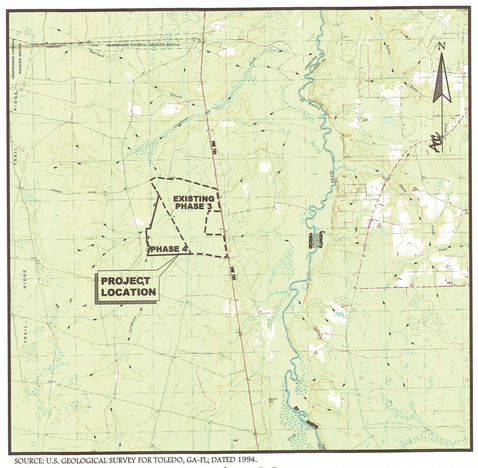
CHESSER ISLAND ROAD MSW LANDFILL
MAJOR MODIFICATION
PHASE 4 EXPANSION

CHARLTON COUNTY, GEORGIA

PERMIT NUMBER: 024-006D(SL)

MARCH 2009



SOURCE: U.S. GEOLOGICAL SURVEY FOR TOLEDO, GA-FL; DATED 1994.

Location Map:
Scale: 1" = 1 mile

Index of Drawings:

Project Information:

Site Address:
Highway 121& Chesser Island Road
Folkston, GA 31537
(912) 496-7918

Description:
Design & Operational Plan for Phase 4 Expansion of the Chesser Island Road MSW Landfill

Responsible Official
Mr. Greg Mathes
Chesser Island Road Landfill, Inc.
P.O. Box 128
Folkston, GA 31537
(912) 496-7918

Owner:

WASTE MANAGEMENT
Chesser Island Road Landfill, Inc.
Hwy 121 @ Chesser Island Road
Folkston, GA 31537
(912) 496-7918

Engineer:

ATLANTIC COAST CONSULTING, INC.
630 Colonial Park Drive
Suite 110
Roswell, GA 30075
(770) 594-5998

CONTACT: Murray Griffin, P.E.

GEORGIA
Environmental Protection Division
Solid Waste Management Program
MINOR MODIFICATION APPROVAL
SOLID WASTE PERMIT NO. 024-006D(SL)
APPROVED BY: _____ DATE: 05/11/2017

RECEIVED
APR 25 2017
SOLID WASTE MANAGEMENT PROGRAM

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GEORGIA REGISTERED PROFESSIONAL ENGINEER M. A. LIVERMAN
4/20/17
06930
LEVEL II CERTIFICATION

PROJECT:
CHESSER ISLAND ROAD MSW LANDFILL
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REVISIONS

INITIAL GAEPD SUBMITTAL	03/13/09
REVISED PER EPD COMMENTS	10/23/09
REVISED PER EPD COMMENTS	12/16/09
1-CCR MANAGEMENT	04/20/17

Drawn by: CW
Checked by:

PROJECT NUMBER:
I014-101
March 2009

COVER

SHEET 1 OF 30

P:\Atlantic\I014 Waste Management North FL\415 - Chesser CDS Mod\Design Data\Drawings\I014-101_1-Cover.dwg 4/20/17 WILLIAM PETERS

COAL COMBUSTION RESIDUAL GROUNDWATER, SURFACE WATER & UNDERDRAIN MONITORING) ANALYTE REQUIREMENTS 2

ALL GROUNDWATER WELLS, SURFACE WATER AND UNDERDRAIN MONITORING POINTS AT THE FACILITY WILL BE SAMPLED SEMI-ANNUALLY FOR THE LIST OF PARAMETERS INCLUDED IN APPENDIX III OF 40 CFR 257 (IN ADDITION TO THE PARAMETERS INCLUDED IN APPENDIX I/II OF THE RULES FOR SOLID WASTE MANAGEMENT AND/OR GEORGIA TABLE 1 AS APPLICABLE). PARAMETERS INCLUDED IN APPENDIX III OF 40 CFR 257 ARE SHOWN IN TABLE 3. APPENDIX III DATA WILL BE EVALUATED IN ACCORDANCE WITH THE STATISTICAL ANALYSIS PLAN. IN THE EVENT OF A VERIFIED SSI FOR AN APPENDIX III SPECIFIC COMPOUND IN A GROUNDWATER MONITORING WELL SAMPLE, THE LIST OF ANALYTES WILL BE EXPANDED TO INCLUDE THOSE LISTED IN APPENDIX IV OF 40 CFR 257. 2

TABLE 3

40 CFR 257 APPENDIX III ANALYTICAL REQUIREMENTS

PARAMETER SUITE	CONTAINER TYPE	TEST METHODS*	PRESERVATIVES	HOLD TIME
BORON, CALCIUM	P	6010 OR 6020	HNO_3	180 DAYS
CHLORIDE, FLUORIDE, SULFATE	P	300	4 C	28 DAYS
pH	NONE	EPA 150.1	NONE	NONE
TOTAL DISSOLVED SOLIDS	P	SM 2540C	4 C	7 DAYS

2

NOTES:

P=POLYETHYLENE

NOTE: ASSESSMENT MONITORING ANALYTES ARE INCLUDED IN APPENDIX IV OF 40 CFR 257. THE NELAP CERTIFIED LABORATORY PERFORMING THE ANALYSIS SHOULD BE CONSULTED REGARDING ANALYTICAL REQUIREMENTS FOR THE APPLICABLE PARAMETER SUITES

*ANALYSIS METHODS FROM "TEST METHODS FOR EVALUATING SOLID WASTE, PHYSICAL/CHEMICAL METHODS" SW-846 THIRD ED. USEPA, SEPT. 1986. ANALYTICAL METHODS USED AND REFERENCED FOR MEETING ENVIRONMENTAL TESTING REQUIREMENTS EVOLVE OVER TIME DUE TO CHANGES IN TECHNOLOGY, UPDATES AND ADDITIONS TO PUBLISHED METHODOLOGY, AND WHEN REGULATIONS CHANGE TO REQUIRE REFERENCE TO DIFFERENT METHODS. IN MANY INSTANCES THERE ARE EQUIVALENT METHODS FOR THE SAME ANALYTE PUBLISHED BY DIFFERENT AUTHORITIES ON METHOD DEVELOPMENT; E.G. THE U.S. EPA OFFICE OF WATER, U.S. EPA OFFICE OF SOLID WASTE, STANDARD METHODS, AND ASTM. ANALYTICAL METHODS LISTED IN THE PLAN MAY BE SUBSTITUTED PROVIDED THAT THE ALTERNATE METHODS ARE GENERALLY APPROVED FOR USE, PROVIDE TECHNICALLY DEFENSIBLE DATA, AND ARE APPROPRIATE FOR THE MEDIA BEING TESTED. THE USE OF ALTERNATIVE APPROVED METHODS IS CONSIDERED AN ACCEPTABLE DEVIATION FROM THE PRESCRIBED METHODS IN THE GWMP AND WILL NOT BE CONSIDERED A VIOLATION OF THE REQUIREMENTS OF THE GWMP.

I, EVAN B. PERRY, CERTIFY THAT I AM A QUALIFIED GROUNDWATER SCIENTIST DEMONSTRATED BY A GEORGIA STATE REGISTERED PROFESSIONAL GEOLOGIST CERTIFICATION. I HAVE SUFFICIENT TRAINING AND EXPERIENCE IN GROUNDWATER HYDROLOGY AND RELATED FIELDS TO MAKE SOUND PROFESSIONAL JUDGMENTS REGARDING GROUNDWATER CERTIFY THAT THE DESIGN OF THE GROUNDWATER MONITORING SYSTEM WAS DESIGNED IN COMPLIANCE WITH THE RULES OF SOLID WASTE MANAGEMENT, CHAPTER 391-3-4, AS SPECIFIED IN {391-3-4-.14(11)2.(b)}.

EVAN B. PERRY

GEORGIA P.G. REGISTRATION NO. 1744

1

GEORGIA
Environmental Protection Division
Solid Waste Management Program
MINOR MODIFICATION APPROVAL
SOLID WASTE PERMIT NO. 024-006D(SL)
APPROVED BY: _____ DATE: 5/17/17

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GEORGIA REGISTERED PROFESSIONAL GEOLOGIST
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2-CCR MONITORING	05/17/17

Drawn by: CA
Checked by:

PROJECT NUMBER:
1014-101
March 2009

WATER MONITORING PLAN

SHEET 25A OF 30

P:\Industrial\1014 Waste Management North FL\415 - Chesser CDS Mod\2 - Design Data\Drawings\1014-101_25A-GROUNDWATER Monitoring.dwg, 5/16/17 MARC

OPERATIONAL PROCEDURES

1. PHASE 4 VOLUME CALCULATIONS:

PHASE 4 GROSS WASTE VOLUME	54,285,614 CY
PROTECTIVE COVER VOLUME	507,232 CY
FINAL COVER VOLUME	1,144,297 CY
DAILY AND INTERMEDIATE COVER VOLUME (15%)	7,914,206 CY
PHASE 4 NET WASTE VOLUME	44,719,879 CY

NEAR TERM CCR TONNAGES (2017 THROUGH APRIL 2018)

ESTIMATED MAXIMUM MSW TO CCR RATIO BY WEIGHT:

ESTIMATED CCR TONNAGES –	1,150	TN/DAY
	300,000	TN/YR
ESTIMATED MSW TONNAGES –	3,850	TN/DAY
	1,004,350	TN/YR

LONG TERM CCR TONNAGES (BEYOND APRIL 2018)

ESTIMATED MAXIMUM MSW TO CCR RATIO BY WEIGHT:

ESTIMATED CCR TONNAGES –	385	TN/DAY
	100,435	TN/YR
ESTIMATED MSW TONNAGES –	3,850	TN/DAY
	1,004,350	TN/YR

AREA OF SITE: TOTAL PROPERTY ±700.9 ACRES
PHASE 4 WASTE MANAGEMENT BOUNDARY ±154.54 ACRES

ESTIMATED PHASE LIFE ASSUMING 3,200 TONS PER DAY, 0.7 TONS/C.Y., AND 310 OPERATING DAYS PER YEAR: 31.6 YEARS

2. CONTROLLED UNLOADING OF WASTE: UNLOADING OF WASTE WILL BE RESTRICTED TO A WORKING FACE LIMITED TO A MAXIMUM OF 200 FEET WIDE BY 200 FEET LONG OR 40,000 SQUARE FEET. MSW AND CCR MAY BE CO-MINGLED AT THE SAME WORKING FACE OR CCR MAY BE PLACED IN INDIVIDUAL LIFTS. CCR LIFTS WILL BE PLACED AND COMPACTED IN ACCORDANCE WITH SECTION 5 OF THIS PLAN. A SPOTTER WILL DIRECT TRUCK TRAFFIC TO AND FROM THE WORKING FACE AND WILL SUPERVISE ALL UNLOADING ACTIVITIES. SCAVENGING WILL BE PROHIBITED.

ONLY HYDRATED CCR MATERIAL WILL BE ACCEPTED AT THE SITE.

OPERATORS WILL BE TRAINED TO IDENTIFY CONDITIONS THAT MAY IMPACT CCR COMPACTION AND WILL OBSERVE INCOMING CCR FOR EXCESS MOISTURE CONTENT.

IN THE EVENT THAT CCR WASTE LOADS ARE BROUGHT TO THE FACILITY CONTAINING EXCESS MOISTURE, THE WASTE MATERIAL WILL BE SPREAD IN A STAGING AREA OVER INTERMEDIATE COVER AND ALLOWED TO DRY PRIOR TO INCORPORATION INTO THE WASTE MASS.

3. CCR WASTE CHARACTERIZATION AND COMPATIBILITY: BULK SAMPLES OF CCR FROM EACH SOURCE WILL BE OBTAINED FOR CHARACTERIZATION AND COMPATIBILITY. SOUTHERN COMPANY AND KEYSTONE ARE THE FACILITY'S ONLY SOURCE OF CCR. ADDITIONAL SOURCES SHALL BE PERMITTED THROUGH EPD PRIOR TO ACCEPTAN'CE. MSW AND CCR RATIOS THAT EXCEED THOSE DEFINED IN SECTION 1 OF THIS PLAN SHALL BE PERMITTED THROUGH EPD PRIOR TO ACCEPTING INCREASED RATIOS.

SAMPLES FOR COMPATIBILITY WILL BE TESTED FOR TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) 8 RCRA METALS BY SW-846 METHOD 1311 AND A PAINT FILTER TEST BY SW-845 METHOD 9095.

4. CCR WASTE ACCEPTANCE PROTOCOL: CCR IS DEFINED BY THE US ENVIRONMENTAL PROTECTION AGENCY AS A SOLID WASTE TO BE REGULATED UNDER A SUBTITLE D (EO 12866 CCR 2050-AE81). CCR WASTE MATERIAL ACCEPTED FOR DISPOSAL AT THIS FACILITY WILL NOT REQUIRE NON-HAZARDOUS CERTIFICATION. ROUTINE RECORD KEEPING PROCEDURES AS SPECIFIED UNDER SECTION 22 OF THIS PLAN WILL BE FOLLOWED.

5. SPREADING AND COMPACTION:

MSW ONLY WASTES WILL BE SPREAD AND COMPACTED IN UNIFORM LAYERS NOT TO EXCEED FIVE FEET IN DEPTH. OPTIMUM DENSITY WILL BE ACHIEVED BY MAKING THREE TO FIVE PASSES OVER THE WASTE WITH THE COMPACTOR. WORKING FACES IN ALL WASTE DISPOSAL AREAS SHALL HAVE A SLOPE NO STEEPER THAN 2H:1V.

MSW AND CCR CO-MINGLED WASTES WILL BE SPREAD AND COMPACTED IN UNIFORM LAYERS NOT TO EXCEED FIVE FEET IN DEPTH. OPTIMUM DENSITY WILL BE ACHIEVED BY MAKING THREE TO FIVE PASSES OVER THE WASTE WITH THE COMPACTOR. WORKING FACES IN ALL WASTE DISPOSAL AREAS SHALL HAVE A SLOPE NO STEEPER THAN 2H:1V.

CCR ONLY LIFTS WILL BE SPREAD IN UNIFORM LAYERS. DENSIFICATION OF THE CCR ONLY LAYER WILL BE ACHIEVED BY MAKING AN APPROPRIATE NUMBER OF PASSES WITH COMPACTION EQUIPMENT TO ACHIEVE AN ESTIMATED DENSITY OF 90% STANDARD PROCTOR. THE NUMBER OF PASSES AND LAYER THICKNESS WILL BE DETERMINED BY CONDUCTING A COMPACTION TEST PAD ADJACENT TO THE PLANNED CCR ONLY WASTE LIFT AREA. ONLY ONE TEST PAD WILL BE REQUIRED FOR EACH DIFFERENT CCR SOURCE. A REPORT CONTAINING RESULTS FROM THE CONSTRUCTION OF THE TEST PAD SHALL BE PLACED IN CHESSER'S OPERATING RECORD AND MADE AVAILABLE FOR EPD REVIEW. IN THE EVENT OF CHANGES IN A SOURCE'S CCR CHARACTERISTICS (E.G. COLOR, TEXTURE, MOISTURE CONTENT), ADDITIONAL CCR TEST PADS WILL BE CONSTRUCTED AND TESTED IN ORDER TO CONFIRM COMPACTION REQUIREMENTS.

6. DAILY COVER:

A. EXCEPT AS PROVIDED IN PARAGRAPH (B) OF THIS SECTION THE PERMITTEE MUST COVER ALL EXPOSED MUNICIPAL SOLID WASTE AND MSW CO-MINGLED WITH CCR OR CCR LAYERS WITH A MINIMUM OF SIX INCHES OF EARTHEN MATERIAL AT THE END OF EACH OPERATING DAY OR AT MORE FREQUENT INTERVALS IF NECESSARY TO CONTROL DISEASE VECTORS, FIRES, ODORS, BLOWING LITTER AND SCAVENGING. CCR ONLY LAYERS WILL HAVE A SMOOTH SURFACE PRIOR TO APPLICATION OF DAILY COVER. DAILY COVER MAY BE STRIPPED AS WASTE IS PLACED ON THE NEXT LIFT ABOVE.

B. ALTERNATIVE MATERIALS SUCH AS HIGH DENSITY WOVEN POLYETHYLENE COATED FABRIC TARPS MAY BE USED IN PLACE OF EARTHEN MATERIAL. AIRSPACE SAVER DAILY COVER, ENSTARE ALTERNATE DAILY COVER, ENGINEERED TEXTILE PRODUCTS LANDFILL COVERS, TARP-O-MATIC OR EQUALS MAY BE USED. THE TARP WILL BE MANUALLY OR MECHANICALLY PLACED OVER THE EXPOSED SOLID WASTE AND SECURED AT THE END OF EACH OPERATING DAY. AT THE BEGINNING OF EACH OPERATING DAY THE TARP WILL BE REMOVED BEFORE WASTE DISPOSAL IS CONTINUED.

C. HYDRATED ASH MAY BE USED AS AN ALTERNATE DAILY COVER CONTINGENT UPON THE FOLLOWING CONDITIONS:

1. HYDRATED ASH NOT STAGED FOR DEPLOYMENT WITHIN 24 HOURS WILL BE STOCKPILED ON THE LANDFILL AND CONTAINED BY EARTHEN BERMS AND TARPS.
2. HYDRATED ASH WILL NOT BE USED AS A COMPONENT OF THE INTERMEDIATE COVER.
3. THE HYDRATED ASH WILL NOT BE USED OR STORED OUTSIDE THE LANDFILL LINER.
4. THE ASH WILL BE KEPT HYDRATED TO PREVENT DISPERSAL BY THE WIND.

D. REMEDIATED SOIL NOT EXCEEDING 100 (ppm) TPH AND 20 (ppm) TOTAL BTEX MAY BE USED AS DAILY COVER.

7. INTERMEDIATE COVER: A UNIFORM LAYER OF COMPACTED CLEAN EARTH NOT LESS THAN ONE (1) FOOT IN DEPTH WILL BE PLACED OVER EACH PORTION OF ANY INTERMEDIATE MSW OR CO-MINGLED MSW AND CCR OR CCR ONLY LIFT FOLLOWING COMPLETION OF THAT LIFT. A 50/50 MIXTURE OF SOIL/MULCH OR JEA EZBASE MAY BE USED AS AN ALTERNATE INTERMEDIATE COVER. THIS COVER MAY BE STRIPPED AS WASTE IS PLACED IN THE NEXT LIFT ABOVE. INTERMEDIATE COVER SHALL BE STOCKPILED IN SEGREGATED AREAS SO AS NOT TO INTERFERE WITH OPERATIONS. INTERMEDIATE COVER SHALL BE PLACED ON ALL DISPOSAL AREAS TO REMAIN OPEN MORE THAN A WEEK. THE COMPOSITION OF INTERMEDIATE COVER SHALL MEET THE FOLLOWING STANDARDS:

A. SAME CRITERIA FOR DAILY COVER; PLUS

B. BE CAPABLE OF SUPPORTING THE GERMINATION AND PROPAGATION OF VEGETATIVE COVER.

8. FINAL COVER: TOPSOIL, 50/50 MIXTURE OF SOIL/MULCH, CLAYEY SOILS AND GENERAL FILL MAY BE STOCKPILED ON-SITE IN SEGREGATED AREAS; SO AS NOT TO INTERFERE WITH OPERATIONS. PRIOR TO STOCKPILING, THIS MATERIAL SHALL BE TESTED FOR CONFORMANCE WITH THE D&O PLANS. WHEN THE WASTE FILL PROGRESSION REACHES FINAL GRADE, THE FINAL COVER WILL BE INSTALLED AS DETAILED IN THE D&O PLANS. ALL FINAL COVER COMPONENTS WILL BE CONSTRUCTED IN ACCORDANCE WITH THE CQA PLAN. A 50/50 MIXTURE OF SOIL/MULCH MAY BE USED IN THE UPPER SIX-INCHES OF THE FINAL COVER SOILS.

9. FIRE PROTECTION: THE DISPOSAL FACILITY SHALL BE DESIGNED AND OPERATED TO PREVENT AND MINIMIZE THE POTENTIAL FOR FIRE OR EXPLOSION.

A MINIMUM SUPPLY OF ONE DAY OF COVER MATERIAL WILL BE MAINTAINED WITHIN 200 FEET OF THE WORKING FACE AND WILL BE USED FOR FIRE PROTECTION.

IN CASE OF FIRE, SOIL SHALL BE IMMEDIATELY DUMPED ONTO BURNING AREA. A WATER TRUCK MAY ALSO BE USED IF AVAILABLE TO ASSIST IN EXTINGUISHING THE FIRE.

SMOKING WILL BE PROHIBITED IN THE LANDFILL AREA. THE LOCAL FIRE DEPARTMENT SHALL BE NOTIFIED IF A FIRE BREAKS OUT.

10. SUPERVISION: THE DISPOSAL FACILITY WILL BE UNDER THE SUPERVISION OF AN EXPERIENCED FULL-TIME EMPLOYEE WHO WILL BE ON-SITE AT ALL TIMES DURING ITS OPERATION. THE SUPERVISOR'S EXPERIENCE MUST INCLUDE TRAINING IN THE OPERATION OF LANDFILLS AND THE IMPLEMENTATION OF DESIGN AND OPERATIONAL PLANS. THE SUPERVISOR SHALL BE CERTIFIED IN ACCORDANCE WITH O.C.G.A. 12-8-24.1 AND THE RULES OF SOLID WASTE MANAGEMENT. AN APPROVED SET OF DESIGN AND OPERATION PLANS SHALL BE KEPT ON-SITE DURING OPERATION HOURS.

THE SUPERVISOR AND FACILITY EMPLOYEES WILL RECIEVE REGULAR EDUACATIONAL TRAINING THAT WILL ALLOW THEM TO DETECT SAFETY EMERGENCIES AND RESPOND IN A TIMELY MANNER.

11. CONTINUITY OF OPERATION: ALL-WEATHER ACCESS ROADS WILL BE PROVIDED TO THE WORKING FACE OF THE DISPOSAL OPERATION. ALL AREAS OF THE SITE ARE SUITABLE FOR WET WEATHER OPERATIONS. BACK-UP OR RENTAL EQUIPMENT WILL BE USED IN THE EVENT OF EQUIPMENT BREAKDOWN.

21. SILTATION AND EROSION CONTROL: CLEARING AND GRADING ACTIVITIES WILL BE LIMITED TO THE CURRENT WASTE CELL AREAS, BORROW AREAS, STOCKPILE AREAS, AND SITE FACILITY AREAS. SILT FENCE AND OTHER EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ALL CONSTRUCTION ACTIVITIES. DISTURBED AREAS ALONG ROADSIDE AND ON CONSTRUCTED SOIL FILL SLOPES SHALL BE SEEDED AND MULCHED IMMEDIATELY AS WORK PROGRESSES TO ESTABLISH PERMANENT VEGETATION. THE ROAD SURFACE SHALL BE STABILIZED WITH SIX INCHES OF LIMEROCK.

SOIL STOCKPILE AND INTERMEDIATE COVER AREAS TO BE EXPOSED FOR LONGER THAN THREE MONTHS SHOULD BE MULCHED AND SEEDED WITH TEMPORARY VEGETATION. SILT FENCE SHALL BE PLACED AROUND ALL STOCKPILE AREAS. PERMANENT VEGETATION OVER WASTE FILL AREAS SHALL BE ESTABLISHED AS FINAL COVER IS PLACED. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED WEEKLY AND IMMEDIATELY AFTER SIGNIFICANT RAIN EVENTS. SILT WILL BE REMOVED FROM SILT FENCE WHEN SILT ACCUMULATION REACHES A DEPTH OF ONE HALF THE HEIGHT OF THE SILT FENCE FABRIC. ACCUMULATED SILT WILL BE REMOVED AND PLACED IN DESIGNATED STOCKPILE AREAS. PERMANENT RECORD SHALL BE KEPT OF ALL SEDIMENT POND CLEANING OPERATIONS.

SILT REMOVAL FROM SEDIMENT PONDS:
SILT WILL BE REMOVED FROM SEDIMENT PONDS AS REQUIRED TO MAINTAIN THE DESIGN CAPACITY OF THE STORMWATER MANAGEMENT SYSTEM.

ALL RECORDS SHALL BE FILED AND MAINTAINED AT THE LANDFILL OFFICE. REPAIRS TO ALL DEVICES SHALL BE MADE AS NECESSARY TO MAINTAIN THEIR EFFECTIVENESS IN SILT CONTROL. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL CONFORM TO THE FOLLOWING O.C.G.A. 12-7-6 BEST MANAGEMENT PRACTICES FOR CONSERVATION AND ENGINEERING PRACTICES:

A. STRIPPING OF VEGETATION, REGRADING, AND OTHER DEVELOPMENT ACTIVITIES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO MINIMIZE EROSION;

B. CUT AND FILL OPERATIONS MUST BE KEPT TO A MINIMUM;

C. DEVELOPMENT PLANS MUST CONFORM TO TOPOGRAPHY AND SOIL TYPE, SO AS TO CREATE THE LOWEST PRACTICABLE EROSION POTENTIAL;

D. WHENEVER FEASIBLE, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED, AND SUPPLEMENTED;

E. THE DISTURBED AREA AND THE DURATION OF EXPOSURE TO EROSIVE ELEMENTS SHALL BE KEPT TO A PRACTICABLE MINIMUM;

F. DISTURBED SOIL SHALL BE STABILIZED AS QUICKLY AS PRACTICABLE;

G. TEMPORARY VEGETATION OR MULCHING SHALL BE EMPLOYED TO PROTECT EXPOSED CRITICAL AREAS DURING DEVELOPMENT;

H. PERMANENT VEGETATION AND STRUCTURAL EROSION CONTROL MEASURES MUST BE INSTALLED AS SOON AS PRACTICABLE;

I. TO THE EXTENT NECESSARY, SEDIMENT IN RUN-OFF WATER MUST BE TRAPPED BY THE USE OF DEBRIS BASINS, SEDIMENT BASINS, SILT TRAPS, OR SIMILAR MEASURES UNTIL THE DISTURBED AREA IS STABILIZED. A DISTURBED AREA IS STABILIZED WHEN IT IS BROUGHT TO A CONDITION OF CONTINUOUS COMPLIANCE WITH REQUIREMENTS.

J. ADEQUATE PROVISIONS SUCH AS BERMS OR DIVERSION DITCHES MUST BE PROVIDED TO MINIMIZE DAMAGE FROM SURFACE WATER TO THE CUT FACE OF EXCAVATIONS OR THE SLOPING SURFACES OF FILLS.

K. CUTS AND FILLS MAY NOT ENDANGER ADJOINING PROPERTY;

L. FILLS MAY NOT ENCROACH UPON NATURAL WATER COURSES OR CONSTRUCTED CHANNELS IN A MANNER SO AS TO ADVERSELY AFFECT OTHER PROPERTY OWNERS;

M. GRADING EQUIPMENT MUST CROSS FLOWING STREAMS BY THE MEANS OF BRIDGES OR CULVERTS, EXCEPT WHEN SUCH METHODS ARE NOT FEASIBLE; PROVIDED, IN ANY CASE, THAT SUCH CROSSINGS MUST BE KEPT TO A MINIMUM;

N. LAND-DISTURBING ACTIVITY PLANS FOR EROSION AND SEDIMENTATION CONTROL SHALL INCLUDE PROVISIONS FOR TREATMENT OR CONTROL OF ANY SOURCE OF SEDIMENTS AND ADEQUATE SEDIMENTATION CONTROL FACILITIES TO RETAIN SEDIMENTS ON SITE OR PRECLUDE SEDIMENTATION OF ADJACENT STREAMS;

O. LAND-DISTURBING ACTIVITIES SHALL NOT BE CONDUCTED WITHIN 25 FEET OF THE BANKS OF ANY STATE WATERS, AS MEASURED FROM THE POINT WHERE VEGETATION HAS BEEN WRESTED BY NORMAL STREAM FLOW OR WAVE ACTION, EXCEPT WHERE THE DIRECTOR DETERMINES TO ALLOW A VARIANCE THAT IS AT LEAST AS PROTECTIVE OF NATURAL RESOURCES AND THE ENVIRONMENT, WHERE OTHERWISE ALLOWED BY THE DIRECTOR PURSUANT TO CODE SECTION 12-2-8, OR WHERE A DRAINAGE STRUCTURE OR A ROADWAY DRAINAGE STRUCTURE MUST BE CONSTRUCTED, PROVIDED THAT ADEQUATE EROSION CONTROL MEASURES ARE INCORPORATED IN THE PROJECT PLANS AND SPECIFICATIONS AND ARE IMPLEMENTED; PROVIDED, HOWEVER, THAT BUFFERS OF AT LEAST 25 FEET ESTABLISHED PURSUANT TO PART 6 OF ARTICLE 5 OF CHAPTER 5 OF THIS TITLE SHALL REMAIN IN FORCE UNLESS A VARIANCE IS GRANTED BY THE DIRECTOR AS PROVIDED IN THIS PARAGRAPH; AND

P. LAND-DISTURBING ACTIVITIES SHALL NOT BE CONDUCTED WITHIN 100 HORIZONTAL FEET, AS MEASURED FROM THE POINT WHERE VEGETATION HAS BEEN WRESTED BY NORMAL STREAM FLOW OR WAVE ACTION, OF THE BANKS OF ANY STATE WATERS CLASSIFIED AS "TROUT STREAMS" PURSUANT TO ARTICLE 2 OF CHAPTER 5 OF THIS TITLE UNLESS A VARIANCE FOR SUCH ACTIVITY IS GRANTED BY THE DIRECTOR EXCEPT WHERE A ROADWAY DRAINAGE STRUCTURE MUST BE CONSTRUCTED, PROVIDED THAT ADEQUATE EROSION CONTROL MEASURES ARE I NCORPORATED IN THE PROJECT PLANS AND SPECIFICATIONS AND ARE IMPLEMENTED.

13. VEGETATIVE PLAN: NO AREA ON THE SITE WILL BE STRIPPED OF ITS NATURAL VEGETATION UNTIL SUCH TIME AS IT IS READY FOR USE. ANY AREA TO BE LEFT EXPOSED AND INACTIVE FOR MORE THAN 3 MONTHS SHALL BE GRASSED. VEGETATION OF THE FINAL COVER SHALL TAKE PLACE WITHIN TWO WEEKS AFTER IT IS PLACED. INTERMEDIATE COVER SHALL BE GRASSED WITH TEMPORARY VEGETATION IF IT WILL BE EXPOSED FOR MORE THAN THREE MONTHS.

ALL SEEDED AREAS MUST BE STABILIZED IN ACCORDANCE WITH THE GEORGIA EROSION AND SEDIMENT CONTROL MANUAL.

A. Ds1 STABILIZATION (TYPICAL)

FOR AREAS REQUIRING STABILIZATION WHEN NO VEGETATION IS AVAILABLE, USE MULCHING UNTIL THE SEASON FOR PLANTING THE REQUIRED VEGETATION IS REACHED. MULCHING WILL BE ACCOMPLISHED BY ONE OR MORE OF THE FOLLOWING METHODS:
(1) DRY STRAW OR HAY SHALL BE SPREAD AT THE RATE OF 2 1/2 TONS PER ACRE. THE MULCH SHALL BE ANCHORED IN THE SOIL WITH A DISK HARROW,
(2) MECHANICALLY APPLIED CLAY AND ASPHALT EMULSION,
(3) STRAW AND FIBER MESH ROLL PLACED AND ANCHORED WITH STAPLES.

B. Ds2 TEMPORARY VEGETATION (TYPICAL)

FOR AREAS REQUIRING TEMPORARY COVER, THE FOLLOWING FAST-GROWING GRASSES CAN BE USED:

TYPE	SEEDING RATE (LBS/ACRE)	PLANTING DATES	YEAR FERTILIZER RATE (LBS/ACRE)	TYPE FERTILIZER (N-P-K)
BROWNTOP MILLET	45	3/15 – 7/31	30-40	8-8-8
RYEGRASS	45	8/1 – 3/15	40-50	8-8-8

C. Ds3 PERMANENT VEGETATION (TYPICAL)

PENSACOLA BAHIA GRASS WILL BE PLANTED ACCORDING TO THE FOLLOWING SCHEDULE:

(TEMPORARY GRASS AT 10 LBS/ACRE AND MULCH SHALL BE MIXED WITH THE FIRST APPLICATION OF PERMANENT GRASS.)

TYPE	SEEDING RATE (LBS/ACRE)	PLANTING DATES	YEARS TO APPLY	N FERT. RATE (LBS/ACRE)	P_2O_5 FERT. RATE (LBS/ACRE)	K_2O FERT. RATE (LBS/ACRE)	N – TOP DRESSING RATE (LBS/ACRE)
PENSACOLA BAHIA GRASS	40-60	10/1-6/15	FIRST	60-90	120-180	120-180	50-100
			SECOND	48	96	96	50-100

14. SURVEY CONTROL: SURVEY CONTROL WILL BE PROVIDED AS INDICATED ON THE APPROVED DESIGN AND OPERATIONAL PLAN. SURVEY CONTROL WILL BE ACCOMPLISHED THROUGH THE USE OF PERMANENT BENCHMARKS. WHERE NECESSARY FOR CONSTRUCTION OR OPERATIONAL PURPOSES, VERTICAL AND HORIZONTAL SURVEY CONTROL WILL BE ESTABLISHED AND MAINTAINED TO DELINEATE WASTE FILL BOUNDARIES, STRUCTURES, AND PROPERTY BOUNDARIES.

15. LEACHATE COLLECTION AND TREATMENT: A LINER AND LEACHATE COLLECTION SYSTEM WILL BE INSTALLED AS SHOWN ON THE APPROVED DESIGN AND OPERATION PLAN. THIS COLLECTION SYSTEM SHALL BE PROPERLY MAINTAINED THROUGHOUT THE OPERATION OF THE DISPOSAL FACILITY.

LEACHATE WILL BE CONVEYED TO ABOVE-GROUND STORAGE TANKS PRIOR TO DISPOSAL. LEACHATE COLLECTED IN THE TANKS SHALL EITHER BE RECIRCULATED BACK INTO THE LANDFILL, SOLIDIFIED AND DISPOSED OF IN THE LANDFILL OR HAULED TO A WASTEWATER TREATMENT PLANT.

PRETREATMENT FACILITIES WILL BE CONSTRUCTED IF NECESSARY TO MEET PERMIT LIMITATIONS ESTABLISHED BY THE TREATMENT FACILITY AND/OR EPD.

LEACHATE MAY BE RECIRCULATED BACK INTO THE LANDFILL ONCE SUFFICIENT SOLID WASTE HAS BEEN DEPOSITED IN A CELL UNDER THE FOLLOWING CONDITIONS:

A. THE CELL MUST HAVE AT LEAST A 15-FOOT LIFT OF SOLID WASTE.

B. LEACHATE MAY NOT BE DISCHARGED WITHIN 100-FEET OF ANY UNLINED AREA.

C. LEACHATE MAY BE DISCHARGED BY DIRECT DISCHARGE FROM A TANKER TRUCK INTO THE WORKING FACE OR DISCHARGED DIRECTLY INTO THE WASTE THROUGH A PIPING DISTRIBUTION SYSTEM.

D. RECIRCULATION MUST BE AT A CONTROLLED RATE TO AVOID PONDING ON THE WORKING FACE.

E. A BERM MUST BE CONSTRUCTED NEAR THE WORKING FACE TO PREVENT RUNOFF FROM THE RECIRCULATED LEACHATE.

LEACHATE COLLECTION AND TREATMENT (CONTINUED):

F. AREAS WHERE LEACHATE IS RECIRCULATED INTO THE WORKING FACE MUST BE COVERED WITH DAILY "SOIL" COVER TO AID IN ABSORPTION AND TO CONTROL ODORS.

UPON COMMENCEMENT OF LEACHATE GENERATION BY THE FACILITY, THE OPERATOR SHALL SAMPLE AND ANALYZE THE FOLLOWING:

A. ON A WEEKLY BASIS, THE VOLUME OF LEACHATE GENERATED AND DISPOSED OF OFF SITE BY THE LANDFILL.

B. ON A SEMI-ANNUAL BASIS, THE CHEMICAL COMPOSITION OF LEACHATE INCLUDING TOTAL ALKALINITY, SPECIFIC CONDUCTANCE, CHLORIDES, SULFATES, TOTAL DISSOLVED SOLIDS, CHEMICAL OXYGEN DEMAND, METALS AND VOLATILE ORGANIC ANALYSIS. FOR THE SEMI-ANNUAL ANALYSIS, THE LEACHATE SAMPLE SHOULD BE COLLECTED FROM THE LEACHATE STORAGE TANK AND SHOULD BE REPRESENTATIVE OF THE AVERAGE MIXED INFLUENT LEACHATE QUALITY.

C. ON AN ANNUAL BASIS FOR APPENDIX 1 CONSTITUENTS.

16. SITE EQUIPMENT: LANDFILL EQUIPMENT WILL BE PROVIDED AS NECESSARY TO ADEQUATELY MAINTAIN THE FACILITY'S DAY TO DAY OPERATIONS. THE MINIMUM EQUIPMENT ANTICIPATED FOR THESE OPERATIONS IS LISTED BELOW:

TYPE	QUANTITY
LANDFILL COMPACTOR	1
BULLDOZER	1

17. BACK-UP EQUIPMENT: BACK-UP EQUIPMENT WILL BE OBTAINED FROM A LOCAL DEALER, AS NECESSARY TO MAINTAIN CONTINUITY OF OPERATIONS.

18. DIRECTIONAL AND INFORMATIONAL SIGNS: DIRECTIONAL SIGNS WILL BE PLACED ON ROADS NEAR THE DISPOSAL FACILITY. AN INFORMATIONAL SIGN WILL BE PLACED AT THE ENTRANCE TO THE DISPOSAL SITE INDICATING THE DAYS AND HOURS OF OPERATION AND TIPPING FEES.

19. AFTER HOURS DUMPING: NO WASTE WILL BE ACCEPTED ON-SITE AFTER OPERATIONAL HOURS UNLESS AN EMERGENCY SITUATION ARISES. EMERGENCY SITUATIONS ARE TO BE DETERMINED BY THE LANDFILL SITE MANAGER WITH APPROVAL FROM THE GEORGIA REGIONAL OFFICE OF THE EPD. ALL AFTER HOURS DUMPING SHALL BE REPORTED TO THE EPD.

20. LITTER CONTROL: THE SITE WILL BE INSPECTED DAILY AND LITTER COLLECTED. THE APPLICATION OF DAILY COVER WILL ALSO MINIMIZE LITTER. NO WASTE WILL REMAIN UNCOVERED OVERNIGHT. SCATTERING OF WASTE BY WIND SHALL BE CONTROLLED BY FENCING OR OTHER BARRIERS.

21. DUST CONTROL: THE ENTRANCE AND PERIMETER ROADS WILL BE PAVED OR GRAVELED TO MINIMIZE DUST. JEA EZBASE MAY BE USED ON ROADWAYS WITHIN THE LINER LIMITS. A WATER TRUCK WILL BE UTILIZED TO SPRAY ACCESS ROADS AND CO-MINGLED MSW AND CCR AND CCR LAYERED DISPOSAL AREAS AS NECESSARY TO CONTROL FUGITIVE DUST EMISSIONS. FUGITIVE DUST FROM CCR DISPOSAL AREAS WILL BE MINIMIZED IN ACCORDANCE WITH AIR QUALITY RULE 391-3-1-.02(2)(n)1 AND WILL NOT EXCEED THE LIMITS DEFINED THEREIN.

FUGITIVE CCR DUST COMPLAINTS FROM CITIZENS WILL BE LOGGED VIA WASTE MANAGEMENT'S 1-800 CITIZEN COMMENT SYSTEM AND BE PLACED IN THE FACILITY'S RECORDS AND MADE AVAILABLE FOR INSPECTION BY EPD.

THE OWNER WILL PREPARE AND SUBMIT TO EPD AN ANNUAL FUGITIVE DUST CONTROL REPORT. THE REPORT WILL BE DUE EVERY 12 MONTHS SUBSEQUENT TO APPROVAL OF THE ORIGINAL CCR MANAGEMENT PLAN. THE REPORT WILL INCLUDE THE FOLLOWING:
A. DESCRIPTION OF ACTIONS TAKEN TO CONTROL FUGITIVE DUST
B. RECORD OF ALL CITIZEN COMPLAINTS
C. A SUMMARY OF CORRECTIVE ACTIONS TAKEN AND RECOMMENDATIONS TO IMPROVE FUGITIVE DUST CONTROL MEASURES (IF APPLICABLE).

22. OPERATIONAL RECORDS/DAILY LOGS: RECORDS WILL BE KEPT OF ALL WASTE TRANSPORTED TO THE SITE BY WEIGHT. COMPLETE DAILY LOGS AND OPERATIONAL RECORDS WILL BE RETAINED IN THE ON SITE OFFICE BUILDING AND SHALL BE MADE AVAILABLE TO EPD UPON REQUEST. ALL RECORD KEEPING SHALL BE IN ACCORDANCE WITH RULE 391-3-4-.07(u).

23. ON-SITE FIRST AID: FIRST AID SUPPLIES WILL BE LOCATED IN THE OFFICE ON-SITE.

24. SITE COMMUNICATIONS: THE OFFICE WILL BE EQUIPPED WITH A TELEPHONE.

25. EMPLOYEE FACILITIES: AN OFFICE TO BE LOCATED ON-SITE WILL BE EQUIPPED WITH ELECTRICITY AND RESTROOM FACILITIES.

26. ON-SITE SOLID WASTE MATERIALS RECOVERY OPERATIONS:

AN AREA HAS BEEN DESIGNATED FOR THE STORAGE OF RECOVERED RECYCLABLE MATERIALS.

1. NO ON-SITE RECOVERED MATERIALS PROCESSING ACTIVITIES SHALL OCCUR WITHOUT PRIOR APPROVAL FROM THE ENVIRONMENTAL PROTECTION DIVISION.

2. ANY DESIGNATED STORAGE AREA FOR RECOVERED MATERIALS MUST BE MAINTAINED IN A NEAT AND ORDERLY MANNER. STORED MATERIALS MUST BE REMOVED FROM THE SITE EVERY 90 DAYS. MATERIALS STORED MORE THAN 90 DAYS SHALL BE DISPOSED IN THE LANDFILL.

3. SCAVENGING SHALL NOT BE ALLOWED IN THE RECOVERED MATERIAL PROCESSING AREA.

4. THE FOLLOWING RECOVERED MATERIALS MAY BE STORED: WHITE GOODS & TIRES.

27. WASTE REQUIRING SPECIAL HANDLING: ALL INFECTIOUS AND ASBESTOS WASTES MUST BE LABELED AND HANDLED IN ACCORDANCE WITH ALL GEORGIA EPD REGULATIONS IN ORDER TO BE ACCEPTED.

ASBESTOS DISPOSAL

1. ASBESTOS CONTAINING WASTE SHALL BE SEALED IN LEAK-PROOF CONTAINERS LABELED WITH: "CAUTION – CONTAINS ASBESTOS FIBERS – AVOID OPENING OR BREAKING CONTAINER – BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH."

2. ASBESTOS CONTAINING WASTE SHALL BE DISPOSED OF IN SUCH A MANNER AS NOT TO DESTROY THE INTEGRITY OF THE ASBESTOS CONTAINING MATERIALS CONTAINERS PRIOR TO THE PLACEMENT OF COVER MATERIAL. THIS WASTE SHALL BE COMPLETELY COVERED IMMEDIATELY AFTER DEPOSITION WITH A MINIMUM OF SIX(6) INCHES OF NON-ASBESTOS MATERIAL.

3. PERSONNEL DISPOSING OF ASBESTOS CONTAINING MATERIAL WILL BE TRAINED FOR THE HAZARDS OF THIS MATERIAL AS WELL AS ITS DISPOSAL.

4. THE LOCATION OF ASBESTOS SHALL BE RECORDED AND PLACED IN THE OPERATING RECORD.

BIOMEDICAL WASTE DISPOSAL

1. BIOMEDICAL WASTE FROM GENERATORS OF LESS THAN 100 POUNDS PER MONTH SHALL BE PROPERLY DISPOSED OF AT THE LANDFILL. DISPOSAL OF UNTREATED BIOMEDICAL WASTE FROM GENERATORS OF MORE THAN 100 POUNDS PER MONTH IS PROHIBITED AT THE LANDFILL.

2. TREATED BIOMEDICAL WASTE MAY BE COMBINED AND HANDLED WITH REGULAR SOLID WASTE.

28. ZONING: ALL CHARLTON COUNTY REQUIREMENTS FOR A SOLID WASTE DISPOSAL FACILITY SHALL APPLY.

29. PROHIBITED WASTE: NO LIQUID WASTE, EITHER BULK OR CONTAINERIZED SHALL BE PLACED IN THE LANDFILL UNLESS THE CONTAINER HAS ONE GALLON CAPACITY OR LESS. ALSO, NO LEAD ACID BATTERIES, RADIOACTIVE WASTE, OR REGULATED QUANTITIES OF HAZARDOUS WASTE MAY BE ACCEPTED. THESE PROHIBITED WASTE SHALL BE LISTED ON THE INFORMATIONAL SIGN. THE SCALEHOUSE ATTENDANT AND THE EQUIPMENT OPERATORS SHOULD BE TRAINED TO IDENTIFY AND EXCLUDE THESE WASTES. AT A MINIMUM, LANDFILL PERSONNEL MUST BE TRAINED TO RECOGNIZE REGULATED WASTES IN ACCORDANCE WITH GEORGIA EPD AND FEDERAL REGULATIONS. RANDOM INSPECTION OF INCOMING LOADS SHALL BE PERFORMED AT THE SCALEHOUSE BY TRAINED PERSONNEL. THE EPD SHALL BE NOTIFIED IF REGULATED HAZARDOUS WASTE OR PCB WASTE IS DISCOVERED AT THE FACILITY.

30. PROHIBITED ACTS: THE LANDFILL SHALL BE OPERATED AND MAINTAINED TO PREVENT OPEN BURNING, SCAVENGING, AND THE OPEN DUMPING OF WASTES.

31. SITE ACCEPTABILITY LIMITATIONS PHASE 4:

1. THE AREA CONSIDERED FOR SUITABILITY INCLUDES ONLY THAT 230.79-ACRE PARCEL SHOWN ON FIGURE 1-2b OF THE AQUATERRA ENGINEERING, LLC, SITE ACCEPTABILITY REPORT, DATED APRIL 10, 2007. THE SURVEY WAS SIGNED AND SEALED BY THE REGISTERED LAND SURVEYOR THAT PREPARED IT ON JANUARY 16, 2008.
2. A LINER AND LEACHATE COLLECTION SYSTEM SHALL BE CONSTRUCTED UNDER ALL AREAS PROPOSED FOR WASTE DISPOSAL. THE BOTTOM OF THE LINER SYSTEM SHALL BE CONSTRUCTED AT LEAST 5-FEET ABOVE THE SEASONAL HIGH WATER TABLE. BECAUSE THE WATER TABLE AT THE SITE WILL LIKELY OCCUR NEAR THE GROUND SURFACE FOR EXTENDED PERIODS OF TIME, THE BOTTOM OF THE LINER SYSTEM SHALL BE CONSTRUCTED AT LEAST 5-FEET ABOVE THE NATURAL GROUND SURFACE. A "CAPILLARY BREAK" SHALL BE INSTALLED BETWEEN THE SEASONAL HIGH WATER TABLE AND THE SOIL BUFFER, TO PREVENT WATER FROM WICKING UP INTO THE DRY SOIL BUFFER.

THE PROJECT ENGINEER SHALL MAKE PERIODIC QUALITY CONTROL INSPECTIONS WHILE THE LINER SYSTEM AND UNDERDRAIN SYSTEM ARE UNDER CONSTRUCTION, AND MUST CERTIFY THE PROPER INSTALLATION OF THE SYSTEMS.

3. A MINIMUM 500-FOOT BUFFER SHALL BE MAINTAINED BETWEEN THE WASTE DISPOSAL AREA AND ANY ADJACENT RESIDENCES AND/OR ANY WATER SUPPLY WELLS.
4. A MINIMUM 200-FOOT UNDISTURBED BUFFER SHALL BE MAINTAINED BETWEEN THE WASTE DISPOSAL AREA AND THE PROPERTY LINE OF THE 230.79-ACRE PARCEL SHOWN ON FIGURE 1-2b.
5. A MINIMUM 150-FOOT UNDISTURBED BUFFER SHALL BE MAINTAINED BETWEEN THE WASTE DISPOSAL AREA AND ALL STREAMS SHOWN ON FIGURE 1-2b.
6. A MINIMUM 50-FOOT UNDISTURBED BUFFER SHALL BE MAINTAINED BETWEEN THE WASTE DISPOSAL AREA AND ALL STREAMS SHOWN ON FIGURE 1-2b UNLESS OTHERWISE PERMITTED BY THE UNITED STATES ARMY CORPS OF ENGINEERS. THE JURISDICTIONAL WETLAND AREAS MUST BE DELINEATED ON THE DESIGN AND OPERATION PLAN.

GEORGIA
Environmental Protection Division
Solid Waste Management Program
MINOR MODIFICATION APPROVAL
SOLID WASTE PERMIT NO. 024-006D(SL)
APPROVED BY: [signature] DATE: 05/19/2017

ATLANTIC COAST CONSULTING, INC.
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GEORGIA REGISTERED No. 030071 PROFESSIONAL ENGINEER MARC A. LIVERMAN

06930
LEVEL II CERTIFICATION

PROJECT:
CHESSER ISLAND ROAD MSW LANDFILL MAJOR MODIFICATION PHASE 4 EXPANSION

CHARLTON COUNTY, GA
PERMIT NO: 024-006D(SL)

WASTE MANAGEMENT
Chesser Island Road Landfill, Inc.
Hwy 121 @ Chesser Island Road
Folkston, GA 31537

REVISIONS

INITIAL GAEPD SUBMITTAL	03/13/09
REVISED PER EPD COMMENTS	10/23/09
REVISED PER EPD COMMENTS	12/16/09
1-MINOR MODIFICATION	04/27/15
2-CCR MANAGEMENT	04/20/17
3-ADD CCR SOURCE	05/17/17
4-CCR CHARACTERISTICS	05/19/17

Drawn by: CW
Checked by:

PROJECT NUMBER: I014-101
March 2009

OPERATIONAL PROCEDURES

P:\Industrial\I014 Waste Management North FL\415 – Chesser CCR Mod\2 – Design Data\Drawings\I014-415_26-Operational Procedures_Sheet 26.dwg 5/19/17 MARC

SITE ACCEPTABILITY LIMITATIONS PHASE 4 (CONTINUED):

7. NO CONSTRUCTION ACTIVITIES SHALL BE ALLOWED IN ANY FLOODPLAIN AREAS OF THE SITE. IF, DURING CONSTRUCTION OF THE SITE, ANY SPRINGS OR SEEPS ARE DISCOVERED, EPD MUST BE IMMEDIATELY NOTIFIED AND PROTECTIVE MEASURES SHALL BE INCORPORATED INTO THE FACILITY'S DESIGN AND OPERATIONS PLANS TO PREVENT CONTAMINATION OF THE SPRING OR SEEP. SAMPLING OF THE SPRING OR SEEP SHALL ALSO BE INCORPORATED INTO THE FACILITY'S SURFACE WATER SAMPLING PLAN.
8. ALL TEMPORARY BORINGS AND/OR PIEZOMETERS AT THIS SITE SHALL BE ABANDONED IN ACCORDANCE WITH THE WATER WELL STANDARDS ACT. ADDITIONALLY, PIEZOMETERS LOCATED IN POTENTIAL WASTE DISPOSAL AREAS SHALL BE ABANDONED BY OVERDRILLING AND FILLING WITH A NON-SHRINKING CEMENT/BENTONITE MIX VIA TREMIE PIPE. A REPORT DOCUMENTING THE ABANDONMENT OF ALL ON-SITE BORINGS/PIEZOMETERS MUST BE SUBMITTED TO EPD PRIOR TO CELL CONSTRUCTION. THIS DOCUMENTATION MUST BE SIGNED AND STAMPED BY THE GEORGIA REGISTERED PROFESSIONAL GEOLOGIST OR PROFESSIONAL ENGINEER THAT SUPERVISED THE WORK.
9. GROUNDWATER, SURFACE WATER, AND METHANE MONITORING SYSTEMS SHALL BE INSTALLED AT THE SITE. SAMPLING PARAMETERS, SAMPLING SCHEDULES, MONITORING WELL CONSTRUCTION AND SPACING SHOULD ADHERE TO THE GUIDELINES ESTABLISHED IN EPD'S RULES OF SOLID WASTE MANAGEMENT, CHAPTER 391-3-4.
10. ALL EROSION CONTROL MEASURES AND/OR DIVERSION DITCHES SHALL CONFORM TO THE EROSION AND SEDIMENT CONTROL ACT AND BE PROTECTIVE OF ALL PERENNIAL AND INTERMITTENT STREAMS. ALL DRAINAGE STRUCTURES SHOULD BE CHANNELED TO A PERMANENT SEDIMENT CONTROL STRUCTURE.

△2

32. CERTIFICATION: PRIOR TO RECEIPT OF SOLID WASTE OR CCR, THE DIVISION MUST BE PROVIDED WITH WRITTEN CERTIFICATION BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN GEORGIA, THAT THE FACILITY HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PERMIT. UNLESS NOTIFIED OTHERWISE BY THE DIVISION, WITHIN 15 DAYS OF RECEIPT BY THE DIVISION OF THE WRITTEN CERTIFICATION, THE FACILITY OWNER OR OPERATOR MAY COMMENCE DISPOSAL OF SOLID WASTE. THIS PROCESS SHALL BE REPEATED FOR EACH SUBSEQUENT MAJOR CONSTRUCTION STAGE, INCLUDING BUT NOT LIMITED TO, NEW CELLS OR TRENCHES, MONITORING WELLS, SEDIMENT PONDS, LEACHATE TREATMENT SYSTEMS, MODIFICATIONS ADDING A NEW SOLID WASTE HANDLING PROCESS, AND APPLICATION OF FINAL COVER.

33. INITIAL PLACEMENT OF WASTE: THE FIRST EIGHT FEET OF SOLID WASTE PLACED ON THE PROTECTIVE COVER MAY NOT CONTAIN MATERIAL CAPABLE OF PENETRATING OR PUNCTURING THE PROTECTIVE COVER. THESE MATERIALS WILL BE PULLED ASIDE AND DISPOSED OF IN OTHER AREAS UNTIL THE WASTE LAYER EXCEEDS 8 FEET OVER THE PROTECTIVE COVER.

NO CCR WILL BE CO-MINGLED WITH MSW IN THE FIRST EIGHT FEET OF WASTE PLACED ON THE PROTECTIVE COVER. CO-MINGLED MSW AND CCR MAY BE PLACED IN SUBSEQUENT WASTE LIFTS ONCE THE WASTE LAYER EXCEEDS 8 FEET.

△2 NO CCR ONLY LAYERS WILL BE PLACED IN THE FIRST EIGHT FEET OF WASTE PLACED ON THE PROTECTIVE COVER. CCR ONLY LAYERS MAY BE PLACED IN SUBSEQUENT WASTE LIFTS ONCE THE WASTE LAYER EXCEEDS 8 FEET.

34. ENVIRONMENTAL PROTECTION: THE LANDFILL SHALL BE OPERATED IN SUCH MANNER AS TO PREVENT AIR, LAND, OR WATER POLLUTION, AND PUBLIC HEALTH HAZARDS.

35. SOLIDIFICATION UNIT:

SOLIDIFICATION: LIQUIDS SOLIDIFICATION SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

WASTE STREAMS:

- ALL WASTES TO BE SOLIDIFIED WILL BE PROCESSED IN ACCORDANCE WITH THE PROHIBITED WASTE EXCLUSION PLAN PER ITEM 29 ON SHEET 26 OF THESE PLANS.
- NO LIQUID WASTES FROM INCOMPATIBLE WASTE STREAMS WILL BE MIXED AS PART OF THIS PROCESS. COMPATIBILITY WILL BE DETERMINED BY THE OPERATOR'S REVIEW OF THE LIQUID WASTE CHARACTERIZATION AS SPECIFIED BELOW.
- BULKING AGENTS USED MAY INCLUDE ONE OR MORE OF THE FOLLOWING: WOOD BARK, WOOD CHIPS, SAW DUST, NON-CCR ASH MATERIAL, KILN DUST, SOILS, AUTO-SHREDDER FLUFF, OTHER CELLULOSE PRODUCTS AND OTHER INERT MATERIALS.

△4

- LIQUID AGENTS USED MAY INCLUDE: LEACHATE, SEMI-LIQUID WASTE OR OTHER NON-HAZARDOUS LIQUIDS.

WASTE ACCEPTANCE PLAN:
ANY WASTE THAT WILL BE ACCEPTED FOR SOLIDIFICATION PROCESSING MUST BE CHARACTERIZED AND CONSIDERED NON-HAZARDOUS. THE WASTE GENERATOR WILL SUPPLY CHESSER ISLAND ROAD LANDFILL WITH A WASTE CHARACTERIZATION OR LABORATORY REPORT SPECIFYING THE DETAILED WASTE PROFILE WHICH SHALL VERIFY THE NON-HAZARDOUS STATUS OF THE WASTE. ALSO A MANIFEST FOR EVERY TRUCK THAT THE WASTE GENERATOR SHIPS TO THE LANDFILL MUST BE RECORDED AND FILED SEPARATELY.

GENERAL OPERATIONS:

△2

- THE FOLLOWING INFORMATION WILL BE RECORDED AS PART OF WASTE SOLIDIFICATION ACTIVITIES AND KEPT IN THE FACILITY OPERATING RECORDS:
  - -LIQUID MATERIAL DESCRIPTION/ WASTE PROFILE
  - -SOLIDIFICATION AGENT DESCRIPTION/ WASTE PROFILE
  - -DATE AND TIME OF SOLIDIFICATION

PERMANENT SOLIDIFICATION PROCESS:
THE PERMANENT SOLIDIFICATION UNIT WILL BE LOCATED IN AN UNLINED PORTION OUTSIDE THE FOOTPRINT OF THE LANDFILL AND ITS PROPOSED LOCATION WILL ELIMINATE THE NEED FOR FUTURE RELOCATION. THE UNIT WILL CONSIST OF A MIXING BASIN, SILO, AND BAGHOUSE. THE BASIN WILL HAVE AN OPENING AND AN AUGER FROM A SILO WILL FEED THE SOLIDIFICATION AGENT TO THE MIXING BASIN. A SILO WILL BE USED TO STORE THE SOLIDIFICATION AGENT AND WILL BE PROVIDED WITH A BAGHOUSE TO CONTAIN ANY FUGITIVE EMISSIONS DURING THE TRANSFER PROCESS.

THE FACILITY WILL IMPLEMENT THE FOLLOWING SAFEGUARDS DURING THE CONSTRUCTION OF THE BASIN. IN ORDER TO PROTECT AGAINST ANY POTENTIAL IMPACTS TO GROUNDWATER, THE FACILITY PROPOSES TO CONSTRUCT A 1/2" – 3/4" THICK MILD STEEL MIXING BASIN. THE BASIN WILL BE BURIED BELOW GENERAL GROUND ELEVATION. THE AREA AROUND THE BASIN WILL BE OVER-EXCAVATED AND RECOMPACTED. A GEOSYNTHETIC CLAY LINER (GCL) WITH PERMEABILITIES OF $5x10^{-9}$cm/sec WILL BE INSTALLED. AT THE BOTTOM OF THE BASIN A ONE FOOT DRAINAGE SAND LAYER WILL BE PROVIDED.

A 4" LEAK DETECTION RISER WILL BE INSTALLED TO ACCESS THE DRAINAGE SAND BLANKET. THE LEAK DETECTION RISER SHALL BE MONITORED SEMI-ANNUALLY USING A SUBMERSIBLE PUMP, WHICH WILL BE LOWERED AND ANY WATER PRESENT WILL BE PUMPED OUT OF THIS UNIT. THE WATER WILL BE OBSERVED VISUALLY FOR ANY INDICATION OF CONTAMINATION FROM THE BASIN. IN ADDITION pH, SPECIFIC CONDUCTIVITY, DISSOLVED OXYGEN, OXIDATION-REDUCTION POTENTIAL, AND TOTAL DISSOLVED SOLIDS WILL BE MEASURED IN THE FIELD. THE DATA COLLECTED FROM ANY WATER PRESENT SHALL BE REPORTED TO EPD WITHIN 30 DAYS FROM COMPLETION OF FIELD ACTIVITIES. IN THE EVENT CONTAMINATION IN THIS LAYER IS DETECTED, THE MIXING BASIN WILL BE REMOVED FROM OPERATION UNTIL A COMPLETE INTEGRITY CHECK OF THE BASIN IS CONDUCTED. ANY CONTAMINATED EFFLUENT PUMPED FROM THIS LAYER WILL BE PUMPED INTO THE LEACHATE STORAGE SYSTEM FOR FURTHER HANDLING. A 2 TO 3 FEET CONCRETE APRON WILL BE CONSTRUCTED AROUND THE BASIN TO PREVENT STORMWATER INTRUSION INTO THE LINED SYSTEM AND WILL ALSO AID IN MAINTAINING THE AREA AROUND THE BASIN. A SPILL-CONTAINMENT DRIVE WITH CURB WILL CONTROL UNLOADING SPILLS BY DRAINING TOWARDS THE MIXING BASINS.

THE SOLIDIFICATION BASIN WILL SERVE ONLY AS A MIXING BASIN FOR THE LIQUID WASTE STREAM AND THE SOLIDIFICATION AGENT. SOLIDIFICATION AGENTS NOT SUITABLE FOR THE SILO SUCH AS BOTTOM ASH MAY BE DIRECTLY PLACED INTO THE MIXING BASIN. THE MIXING BASIN WILL NOT BE USED TO STORE MATERIAL, AND THE MATERIAL STORED WILL NOT BE A PETROLEUM PRODUCT. THE SOLIDIFIED MATERIAL IN THE BASIN WILL BE REMOVED WITHIN 24 HOURS OF PROCESSING.

TO ENSURE THE INTEGRITY OF THE BASIN, THE BASIN WILL BE CLEANED PERIODICALLY ON AN AS-NEEDED BASIS, AND ANY DEFICIENCIES THAT MAY EFFECT THE INTEGRITY OF THE BASIN WILL BE CORRECTED AT THE EARLIEST OPPORTUNE MOMENT. AN ANNUAL LEAK TEST IS ALSO PROPOSED TO ENSURE THAT THE INTEGRITY OF THE BASIN IS MAINTAINED. THE TEST WILL CONSIST OF FILLING THE BASIN TO A KNOWN ELEVATION WITH CLEAN WATER, AND THEN RECORDING THE WATER ELEVATION AFTER A PERIOD OF 24 HOURS. IN THE EVENT THERE IS A DIFFERENCE OF MORE THAN 20% IN THE MEASURED WATER ELEVATIONS, THE FACILITY WILL DISCONTINUE USING THE MIXING BASIN, UNTIL ALL DEFICIENCIES ARE CORRECTED. THE WATER USED FOR THE TEST WILL BE PUMPED INTO THE LEACHATE STORAGE SYSTEM FOR FURTHER HANDLING. ADDITIONALLY, A GEORGIA-REGISTERED PROFESSIONAL ENGINEER MUST INSPECT THE SOLIDIFICATION UNIT ANNUALY AND CERTIFY ITS INTEGRITY.

TYPICAL OPERATION OF THE SOLIDIFICATION BASIN:
1. CLOSE THE LID TO THE BASIN; IF AN AGENT SUCH AS RECYCLED SHORT FIBER IS BEING USED, THE BASIN LID CAN BE LEFT OPEN DURING THE LOADING PROCESS.
2. CHECK TO ENSURE THAT THE RUBBER PADS AROUND THE LID OF THE BASIN AND THE ABSORBENT MATERIAL, IF REQUIRED ARE IN GOOD WORKING CONDITION.
3. MOVE THE AUGER TO THE OPENING IN THE LID OF THE BASIN AND ENSURE THAT THE MOUTH OF THE AUGER IS CORRECTLY ALIGNED OVER THE OPENING IN THE BASIN.
4. BEGIN OPENING THE VALVE SLOWLY.
5. DO NOT OVERLOAD THE BASIN; MAKE SURE THAT THERE IS SUFFICIENT LIQUID IN THE BASIN PRIOR TO TRANSFERRING ANY SOLIDIFICATION AGENT INTO THE BASIN.
6. CLOSE THE VALVE AND WAIT FOR ALL SOLIDIFICATION AGENT TO PASS THROUGH THE AUGER AND INTO THE BASIN.
7. MOVE THE AUGER TO ITS ORIGINAL POSITION; ALLOW TIME FOR THE SOLIDIFICATION AGENT TO ADSORB THE LIQUID WASTE.
8. CAREFULLY OPEN THE BASIN LID AND WITH DELIBERATE MOTIONS COMMENCE THE MIXING PROCESS. DO NOT ATTEMPT TO DIG INTO THE PILE OF SOLIDIFICATION AGENT BUT GRADUALLY STIR THE MATERIAL AND AVOID ANY PUFFING OF THE SOLIDIFICATION AGENT.
9. ENSURE THAT THE WASTE PASSES THE PAINT FILTER TEST PRIOR TO DISPOSAL WITHIN THE LINED FOOTPRINT.

TYPICAL OPERATION OF THE SILO:
1. INSTRUCT THE DRIVER OF THE PNEUMATIC TRUCK OF THE RATED PRESSURE FOR THE SILO; DO NOT EXCEED THE RATED PRESSURE DURING TRANSFER OPERATIONS.
2. USE THE PULSE JET ON THE BAGHOUSE PRIOR TO COMMENCING LOADING OPERATIONS.
3. INSTRUCT THE DRIVER ON THE VARIOUS CONNECTIONS TO THE INLET OF THE SILO; OPEN THE BUTTERFLY VALVE AND COMMENCE TRANSFER.
4. OBSERVE THE DISCHARGE FROM THE BAGHOUSE ON THE SILO WITHOUT CAUSING EXCESSIVE EMISSIONS.
5. AT THE END OF THE TRANSFER OPERATION, CALCULATE THE HOLDING CAPACITY OF THE SILO. DO NOT OVERLOAD THE SILO.

MAINTENANCE ACTIVITIES:
1. ON A WEEKLY, OR AS NEEDED BASIS, EXAMINE THE SIDES OF THE BASIN LID AND ENSURE THAT THE RUBBER PADS ARE IN GOOD WORKING CONDITION.
2. CHECK TO ENSURE THAT THE FACILITY HAS ADEQUATE BOOMS OR OTHER ABSORBENT MATERIAL TO BE USED TO PLUG LEAKS IN BASIN.
3. PULSE THE BAGHOUSE AND ENSURE THAT THE FILTERS TO NOT REQUIRE REPLACEMENT.
4. CHECK THE AUGER AND ENSURE THAT THERE ARE NO LEAKS DURING THE TRANSFER PROCESS.

TEMPORARY SOLIDIFICATION PROCESS:
THREE ROLL-OFF BOXES WILL BE USED AS TEMPORARY SOLIDIFICATION UNITS IN THE ACTIVE STAGE OF THE LANDFILL. EACH 40 CUBIC YARD ROLL-OFF BOX WILL HAVE THE GATE WELDED SHUT TO PREVENT LEAKAGE. AT A MINIMUM, 10 FEET OF SEPARATION SHALL BE KEPT BETWEEN THE LANDFILL BASE LINER AND THE BOTTOM OF EACH TEMPORARY SOLIDIFICATION UNIT. EACH UNIT SHALL BE BURIED IN WASTE TO 2 FEET FROM THE TOP. THE TEMPORARY SOLIDIFICATION UNITS WILL BE TRANSPORTED TO EACH STAGE BY LIFTING, NOT DRAGGING, EACH BOX AND CARRYING IT TO THE NEXT STAGE. DURING TRANSPORTATION, EACH UNIT SHALL BE VISUALLY INSPECTED FOR CRACKS, LEAKS, AND WELD DEFICIENCIES. SOLIDIFICATION AGENTS SUCH AS SAWDUST, FLY ASH, BOTTOM ASH OR OTHER TYPES OF ABSORBENT MATERIAL ARE TO BE USED IN THE SOLIDIFICATION PROCESS AND ARE TO BE MIXED THOROUGHLY WITH THE LIQUID WASTE USING A BACKHOE.

36. ALTERNATE SOLIDIFICATION PROCESS:

AN ALTERNATE SOLIDIFICATION PROCESS WILL UTILIZE A PUG MILL TO MIX LIQUID WASTES WITH SOLIDIFICATION AGENTS. THE PUG MILL UNIT WILL BE LOCATED NEAR THE PERMITTED SOLIDIFICATION UNIT IN AN UNLINED PORTION OUTSIDE THE FOOTPRINT OF THE LANDFILL. THE PUG MILL HOPPER WILL BE LOCATED DIRECTLY BENEATH A SILO TO FACILITATE GRAVITY-FEED OF THE SOLIDIFICATION AGENT. TRANSFER PUMPS WILL BE UTILIZED TO CONVEY LIQUID WASTES FROM ABOVE-GROUND STORAGE TANKS AND/OR SOLIDIFICATION BASINS VIA DUAL-CONTAINED HDPE PIPING INTO THE MIXING HOPPER OF THE PUG MILL. A CONVEYOR BELT SYSTEM WILL TRANSFER THE SOLIDIFIED MATERIAL FROM THE PUG MILL INTO DUMP TRUCKS, WHICH WILL IN TURN, TRANSPORT THE MATERIAL TO THE LINED AREA OF THE LANDFILL FOR DISPOSAL.

THE PUG MILL UNIT, STORAGE TANKS, AND LOADING/UNLOADING AREAS WILL BE INSTALLED ON CONCRETE PADS EQUIPPED WITH SECONDARY CONTAINMENT CURBS. ADDITIONAL SPILL CONTAINMENT CURBING WILL BE INSTALLED AROUND THE SOLIDIFICATION BASINS.

A ROOFED STRUCTURE WILL BE CONSTRUCTED OVER THE PUG MILL UNIT AND LOADING/UNLOADING AREAS TO MINIMIZE STORMWATER COLLECTION IN THE CONTAINMENT AREAS AND SOLIDIFICATION BASINS.

ALL OTHER APPLICABLE REQUIREMENTS DESCRIBED IN SECTION 35 OF THE OPERATIONAL PROCEDURES WILL BE ADHERED TO.

TYPICAL PUGMILL UNIT OPERATIONS:
1. PNEUMATIC TANKERS WILL TRANSPORT SOLIDIFICATION AGENTS TO THE LANDFILL AND TRANSFER THE AGENTS INTO SILOS WHERE IT WILL BE STORED. THE SILOS WILL BE EQUIPPED WITH A BAGHOUSE TO MINIMIZE FUGITIVE EMISSIONS DURING THE TRANSFER PROCESS.
2. THE SILOS GRAVITY FEED THE SOLIDIFICATION AGENTS DIRECTLY INTO THE PUGMILL MIXING HOPPER.
3. TRANSFER PUMPS CONVEY LIQUID WASTES FROM THE ABOVE-GROUND STORAGE TANKS AND/OR SOLIDIFICATION BASINS INTO THE PUGMILL MIXING HOPPER.
4. THE PUG MILL UNIT THEN THOROUGHLY BLENDS THE LIQUID WASTES AND SOLIDIFICATION AGENTS TOGETHER.
5. ONCE ADEQUATE MIXING AND SOLIDIFICATION ARE ACCOMPLISHED, A CONVEYOR BELT SYSTEM WILL TRANSFER THE SOLIDIFIED MATERIAL FROM THE PUG MILL INTO DUMP TRUCKS.
6. LOADED DUMP TRUCKS THEN TRANSPORT THE MATERIAL TO THE LINED AREA OF THE LANDFILL FOR PROPER DISPOSAL.

TYPICAL OPERATION OF THE SILO:
1. INSTRUCT THE DRIVER OF THE PNEUMATIC TRUCK OF THE RATED PRESSURE FOR THE SILO; DO NOT EXCEED THE RATED PRESSURE DURING TRANSFER OPERATIONS.
2. USE THE PULSE JET ON THE BAGHOUSE PRIOR TO COMMENCING LOADING OPERATIONS.
3. INSTRUCT THE DRIVER ON THE VARIOUS CONNECTIONS TO THE INLET OF THE SILO; OPEN THE BUTTERFLY VALVE AND COMMENCE TRANSFER.
4. OBSERVE THE DISCHARGE FROM THE BAGHOUSE ON THE SILO WITHOUT CAUSING EXCESSIVE EMISSIONS.
5. AT THE END OF THE TRANSFER OPERATION, CALCULATE THE HOLDING CAPACITY OF THE SILO. DO NOT OVERLOAD THE SILO.

MAINTENANCE ACTIVITIES:
1. ON A WEEKLY, OR AS NEEDED BASIS, EXAMINE THE SIDES OF THE BASIN LID AND ENSURE THAT THE RUBBER PADS ARE IN GOOD WORKING CONDITION.
2. CHECK TO ENSURE THAT THE FACILITY HAS ADEQUATE BOOMS OR OTHER ABSORBENT MATERIAL TO BE USED TO PLUG LEAKS IN BASIN.
3. PULSE THE BAGHOUSE AND ENSURE THAT THE FILTERS DO NOT REQUIRE REPLACEMENT.
4. CHECK THE AUGER AND ENSURE THAT THERE ARE NO LEAKS DURING THE TRANSFER PROCESS.

37. STAGED CONSTRUCTION & FILL SEQUENCE:

THE LANDFILL WILL BE CONSTRUCTED IN STAGES. EACH STAGE MAY BE SUBDIVIDED INTO CELLS FOR CONSTRUCTION. CELL SIZE MAY VARY DEPENDING ON OPERATING CONDITIONS AND WASTE STREAM VOLUME. TEMPORARY STORMWATER CONTROLS, TEMPORARY ROADS AND TEMPORARY LEACHATE CONTROLS SHALL BE CONSTRUCTED FOR EACH CELL. CONSTRUCTION GRADES SHALL MAINTAIN THE MINIMUM PERMITTED SLOPES FOR DRAINAGE IN ACCORDANCE WITH THE STAGE DESIGN. IF VARIATIONS TO THE APPROVED PLAN ARE DESIRED, MINOR MODIFICATIONS WILL BE SUBMITTED TO EPD FOR APPROVAL PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY.

△3 THE ANTICIPATED ORDER IN WHICH STAGES WILL BE CONSTRUCTED AND FILLED IS AS FOLLOWS: STAGE 5, 6A, 7A, 8A, 9, 6B, 7B, 8B, 10A, 6C, 7C, 8C, AND 10B.

THE INITIAL LIFT IN STAGE 5 WILL START FROM THE SOUTH AND PROCEED NORTH. INITAL LIFTS FOR ALL OTHER STAGES WILL START FROM THE WEST AND PROCEED EAST. ALL SUBSEQUENT LIFTS IN EACH STAGE WILL CONTINUE IN THE OPPOSITE DIRECTION FROM WHERE THE PRECEEDING LIFT ENDS.

38. LANDFILL GAS CONTROL:

THIS LANDFILL IS SUBJECT TO NEW SOURCE PERFORMANCE STANDARDS (NSPS) AS PART OF THE CLEAN AIR ACT AND MAY BE REQUIRED TO INSTALL A LANDFILL GAS COLLECTION AND CONTROL SYSTEM (GCCS) WHEN NMOC EMISSIONS EXCEED REGULATORY REQUIREMENTS. A GCCS DESIGN AND OPERATIONAL PLAN WILL BE SUBMITTED TO GEORGIA EPD ONCE AN EXCEEDANCE HAS OCCURED.

39. CCR MANAGEMENT PLAN RENEWAL, MODIFICATIONS AND LOCAL GOVERNMENT NOTIFICATION:

UPON APPROVAL OF THE CCR MANAGEMENT PLAN BY THE EPD, THE CCR MANAGEMENT PLAN SHALL BE VALID FOR A DURATION OF ONE YEAR. THE FACILITY WILL SUBMIT AN ANNUAL CCR MANAGEMENT AND DUST CONTROL REVIEW SEALED BY A GEORGIA REGISTERED PROFESSIONAL ENGINEER. THE ANNUAL CCR MANAGEMENT REPORT MAY BE COMBINED WITH THE ANNUAL FUGITIVE DUST CONTROL REPORT DEFINED IN SECTION 21 OF THIS PLAN.

THIS PLAN WILL BE REVISED AND SUBMITTED TO EPD FOR APPROVAL IF CHANGES IN THE OPERATIONAL PROCEDURES OR FACILITY DESIGN ARE REQUIRED DUE TO CHANGES IN THE CCR WASTE STREAM.

△2 THE OWNER OR OPERATOR WILL PROVIDE WRITTEN NOTIFICATION INFORMING LOCAL GOVERNMENTS WITHIN CHARLTON COUNTY THAT THE FACILITY IS PLANNING TO ACCEPT CCR WASTE. ADDITIONALLY, LOCAL GOVERNMENTS WITHIN CHARLTON COUNTY WILL BE PROVIDED WITH WRITTEN NOTIFICATION FROM THE OWNER OR OPERATOR IF THE CCR MANAGEMENT PLAN IS AMENDED AND APPROVED BY EPD.

GEORGIA
Environmental Protection Division
Solid Waste Management Program
MINOR MODIFICATION APPROVAL
SOLID WASTE PERMIT NO. 024-006D(SL)
APPROVED BY: _____ DATE: 05/19/2017

ATLANTIC COAST CONSULTING, INC.
630 Colonial Park Drive
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GEORGIA REGISTERED No. 030071 PROFESSIONAL ENGINEER MARC A. LIVERMAN

06930
LEVEL II CERTIFICATION

PROJECT:
CHESSER ISLAND ROAD MSW LANDFILL
MAJOR MODIFICATION
PHASE 4
EXPANSION

CHARLTON COUNTY, GA
PERMIT NO: 024-006D(SL)

WASTE MANAGEMENT
Chesser Island Road Landfill, Inc.
Hwy 121 @ Chesser Island Road
Folkston, GA 31537

REVISIONS

INITIAL GAEPD SUBMITTAL	03/13/09
REVISED PER EPD COMMENTS	10/23/09
REVISED PER EPD COMMENTS	12/16/09
1. MINOR MODIFICATION	04/27/15
2. CCR MANAGEMENT	04/20/17
3. TERRACE MODIFICATION	04/25/17
3. SOLIDIFICATION MATERIAL	05/19/17

Drawn by: CW | Checked by:

PROJECT NUMBER:
I014-101
March 2009

OPERATIONAL PROCEDURES (CONTINUED)

SHEET 26A OF 30

P:\Industrial\I014 Waste Management Folkston FL\415 - Chesser CDR Mod\3 - Design Work\Drawings\I014-415_26-Operational Procedures_Sheet 26A.dwg 5/19/17 MARC

CLOSURE PLAN

THE CLOSURE PLAN DESCRIBES THE STEPS NECESSARY TO CLOSE THE DISPOSAL FACILITY AT ANY POINT DURING ITS INTENDED OPERATING LIFE, IN A MANNER THAT MINIMIZES THE NEED FOR FURTHER MAINTENANCE AND MINIMIZES THE POST-CLOSURE RELEASE OF LEACHATE TO THE GROUND OR SURFACE WATERS, OR OTHER POLLUTANTS TO THE EXTENT NECESSARY TO PROTECT HUMAN HEALTH AND THE ENVIRONMENT. THE FOLLOWING ITEMS WILL BE ACCOMPLISHED AT ANY TIME THAT THE DIRECTOR OF THE GEORGIA EPD DETERMINES THAT THE SITE WILL BE CLOSED:

1. WRITTEN NOTICE OF FINAL CLOSURE SHALL BE PROVIDED TO THE DIRECTOR OF THE GEORGIA EPD WITHIN THIRTY (30) DAYS OF RECEIVING THE FINAL LOAD OF WASTE. NOTICE OF CLOSURE MUST INCLUDE THE DATE OF FINAL WASTE RECEIPT AND AN ACCURATE LEGAL DESCRIPTION OF THE BOUNDARIES OF THE LANDFILL.

2. FINAL COVER/GRADING: A UNIFORM COMPACTED LAYER OF CLEAN EARTH COVER IN ACCORDANCE WITH FINAL COVER DETAIL, SHALL BE PLACED OVER THE FINAL LIFT OF WASTE NOT LATER THAN ONE MONTH FOLLOWING PLACEMENT OF SOLID WASTE WITHIN THAT LIFT. THE LANDFILL AREA SHALL BE FINAL GRADED TO MINIMIZE RUNOFF ONTO THE DISPOSAL SITE AND TO PREVENT EROSION. ALL AREAS SHALL BE GRADED TO PROVIDE POSITIVE DRAINAGE FROM THE SITE. THE GRADE OF THE FINAL SURFACE OF THE LANDFILL MAY NOT BE LESS THAN 3% NOR GREATER THAN 33% . ALL WASTE AREAS SHALL BE COVERED IN ACCORDANCE WITH THE FINAL COVER DETAILS.

3. VEGETATION METHODS: AFTER APPLICATION OF FINAL COVER, THE SITE WILL BE GRASSED IN ACCORDANCE WITH THE VEGETATIVE PLAN CITED IN THE OPERATIONAL PROCEDURES.

4. THE DEED FOR THE PROPERTY WHICH WAS USED FOR LANDFILLING SHALL INCLUDE NOTICE OF THE LANDFILL OPERATIONS, THE DATE THE LANDFILL OPERATION COMMENCED AND TERMINATED, AN ACCURATE LEGAL DESCRIPTION OF THE ACTUAL LOCATION OF THE LANDFILL, AND A DESCRIPTION OF THE TYPE OF SOLID WASTES WHICH HAVE BEEN DEPOSITED IN THE LANDFILL. CONCURRENT WITH THE SUBMISSION OF NOTICE OF FINAL CLOSURE TO EPD, THE OWNER OR OPERATOR MUST SUBMIT TO THE EPD CONFIRMATION THAT THE INFORMATION REQUIRED IN THIS SECTION HAS BEEN NOTICED ON THE PROPERTY DEED.

5. EQUIPMENT NEEDED: THE SITE EQUIPMENT DESCRIBED IN THE OPERATIONAL PROCEDURES WILL BE AVAILABLE TO CLOSE THE SITE. IF NECESSARY, A THIRD PARTY COULD OBTAIN A GRADING CONTRACTOR TO CLOSE THE SITE UNDER CONTRACT. THE EQUIPMENT NEEDED IS TYPICALLY OWNED BY MOST GRADING CONTRACTORS OR EASILY RENTED.

6. EROSION AND SEDIMENTATION CONTROLS: EROSION AND SEDIMENTATION CONTROLS SHALL BE MAINTAINED UNTIL A SUITABLE STAND OF GRASS HAS BEEN ESTABLISHED. WHEN A SUITABLE STAND OF GRASS HAS BEEN ESTABLISHED, SILT FENCE AND OTHER TEMPORARY EROSION CONTROL MEASURES MAY BE REMOVED. THE SEDIMENTATION PONDS SHALL BE CLEANED OUT AT CLOSURE. DOWNDRAINS REQUIRED TO PROPERLY DRAIN THE FINAL COVER SHALL BE INSTALLED AT CLOSURE.

7. IF THE LANDFILL IS CLOSED PRIOR TO REACHING APPROVED FINAL ELEVATIONS, AN AS BUILT PLAN SHALL BE SUBMITTED TO EPD FOR REVIEW WITHIN 30 DAYS OF CLOSING.

8. A PROFESSIONAL ENGINEER REGISTERED TO PRACTICE IN THE STATE OF GEORGIA SHALL PROVIDE A WRITTEN CERTIFICATION THAT THE FACILITY HAS BEEN CLOSED IN ACCORDANCE WITH THE APPROVED CLOSURE PLAN.

CLOSURE COST ESTIMATE

CLOSURE OF PHASE 1 AND 2 OF THIS SITE WAS ACCEPTED BY EPD ON DECEMBER 20, 2005. IT IS ASSUMED THAT PHASE 3 AND 4 DISPOSAL AREAS WILL BE CLOSED IN TWO PHASES. THE FOLLOWING UNIT PRICES WERE OBTAINED FROM RECENT CONTRACTOR BIDS ON SIMILAR PROJECTS AND ARE REPRESENTATIVE OF CLOSURE COSTS IN THE FIRST QUARTER OF 2010. A PERMANENT RECORD WILL BE MAINTAINED OF ALL CLOSURE ACTIVITIES.

A.	MOBILIZATION:	$ 250,000
B.	FINAL COVER:	
	12" COMPACTED SOIL = 208 AC X 43560 SF/AC X 1 FT X CY/27 CF X $3.75/CY =	$ 1,258,400
	50-MIL HDPE AGRU SUPER GRIPNET = 208 AC X 43560 SF/AC X $0.64/SF =	$ 5,798,707
	8 oz GEOTEXTILE = 208 AC X 43560 SF/AC X $0.14/SF =	$ 1,268,467
	18" GENERAL FILL = 208 AC X 43560 SF/AC X 1.5 FT X CY/27 CF X $3.75/CY =	$ 1,887,600
C.	GRASSING COSTS: TOTAL GRASSING COST INCLUDES AT LEAST 1,500 LBS/AC. OF FERTILIZER, 60 LBS/AC. OF SEED, AND 2.5 TONS/AC OF STRAW OR HAY	
	COST = 208 AC X $1,750/AC =	$ 364,000
D.	DOWN DRAINS: (ASSUME RIP RAP MUST BE REPLACED)	
	DRAINAGE STRUCTURE COST = 9,900 LF X $80/LF = (MATERIAL & INSTALLATION)	$ 792,000
	RIP RAP COST = 588 TN X $20/TN =	$ 11,760
E.	PASSIVE GAS EXTRACTION SYSTEM	
	METHANE VENT INSTALLATION = 208 VENTS X $1750 EA = (INSTALLATION & MATERIAL)	$364,000
F.	SEDIMENT POND CLEANOUT: ASSUME THE AMOUNT OF SILT TO BE REMOVED IS EQUAL TO THE ANNUAL AMOUNT OF SEDIMENT EROSION.	
	AMOUNT OF SILT TO BE REMOVED = 208 AC X 134 CY/AC = 27,872 CY	
	COST = 27,872 CY X $2/CY =	$ 55,744
G.	ENGINEERING	$ 100,000
H.	CQA COST = 208 AC X $7,000/AC	$ 1,456,000
I.	CLOSURE CONSTRUCTION MANAGEMENT	$ 25,000
	TOTAL COST:	$ 13,631,678

POST-CLOSURE CARE

THE POST-CLOSURE CARE PLAN DESCRIBES THE STEPS THAT WILL BE TAKEN FOR AT LEAST THIRTY YEARS AFTER COMPLETION OF CLOSURE TO ADEQUATELY PROTECT HUMAN HEALTH AND THE ENVIRONMENT. THE FACILITY CONTACT DURING POST-CLOSURE CARE IS:

CHESSER ISLAND ROAD LANDFILL, INC.
5110 US HIGHWAY 301 SOUTH
BALDWIN, FL 32234
(904) 289-9100

POST-CLOSURE CARE SHALL INCLUDE THE FOLLOWING:

1. POST CLOSURE USE: CURRENTLY, THERE ARE NO PLANS FOR DEVELOPMENT OF THE SITE DURING POST-CLOSURE. ANY POST CLOSURE USE OF THE PROPERTY WILL NOT DISTURB THE INTEGRITY OF THE FINAL COVER, LINER(S), OR ANY OTHER COMPONENTS OF THE CONTAINMENT SYSTEM, OR THE FUNCTION OF THE MONITORING SYSTEMS, UNLESS EPD DETERMINES THAT:
   A) THE ACTIVITIES WILL NOT INCREASE THE POTENTIAL THREAT TO HUMAN HEALTH OR THE ENVIRONMENT; OR
   B) THE ACTIVITIES ARE NECESSARY TO REDUCE A THREAT TO HUMAN HEALTH OR THE ENVIRONMENT.

2. SURFACE AND GROUNDWATER MONITORING SCHEDULE: THE SAMPLING AND ANALYSIS PROGRAM IDENTIFIED IN THE EPD APPROVED WATER MONITORING PLAN WILL BE MAINTAINED AND OPERATED THROUGHOUT THE POST-CLOSURE CARE PERIOD. AFTER FIVE YEARS AND AFTER EACH FIVE YEAR INTERVAL THEREAFTER, THE OWNER MUST PROVIDE TO EPD AN ANALYSIS OF THE GROUNDWATER MONITORING DATA AND A RECOMMENDATION AS TO THE NEXT FIVE YEAR POST-CLOSURE CARE PROCEDURES.

3. METHANE GAS MONITORING: THE SAMPLING AND ANALYSIS PLAN IDENTIFIED IN THE EPD APPROVED METHANE GAS MONITORING PROGRAM WILL BE MAINTAINED AND OPERATED THROUGHOUT THE POST-CLOSURE PERIOD. METHANE GAS MONITORING WILL BE CONDUCTED QUARTERLY PRIOR TO CLOSURE AND QUARTERLY FOR A MINIMUM OF 30 YEARS DURING POST- CLOSURE CARE OR UNTIL DEMONSTRATION IS MADE TO THE GEORGIA ENVIRONMENTAL PROTECTION DIVISION THAT IT IS NO LONGER REQUIRED.

4. ROUTINE INSPECTION OF VEGETATIVE/FINAL COVER/DRAINAGE SYSTEMS: THE SITE SHALL BE INSPECTED ON A QUARTERLY BASIS DURING THE POST-CLOSURE CARE PERIOD. THE SITE WILL BE INSPECTED TO EVALUATE THE INTEGRITY AND EFFECTIVENESS OF THE FINAL COVER AND DRAINAGE SYSTEMS. REPAIRS SHALL BE MADE TO THE COVER SYSTEMS, AS NECESSARY, TO CORRECT THE EFFECTS OF SETTLING, SUBSIDENCE, EROSION, OR OTHER EVENTS. IF DRAINAGE STRUCTURES ARE CLOGGED OR DAMAGED SO THAT PROPER DRAINAGE IS IMPEDED, THE STRUCTURES SHALL BE CLEANED OR REPLACED. PERMANENT RECORDS WILL BE MAINTAINED AT THE LANDFILL OFFICE OF ALL INSPECTIONS, REPAIRS AND SEDIMENT POND CLEANOUTS.

5. SEDIMENT BASIN MAINTENANCE/CLEANOUT: THE SEDIMENT POND SHALL BE INSPECTED QUARTERLY WHILE IT IS IN SERVICE. THE SEDIMENT POND SHALL BE KEPT IN SERVICE AND PROPERLY MAINTAINED UNTIL AN ADQUATE VEGETATIVE COVER HAS BEEN ESTABLISHED AND EPD APPROVES THE REMOVAL OF THE SEDIMENT POND. FOR THE POST CLOSURE CARE COST ESTIMATE, IT IS ASSUMED THAT THE SEDIMENT POND WILL BE CLEANED ONCE PER YEAR FOR THE FIRST THREE YEARS AFTER CLOSURE THEN ONCE EVERY FOUR YEARS.

6. LIMITED ACCESS: ACCESS TO THE CLOSED SITE WILL BE LIMITED TO ONLY THOSE PERSONS PERFORMING POST-CLOSURE CARE. THE ACCESS WILL BE LIMITED BY THE USE OF SECURITY GATE AT THE SITE ENTRANCE, WHICH WILL REMAIN LOCKED AT ALL TIMES.

7. IF THE OWNER AND/OR OPERATOR OR ANY SUBSEQUENT OWNER OR OPERATOR OF THE LAND UPON WHICH A LANDFILL IS LOCATED WISHES TO REMOVE WASTES AND WASTE RESIDUES OR CONTAMINATED SOILS, THE OWNER OR OPERATOR MUST REQUEST AND RECEIVE WRITTEN APPROVAL FROM EPD PRIOR TO REMOVAL OF WASTE.

8. THE OWNER AND/OR OPERATOR WILL BE RESPONSIBLE FOR CONDUCTING ALL MONITORING ACTIVITIES. AT ANY TIME THE MONITORING RESULTS INDICATE EXCEEDING OF ESTABLISHED STANDARDS OR INDICATE A THREAT TO HUMAN HEALTH OR THE ENVIRONMENT, THE OWNER AND/OR OPERATOR SHALL NOTIFY EPD WITHIN 5 DAYS OF SUCH DETERMINATION AND SHALL PROVIDE A PLAN FOR REMEDIATION WITHIN 30 DAYS OF SUCH NOTICE. THE PLAN SHALL BE SUBMITTED TO EPD FOR APPROVAL. UPON APPROVAL, THE OWNER/AND OR OPERATOR SHALL IMPLEMENT THE APPROVED PLAN.

9. THE OWNER AND/OR OPERATOR WILL BE RESPONSIBLE FOR ALL MOWING ACTIVITIES ON THE SITE. A COMPLETE MOWING OF THE SITE SHALL TAKE PLACE APPROXIMATELY FOUR (4) TIMES DURING THE YEAR (OR AS REQUIRED).

10. THE OWNER AND/OR OPERATOR WILL BE RESPONSIBLE FOR CONDUCTING ALL RE-SEEDING AND FERTILIZING ACTIVITIES TO MAINTAIN VEGETATION ON THE SITE. RE-SEEDING AND FERTILIZING RATES SHALL FOLLOW GUIDELINES STATED IN THE OPERATIONAL PROCEDURES.

FINANCIAL ASSURANCE

THE OWNER IS RESPONSIBLE FOR PROVIDING A FINANCIAL ASSURANCE MECHANISM FOR THE CLOSURE AND POST-CLOSURE COSTS. THE FINANCIAL ASSURANCE MECHANISM SHALL BE IN EFFECT PRIOR TO INITIAL PLACEMENT OF WASTE.

ANNUAL POST-CLOSURE CARE COST ESTIMATE

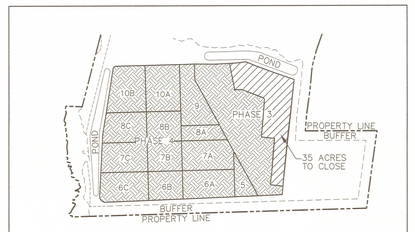
THE FOLLOWING UNIT COSTS ARE BASED ON A THIRD PARTY PERFORMING POST-CLOSURE IN THE FIRST QUARTER OF 2010.

		PHASE 1&2	PHASE 3&4	
A.	LEACHATE DISPOSAL: LEACHATE WILL BE TRANSPORTED TO A PUBLICLY OWNED WATER TREATMENT FACILITY FOR TREATMENT, OR ANOTHER EPD APPROVED TREATMENT FACILITY. PRETREATMENT WILL BE PROVIDED AS NECESSARY. ASSUME A LEACHATE PRODUCTION RATE OF 10 GALLONS PER ACRE PER DAY (GPAD).			
	ACREAGE X 10 GPAD X $ 0.05/GAL X 365 DAYS/YEAR =	$ 2,555	$ 44,348	
B.	ENVIRONMENTAL MONITORING: THE MONITORING PROGRAMS WILL FOLLOW THE APPROVED MONITORING PLAN.			
	SEMI-ANNUAL SURFACE MONITORING 2 EVENTS X $1,600/EVENT =	$ 3,000	$ 3,200	2
	SEMI-ANNUAL GROUNDWATER MONITORING 2 EVENTS X $7.00/EVENT (PH 1&2); $17,028/EVENT (PH 3&4) =	$ 14,000	$ 34,056	1 2
	LEACHATE SAMPLING: QUARTERLY MONITORING 4 EVENTS x $ 500/EVENT =	$ 2,000	$ 2,000	
	ANNUAL MONITORING 1 EVENT x $ 600/EVENT =	$ 600	$ 600	
	METHANE GAS MONITORING 4 EVENTS x $ 750/EVENT =	$ 3,000	$ 3,000	
C.	OPERATION & MAINTENANCE OF LANDFILL GAS COLLECTION AND CONTROL SYSTEM (GCCS)	$ 75,000	$ 0	
D.	ROUTINE INSPECTION/REPAIRS: ASSUME THE REPAIR OF ONE ACRE OF FINAL COVER PER YEAR AVERAGING 1 FOOT OF DEPTH, AND QUARTERLY INSPECTIONS. REPAIRS INCLUDE RESEEDING WITH 60 POUNDS OF SEED ACCORDING TO THE GRASSING SCHEDULE, SEE "VEGETATIVE PLAN" OF THE OPERATIONAL PROCEDURES, AND 400 LINEAR FEET OF SILT FENCE.			
	REPAIR COST FOR: 1 AC X 43,560 SF/AC X 1 FT X CY/27CF = 1,613 CY			
	1,613 CY X $6.00/CY =	$ 9,678	$ 9,678	
	400 LF X $4/LF =	$ 1,600	$ 1,600	
	INSPECTION COST: 4 X $500/EACH =	$ 2,000	$ 2,000	
E.	SEDIMENT POND CLEANOUT: ASSUME THE SEDIMENT PONDS WILL NEED TO BE CLEANED OUT ONCE PER YEAR FOR THE FIRST THREE YEARS AFTER CLOSURE, THEN ONCE EVERY 4 YEARS. (PHASE 1&2-2,144 CY; PHASE 3&4-25,460 CY)			
	$\frac{(CY \times 3\ YR) + (CY \times (27/4)\ YRS)}{30YRS}$ X $2/CY =	$ 1,394	$ 16,549	
F.	MOWING: ACREAGE x $50/HR. x 1 HR./AC. x 4 CUTS/YR. =	$ 3,600	$ 48,600	
G.	RE-SEEDING: ASSUME 10% x ACREAGE x $1,750/AC =	$ 3,150	$ 42,525	
H.	POST-CLOSURE MANAGEMENT	$ 5,000	$ 5,000	1 2
	TOTAL COST	$ 126,577	$ 212,940	

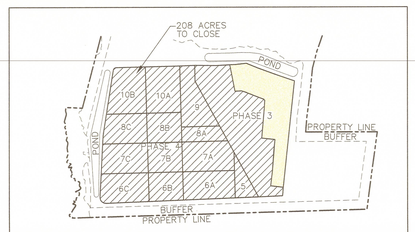
30 YEAR CLOSURE COST & CLOSURE CARE COST ESTIMATE

A.	TOTAL POST-CLOSURE COST - PHASE 1&2	$ 3,797,310	
B.	TOTAL POST-CLOSURE COST - PHASE 3&4	$ 6,388,200	1 2
C.	ABANDON WELLS AFTER 30 YEARS/CERTIFICATION	$ 100,000	
D.	CLOSURE COST - PHASE 3&4	$ 13,631,678	
	SUBTOTAL 30 YEAR COST	$ 23,917,188	1 2
	5% CONTINGENCY	$ 1,195,859	
	TOTAL 30 YEAR COST	$ 25,113,047	3

PHASE 3&4 CLOSURE SEQUENCING



LANDFILL CLOSURE SEQUENCE NO. 1



LANDFILL CLOSURE SEQUENCE NO. 2

LEGEND
- AREA PREVIOUSLY CLOSED
- AREA TO BE CLOSED
- INTERMEDIATE AREA

NOTES:
1. WORST CASE CLOSURE IS CLOSURE SEQUENCE NO. 2 WHEN 208 ACRES WILL BE COVERED WITH INTERMEDIATE COVER (SEE CLOSURE COST ESTIMATE).
2. ACREAGES MAY VARY SLIGHTLY DEPENDING ON ACTUAL CLOSURE AREAS.

GEORGIA
Environmental Protection Division
Solid Waste Management Program
MINOR MODIFICATION APPROVAL
SOLID WASTE PERMIT NO. 024-006D(SL)
APPROVED BY: [signature] DATE: 05/19/2017

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GEORGIA REGISTERED No. 030071 PROFESSIONAL ENGINEER MARC A. LIVERMAN
06930
LEVEL II CERTIFICATION

PROJECT:
CHESSER ISLAND ROAD MSW LANDFILL MAJOR MODIFICATION PHASE 4 EXPANSION
CHARLTON COUNTY, GA
PERMIT NO: 024-006D(SL)

WASTE MANAGEMENT
Chesser Island Road Landfill, Inc.
Hwy 121 @ Chesser Island Road
Folkston, GA 31537

REVISIONS

INITIAL GAEPD SUBMITTAL	03/13/09
REVISED PER EPD COMMENTS	10/23/09
REVISED PER EPD COMMENTS	12/16/09
1-CCR MANAGEMENT	04/20/17
2-CCR MONITORING COST	05/17/17
3-ADDED 5% CONTINGENCY	05/19/17

Drawn by: CW
Checked by:

PROJECT NUMBER:
I014-101
March 2009

CLOSURE & POST CLOSURE CARE PLAN

SHEET 27 OF 30

P:\Industrial\I014 Waste Management North FL\I01 - Chesser CQA Mod\2 - Design Data\Drawings\I014-101_07-CLOSURE & POST CLOSURE.dwg, 5/19/17 MARC

5.3.2.1 Visual Inspection

The CQA Technician shall maintain continuous, visual observation and documentation of liner deployment and seaming. Specifically, the following observations shall be made:

- Observe and document adequacy of subgrade for liner deployment;
- Observe and document deployment techniques;
- Observe for scratches, crimps or defects in the geomembrane liner or GCL;
- Observe and identify damage to the underlying soil liner that may result from deployment;
- Observe and measure overlap of panels prior to seaming to document that minimum overlap has been accomplished;
- Observe and document test weld and seaming operations;
- Observe wrinkle development and control within the geomembrane liner, including wrinkle height, length, etc.;
- Observe and document repair procedures for all scratches, punctures, tears and crimps;
- Observe and document non-destructive seam testing, noting methods used for seam testing and results;
- Observe during deployment, seaming and covering, personnel and/or vehicular traffic on the deployed geomembrane liner and related activities that could damage the synthetic liner.
- Develop not-to-scale as-built drawings for the geomembrane liner, including at least the locations of all welded seams, seam caps, destructive test locations, and panel numbers.

5.3.3 Seam Testing

Approved processes for field seaming are extrusion welding and fusion welding. Seam testing shall include trial welds, continuous (non-destructive) testing of completed seams and destructive testing of completed seams in accordance with Table 4. The trial welds and continuous testing shall be performed by the geomembrane Installer and documented by the CQA Technician. The destructive samples shall be secured by the CQA Technician and shipped to an independent third party laboratory for testing. The independent third party laboratory shall be certified by the Geosynthetics Accreditation Institute (GAI) to perform the applicable test. CQA Technician(s) shall also observe and document GCL panel overlaps and seam augmentation, if required.

5.3.3.1 Field Test Welds

Field test welds are a performance test for the welder and his welding equipment. Prior to performing any seams, each technician and welding equipment shall perform a field test weld. Field test welds shall be made at the beginning of each seaming period and if there are significant changes in ambient conditions (temperature variation, moisture). Each seaming technician shall make at least one trial seam every 4 to 5 hours. After performing a trial seam, three one inch specimens will be cut from it and tested in shear and peel.

The seaming technician and his equipment shall not be used until satisfactory trial seams have been performed. Each test weld will be documented on a test weld form. The documentation will be performed by the CQA Technician.

5.3.3.2 Non-Destructive Testing

All non-destructive seam testing will be continuously performed and documented on all welded seams, patches and repairs. Air pressure testing shall be performed for dual-track fusion welds where an air channel exists between double welds in accordance with GRI GM 6. During the test the loss of pressure equal to or less than 3 psi from the original start value of at least 30 psi after five minutes is acceptable. Single-track fusion welds and Extrusion welds shall be tested by vacuum testing techniques. During the test no air bubbles appearing after 15 seconds under a vacuum box is acceptable. The CQA engineer may approve alternative testing procedures if the geomembrane liner installer can prove equal or better capability to detect seam failures. The geomembrane liner Installer should provide the procedures to be used in a separate CQC Plan developed by the Installer. The specific testing program will be reviewed and approved or modified by the CQA engineer.

5.3.3.3 Destructive Testing

Destructive samples will be obtained from the welded production seams at a frequency of 1 per 500 LF. The sample should be of sufficient size to yield three 1 foot by 1 foot samples with the seam approximately centered in each sample. One sample shall be provided to the Installer for testing, one seam shall be tested by an independent third party laboratory and the remaining sample shall be archived by the CQA Technician. All samples should be labeled to identify the sample and seam number and date seamed, the welder and the welding equipment. The label should also identify the technician who tested the seam.

Five subsamples should be tested in shear and five in peel in accordance with ASTM D-4437. A passing test is one that achieves the minimum acceptable requirement of Table 4.

The results of the testing will be compared to the requirements by the CQA technician who shall notify the Installer of the results.

5.4 Geocomposite and Non-woven Geotextile

A geotextile-geonet-geotextile geocomposite and non-woven geotextile may be installed directly over the 60-mil HDPE geomembrane to facilitate leachate removal, depending upon the liner design option selected. A geotextile will be placed over the final cap geomembrane to facilitate infiltration drainage. This section addresses the CQC and CQA requirements associated with the geocomposite and non-woven geotextile materials utilized for drainage.

5.4.1 Material Acceptance

The geocomposite and geotextile supplier shall provide the CQA engineer with manufacturer quality control (MQC) certifications and warranty data for the materials to be delivered on site prior to delivery. The MQC data will be compared to the requirements for geotextile and geocomposite as provided in Tables 5 and 6. Based upon the information provided, the CQC engineer will accept the materials for shipment if the material requirements are met.

The CQC technician shall inventory all geocomposite materials that are received on site. The inventory will document that the MQC information provided previously to the CQA engineer is applicable to the inventory shipped. Selected rolls of geotextile and geocomposite material will be sampled either at the manufacturers plan on on-site for confirmation of the materials properties as provided in Tables 5 and 6.

5.4.2 Installation

During shipment and storage, the geocomposites and geotextiles shall be protected from ultraviolet light exposure, moisture, dirt, dust, puncture or other damaging conditions. The General Contractor or the Subcontractor responsible for installation shall be responsible for storage and protection of the geocomposites and geotextiles. The CQC Technician shall observe material handling and storage. Handling of the geocomposites and geotextiles should be with devices that minimize the potential for cutting, puncturing or otherwise abrading the materials. Any noticeable defects of the delivered material will be documented on the material inventory sheets, and the damaged rolls shall be segregated. Care shall be taken to prevent entrapment of excessive dust or dirt during installation. If the geocomposite and geotextile are not free of soil and debris before installation, they shall be cleaned by the General Contractor or the Subcontractor just prior to installation.

The geocomposite and geotextiles shall be placed with the long dimension of the rolls running vertical with the slope, rather than across (horizontal to) the slope. The geocomposite and geotextiles shall be rolled down the slope in a manner that continually keeps the material in tension. If necessary, the geocomposite and geotextiles shall be straightened by hand after being unrolled to minimize wrinkles. Adjacent rolls shall be overlapped in accordance with the manufacturers recommendations. The geonet component of the geocomposite will be secured with plastic ties approximately every 5 feet along the roll length. End-to-end overlaps shall be tied at least every 2 feet, and the rolls shall be oriented such that these overlaps are staggered. Plastic ties shall be white or brightly-colored for easy inspection. Metallic ties will not be allowed. The geocomposite and geotextile will both be overlapped and sewn or heat tacked per the manufacturer's recommendation. All soil materials located on top of the geocomposite and geotextile shall be deployed in such a manner as to ensure that the geocomposite, geotextile, and underlying materials are not damaged, that minimal slippage of the geocomposite and geotextile on underlying layers occurs, and that no excess tensile stresses occur in the geocomposite and geotextile.

5.5 Leachate Collection and Conveyance System

The material for leachate collection system/protective cover includes leachate pipe, sand, gravel, geocomposite, and geotextile. This section addresses material acceptance and installation procedures.

5.5.1 Material Acceptance

Prior to delivery of the man-made materials (pipe, geocomposite, and geotextile), the CQA engineer shall review the manufacturer's certification data sheets and shall approve the materials. Upon delivery to the site, the CQA technician shall inventory all materials.

Samples of the earthen materials (sand and gravel) will be collected and tested in accordance with Table 1 prior to construction. The CQA engineer will notify the Owner of material acceptance.

5.5.2 Material Verification

During construction, the sand and/or gravel will be sampled and tested to document gradation and permeability. Testing will be performed in accordance with Table 1.

5.5.3 Visual Inspection

The CQA Inspector shall maintain continuous visual inspection during all phases of the leachate system construction. All construction will be performed in accordance with the specifications and construction drawings. Daily documentation will be recorded on the daily field reports. Visual inspection will include at a minimum:

- Verify that underlying geosynthetics are not damaged during placement of the LCS materials;
- Observe leachate pipe installation to determine type, location, elevations and orientation of the perforations;
- Observe and inspect the gravel pack placement around the leachate pipe for size, uniformity and placement;
- Observe placement of the soil drainage layer and note gradation, angularity, thickness, and any visual indications of material change;
- Observe installation of geotextiles and verify conformity with plans including material type, location, wraps, etc.;

Report observations on the daily field report form.

5.6 Protective Cover

The material for protective cover includes on-site soils for placement on the geocomposite. This section addresses material acceptance and installation procedures.

5.6.1 Material Acceptance and Verification

Available on-site soils will be utilized for protective cover. These materials shall be a maximum particle size of 3" and be free of deleterious matter including sticks, roots, organics, and other debris. The CQA technician shall continuously monitor the protective cover for conformance.

5.6.2 Visual Inspection

The CQA inspector shall maintain continuous visual inspection during placement of the protective cover. All construction will be performed in accordance with the specifications and construction drawings. Daily documentation will be recorded on the daily field reports. Visual inspection will include at a minimum:

- Verify that underlying geosynthetics are not damaged during placement of the LCS materials;
- Verify the required thickness;
- Report observations on the daily field report form.

5.7 Rock Toe Drain

The rock toe drain at the toe of slope at low ends of each stage shall consist of GDOT #57 stone. The stone shall be less than 5 percent calcium carbonate by weight. Each source shall be tested at least once for gradation and calcium carbonate content.

5.8 Final Cover System

5.8.1 Final Cover Compacted Soil

The compacted soil material shall consist of either on-site or off-site material with a maximum particle size of 3/4 inch. The soil shall be compacted to 95 percent of the maximum dry density determined by ASTM D-2922, D-1556, OR D-2937, Standard Proctor during compaction. The thickness of lifts shall not exceed 6-inches.

Prior to acceptance of any material for use as low permeability soil liner, the CQA engineer or site technician will visit the potential borrow area(s) to visually observe and field classify the material. Upon preliminary acceptance by the CQA engineer, based on field classification, a sample of representative material from each borrow source will be obtained and transported to the soils laboratory for prequalification testing.

5.9 Top Soil

Top Soil must sustain vegetative growth, minimize erosion, and protect the integrity of the underlying components of the final cover system Topsoil shall be a rich, friable loam containing a large amount of humus and shall be original surface sandy loam, topsoil of good, rich uniform quality, free from any material such as hard clods, stiff clay, hardpan, partially disintegrated stone, pebbles larger than 1/2-inch in diameter, lime, cement, bricks, ashes, cinders, slag, concrete, bitumen or its residue, boards, sticks, chips or other undesirable material harmful or unnecessary to plant growth. The pH shall range from 5.5 to 6.0.

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5.10 Liner System Interface Friction Requirements

Prior to starting a cell floor or final cover construction project, the selected materials shall be tested by direct shear methods at a minimum frequency of 1 test per every 100,000 SF of lined area. For geosynthetic interfaces, testing shall be in accordance with ASTM D5321. For GCL interfaces, testing shall be in accordance with ASTM D6243. The cohesive soil liner material shall be remolded in accordance with the permeability testing requirements. The conditions for the soil liner and GCL against the geomembrane and the GCL vs the soil liner material shall be as follows: consolidated and inundated for 24 hours and shear at 0.04 in/min with undrained condition. The conditions for the geomembrane and the geocomposite vs the protective cover material as well as the geomembrane vs the geocomposite shall be as follows: wetted interface and consolidate for 30 minutes and shear at 0.04 in/min with a drained condition. The normal stresses used for all tests shall include the following: 2.6 psi, 102.9 psi and 205.8 psi. The minimum horizontal displacement should be 3 inches. All testing shall be completed and results approved by the Engineer prior to final approval of the proposed construction materials. The results shall demonstrate that the minimum peak friction angle for any interface condition in the liner system is 15 degrees or greater. If the results do not meet the minimum requirements, the design engineer may evaluate alternate materials or re-evaluate the system stability and minimum ϕ requirements.

6.0 SURVEYING

Field surveys are required for construction layout, determination of excavation depth, verifying liner thickness and final waste grades, as well as quantity take-off. The following sections summarize surveying requirements.

6.1 Field Control

The Owner will establish reference points and benchmarks which shall constitute the field control. This work will be performed under the supervision of a registered professional land surveyor. Horizontal control lines will be laid out in advance of construction operations and will be coordinated with the General Contractor.

6.2 Construction Layout

From the established field control, the General Contractor shall establish and maintain all necessary controls for the proper layout and performance of the work. The contractor shall use competent personnel and suitable equipment for the layout work required.

6.3 Verification

The owner or contractor provided surveyor will conduct surveys to verify that phases of the work have been completed in accordance with the permitted design. These surveys shall be made utilizing a control grid with control points spaced no greater than 100 feet on center. On perimeter berm side slopes, each section will include at least the crest, toe and one intermediate location even if fewer points would satisfy the 100- foot spacing requirement. Final stamped copies give to CQA engineer to include in the final certification report.

Verification surveys will be conducted upon completion of the capillary break layer, top of subgrade, top of compacted soil liner, leachate collection system components, and top of protective cover. Thickness measurements on slopes must take into account the slope and must provide for the required component thickness as measured perpendicular to the slope.

These surveys will serve as verification that each major component of the liner system has been constructed in accordance with the D&O plan, and that minimum thicknesses have been achieved.

Thickness of the final cover components will be verified in similar manner as the base liner components. In the event that final cover components cannot be verified by standard surveying techniques, the thickness of each soil component shall be determined by hand borings or excavation on a grid with a spacing of 200 feet or less. All resulting holes shall be backfilled with bentonite, or the area should be reworked and replaced as soil cover. Alternatively, settlement plates could be placed at select locations and surveyed before and after cap construction.

6.4 Accuracy

Layout of all facilities shall be referenced to the GA State Plane coordinate system. Horizontal layout shall consist of a closed loop (either on itself or to a known coordinate point) with an error of closure not greater than 1:1000. Level surveys and cross-section surveys shall begin and be tied back into established bench-marks. Turning points should be solid objects with readings taken to the nearest 0.01 ft. error of closure of level surveys should not exceed 0.03 ft. Individual elevation shots (cross-sections and thickness) shall be taken to the nearest 0.1 ft.

6.5 Variations

The design engineer or owner may grant variances from the thickness requirements provided that:

- The liner components meet the minimum thickness requirements,
- The point is not deficient by more than +0.2 feet,
- No more than 5% of points are deficient,
- These points are not concentrated in one area, and
- The average thickness (including the deficient points) meets or exceeds the specified value.

6.6 Documentation

All survey data will be recorded in electronic data collectors or standard field books. Notes shall include date, section surveyed, weather conditions and names of the members of the survey party. Surveys shall be plotted when required, to facilitate determination of compliance with specification requirements.

7.0 BASE LINER, LEACHATE COLLECTION SYSTEM, & FINAL COVER LINER OPTIONS

7.1 Base Liner System

The landfill base liner system will consist of one of several options that have been previously approved by the Georgia Environmental Protection Division (EPD). Any of the options detailed in the approved Design & Operational Plan may be used in any individual cell construction.

7.2 Leachate Collection Layer

The landfill leachate collection layer will consist of one of several options that have been previously approved by the Georgia Environmental Protection Division (EPD). Any of the options detailed in the approved Design & Operational Plan may be used in any individual cell construction.

7.3 Final Cover System

The landfill final cover layer will consist of one of several options that have been previously approved by the Georgia Environmental Protection Division (EPD). Any of the options detailed in the approved Design & Operational Plan may be used in any individual cell closure.

GEORGIA
Environmental Protection Division
Solid Waste Management Program
MINOR MODIFICATION APPROVAL
SOLID WASTE PERMIT NO. 024-006D(SL)
APPROVED BY: [illegible] DATE: 05/19/2017

RECEIVED
APR 25 2017
SOLID WASTE
MANAGEMENT PROGRAM

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GEORGIA REGISTERED No. 030071 PROFESSIONAL ENGINEER MARC A. LIVERMAN
4/20/17

06930
LEVEL II CERTIFICATION

PROJECT:

CHESSER ISLAND ROAD MSW LANDFILL MAJOR MODIFICATION PHASE 4 EXPANSION

CHARLTON COUNTY, GA
PERMIT NO: 024-006D(SL)

WASTE MANAGEMENT
Chesser Island Road Landfill, Inc.
Hwy 121 @ Chesser Island Road
Folkston, GA 31537

REVISIONS	
INITIAL GAEPD SUBMITTAL	03/13/09
REVISED PER EPD COMMENTS	10/23/09
REVISED PER EPD COMMENTS	12/16/09
1-MINOR MODIFICATION	08/23/10
2-CCR MANAGEMENT	04/20/17

Drawn by: CW
Checked by: [illegible]

PROJECT NUMBER:
I014-101
March 2009

CONSTRUCTION QUALITY ASSURANCE PLAN

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TABLE 1
FILL MATERIAL CONFORMANCE TESTING SUMMARY

ITEM	TEST METHOD	MINIMUM FREQUENCY	MINIMUM CRITERIA
STRUCTURAL FILL	MOISTURE-DENSITY (ASTM D-698-91)	1 TEST/10,000 CY	N/A
	GRAIN SIZE - MECHANICAL (ASTM D-422-63(90))	1 TEST/10,000 CY AND EACH CHANGE IN MATERIAL	≤ 3/4"
	LIQUID AND PLASTIC LIMITS (ASTM D-4318-84)	1 TEST/10,000 CY AND EACH CHANGE IN MATERIAL	NA
	DENSITY - NUCLEAR, SAND CONE OR DRIVE CYLINDER (ASTM D-2922-91)	1 TEST/10,000 SF OR 1 TEST/LIFT	COMPACTION ≥ 95%
	MOISTURE (ASTM D-2216 OR 4643)	EVERY 10TH NUCLEAR MOISTURE TEST	NA
	DENSITY (ASTM D-1556 OR 2937)	EVERY 25TH NUCLEAR DENSITY TEST	NA
	SURVEY	100 FT GRID	MIN. THICKNESS TO +0.2 FT
COMPACTED SOIL LINER (2) (PRE-CONSTRUCTION)	MOISTURE DENSITY (ASTM D-698 OR D-1557)	1 TEST/5,000 CY AND EACH CHANGE IN MATERIAL	N/A
	LIQUID AND PLASTIC LIMITS (ASTM D-4318-84)	1 TEST/5,000 CY AND EACH CHANGE IN MATERIAL AND 1 TEST/LIFT/TEST PAD (1)	N/A
	GRAIN SIZE (ASTM D-422-63)	1 TEST/1,000 CY AND EACH CHANGE IN MATERIAL AND 1 TEST/LIFT/TEST PAD (1)	≤ 1/4" FOR UPPER 6" LAYER (4) ≤ 1" FOR LOWER 18" LAYER (4) ≤ 1" FOR UPPER 6" LAYER (5) ≤ 3" FOR LOWER 18" LAYER (5)
	PERMEABILITY (ASTM D-5084 OR EPA 9100D)	1 TEST/10,000 CY AND EACH CHANGE IN MATERIAL AND 2 TUBES/LIFT/TEST PAD (1)	≤ 1x10-7 cm/s (4) ≤ 1x10-4 cm/s (5)
	MOISTURE CONTENT (ASTM D-2216, 4643, 4944, OR 4954)	1 TEST/1,000 CY AND EACH CHANGE IN MATERIAL AND 1 TEST/LIFT/TEST PAD (1)	N/A
COMPACTED SOIL LINER (2) (DURING CONSTRUCTION)	FIELD DENSITY - NUCLEAR, SAND CONE OR DRIVE CYLINDER (ASTM D-2922 OR D-1556)	1 TEST/10,000 SF/LIFT AND 1 TEST/200 LF OF SIDEWALL	COMPACTION ≥ 95% (3)
	FIELD MOISTURE - NUCLEAR OR MICROWAVE (ASTM D-2216)	1 TEST/10,000 SF/LIFT AND 1 TEST/200 LF OF SIDEWALL	N/A
	DRY DENSITY - UNDISTURBED (ASTM D-2922)	1 TEST/40,000 SF/LIFT AND 1 TEST 1/800 LF OF SIDEWALL (NOT REQUIRED IF APZ ESTABLISHED)	N/A
	MOISTURE CONTENT - UNDISTURBED (ASTM D-2216)	1 TEST/40,000 SF/LIFT AND 1 TEST 1/800 LF OF SIDEWALL (NOT REQUIRED IF APZ ESTABLISHED)	N/A
	LIQUID AND PLASTIC LIMITS - UNDISTURBED (ASTM D-4318)	1 TEST/40,000 SF/LIFT AND 1 TEST 1/800 LF OF SIDEWALL (NOT REQUIRED IF APZ ESTABLISHED)	N/A
	PERMEABILITY (ASTM D-5084 OR EPA 9100 D)	1 TEST/40,000 SF/LIFT AND 1 TEST 1/800 LF OF SIDEWALL (NOT REQUIRED IF APZ ESTABLISHED)	≤ 1x10-7 cm/s (4) ≤ 1x10-4 cm/s (5)
	SURVEY	100 FT GRID	MIN. THICKNESS TO +0.2 FT
PROTECTIVE COVER SOIL (2) (PRE-CONSTRUCTION)	GRAIN SIZE (ASTM D-422-63)	1 PER SOURCE	≤ 1/4" (6) ≤ 3" (7)
	PERMEABILITY (ASTM D-2434)	1 PER SOURCE	≥ 1x10-2 cm/s (6)
	CALCIUM CARBONATE CONTENT (ASTM D-3042)	1 PER SOURCE	5% BY WEIGHT
PROTECTIVE COVER SOIL (2) (DURING CONSTRUCTION)	GRAIN SIZE (ASTM D-422-63)	1 TEST/1,500 CY	≤ 1/4" (6) ≤ 3" (7)
	PERMEABILITY (ASTM D-2434)	1 TEST/3,000 CY	1x10-2 cm/s (6)
	SURVEY	100 FT GRID	MIN. THICKNESS TO +0.2 FT
LCS GRAVEL (PRE-CONSTRUCTION)	GRAIN SIZE (ASTM D-422)	1 PER SOURCE	GDOT #57 5% MINUS #200 SIEVE
	CALCIUM CARBONATE CONTENT (ASTM D-3042)	1 PER SOURCE	5% BY WEIGHT
LCS GRAVEL (DURING CONSTRUCTION)	GRAIN SIZE - MECHANICAL (ASTM D-422)	1 TEST/5,000 CY	GDOT #57 5% MINUS #200 SIEVE
	CALCIUM CARBONATE CONTENT (ASTM D-3042)	1 TEST/5,000 CY	5% BY WEIGHT
FINAL COVER COMPACTED SOIL LAYER (DURING CONSTRUCTION)	FIELD DENSITY - NUCLEAR, SAND CONE OR DRIVE CYLINDER (ASTM D-2922, D-1556, OR D-2937)	1 TEST/10,000 SF/LIFT	COMPACTION ≥ 95%
	FIELD MOISTURE - NUCLEAR OR MICROWAVE (ASTM D-3017 OR D-4643)	1 TEST/10,000 SF/LIFT	N/A
	GRAIN SIZE - MECHANICAL (ASTM D-422)	1 PER SOURCE	≤ 3/4"
	MOISTURE - DENSITY (ASTM D-698)	1 PER SOURCE	N/A
	MOISTURE CONTENT (ASTM D-2216)	EVERY 25th FIELD DENSITY TEST	N/A
	PERMEABILITY (ASTM D-5084 OR EPA 9100 D)	1 TEST/40,000 SF OF LINER/LIFT (NOT REQUIRED IF APZ ESTABLISHED)	≤ 1x10-5 cm/s (OPTION 1 ONLY)
	SURVEY	100 FT GRID	MIN. THICKNESS TO +0.2 FT
FINAL COVER PROTECTIVE SOIL LAYER (DURING CONSTRUCTION)	GRAIN SIZE - MECHANICAL (ASTM D-422)	1 TEST/20,000 CY	≤ 3"
	SURVEY	100 FT GRID	MIN. THICKNESS TO +0.3 FT
	UPPER LIFT	N/A	MUST SUPPORT VEGETATION

(1) APZ PROCEDURE OPTION - SEE 5.2.1.1 ON SHEET 28
(2) SLIGHT MODIFICATIONS TO THE MINIMUM CRITERIA IS ACCEPTABLE IF THE PERMEABILITY CRITERION IS MET.
(3) OR AS REQUIRED BY APZ.
(4) LINER SYSTEM OPTION 1.
(5) LINER SYSTEM OPTION 2.
(6) LEACHATE COLLECTION SYSTEM ALTERNATIVE A.
(7) LEACHATE COLLECTION SYSTEM ALTERNATIVE B.

TABLE 2
GEOSYNTHETIC CLAY LINER (GCL) CONFORMANCE TESTING SUMMARY

PROPERTIES	TEST METHOD	MANUFACTURER QC TEST FREQUENCY	CONFORMANCE QA TEST FREQUENCY	REQUIRED TEST VALUES
BENTONITE MASS/UNIT AREA (MIN. AVE.)	ASTM D-5993	1 PER 50,000 SF	1 PER 250,000 SF	0.75 LBS/SF(1)
PERMEABILITY (MAX.)	ASTM D-5887(2)	1 PER 100,000 SF	1 PER 250,000 SF	1 x10^{-9}cm/sec (2)
FLUID LOSS, MAX. (BENTONITE PROPERTY)	ASTM D-5891	1 PER 100,000 LBS	N/A	18 ml
PEEL STRENGTH (MIN. AVE.)	ASTM D-6496	1 PR 50,000 SF	1 PER 250,000 SF	(4)
INTERNAL SHEAR STRENGTH (MIN.)	ASTM D-6243(3)	1 PER PROJECT	N/A	LBS/SF(4)
PUNCTURE (MIN. AVE.)(6)	ASTM D-4833	1 PER 100,000 SF	1 PER 250,000 SF	70 LBS

(1) BENTONITE MASS PER UNIT AREA TO BE REPORTED AT 0% MOISTURE CONTENT.
(2) PERMEABILITY TESTING TO BE PERFORMED WITH WATER @ 20 PSI MAXIMUM EFFECTIVE CONFINING STRESS AND 2 PSI HEAD.
(3) TYPICAL PEAK VALUE FOR SPECIMEN, HYDRATED 24 HOURS AT 200 PSF AND SHEARED AT 200 PSF NORMAL STRESS.
(4) REQUIRED VALUE SHALL BE TAKEN FROM MANUFACTURER'S STANDARD MATERIAL SPECIFICATION SHEET FOR THE SELECTED GCL MATERIAL. GCL SELECTION SHALL BE BASED ON THE MATERIAL'S ABILITY TO MEET OR EXCEED THE REQUIREMENTS IDENTIFIED IN THE SITE'S DESIGN.
(5) GEOTEXTILE COMPONENTS OF GCL SHALL BE QC TESTED IN ACCORDANCE WITH THE MANUFACTURER'S QUALITY CONTROL PROGRAM.
(6) PUNCTURE TEST TO BE PERFORMED ON GCL MATERIAL USED IN BASE LINER APPLICATIONS WHERE MATERIAL IS PLACED DIRECTLY ON SUBGRADE.

TABLE 3
REQUIRED QUALITY CONTROL PRE-SHIPMENT TESTING OF GEOMEMBRANE LINER

PROPERTIES	TEST METHOD	MANUFACTURER QC TEST FREQUENCY	CONFORMANCE QA TEST FREQUENCY
THICKNESS	ASTM D-5994	1 PER ROLL	1 PER 250,000 SF
ASPERITY HEIGHT	GM 12	1 PER 50,000 SF	N/A
SHEET DENSITY	ASTM D-792 OR ASTM D-1505	1 PER 50,000 SF	1 PER 250,000 SF
TENSILE PROPERTIES	ASTM D-6693	1 PER 50,000 SF	1 PER 250,000 SF
TEAR RESISTANCE	ASTM D-1004 DIE C	1 PER 50,000 SF	N/A
PUNCTURE RESISTANCE	ASTM D-4833	1 PER 50,000 SF	1 PER 250,000 SF
STRESS CRACK RESISTANCE	ASTM D-5397 (App.)	1 PER 180,000 LBS OF RESIN	N/A
CARBON BLACK CONTENT	ASTM D-1603	1 PER 50,000 SF	1 PER 250,000 SF
CARBON BLACK DISPERSION	ASTM D-5596	1 PER 50,000 SF	1 PER 250,000 SF

TABLE 4
REQUIRED PHYSICAL PROPERTIES OF HIGH DENSITY POLYETHYLENE (HDPE) TEXTURED GEOMEMBRANE

PROPERTIES	TEST METHOD	REQUIRED TEST VALUES 40 MIL(12)	REQUIRED TEST VALUES 60 MIL(12)
• THICKNESS (MIN. AVE.) • LOWEST INDIVIDUAL FOR 8 OUT OF 10 VALUES • LOWEST INDIVIDUAL FOR ANY OF THE 10 VALUES	ASTM D-5994	40 mil 36 mil – 34 mil	60 mil 60 mil – 60 mil
ASPERITY HEIGHT (MIN. AVE.) (1)(2)	D 7466	10 mil	10 mil
SHEET DENSITY (MIN. AVE.)	ASTM D-792 OR ASTM D-1505	0.940 g/cc	0.940 g/cc
TENSILE PROPERTIES (3) (MIN. AVE.) • YIELD STRENGTH • BREAK STRENGTH • YIELD ELONGATION • BREAK ELONGATION	ASTM D-6693	– 84 lb/in 60 lb/in 12% 100%	– 126 lb/in 90 lb/in 12% 100%
TEAR RESISTANCE (MIN. AVE.)	ASTM D-1004 DIE C	28 lbs	42 lbs
PUNCTURE RESISTANCE (MIN. AVE.)	ASTM D-4833	60 lbs	90 lbs
STRESS CRACK RESISTANCE(4)	ASTM D-5397 (App.)	300 hours	300 hours
CARBON BLACK CONTENT (RANGE)	ASTM D-1603 (5)	2-3%	2-3%
CARBON BLACK DISPERSION(6)	ASTM D-5596	Category 1,2, or 3(6)	Category 1, 2, or 3(6)
OXIDATIVE INDUCTION TIME (OIT) (MIN. AVE.)(7) • STD. OIT, or • HIGH PRESSURE OIT	ASTM D-3895 ASTM D-5885	– 100 min. 400 min.	– 100 min. 400 min.
OVEN AGING AT 85°C (7)(8) • STD. OIT (MIN. AVE.), % RETAINED AFTER 90 DAYS or • HIGH PRESSURE OIT (MIN. AVE.), % RETAINED AFTER 90 DAYS	ASTM D-5721 ASTM D-3895 – – ASTM D-5885	– 55% – – 80%	– 55% – – 80%
UV RESISTANCE (2) • STD. OIT (MIN. AVE.), or • HIGH PRESSURE OIT (MIN. AVE.) % RETAINED AFTER 1600 HRS (11)	GM 11 ASTM D-3895 ASTM D-5885	(10) 50%	(10) 50%
NON-DESTRUCTIVE TESTING	GRI GM 6	SEE CQA PLAN TEXT	SEE CQA PLAN TEXT
DESTRUCTIVE TESTING	ASTM D-4437	90% SHEAR/60% PEEL	90% SHEAR/60% PEEL

(1) THE LOWEST INDIVIDUAL READING MUST BE ≥ 17 mils.
(2) TEST EACH SIDE OF THE TEXTURED GEOMEMBRANE RECORDING A MEASUREMENT EVERY LINEAL FOOT OF TEXTURED ROLL WIDTH.
(3) MACHINE DIRECTION (MD) AND CROSS MACHINE DIRECTION (XMD) AVERAGE VALUES SHOULD BE ON THE BASIS OF 5 TEST SPECIMENS EACH DIRECTION.
• YIELD ELONGATION IS CALCULATED USING A GAGE LENGTH OF 1.3 INCHES.
• BREAK ELONGATION IS CALCULATED USING A GAGE LENGTH OF 2.0 INCHES.
(4) THE P-NCTL TEST IS NOT APPROPRIATE FOR TESTING GEOMEMBRANES WITH TEXTURED OR IRREGULAR ROUGH SURFACES. TEST SHOULD BE CONDUCTED ON SMOOTH EDGES OF TEXTURED ROLLS OR ON SMOOTH SHEETS MADE FROM THE SAME FORMULATION AS BEING USED FOR THE TEXTURED MATERIALS.
(5) OTHER METHODS SUCH AS D 4218 (MUFFLE FURNACE) OR MICROWAVE METHODS ARE ACCEPTABLE IF AN APPROPRIATE CORRELATION TO D-1603 (TUBE FURNACE) CAN BE ESTABLISHED.
(6) CARBON BLACK DISPERSION (ONLY NEAR SPHERICAL AGGOMERATES) FOR 10 DIFFERENT VIEWS:
• 9 IN CATEGORIES 1 OR 2, AND
• 1 IN CATEGORY 3.
(7) THE MANUFACTURER HAS THE OPTION TO SELECT EITHER ONE OF THE OIT METHODS LISTED TO EVALUATE THE ANTIOXIDANT CONTENT IN THE GEOMEMBRANE.
(8) IT IS ALSO RECOMMENDED TO EVALUATE SAMPLES AT 30 AND 60 DAYS TO COMPARE WITH THE 90 DAY RESPONSE.
(9) THE CONDITION OF THE TEST SHOULD BE 20 HR. UV CYCLE AT 75° C FOLLOWED BY 4 HR. CONDENSATION AT 60° C.
(10) NOT RECOMMENDED SINCE THE HIGH TEMPERATURE OF THE STD-OIT TEST PRODUCES AN UNREALISTIC RESULT FOR SOME OF THE ANTIOXIDANTS IN THE UV EXPOSED SAMPLES.
(11) UV RESISTANCE IS BASED ON PERCENT RETAINED VALUE REGARDLESS OF THE ORIGINAL HP-OIT VALUE.
(12) BASED ON GRI GM13, REV. 9, 6/01/09. LATEST REVISION OF THE GM13 SHOULD BE USED IF TEST METHODS LISTED ARE NO LONGER COMMON.

TABLE 5
NONWOVEN GEOTEXTILE CONFORMANCE TESTING SUMMARY

PROPERTIES	TEST METHOD	MANUFACTURER QC TEST FREQUENCY(2)	CONFORMANCE QA TEST FREQUENCY	REQUIRED TEST VALUES 6 oz/sy	REQUIRED TEST VALUES 8 oz/sy	REQUIRED TEST VALUES 10 oz/sy	REQUIRED TEST VALUES 12 oz/sy	REQUIRED TEST VALUES 16 oz/sy
MASS/UNIT AREA (MIN. AVE.)	ASTM D-5261	1 PER 100,000 SF	1 PER 250,000 SF	5.5 oz/sy	7.2 oz/sy	9.1 oz/sy	11.1 oz/sy	15.1 oz/sy
APPARENT OPENING SIZE (MAX.)	ASTM D-4751	1 PER 540,000 SF	1 PER PROJECT(1)	0.3 mm	0.212 mm	0.25 mm	0.212 mm	0.180 mm
GRAB STRENGTH (MIN. AVE.)	ASTM D-4632	1 PER 100,000 SF	1 PER 250,000 SF	150 lbs	190 lbs	230 lbs	300 lbs	370 lbs
PUNCTURE STRENGTH (MIN. AVE.)	ASTM D-4833	1 PER 100,000 SF	1 PER 250,000 SF	70 lbs	90 lbs	120 lbs	140 lbs	170 lbs
UV RESISTANCE	ASTM D-4355	1 PER RESIN FORMULATION	N/A	70%(3)	70%(3)	70%(3)	70%(3)	70%(3)
PERMITTIVITY (MIN.)	ASTM D-4491	1 PER 540,000 SF	1 PER PROJECT(1)	1.1 sec^{-1}	1.0 sec^{-1}	0.9 sec^{-1}	0.7 sec^{-1}	0.5 sec^{-1}

(1) AOS AND PERMITTIVITY SHALL ONLY BE TESTED FOR GEOTEXTILES USED IN FILTER APPLICATIONS.
(2) MANUFACTURER MAY ELECT TO PROVIDE CERTIFICATION VALUES FOR GEOTEXTILES.
(3) AFTER 500 HOURS OF EXPOSURE.

TABLE 6
LINER SYSTEM GEONET - 200 mil CONFORMANCE TESTING SUMMARY

PROPERTIES	TEST METHOD	MANUFACTURER QC TEST FREQUENCY	CONFORMANCE QA TEST FREQUENCY	REQUIRED TEST VALUES
THICKNESS (MIN. AVE.)	ASTM D-751 OR ASTM D-5199	1 PER 100,000 SF	1 PER 250,000 SF	200 mil
DENSITY (MIN. AVE.)	ASTM D-792 OR ASTM D-1505	1 PER 100,000 SF	1 PER 250,000 SF	0.940 g/cc
MASS/UNIT AREA (MIN. AVE.)	ASTM D-5261	1 PER 100,000 SF	1 PER 250,000 SF	lbs/sf(2)
CARBON BLACK CONTENT (RANGE)	ASTM D-1603(3)	1 PER 100,000 SF	1 PER 250,000 SF	2-3%
TRANSMISSIVITY (1) (MIN. AVE.)	ASTM D-4716	1 PER PROJECT	1 PER PROJECT	m^2/sec (2)

(1) TRANSMISSIVITY SHALL BE MEASURED IN A 12-INCH x 12-INCH BOX USING THE SAME BOUNDARY CONDITIONS, LOAD, DURATION AND GRADIENT AS THOSE USED BY THE MANUFACTURER TO ESTABLISH THE MIN. AVE. FOR THE REQUIRED TEST VALUE.
(2) REQUIRED VALUE SHALL BE TAKEN FROM MANUFACTURER'S STANDARD MATERIAL SPECIFICATION SHEET FOR THE SELECTED GEONET MATERIAL. GEONET SELECTION SHALL BE BASED ON THE MATERIAL'S ABILITY TO MEET OR EXCEED THE TRANSMISSIVITY IDENTIFIED IN THE SITE'S DESIGN.
(3) OTHER METHODS SUCH AS D-4218 (MUFFLE FURNACE) OR MICROWAVE METHODS ARE ACCEPTABLE IF AN APPROPRIATE CORRELATION TO D-1603 (TUBE FURNACE) CAN BE ESTABLISHED.

GEORGIA
Environmental Protection Division
Solid Waste Management Program
MINOR MODIFICATION APPROVAL
SOLID WASTE PERMIT NO. 024-006D(SL)
APPROVED BY: _____ DATE: 05/19/2017

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GEORGIA REGISTERED No. 030071 PROFESSIONAL ENGINEER MARC A. LIVERMAN
06930
LEVEL II CERTIFICATION

PROJECT:
CHESSER ISLAND ROAD
MSW LANDFILL
MAJOR MODIFICATION
PHASE 4
EXPANSION

CHARLTON COUNTY, GA
PERMIT NO: 024-006D(SL)

WASTE MANAGEMENT
Chesser Island Road Landfill, Inc.
Hwy 121 @ Chesser Island Road
Folkston, GA 31537

REVISIONS

INITIAL GAEPD SUBMITTAL	03/13/09
REVISED PER EPD COMMENTS	10/23/09
REVISED PER EPD COMMENTS	12/16/09
1. MINOR MODIFICATION	08/23/10
2. CCR MANAGEMENT	04/20/17

Drawn by: CW
Checked by:

PROJECT NUMBER:
I014-101
March 2009

CONSTRUCTION QUALITY ASSURANCE PLAN

SHEET 30 OF 30