH+
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 ENGINEERS
 14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577



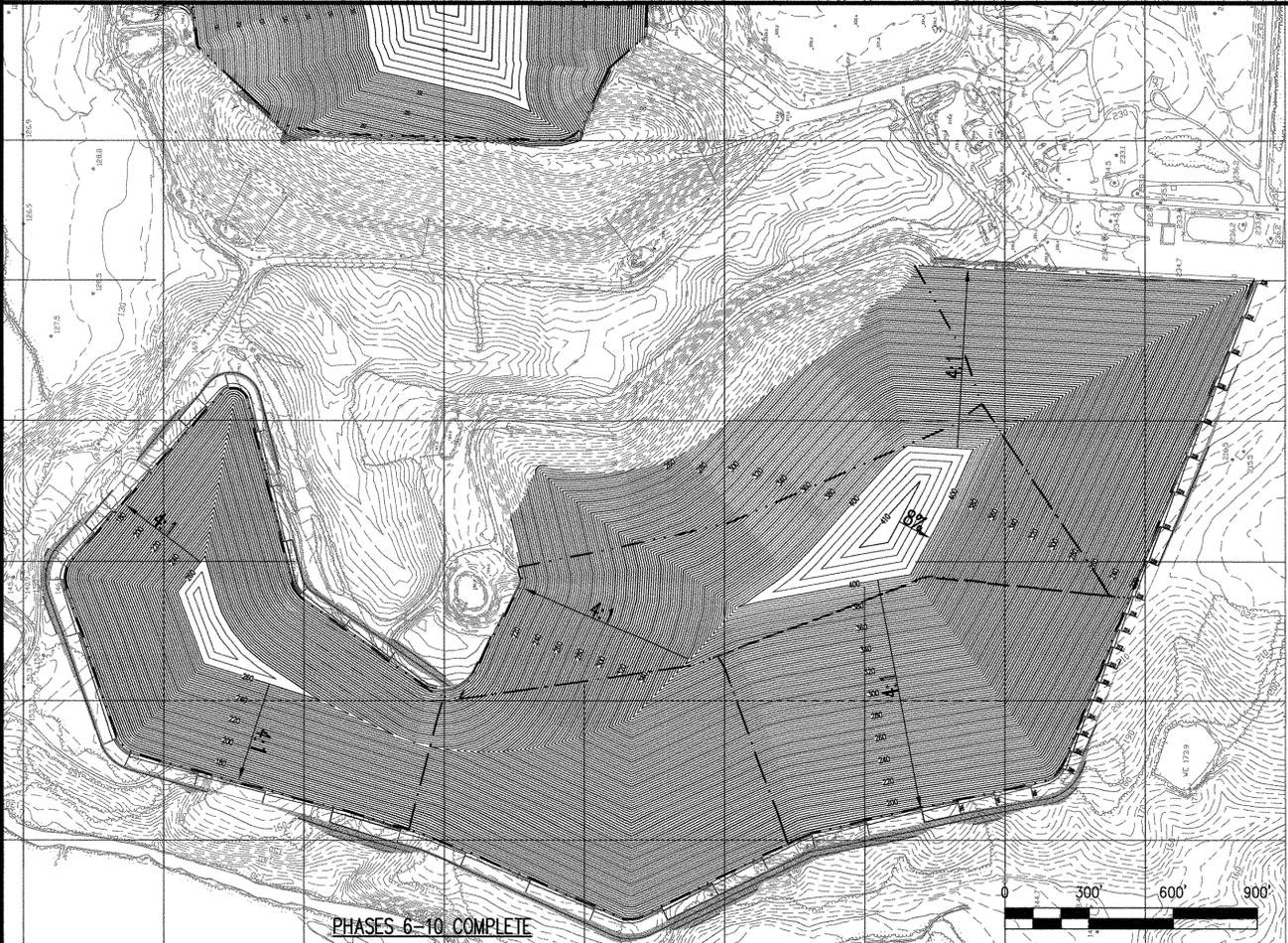
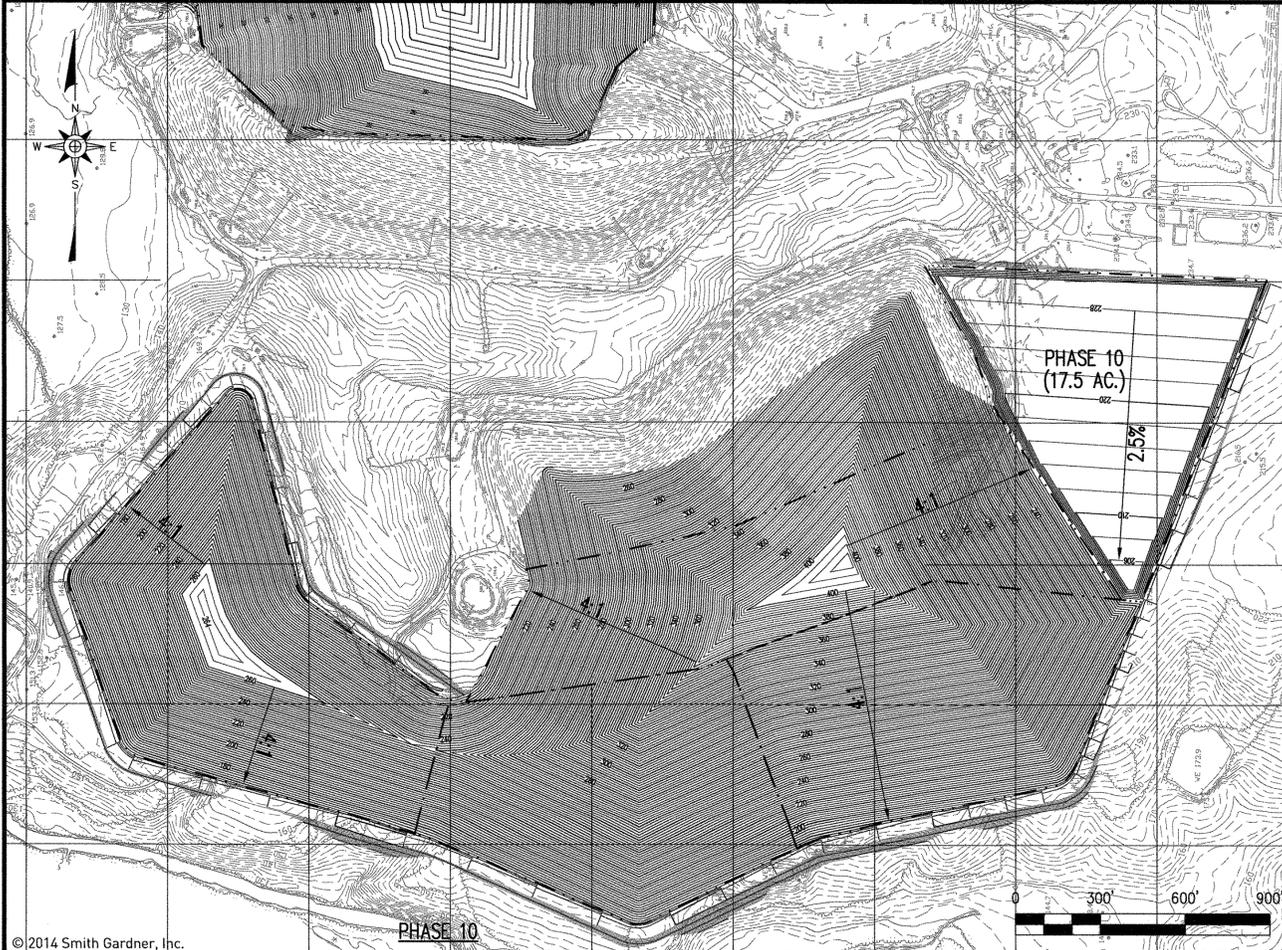
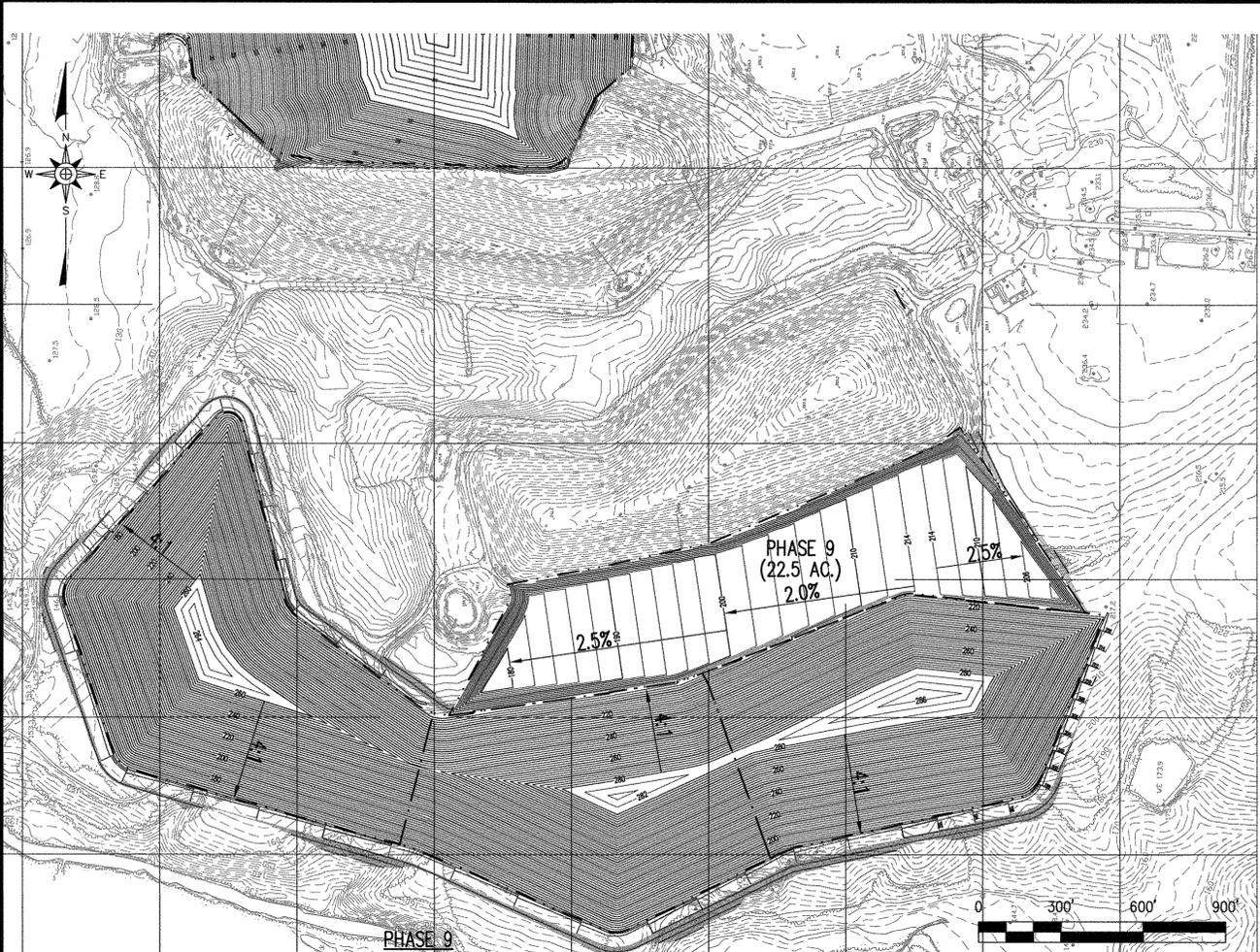
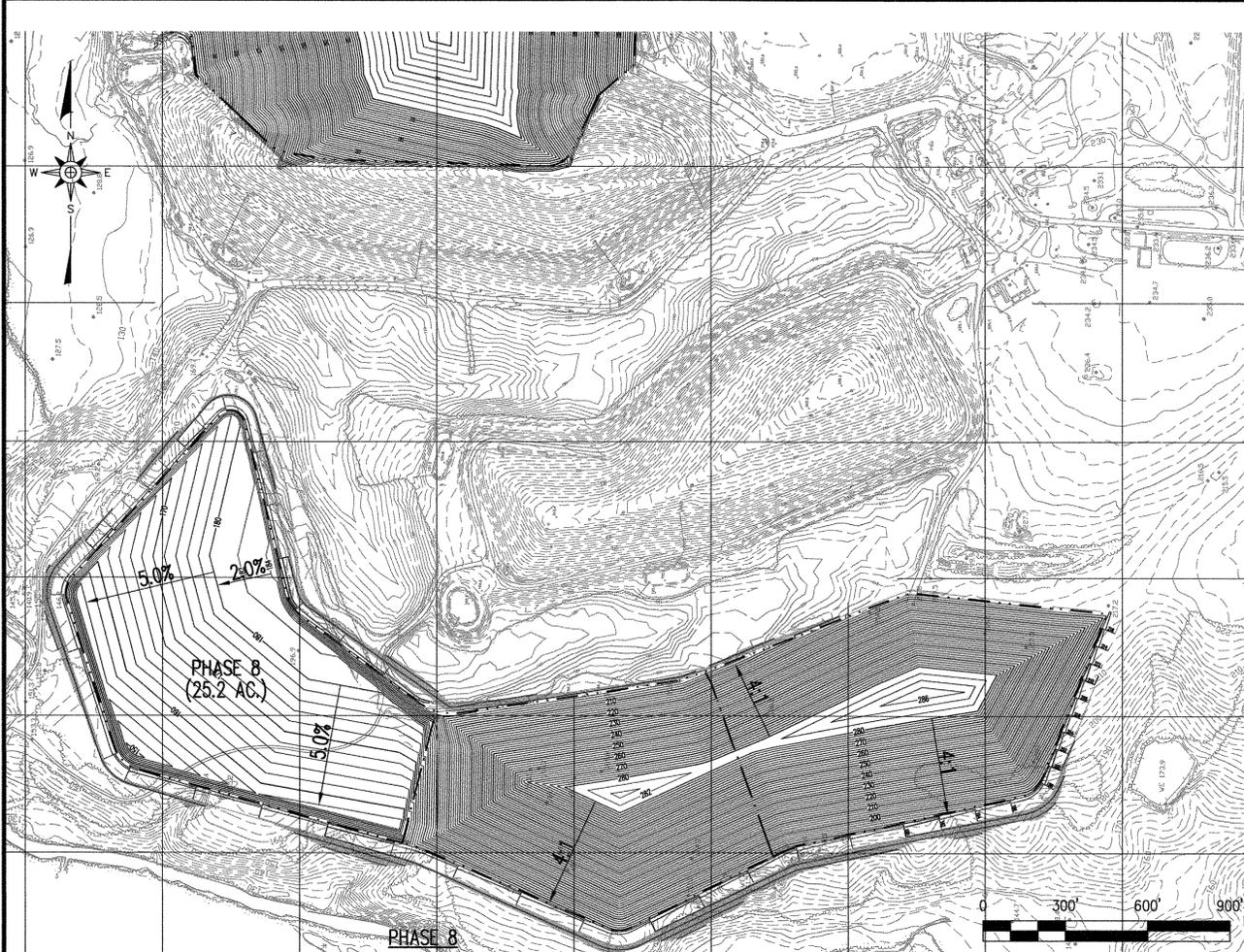
REV.	DATE	DESCRIPTION
1	11/08	RESPONSE TO NCDENR
		COMMENTS - ADDITIONAL CHANGES
2	2/15	REVISED PER DWM COMMENTS

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PROJECT TITLE:
**JOHNSTON COUNTY
 MSW LANDFILL FACILITY
 PHASE 4A
 PERMIT AMENDMENT DRAWINGS**

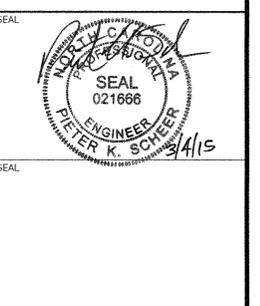
DRAWING TITLE:
**MSW LANDFILL PHASING PLAN
 (SHEET 1 OF 2)**

DESIGNED BY:	P.K.S.	PROJECT NO.:	JOHN 07-2
DRAWN BY:	T.R.S.	SCALE:	AS SHOWN
APPROVED BY:	<i>PKS</i>	DATE:	FEB. 2015
FILE NAME:	JOHN-D0503B		
SHEET NUMBER:	22	DRAWING NUMBER:	P1



PREPARED FOR:
**JOHNSTON COUNTY
 NORTH CAROLINA
 DEPARTMENT OF
 SOLID WASTE SERVICES**

PREPARED BY:
 NC LIC. NO. C-0828 (ENGINEERING)
**SMITH+
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 14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577



REV.	DATE	DESCRIPTION
1	11/08	RESPONSE TO NCDENR
2	2/15	COMMENTS - ADDITIONAL CHANGES REVISED PER DWM COMMENTS

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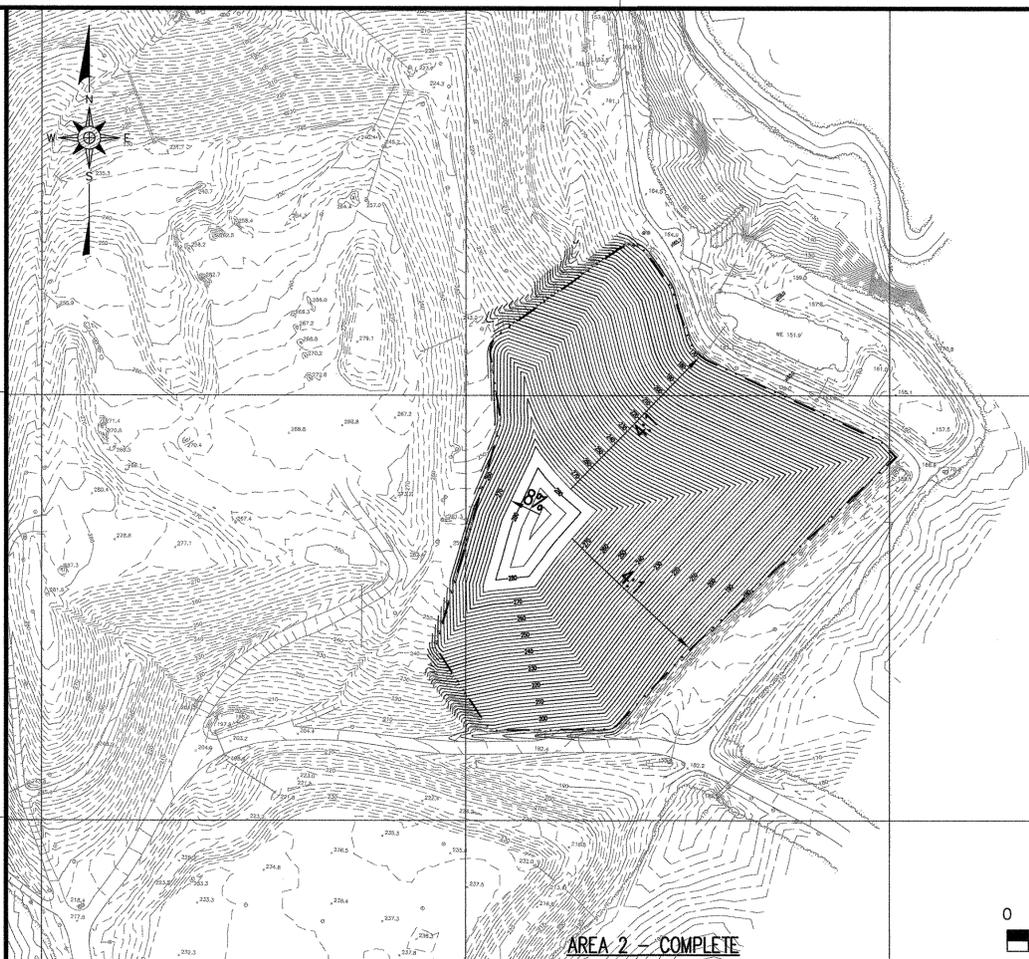
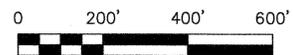
PROJECT TITLE:
**JOHNSTON COUNTY
 MSW LANDFILL FACILITY
 PHASE 4A
 PERMIT AMENDMENT DRAWINGS**

DRAWING TITLE:
**MSW LANDFILL PHASING PLAN
 (SHEET 2 OF 2)**

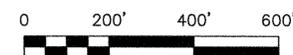
DESIGNED:	P.K.S.	PROJECT NO.:	JOHN 07-2
DRAWN:	T.R.S.	SCALE:	AS SHOWN
APPROVED:	P.K.S.	DATE:	FEB. 2015
FILENAME:	JOHN-D0548B		
SHEET NUMBER:	23	DRAWING NUMBER:	P2



AREA 2 - CELL 2

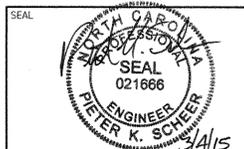


AREA 2 - COMPLETE



PREPARED FOR:
**JOHNSTON COUNTY
 NORTH CAROLINA
 DEPARTMENT OF
 SOLID WASTE SERVICES**

PREPARED BY:
 NC LIC. NO. C-0828 (ENGINEERING)
**SMITH+
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SEAL

REV.	DATE	DESCRIPTION
1	11/08	RESPONSE TO NCDENR
		COMMENTS + ADDITIONAL CHANGES
2	2/15	REVISED PER DWM COMMENTS

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PROJECT TITLE:
**JOHNSTON COUNTY
 MSW LANDFILL FACILITY
 PHASE 4A
 PERMIT AMENDMENT DRAWINGS**

DRAWING TITLE:
**CGO LANDFILL
 PHASING PLAN**

DESIGNED: P.K.S.	PROJECT NO.: JOHN 07-2
DRAWN: T.R.S.	SCALE: AS SHOWN
APPROVED: <i>PKS</i>	DATE: FEB. 2015
FILENAME: JOHN-D0550B	
SHEET NUMBER: 24	DRAWING NUMBER: P3