



WASTE MANAGEMENT, INC.

PINE BLUFF SOLID WASTE MANAGEMENT FACILITY EAST CHEROKEE DRIVE CHEROKEE COUNTY, GEORGIA PERMIT NO. 028-039D (SL)

RESPONSIBLE OFFICIAL

MR. GENE BARNES
DIRECTOR OF DISPOSAL OPERATIONS
WASTE MANAGEMENT, INC.
13809 EAST CHEROKEE DRIVE
BALL GROUND, GEORGIA 30107
770-479-2936

PROPERTY OWNER

WASTE MANAGEMENT, INC.
13809 EAST CHEROKEE DRIVE
BALL GROUND, GEORGIA 30107
770-479-2936

EPD OFFICIAL SITE NAME

PINE BLUFF LANDFILL

ENGINEER

JORDAN, JONES & GOULDING, INC.
6801 GOVERNORS LAKE PARKWAY
NORCROSS, GEORGIA 30071
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GEORGIA
Environmental Protection Division
Solid Waste Management Program
MINOR MODIFICATION APPROVAL
SOLID WASTE PERMIT NO. 028-039D(SL)
APPROVED BY: [Signature] DATE: 8/22/12



MAJOR MODIFICATION
DECEMBER 2000

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MANAGEMENT PROGRAM

20. **LITTER CONTROL:** THE SITE WILL BE INSPECTED AND LITTER COLLECTED REGULARLY. DAILY COVER WILL ALSO CONTRIBUTE TO A REDUCTION IN LITTER. SCATTERING OF WASTE BY WIND SHALL BE CONTROLLED BY FENCING OR OTHER BARRIERS.

21. **DUST CONTROL:** [Du] THE ENTRANCE AND PERIMETER ROADS WILL BE PAVED OR GRAVELED TO MINIMIZE DUST. A WATER TRUCK IS AVAILABLE TO SPRAY ACCESS ROADS AND CO-MINGLED MSW AND CCR DISPOSAL AREAS, IF NECESSARY. 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). A COPY OF APPROVED PLANS WILL BE KEPT ON SITE.

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 AND 2-WAY RADIOS.

25. **EMPLOYEE FACILITIES:** AN OFFICE AND MAINTENANCE BUILDING ARE LOCATED ON-SITE. IT IS EQUIPPED WITH ELECTRICITY, RESTROOM FACILITIES, AND AIR CONDITIONING.

26. **ONSITE 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. THE DESIGNATED STORAGE AREA FOR RECOVERED MATERIALS MUST BE MAINTAINED IN A NEAT AND ORDERLY MANNER. STORED MATERIALS SHALL BE REMOVED FROM THE SITE PERIODICALLY OR DISPOSED IN THE LANDFILL.
- 3. SCAVENGING SHALL NOT BE ALLOWED IN THE RECOVERED MATERIAL PROCESSING AREA.
- 4. THE ENVIRONMENTAL PROTECTION DIVISION SHALL BE NOTIFIED 30 DAYS PRIOR TO ANY CHANGE IN THE LOCATION OF THE DESIGNATED RECOVERABLE MATERIAL DROP OFF AREA.
- 5. THE FOLLOWING RECOVERED MATERIALS MAY BE STORED: WHITE GOODS, TIRES, METALS, GLASS, PLASTIC, PAPER, AND CARDBOARD.

27. **RECOVERED MATERIALS PROCESSING:** THERE WILL BE NO ON-SITE MATERIALS PROCESSING UNLESS PERMITTED BY THE EPD.

28. **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 WITH A MINIMUM OF SIX(6) INCHES OF NON-ASBESTOS MATERIAL AT THE END OF EACH OPERATING DAY.
 - 3. PERSONNEL DISPOSING OF ASBESTOS CONTAINING MATERIAL WILL BE TRAINED FOR THE HAZARDS OF THIS MATERIAL AS WELL AS ITS DISPOSAL. THESE PERSONNEL WILL WEAR RESPIRATORS WHILE HANDLING AND DISPOSING ASBESTOS.

- 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.

29. **ZONING:** THIS SITE MEET ALL CHEROKEE COUNTY REQUIREMENTS FOR A SOLID WASTE DISPOSAL FACILITY.

30. **SITE LIMITATIONS FROM EPD LETTER DATED NOVEMBER 17, 2000**

- 1. THIS LETTER OF SITE SUITABILITY IS LIMITED TO THOSE AREAS DESIGNATED AS "PROPOSED REVISION(S) TO MSW LIMITS," AS SHOWN ON FIGURE1, SITE MAP, DATED JULY 2000 AND REVISED ON SEPTEMBER 28, 2000.
- 2. A LINER AND LEACHATE COLLECTION SYSTEM SHALL BE CONSTRUCTED UNDER ALL AREAS PROPOSED FOR WASTE DISPOSAL. THE LINER SHALL BE CONSTRUCTED AT LEAST POTENTIOMETRIC 7.5 FEET ABOVE THE POTENTIOMETRIC SURFACE SHOWN ON FIGURE 2, SURFACE MAP - 1994 DATA, DATED JULY 2000 AND REVISED ON SEPTEMBER 28, 2000. THE PROJECT ENGINEER SHALL MAKE PERIODIC QUALITY CONTROL INSPECTIONS WHILE THE LINER AND LEACHATE COLLECTION SYSTEMS ARE UNDER CONSTRUCTION, AND SHALL CERTIFY THE PROPER INSTALLATION OF THE SYSTEMS.
- 3. BEDROCK: THE LINER SYSTEM SHALL BE KEPT A MINIMUM OF FIVE FEET ABOVE BEDROCK EXPOSED DURING THE EXCAVATION OF A WASTE CELL SHALL BE RE-COVERED WITH FIVE FEET OF COMPACTED, CLEAN, RUBBLE-FREE SOIL.
- 4. A FIFTY FOOT WIDE HORIZONTAL BUFFER SHALL BE MAINTAINED BETWEEN THE LINER SYSTEM AND JURISDICTIONAL WETLAND AREAS. WETLAND AREAS SHALL BE DELINEATED ON THE DESIGN AND OPERATION PLAN. NO LANDFILLING SHALL BE ALLOWED IN US ARMY CORPS OF ENGINEERS JURISDICTIONAL WETLAND AREAS.
- 5. A MINIMUM 500 FOOT BUFFER SHALL BE MAINTAINED BETWEEN THE WASTE DISPOSAL BOUNDARY AND ANY OCCUPIED DWELLING OR ANY OPERATIONAL WATER SUPPLY WELL.
- 6. ALL DRAINAGE STRUCTURES SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE MANUAL OF EROSION AND SEDIMENT CONTROL. SHALL BE CHANNLED TO IN GEORGIA. ALL DRAINAGE STRUCTURES SEDIMENT BASIN.
- 7. ALL TEMPORARY PIEZOMETERS IN THE EXPANSION AREA SHALL BE PLUGGED AND ABANDONED IN ACCORDANCE WITH THE WATER WELL STANDARDS ACT. ADDITIONALLY, PIEZOMETERS LOCATED IN POTENTIAL WASTE DISPOSAL AREAS SHALL HAVE THE CASING PULLED FROM THE HOLE AND SHALL BE GROUTED, WITH NON-SHRINKING CEMENT, FROM THE BOTTOM OF THE HOLE UP TO WITHIN TEN FEET OF THE BOTTOM OF THE LANDFILL. IF THE CASING CANNOT BE PULLED FROM THE BOREHOLE, THE CASING SHALL BE REMOVED BY OVERDRILLING THE BOREHOLE. THE LAST 10 FEET OF THE BOREHOLE SHALL BE FILLED WITH HYDRATED BENTONITE PELLETS.
- 8. A REPORT DISCUSSING THE ADEQUACY OF THE CURRENT GROUNDWATER MONITORING SYSTEM WITH RESPECT TO THE EXPANSION AREAS SHALL BE SUBMITTED TO THE DIVISION.
- 9. NO SOLID WASTE SHALL BE DISPOSED OF IN ANY 100-YEAR FLOOD-HAZARD ZONE. ANY 100-YEAR FLOOD ELEVATION(S) ON THE SITE MUST BE SHOWN ON THE DESIGN AND OPERATIONAL PLAN.

SITE LIMITATIONS FROM EPD LETTER DATED NOVEMBER 17, 2000 (CONT.)

10. THIS SITE IS LOCATED IN A SEISMIC IMPACT ZONE AS DEFINED IN THE RULES FOR SOLID WASTE MANAGEMENT, CHAPTER 391-3-4.05(1)(g). THE DESIGN ENGINEER MUST CERTIFY THAT ALL CONTAINMENT STRUCTURES ARE DESIGNED TO RESIST THE MAXIMUM HORIZONTAL GROUND ACCELERATION FOR THE SITE. THEREFORE, THE REGISTERED PROFESSIONAL ENGINEER PREPARING THE DESIGN AND OPERATIONAL PLAN MUST STAMP AND SIGN EACH ENGINEERING DRAWING WITH THE ACCOMPANYING NOTATION:

I HAVE REVIEWED THE INFORMATION PRESENTED IN THE DRAWING, AND IN MY PROFESSIONAL OPINION, ALL CONTAINMENT STRUCTURES ARE DESIGNED TO RESIST A MAXIMUM HORIZONTAL GROUND ACCELERATION OF 0.22g IN 250 YEARS.

31. **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 PHASE, INCLUDING BUT NOT LIMITED TO, NEW CELLS OR TRENCHES, ADDITIONAL MONITORING WELLS, SEDIMENT PONDS, LEACHATE TREATMENT SYSTEMS, MODIFICATIONS ADDING A NEW SOLID WASTE HANDLING PROCESS, AND APPLICATION OF FINAL COVER.

32. **PROHIBITED WASTE:** NO LIQUID WASTE, EITHER BULK OR CONTAINERIZED SHALL BE PLACED IN THE LANDFILL UNLESS THE CONTAINER HAS ONE GALLON CAPACITY OR LESS. NO GENERATOR MAY DISCARD IN EXCESS OF FOUR GALLONS OF LIQUIDS IN CONTAINERS UNLESS THE LIQUIDS HAS BEEN SOLIDIFIED IN THE PERMITTED SOLIDIFICATION BASIN. 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 PERSONEL 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.

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

34. **INITIAL PLACEMENT OF WASTE:** THE FIRST EIGHT FEET OF SOLID WASTE PLACED ON THE PROTECTIVE COVER SHALL BE SUPERVISED AND MAY NOT CONTAIN MATERIAL CAPABLE OF PENETRATING OR PUNCTURING THE PROTECTIVE COVER. MATERIAL DEEMED INAPPROPRIATE WILL BE PULLED ASIDE AND DISPOSED OF AS 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.

35. **C & D DISPOSAL OPTION:** PHASE 15, 16, 17, AND 18 SHALL HAVE THE OPTION OF ONLY C & D DISPOSAL. FOR MSW DISPOSAL AREAS CHOSEN FOR C & D DISPOSAL, NO LINER SYSTEM AND LEACHATE COLLECTION SYSTEM IS REQUIRED. A 7.5 FOOT SEPARATION BETWEEN GROUNDWATER AND TOP OF SUBGRADE SHALL BE MAINTAINED FOR BOTH MSW AND C & D.

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

37. **POST CLOSURE CARE:** THE OWNER AND/OR OPERATOR SHALL 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 THE DIVISION 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 THE DIRECTOR FOR APPROVAL. UNLESS NOTIFIED OTHERWISE BY THE DIVISION WITHIN 30 DAYS OF RECEIPT OF A COMPLETE PLAN, THE PLAN SHALL STAND APPROVED. UPON APPROVAL, THE OWNER AND/OR OPERATOR SHALL IMPLEMENT THE APPROVED PLAN.

38. **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.

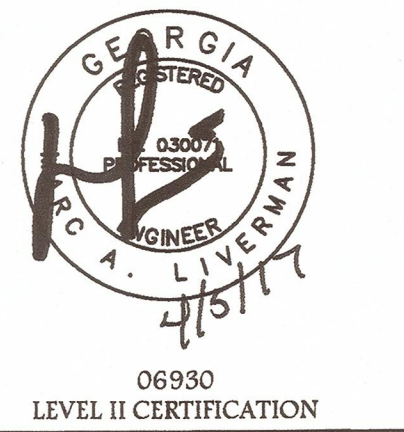
THE OWNER OR OPERATOR WILL PROVIDE WRITTEN NOTIFICATION INFORMING CHEROKEE COUNTY THAT THE FACILITY IS PLANNING TO ACCEPT CCR WASTE. ADDITIONALLY, CHEROKEE COUNTY WILL BE PROVIDED WITH WRITTEN NOTIFICATION FROM THE OWNER OR OPERATOR IF THE CCR MANAGEMENT PLAN IS AMENDED AND APPROVED BY EPD.

NOTES:

- 1. CONSTRUCTION QUALITY ASSURANCE PLAN IS CONTAINED ON SHEETS 46 - 48.



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PROJECT:
PINE BLUFF SOLID WASTE MANAGEMENT FACILITY

CHEROKEE COUNTY, GA



13089 EAST CHEROKEE DRIVE
BALLGROUND, GA 30107
770-479-2936

REVISIONS

0 - Initial Issue	12/8/00
1 - Added statements #34 & 35 per EPD comments	3/23/01
2 - Add'd narrative to #2	5/24/13
3 - CCR Management	4/5/17

GEORGIA
Environmental Protection Division
Solid Waste Management Program
MINOR MODIFICATION APPROVAL
SOLID WASTE PERMIT NO. 02840290413
APPROVED BY: [Signature] DATE: 5/22/12

Drawn by: MAL Checked by: [Signature]

PROJECT NUMBER:

I002-415

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SOLID WASTE MANAGEMENT PROGRAM

OPERATIONAL PROCEDURES (CONTINUED)

Sheet 43A

I HAVE REVIEWED THE INFORMATION PRESENTED IN THE DRAWING, AND IN MY PROFESSIONAL OPINION, ALL CONTAINMENT STRUCTURES ARE DESIGNED TO RESIST A MAXIMUM HORIZONTAL GROUND ACCELERATION OF 0.22g IN 250 YEARS.

OPERATIONAL PROCEDURES

1. **MSW LANDFILL VOLUME CALCULATIONS:**

	MSW
TOTAL VOLUME OF WASTE AND COVER	64,230,000 CY
DAILY AND INTERMEDIATE COVER VOLUME	6,088,461 CY
LEACHATE COLLECTION SYSTEM	1,322,745 CY
FINAL COVER VOLUME (NO TERRACES)	2,022,644 CY
FINAL COVER VOLUME (WITH TERRACES)	2,528,305 CY
SOIL VOLUME FOR COVER	3,180,700 CY
AVAILABLE ONSITE	3,180,700 CY
WASTE VOLUME	54,796,150 CY

3. ESTIMATED MAXIMUM ANNUAL MSW TO CCR RATIO BY WEIGHT: 10:1
 ESTIMATED CCR TONNAGES - 330 TN/DAY
 90,025 TN/YR

4. ESTIMATED MSW TONNAGES - 3,300 TN/DAY
 900,250 TN/YR

AREA OF SITE: TOTAL 914.5 ACRES
 USEABLE DISPOSAL AREA 398 ACRES

ESTIMATED LIFE OF SITE 64 YEARS

2. **CONTROLLED UNLOADING OF WASTE:** UNLOADING OF WASTE WILL BE RESTRICTED TO A WORKING FACE LIMITED TO APPROXIMATELY 200 FEET WIDE. A SPOTTER MAY BE USED DURING PEAK TIMES OR BAD WEATHER TO SUPERVISE ALL UNLOADING ACTIVITIES. SCAVENGING WILL BE PROHIBITED. MSW AND CCR DISPOSAL OPERATION MAY BE OPERATED AND MAINTAINED ON AN INDEPENDENT WORKING FACE, AS DEFINED BELOW, OR CCR AND MSW MAY BE CO-MINGLED AT THE SAME WORKING FACE OR CCR MAY BE PLACED IN LAYERS UP TO 10 FT THICK IN BETWEEN MSW LAYERS.

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.

2. UPON BEGINNING DISPOSAL OPERATIONS IN A NEWLY CONSTRUCTED AND CERTIFIED CELL THE FACILITY MAY OPERATE TWO INDEPENDENT WORKING FACES UNDER THE FOLLOWING CRITERIA:
- THE COMBINED WORKING FACES SHALL NOT EXCEED 40,000 SQUARE FEET AT ANY TIME.
 - SOIL STOCKPILES OF SUFFICIENT VOLUME FOR USE AS FIRE PROTECTION MUST BE PROVIDED FOR BOTH WORKING FACES.
 - THE WORKING FACES MUST BE COVERED WITH SIX INCHES OF CLEAN EARTH AT THE END OF EACH DAY'S OPERATION, OR AN EPD APPROVED ALTERNATE.
 - THE USE OF TWO WORKING FACES IS LIMITED TO A PERIOD OF SIX MONTHS, AND SHALL BE DOCUMENTED IN THE FACILITY OPERATING RECORD.

3. **CCR WASTE CHARACTERIZATION AND COMPATIBILITY:** BULK SAMPLES OF CCR FROM EACH SOURCE WILL BE OBTAINED FOR CHARACTERIZATION AND COMPATIBILITY. SOUTHERN COMPANY IS THE FACILITY'S ONLY SOURCE OF CCR. ADDITIONAL SOURCES SHALL EXCEED THOSE DEFINED IN SECTION 1 OF THIS PLAN MSW AND CCR RATIOS THAT EXCEED THOSE DEFINED IN SECTION 1 OF THIS PLAN SHALL BE PERMITTED THROUGH EPD PRIOR TO ACCEPTANCE. CCR RECEIVED SHALL ONLY BE POND-DERIVED, NOT DRY CCR FROM A BAGHOUSE OR PRECIPITATOR.

SAMPLES FOR COMPATIBILITY WILL BE TESTED FOR TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) 8 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:**

3. MSW ONLY WASTES WILL BE SPREAD AND COMPACTED IN UNIFORM LAYERS NOT TO EXCEED TWO 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 3H:1V.

3. MSW AND CCR CO-MINGLED WASTES WILL BE SPREAD AND COMPACTED IN UNIFORM LAYERS NOT TO EXCEED TWO 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 3H:1V.

6. **DAILY COVER:**

3. 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 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.

B. ALTERNATIVE MATERIALS (SUCH AS FOAMS OR TARPS) OF AN ALTERNATIVE THICKNESS (OTHER THAN AT LEAST SIX INCHES OF EARTHEN MATERIAL) MAY ALSO BE USED.

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 LIFT FOLLOWING COMPLETION OF THAT LIFT. 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. THE COMPOSITION OF THE INTERMEDIATE COVER SHALL MEET THE FOLLOWING STANDARDS:

- SAME CRITERIA FOR DAILY COVER; PLUS
- BE CAPABLE OF SUPPORTING THE GERMINATION AND PROPAGATION OF VEGETATIVE COVER.

8. **FINAL COVER:** TOPSOIL, CLAYEY SOILS AND GRANULAR FILL WILL BE STOCKPILED ON-SITE IN SEGREGATED AREAS SO AS NOT TO INTERFERE WITH OPERATIONS. SOLID WASTE LIFTS ARE COMPLETED AND ARE AT FINAL GRADE, IN ACCORDANCE WITH THE CONSTRUCTION QUALITY ASSURANCE PROGRAM (OUTLINED ON SHEET 46 OF THESE D&O PLANS).

9. **FIRE PROTECTION:** THE POTENTIAL FOR FIRE WILL BE MINIMIZED USING SOIL AND WATER. A STOCKPILE OF SOIL WILL BE LOCATED NEAR THE WORKING FACE TO BE USED FOR FIRE PROTECTION. WATER AND FIRE EXTINGUISHERS WILL BE USED FOR ADDITIONAL FIRE FIGHTING CAPABILITIES.

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.

3. THE SUPERVISOR AND FACILITY EMPLOYEES WILL RECEIVE REGULAR EDUCATIONAL 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.

12. **SILTATION AND EROSION CONTROL:** CLEARING AND GRADING ACTIVITIES WILL BE LIMITED TO THE CURRENT PHASE OF WASTE CELL AREAS, BORROW AREAS, STOCKPILE AREAS, SITE FACILITY AREAS, ROAD AND POND CONSTRUCTION AND LEACHATE COLLECTION SYSTEM INSTALLATION. SILT FENCE AND OTHER EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ALL CONSTRUCTION ACTIVITIES. ACCESS ROAD AND SILT POND CONSTRUCTION WILL OCCUR FIRST. THE PERIMETER ROAD IS DESIGNED WITH SIDE DITCHES WHICH WILL DIRECT RUNOFF FROM THE SITE PERIMETER INTO THE SILT POND. DISTURBED AREAS ALONG ROADSIDE AND ON CONSTRUCTED SOIL FILL SLOPES SHALL BE SEEDED AND MULCHED IMMEDIATELY AS WORK PROGRESSES TO ESTABLISH PERMANENT VEGETATION.

SOIL STOCKPILE AND INTERMEDIATE COVER AREAS TO BE EXPOSED FOR LONGER THAN THREE MONTHS SHOULD BE MULCHED AND SEEDED WITH TEMPORARY STABILIZATION. 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 ON A REGULAR BASIS 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 THE OPERATIONAL STOCKPILE AREA.

SILT REMOVAL FROM SEDIMENT PONDS:

SILT WILL BE REMOVED FROM SEDIMENT PONDS, WITH ON-SITE EQUIPMENT OR BY PRIVATE CONTRACTOR.

REPAIRS TO ALL DEVICES SHALL BE MADE AS NECESSARY TO MAINTAIN THEIR EFFECTIVENESS IN SILT CONTROL. ALL EROSION AND SEDIMENTATION CONTROL MEASURES THE FOLLOWING O.C.G.A. 12-7-6 MINIMUM REQUIREMENTS FOR SHALL CONFORM TO CONSERVATION AND ENGINEERING PRACTICES:

- STRIPPING OF VEGETATION, REGRADING, AND OTHER DEVELOPMENT ACTIVITIES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO MINIMIZE EROSION;
- CUT AND FILL OPERATIONS MUST BE KEPT TO A MINIMUM;
- DEVELOPMENT PLANS MUST CONFORM TO TOPOGRAPHY AND SOIL TYPE, SO AS TO CREATE THE LOWEST PRACTICABLE EROSION POTENTIAL;
- WHENEVER FEASIBLE, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED, AND SUPPLEMENTED;
- THE DISTURBED AREA AND THE DURATION OF EXPOSURE TO EROSION ELEMENTS SHALL BE KEPT TO A PRACTICABLE MINIMUM;
- DISTURBED SOIL SHALL BE STABILIZED AS QUICKLY AS PRACTICABLE;
- TEMPORARY VEGETATION OR MULCHING SHALL BE EMPLOYED TO PROTECT EXPOSED CRITICAL AREAS DURING DEVELOPMENT;
- PERMANENT VEGETATION AND STRUCTURAL EROSION CONTROL MEASURES MUST BE INSTALLED AS SOON AS PRACTICABLE;
- 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.
- 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.
- CUTS AND FILLS MAY NOT ENDANGER ADJOINING PROPERTY;
- FILLS MAY NOT ENCROUGH UPON NATURAL WATER COURSES OR CONSTRUCTED CHANNELS IN A MANNER SO AS TO ADVERSELY AFFECT OTHER PROPERTY OWNERS;
- 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;
- 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 BEYOND THE LEVELS SPECIFIED IN PARAGRAPH (18) OF THIS CODE SECTION;
- 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
- 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 INCORPORATED IN THE PROJECT PLANS AND SPECIFICATIONS AND ARE IMPLEMENTED.

15. DISCHARGES OF STORM-WATER RUNOFF FROM DISTURBED AREAS SHALL BE CONTROLLED TO THE EXTENT THAT TURBIDITY OF THE STORMWATER RUNOFF SHALL NOT EXCEED 100 NEPHELOMETRIC TURBIDITY UNITS HIGHER THAN THE TURBIDITY LEVEL OF THE RECEIVING STREAM IMMEDIATELY UPSTREAM FROM THE STORMWATER RUNOFF DISCHARGE AT THE TIME OF SUCH DISCHARGE; PROVIDED, HOWEVER, THAT FOR TROUT STREAMS, SUCH MAXIMUM ALLOWABLE TURBIDITY LEVEL SHALL BE 50 NEPHELOMETRIC TURBIDITY UNITS HIGHER THAN THE TURBIDITY LEVEL OF SUCH STREAM IMMEDIATELY UPSTREAM FROM THE STORM-WATER RUNOFF DISCHARGE AT THE TIME OF SUCH DISCHARGE. DUE TO THE VARIOUS SOILS AND HYDROLOGICAL AND WATER CONDITIONS THROUGHOUT THE STATE, THE DIVISION SHALL HAVE THE DISCRETION TO VARY FROM THE AFORESAID NEPHELOMETRIC TURBIDITY UNITS.

16. **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 INCORPORATED IN THE PROJECT PLANS AND SPECIFICATIONS AND ARE IMPLEMENTED.

17. DISCHARGES OF STORM-WATER RUNOFF FROM DISTURBED AREAS SHALL BE CONTROLLED TO THE EXTENT THAT TURBIDITY OF THE STORMWATER RUNOFF SHALL NOT EXCEED 100 NEPHELOMETRIC TURBIDITY UNITS HIGHER THAN THE TURBIDITY LEVEL OF THE RECEIVING STREAM IMMEDIATELY UPSTREAM FROM THE STORMWATER RUNOFF DISCHARGE AT THE TIME OF SUCH DISCHARGE; PROVIDED, HOWEVER, THAT FOR TROUT STREAMS, SUCH MAXIMUM ALLOWABLE TURBIDITY LEVEL SHALL BE 50 NEPHELOMETRIC TURBIDITY UNITS HIGHER THAN THE TURBIDITY LEVEL OF SUCH STREAM IMMEDIATELY UPSTREAM FROM THE STORM-WATER RUNOFF DISCHARGE AT THE TIME OF SUCH DISCHARGE. DUE TO THE VARIOUS SOILS AND HYDROLOGICAL AND WATER CONDITIONS THROUGHOUT THE STATE, THE DIVISION SHALL HAVE THE DISCRETION TO VARY FROM THE AFORESAID NEPHELOMETRIC TURBIDITY UNITS.

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 SHALL BE STABILIZED IN ACCORDANCE WITH 11C. FINAL COVER SHALL BE PLACED

A. **[Ds1] SUGGESTED STABILIZATION**
 FOR AREAS REQUIRING STABILIZATION WHEN NO VEGETATION IS AVAILABLE, (7-1 TO 8-15) 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.
 (2) MECHANICALLY APPLIED CLAY AND ASPHALT EMULSION, (3) STRAW AND FIBER MESH ROLL PLACED AND ANCHORED WITH STAPLES. WHEN THE MUNICIPAL

B. **[Ds2] SUGGESTED TEMPORARY VEGETATION**
 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)	N - TOP DRESSING RATE (LBS/ACRE)
BROWNTOP MILLET	40	4/1 - 9/15	500	10-10-10	30
RYEGRASS	40	5/15 - 4/1	"	"	"

C. **[Ds3] SUGGESTED PERMANENT VEGETATION**
 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	YEAR FERTILIZER RATE (LBS/ACRE)	TYPE FERTILIZER (N-P-K)	N - TOP DRESSING RATE (LBS/ACRE)
PENSACOLA BAHIA GRASS	60	1/1 - 12/31	FIRST 1500 SECOND 1000 MAINTENANCE 400	6-12-12 6-12-12 10-10-10	50-100 30

OTHER VEGETATION TYPES MAY BE USED IN ACCORDANCE WITH THE GEORGIA EROSION CONTROL MANUAL.

14. **SURVEY CONTROL:** SURVEY CONTROL WILL BE PROVIDED AS INDICATED ON THE APPROVED DESIGN AND OPERATIONAL PLAN. SITE SURVEY CONTROL SHALL BE PROVIDED BEFORE CONSTRUCTION TO ENSURE THE OPERATION WILL BE ON PERMITTED LANDS. SURVEY CONTROL WILL BE ACCOMPLISHED THROUGH THE USE OF PERMANENT BENCHMARKS, TEMPORARY BENCHMARKS AND SURVEY CONTROL STAKES WHICH DESIGNATE AND/OR DELINEATE ALL PERMITTED AREAS. 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. GRADE STAKES OR OTHER APPROPRIATE CONTROL MARKERS WILL BE PLACED AT THE BEGINNING OF EACH LIFT. ALL BUFFERS, 100 YEAR FLOOD PLAIN AND WETLANDS SHALL BE STAKED PRIOR TO ANY CONSTRUCTION.

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 PIPED TO LINED LEACHATE HOLDING POND PRIOR TO DISPOSAL. INITIALLY LEACHATE COLLECTED IN THE HOLDING POND SHALL BE RECIRCULATED BACK INTO THE LAND FILL. THE OWNER OPERATOR MAY HAUL LEACHATE TO A PROPERLY PERMITTED OFFSITE TREATMENT FACILITY. UPON COMMENCEMENT OF LEACHATE FLOW FROM THE FACILITY, THE OPERATOR SHALL SAMPLE AND ANALYZE IN ACCORDANCE WITH THE FACILITY'S APPROVED GROUNDWATER MONITORING PLAN.

LEACHATE OUTBREAKS
 LEACHATE OUTBREAKS ON THE INTERMEDIATE AND FINAL COVER WILL BE MINIMIZED BY REMOVAL OF APPROXIMATELY 12 INCHES OF THE COVER SOIL. AN APPROXIMATE 20 FEET WIDE STRIP SHOULD BE REMOVED TO ALLOW FOR FREE FLOW OF LEACHATE THROUGH THE WASTE. IF LEACHATE OUTBREAKS ON THE FINAL COVER SHOULD OCCUR, A LEACHATE MAINTENANCE TRENCH WILL BE INSTALLED. THE GRAVEL TRENCHES SHALL EXTEND A MINIMUM OF FIVE FEET EITHER SIDE OF THE OUTBREAK. THE WIDTH AND DEPTH WILL GENERALLY VARY FROM 2' X 4' TO 4' X 8'. ONCE INSTALLED, THE FINAL COVER WILL BE REPLACED AND SEEDED.

LEACHATE RECIRCULATION
 LEACHATE MAY BE RECIRCULATED BACK INTO THE LANDFILL ONCE SUFFICIENT SOLID WASTE HAS BEEN DISPOSED IN A CELL UNDER THE FOLLOWING CONDITIONS:
 A) THE CELL MUST HAVE AT LEAST 15-FOOT LIFT OF SOLID WASTE.
 B) LEACHATE MAY NOT BE DISCHARGED WITHIN 100-FEET OF ANY UNLINED AREA.
 C) LEACHATE MAY BE DISCHARGED DIRECTLY INTO THE WORKING FACE OR DESIGNATED LEACHATE RECIRCULATION TRENCH.
 D) RECIRCULATION MUST BE AT A CONTROLLED RATE TO AVOID PONDING ON THE WORKING FACE OR THE COVER SURFACE.
 E) A BERM MUST BE CONSTRUCTED NEAR THE WORKING FACE TO PREVENT RUNOFF FROM THE RECIRCULATED LEACHATE.
 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.

16. **SITE EQUIPMENT:** THE EQUIPMENT SHOWN BELOW IS THE MINIMUM EQUIPMENT THAT SHOULD BE USED AT THIS SITE. THE ACTUAL MANUFACTURER AND MODEL MAY VARY AS LONG AS THE EQUIPMENT SELECTED IS EQUIVALENT. ALL EQUIPMENT SELECTED SHALL BE IN GOOD WORKING CONDITION. THE EQUIPMENT SIZE AND QUANTITY WILL BE ADJUSTED UP OR DOWN AS REQUIRED TO HANDLE THE INCOMING WASTE STREAM.

MANUFACTURER	TYPE	MODEL	QUANTITY
CATERPILLAR	MOTOR GRADER	12G	1
CATERPILLAR	PAN	827	1
CATERPILLAR	STEEL WHEELED COMPACT	826c	1
CATERPILLAR	WATER TRUCK	--	1
CATERPILLAR	BULLDOZER	D8	1

17. **BACKUP EQUIPMENT:** ADDITIONAL EQUIPMENT IS AVAILABLE FROM LOCAL DEALERS OR OTHER LOCAL WASTE MANAGEMENT, INC.-OWNED LANDFILLS.

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.

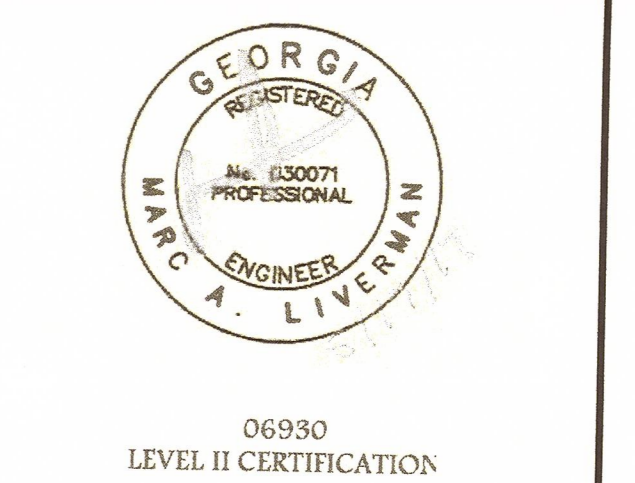
19. **AFTER HOURS DUMPING:** NO WASTE WILL BE ACCEPTED ON-SITE AFTER OPERATIONAL HOURS, UNLESS AN EMERGENCY SITUATION ARISES. EMERGENCY SITUATIONS ARE TO BE DETERMINED BY THE SOLID WASTE DIRECTOR WITH APPROVAL FROM THE GEORGIA REGIONAL OFFICE OF THE EPD. ALL AFTER HOURS DUMPING SHALL BE REPORTED TO THE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

NOTES:
 1. CONSTRUCTION QUALITY ASSURANCE PLAN IS CONTAINED ON SHEETS 46 - 48.

I HAVE REVIEWED THE INFORMATION PRESENTED IN THE DRAWING, AND IN MY PROFESSIONAL OPINION, ALL CONTAINMENT STRUCTURES ARE DESIGNED TO RESIST A MAXIMUM HORIZONTAL GROUND ACCELERATION OF 0.22g IN 250 YEARS.



ATLANTIC COAST CONSULTING, INC.
 9040 Executive Park Drive
 Knoxville, TN 37923
 865.531.9143
 www.atlcc.net



PROJECT:
PINE BLUFF SOLID WASTE MANAGEMENT FACILITY
 CHEROKEE COUNTY, GA



13089 EAST CHEROKEE DRIVE
 BALLGROUND, GA 30107
 770-479-2956

REVISIONS

0 - Initial Issue	12/8/00
1 - Added statements #54 & 55 per EPD comments	5/23/01
2 - Add'd narrative to #2	5/24/13
3 - CCR Management	4/5/17
4 - CCR Annual Ratio	5/17/17
5 - CCR Source	5/22/17

GEORGIA Environmental Protection Division Solid Waste Management Program
 MINOR MODIFICATION APPROVAL
 APPROVED BY: [Signature] DATE: 5/22/17

Drawn by: MAL Checked by: [Signature]

PROJECT NUMBER:
1002-415
 April 2017

OPERATIONAL PROCEDURES

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:

- 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.
- FINAL COVER/GRADING: A UNIFORM COMPACTED LAYER OF CLEAN EARTH COVER SHALL BE PLACED OVER THE FINAL LIFT OF WASTE NOT LATER THAN ONE MONTH FOLLOWING PLACEMENT OF SOLID WASTE WITHIN THAT LIFT. IN ADDITION TO THIS COVER, A 40 MIL HDPE GEOMEMBRANE, A DOUBLE SIDED DRAINAGE COMPOSITE AND AN 18 INCH LAYER OF PROTECTIVE / VEGETATIVE SOIL SHALL BE PLACED OVER THE WASTE. 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.
- VEGETATION METHODS: AFTER APPLICATION OF FINAL COVER, THE SITE WILL BE GRASSED IN ACCORDANCE WITH THE VEGETATIVE PLAN CITED IN ITEM 11 OF THE OPERATIONAL PROCEDURES SHEET (SHEET 43).
- 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.
- EQUIPMENT NEEDED: THE SITE EQUIPMENT DESCRIBED IN ITEM 14 OF THE OPERATIONAL PROCEDURES SHEET (SHEET 43) 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.
- 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. ANY ADDITIONAL STORMWATER CONVEYANCE MEASURES REQUIRED TO PROPERLY DRAIN THE FINAL COVER SHALL BE INSTALLED AT CLOSURE.
- 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.
- 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

THE FOLLOWING ASSUMPTIONS HAVE BEEN MADE IN THE FORMULATION OF THE COST ESTIMATE.

- THE AVERAGE SIZE OF CLOSURE AREA USED IS 14 ACRES.
 - COSTS ARE BASED ON THE CAP SYSTEM DEPICTED AS OPTION 1 ON SHEET 48.
 - COSTS ARE BASED ON RECENT CONTRACTOR PRICING ON PROJECTS OF SIMILAR NATURE.
- THE OWNER/OPERATOR OF THIS LANDFILL SHALL PROVIDE SUFFICIENT FINANCIAL ASSURANCE AT ALL TIMES TO COVER ALL CLOSURE AND POST-CLOSURE COST REQUIRED FOR THE AREAS ANNUALLY AND USED IN THE DETERMINATION OF THE VALUE REQUIREMENT OF THE POSTED FINANCIAL ASSURANCE MECHANISMS FOR THE SITE. ANY NEW CELL DEVELOPMENT SHALL BE RESTRICTED UNTIL AN UPDATED FINANCIAL ASSURANCE MECHANISM FOR THE SITE HAS BEEN SUBMITTED TO THE DIVISION TO INCLUDE THIS NEW AREA. THE CLOSURE COST SHALL BE DETERMINED BY MULTIPLYING THE UNIT CLOSURE COST PER ACRE BY THE NUMBER OF ACRES DEVELOPED AT THAT TIME. ANY DEVIATION OF THIS REQUIREMENT MUST BE APPROVED IN WRITING FROM THE DIVISION. A GEORGIA REGISTERED PROFESSIONAL ENGINEER SHALL CERTIFY TO EPD THE SIZE OF THE DEVELOPED, UNCLOSED, AREA. THE OWNER (PINE BLUFF LANDFILL) 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 PLACEMENT OF WASTE IN ANY NEWLY DEVELOPED AREAS AND SHALL BE ADJUSTED ANNUALLY FOR INFLATION.

A. MSW LANDFILL DISPOSAL AREAS:		
SOIL = 14 AC X 43560 SF/AC X 1.5 FT X CY/27 CF X \$4.00/CY		= \$ 135,520
40 MIL HDPE GEOMEMBRANE = 14 AC X 43560 SF/AC X \$ 0.40/SF		= \$ 243,936
DRAINAGE COMPOSITE = 14 AC X 43560 SF/AC X \$0.55/SF		= \$ 335,412
TOPSOIL LAYER = 14 AC X 43560 SF/AC X 1.5 FT X CY/27 CF X \$4.00/CY		= \$ 135,520
DIVERSION BERMS = 1770 LF X 5 EA X 91 SF X CY/27 CF X \$4.00/CY		= \$ 119,311
		\$ 969,699
B. GRASSING COSTS: TOTAL GRASSING COST INCLUDES AT LEAST 1,500 LBS/AC. OF FERTILIZER, 80 LBS/AC. OF SEED, AND 2.5 TONS/AC OF STRAW OR HAY		
COST = 14 AC X \$1,500/AC =		\$ 21,000
C. DRAINAGE STRUCTURES: ASSUMES STORMWATER FLUMES WILL BE REINSTALLED AFTER FINAL COVER IS INSTALLED AND THAT ASSOCIATED RIP RAP MUST BE REPLACED.		
DOWNDRAINS = 280 LF x \$25.00/LF =		\$ 7,000
RIP RAP = 1 EACH x \$200.00/EACH =		\$ 200
		\$ 7,200
D. SEDIMENT POND CLEANOUT: ASSUMES THE AMOUNT OF SILT TO BE REMOVED EQUAL TO THE ANNUAL AMOUNT OF SEDIMENT EROSION.		
AMOUNT OF SILT TO BE REMOVED = 14 AC X 134 CY/AC = 1,876 CY		
COST = 1,876 CY X \$2/CY =		\$ 3,752
E. REPAIR EROSION CONTROL: ASSUMES THAT APPROXIMATELY 50 PERCENT OF SILT FENCE MUST BE REPLACED.		
COST = 0.50 X 5000 FT X \$5/LF =		\$ 12,500
F. ENGINEERING AND SURVEYING		
QA/QC (MSW) 14AC X 43560 SF/AC X \$0.30/SF		= \$ 182,952
SURVEYING		= \$5,000
DESIGN		= \$50,000
		\$ 237,952
G. GAS EXTRACTION SYSTEM: ASSUMES THE FLARE & BLOWER BUILDING HAVE ALREADY BEEN IN OPERATION. FOR CLOSURE IT IS ASSUMED THAT 1 WELL PER 2 ACRES AND 100' OF EXTRACTION PIPING PER ACRE WILL BE INSTALLED. 7 EXTRACTION WELLS X \$5000/EA		
1400 LF X \$5/LF		= \$7,000
		\$42,000
TOTAL COST		\$ 1,294,103
COST/ACRE		\$ 92,435

EXAMPLE
IF SIZE OF DEVELOPED UNCLOSED AREA OF LANDFILL EQUALS 35 ACRES, CLOSURE COST FINANCIAL ASSURANCE REQUIRED WOULD BE 35 ACRES X \$92,435 = \$3,235,225.

POST-CLOSURE CARE

THE POST-CLOSURE CARE PLAN DESCRIBES THE STEPS THAT WILL BE TAKEN FOR THIRTY YEARS AFTER COMPLETION OF CLOSURE OR AS REQUIRED TO ADEQUATELY PROTECT HUMAN HEALTH AND THE ENVIRONMENT. THE PERSON WHO CAN BE CONTACTED ABOUT THE FACILITY DURING POST-CLOSURE CARE IS:

GENERAL MANAGER
13809 EAST CHEROKEE DRIVE
BALL GROUND, GEORGIA 30107

POST-CLOSURE CARE SHALL INCLUDE THE FOLLOWING:

- 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:
 - THE ACTIVITIES WILL NOT INCREASE THE POTENTIAL THREAT TO HUMAN HEALTH OR THE ENVIRONMENT; OR
 - THE ACTIVITIES ARE NECESSARY TO REDUCE A THREAT TO HUMAN HEALTH OR THE ENVIRONMENT.
- SURFACE AND GROUNDWATER MONITORING SCHEDULE: THE SAMPLING AND ANALYSIS PROGRAM IDENTIFIED IN THE WATER MONITORING PLAN WILL BE MAINTAINED AND OPERATED THROUGHOUT THE POST-CLOSURE CARE PERIOD. AFTER FIVE YEARS, AND AT THE END OF 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.
- METHANE GAS MONITORING: THE SAMPLING AND ANALYSIS PLAN 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.
- LEACHATE COLLECTION/TREATMENT/DISPOSAL SYSTEMS OPERATION SCHEDULE: THE LEACHATE COLLECTION SYSTEM WILL BE INSPECTED AND MAINTAINED QUARTERLY TO ENSURE PROPER OPERING. THE LEACHATE WILL CONTINUE TO BE SAMPLED AND ANALYZED FOR THE PARAMETERS AND AT THE FREQUENCY STATED IN ITEM 13 OF THE OPERATIONAL PROCEDURES SHEET (SHEET 43). THE LEACHATE COLLECTION SYSTEM WILL BE MAINTAINED FOR A MINIMUM OF 30 YEARS OR UNTIL THE LEACHATE DOES NOT PROVIDE A CONTAMINATION THREAT TO HUMAN HEALTH OR THE ENVIRONMENT.
- 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.
- SEDIMENT BASIN MAINTENANCE/CLEANOUT: THE SEDIMENT PONDS SHALL BE INSPECTED QUARTERLY WHILE IN SERVICE. THE SEDIMENT PONDS SHALL BE KEPT IN SERVICE AND PROPERLY MAINTAINED UNTIL AN ADEQUATE VEGETATIVE COVER HAS BEEN ESTABLISHED AND EPD APPROVES THE REMOVAL OF THE SEDIMENT PONDS. FOR THE POST CLOSURE CARE COST ESTIMATE, IT IS ASSUMED THAT THE SEDIMENT PONDS ARE CLEANED ONCE PER YEAR FOR THE FIRST THREE YEARS AFTER CLOSURE THEN ONCE EVERY FOUR YEARS.
- 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 FENCING AROUND THE SITE.
- 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, THE LINER, OR CONTAMINATED SOILS, THE OWNER OR OPERATOR MUST REQUEST AND RECEIVE WRITTEN APPROVAL FROM EPD.
- THE OWNER AND/OR OPERATOR WILL BE RESPONSIBLE FOR CONDUCTING ALL MONITORING ACTIVITIES IN ACCORDANCE WITH THE APPROVED PLAN.
- THE OWNER AND/OR OPERATOR WILL BE RESPONSIBLE FOR ALL MOWING ACTIVITIES ON THE SITE.
- 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 ITEM 11 OF THE OPERATIONAL PROCEDURES SHEET (SHEET 43).
- AT THE CONCLUSION OF POST CLOSURE CARE ACTIVITIES, A GEORGIA REGISTERED PROFESSIONAL ENGINEER WILL SUBMIT A LETTER TO EPD VERIFYING THAT POST CLOSURE CARE ACTIVITIES HAVE BEEN CONDUCTED IN ACCORDANCE WITH THE APPROVED POST CLOSURE CARE PLAN.

ANNUAL POST-CLOSURE CARE COST ESTIMATE

- LEACHATE DISPOSAL: LEACHATE WILL BE DISCHARGED TO A PRIVATE WASTEWATER TREATMENT FACILITY. ASSUMES A POST CLOSURE LEACHATE GENERATION RATE OF 10 GALLONS PER ACRE PER DAY(GPAD) FOR THE FIRST 15 YEARS AND 5 GPAD FOR SECOND 15 YEARS.

(1ST 15 YRS.) 398 ACRES X 10 GPAD X \$0.065/GALLON X 365 DAYS/YEAR =	\$ 94,425
(2ND 15 YRS.) 398 ACRES X 5 GPAD X \$0.065/GALLON X 365 DAYS/YEAR =	\$ 47,212
 - ENVIRONMENTAL MONITORING: ASSUMES THE MONITORING PROGRAMS SET UP IN THE D&O PLAN ARE CONTINUED.

SEMIANNUAL SURFACE AND GROUNDWATER MONITORING 2 X \$750/LOCATION X 39 LOCATIONS =	\$ 58,500
LEACHATE MONITORING	= \$ 1,000
QUARTERLY METHANE GAS MONITORING 4 X \$20/LOCATION X 50 LOCATIONS =	\$ 4,000
ROUTINE INSPECTION/REPAIRS: ASSUMES THE REPAIR OF TWO ACRES 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 IN ITEM 11 "VEGETATIVE PLAN" OF THE OPERATIONAL PROCEDURES SHEET (SHEET 43) AND 400 LINEAR FEET OF SILT FENCE.	\$ 63,500
REPAIR COST FOR: 2 AC X 43,560 SF/AC X 1 FT X CY/27CF = 3,226 CY FINAL COVER: 3,226 CY X \$4.00/CY =	\$ 12,904
SILT FENCE: 400 LF X \$5/LF = \$2,000 INSPECTION COST: 4 X \$500/EACH =	\$ 2,000
	\$ 16,904
 - SEDIMENT POND CLEANOUT: ASSUMES THE SILT PONDS WILL NEED TO BE CLEANED OUT ONCE PER YEAR FOR THE FIRST THREE YEARS AFTER CLOSURE, THEN ONCE EVERY 4 YEARS.

398 AC. X 134 CY/AC. = 53,332	
N X $\frac{(53,332 \text{ CY} \times 3 \text{ YR} + 17,777 \text{ CY} \times 27 \text{ YRS})}{30 \text{ YRS}}$ X \$2/CY =	\$ 34,665
 - MOWING: 398 AC. X \$25/AC. X 2 CUTS/YR.

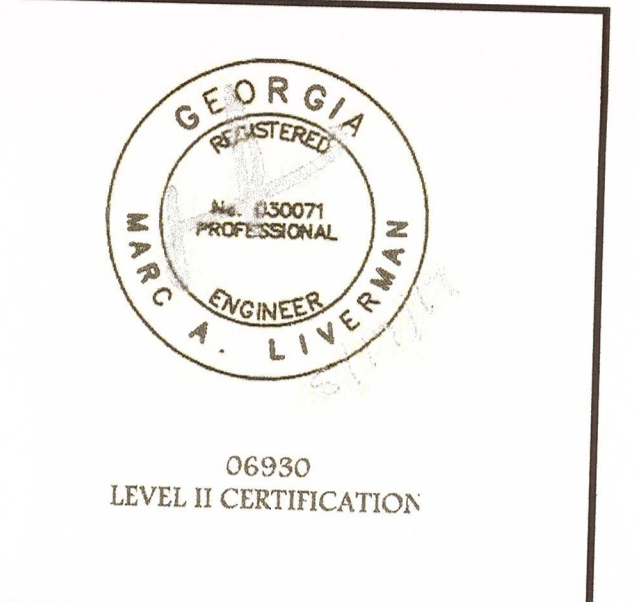
	\$ 19,900
--	------------------
- | | |
|--------------------------|------------|
| (1ST 15 YRS.) TOTAL COST | \$ 229,394 |
| (2ND 15 YRS.) TOTAL COST | \$ 182,181 |

30 YEAR CLOSURE & POST-CLOSURE CARE COST ESTIMATE

A. TOTAL POST-CLOSURE COST (1ST 15 YRS.)	\$ 6,881,820
B. TOTAL POST-CLOSURE COST (2ND 15 YRS.)	\$ 5,465,430
C. CLOSURE COST	\$ 1,294,103
	\$ 13,641,353
SUBTOTAL 30 YEAR COST	\$ 13,641,353
5% CONTINGENCY	\$ 682,068
TOTAL 30 YEAR COST	\$ 14,323,421

GEORGIA
Environmental Protection Division
Solid Waste Management Program
MINOR MODIFICATION APPROVAL
SOLID WASTE PERMIT NO. 028-089,004J
APPROVED BY: DATE: 5/22/12

ACC
ATLANTIC COAST
CONSULTING, INC.
9040 Executive Park Drive
Knoxville, TN 37923
865.531.9143
www.atficc.net



PROJECT:
PINE BLUFF
SOLID WASTE
MANAGEMENT
FACILITY
CHEROKEE COUNTY, GA



13809 EAST CHEROKEE DRIVE
BALLGROUND, GA 30107
770-479-2936

REVISIONS

0 - Initial Issue	12/8/00
1 - Revised Closure and Post Closure Costs; Inflation Note	3/23/01
2 - Added PE Certification of Developed Area	4/23/01
3 - CCR Monitoring Cost	4/5/12
4 - Added 5% Contingency	5/22/12

Drawn by: MAL Checked by:

PROJECT NUMBER:
1002-415
April 2017

CLOSURE/POST CLOSURE CARE PLAN

SECTION 3.3 – GEOMEMBRANE

Material

The geomembrane will include both smooth and textured High Density Polyethylene (HDPE) for the base liner and final cover and AGRU/AMERICA SUPER GRIPNET or equivalent for the final cover. Required HDPE properties are specified in Table 3.4.

Table 3.4

REQUIRED PHYSICAL PROPERTIES OF HDPE GEOMEMBRANE LINER AND SEAMS				
Property	Test Method	40-mil (1.5mm)	60-mil (1.5mm)	AGRU
Minimum Thickness, mil. (mm)	ASTM D 5994	40 (1.00) *	60 (1.50)	50 (1.25) *
Minimum Sheet density, g/cm ³	ASTM D 1505/D 792 **	0.94	0.94	0.94
Minimum Tensile Properties (each direction) (1)	ASTM D 6693			
Strength at Yield, lb/in.(N/mm)		84 (14.7)	126 (22.1)	110
Elongation at Yield, %**		12/10	12/10	10
Strength at Break, lb/in.(N/mm)**		152/48 (26.6/8.4)	228/72 (39.9/12.6)	120
Elongation at Break, %**		560/100	560/100	100
Minimum Puncture Resistance, lbs. (N)	ASTM D4833	48 (213)	72(320)	70
Carbon Black Content, Allowable Range in %	ASTM D 1603 (3)	2.0-3.0	2.0-3.0	2.0-3.0
Carbon Black Dispersion, Acceptance Levels	ASTM D 5596	note (4)	note (4)	note (4)
Tear Resistance, lbs.	ASTM D 1004	28	42	35
Stress Crack Resistance, hrs. (2)	ASTM D 5397	300	300	300
OIT (standard) or (5), min.	ASTM D 3895	100	100	100
OIT (high pressure) (5) , min.	ASTM D 5885	400	400	N/A
Oven Aging (standard) or (5) (6) , %	ASTM D 5721/D 3895	55	55	N/A
Oven Aging (high pressure) (5) (6), %	ASTM D 5885	80	80	80
UV Resistance (high pressure) (7) (8), %	GRI GM11 ASTM D5885	50	50	50
Asperity Height, mil	GRI GM12	N/A	N/A	16

* Required property for final cover geomembrane is Minimum Average Roll Value (MARV), rather than minimum value.
** First value represents minimum value for smooth sheet; second value represents minimum value for textured sheet.

Values have been normalized for gauge.

(1) 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.
(2) P-NCTL test is not appropriate for testing geomembranes with textured or irregular rough surfaces. Test shall be conducted on smooth edges of textured rolls or on smooth sheets made from the same formulation as being used for textured sheet materials. The yield stress used to calculate the applied load for the SP-NCTL test shall be the manufacturer's mean value via MQC testing.
(3) Other methods such as D421B (muffle furnace) or microwave methods are acceptable if an appropriate correlation to D1603 (tube furnace) can be established.

(4) Carbon black dispersion (only near spherical agglomerates) for 10 different views:

- 9 in Categories 1 or 2 and 1 in Category 3
- (5) The manufacturer/contractor has the option to select either one of the OIT methods listed to evaluate the antioxidant content in the geomembrane, provided testing is consistent throughout the entire project.
- (6) It is also recommended to evaluate samples at 30 and 60 days to compare with the 90 day response.
- (7) The condition of the test should be 20 hr. UV cycle at 75 degrees C followed by 4 hr condensation at 60 degrees C.
- (8) UV resistance is based on percent retained value regardless of the original HP-OIT value.

Submittals

The Geomembrane Installer will submit the following as obtained from the Geomembrane Manufacturer to the Owner or his designee. All of the submittals will be reviewed and retained by the CQA Engineer.

- The origin, identification and production date of the resin.
- A copy of the quality control certificates issued by the resin supplier.

Reports on the tests conducted by the manufacturer to verify the quality of the resin used. At a minimum, these tests shall include those listed in Table 3.5.

Table 3.5

Properties	Unit	Specified Value	Test Method	Minimum Test Frequency
Density	g/cm ³	> 0.932	ASTM D 1505 or D 792	Once per 200,000 lbs. of resin
Melt Flow Index	g/10 min	< 1.0	ASTM D 1238	Once per 200,000 lbs. of resin

Reports on the tests listed in Table 3.6 and conducted by the manufacturer to verify the quality of the finished geomembrane sheet.

Table 3.6

Properties	Test Method	Frequency
Density	ASTM D 1505 or D 792	Every 200,000 lbs.
Thickness	ASTM D 5199 or 5994	Each Roll
Tensile Properties*	ASTM D 6693	Every 20,000 lbs.
Tear Resistance	ASTM D 1004, Die C	Every 45,000 lbs.
Environmental Stress Crack Resistance	ASTM D 5397	Once per 200,000 lbs. of resin
Puncture Resistance	ASTM D 4833	Every 45,000 lbs.
Carbon Black Content	ASTM D 1603	Every 20,000 lbs.
Carbon Black Dispersion	ASTM D 5596	Every 45,000 lbs.
OIT (standard)	ASTM D 3895	Every 200,000 lbs.
OIT (high pressure)	ASTM D 5885	Every 200,000 lbs.
Oven Aging (standard) or Oven Aging (high pressure)	ASTM D 5721 ASTM D 5885	Per Formulation Per Formulation
UV Resistance (high pressure)	GRI GM11	Per Formulation
Asperity Height	GRI GM12	Every 2nd Roll

- * Tensile properties consist of yield strength and elongation at yield and break, and break strength, in both machine and cross-direction.
- A statement that no reclaimed or recycled polymer is added to the resin except that which is generated in the manufacturer's own plant from the same raw material.
- A material properties sheet including, at a minimum, all specified properties, measured using test methods indicated in Table 3.4.
- A certification that all property values being guaranteed by the Geomembrane manufacturer are given in the properties sheet. The Geomembrane Installer will submit the following to the Owner or his designee prior to the installation:
 - Qualifications of Geomembrane Installer Superintendent and Foreman
 - Resumes of Geomembrane Contractor field crew
 - Six sets of geomembrane panel layout drawings

Quality Assurance

The CQA Engineer or his representative will obtain random samples (one per 100,000 square feet) of geomembrane prior to installation. Samples must be representative of the material supplied and exclude the outer wrap of geomembrane if signs of scuffing or other damage is observed. Samples should be full roll width and at least 2 feet long. Samples will be submitted for conformance testing at a laboratory selected by, and paid by, the Owner. The following conformance tests shall be performed using the methods in Table 3.4.

- Thickness
- Density
- Tensile Properties
- Carbon Black Content

Conformance test results shall meet the requirements of Table 3.4. The thickness of any geomembrane panel shall be determined by making five individual measurements of thickness along the long edge of the panel. All five measurements must meet the minimum requirements listed in Table 3.4.

Installation

No horizontal seams will be allowed on slopes greater than 10 percent or within five feet of the toe or crest of the slope.

Only those geomembrane panels which are to be seamed together in one day shall be unrolled. Panels should be positioned with the following minimum overlaps:

- Extrusion welded seams: 3 inches
- Fusion weld seams: 4 inches

After panels are in place, as many wrinkles as possible shall be removed. Liner should be allowed to "relax" before beginning field seaming. Sandbags or other temporary weights shall be used as necessary during seaming.

No support equipment used by any contractor shall be allowed on the geomembrane. Personnel working on the geomembrane liner shall not smoke, wear damaging shoes, or engage in any activity which damages the geomembrane.

The anchor trench will be backfilled and compacted by the Contractor to at least 95 percent of the maximum dry density (ASTM D 698). Care should be taken when backfilling the trench to prevent any damage to the geomembrane.

Test Seams

The Geomembrane Installer will perform a test seam on fragment pieces of geomembrane liner to verify that seaming conditions are adequate. Test seams will be made at the beginning of each seaming period and at least twice daily for each seaming apparatus used that day. Each seaming technician will make at least one test seam each day worked. The test seam sample should be approximately five feet long by one foot wide. The CQA Engineer will cut six sample coupons from the center 3 feet of the test sample. The date, time, and equipment, as well as ambient temperature, name of seamer, and pass or fail description will be recorded for each test seam.

Specimens from each sample will be tested in peel and shear (ASTM D4437). Film Tear Bond (FTB) type failures will be the criterion for qualification of the test seam. Testing will be performed in the field by the Geomembrane Installer under full time observation by the CQA Engineer or his representative.

Three specimens from each sample shall be tested for Bonded Seam Strength using ASTM D4437 as modified in NSF Standard Number 54 using 1-inch wide specimens and a strain rate of 2-inches per minute. The load at failure shall be at least 95 percent of the yield strength (in pounds per width) of the parent geomembrane. Failures in grind areas of extrusion seams may require resampling and retesting.

At least three specimens from each sample shall be tested for Peel Adhesion using ASTM D4437 as modified in NSF Standard Number 54 using a minimum of 1-inch wide specimens and a strain rate of 2-inches per minute. The load at failure shall be 82 percent of the yield strength of the parent geomembrane (in pounds per inch width) or greater. All test seams must pass the field testing before production field seaming is performed by the Geomembrane Installer.

Non-Destructive Testing

The Geomembrane Installer is responsible for the completion of non-destructive testing of the entire length of all field seams, verifying that seal seam is air tight. Testing can be a vacuum test, pressure test, or approved equal and will be described by the Geomembrane Installer and approved by the CQA Engineer in advance. Non-destructive testing will be monitored by the CQA Engineer or his representative on a full time basis.

Destructive Testing

Destructive seam tests will be performed to evaluate seam strength. Testing will be performed as the seaming work progresses, not at the completion of all field seaming. Destructive seam samples will be laboratory tested by the CQA Engineer. Testing frequency shall average one sample per 500 linear feet of field seam.

Test samples shall be of sufficient size to provide the following:

- one sample to the CQA Engineer
- one sample to the Contractor
- one sample to the Owner.

A minimum of five peel specimens will be tested for each sample in accordance with ASTM D6392. At least five specimens from each sample will be tested for bonded shear strength in accordance with ASTM D6392. These test samples shall be taken at the same locations as the contractor's destructive testing samples. Five peel tests will be performed on each side of a double-wedge fusion seam.

The load and elongation at failure will be measured for each specimen. FTB is the qualifying criterion. However, a maximum of one non film-tear bond failure out of five tests is acceptable, provided the non film-tear bond specimen meets the strength requirements. The CQA Engineer will describe the type of failure for each specimen and record the presence of any disbonding, delamination, foreign material in the bond area, etc.

As a general guideline for seams in HDPE, the bonded shear strength should equal or exceed 95 percent of the yield strength (in pounds per unit width) of the parent material. If a shear specimen exhibits a failure within the grinding or preparation area adjacent to the seam that falls below 95 percent of the parent material strength, the CQA Engineer may require additional seam repair. The elongation of the specimen at failure should be a minimum of 50 percent when testing in shear.

As a general guideline for seams in HDPE, the peel adhesion should exceed 62 percent of the sheet yield strength of the parent material. If a peel specimen fails in the grinding or preparation area, this should be clearly noted on the test report. Both sides of the double-wedge fusion seam must pass the testing requirements to constitute a passing test.

SECTION 3.4 – LEACHATE COLLECTION SYSTEM

Option 1 – Granular Material

The granular material shall consist of material, natural or manufactured sand, that is substantially free of aggregate, rocks, debris, plant material or other solid material larger than 1/4-inch in diameter, and no material with sharp edges. This material shall have a minimum permeability of 1x10⁻⁴ cm/sec. Granular material shall be placed in a single loose lift of sufficient thickness to obtain two feet of final depth, and in a manner that minimizes possible damage to the liner system. After installation is complete, equipment operations on top of the Leachate Collection Layer shall be restricted.

Samples will be collected at the frequency given in Table 3.7.

Table 3.7

Granular Drainage Blanket Testing		
Testing	Test Method	Frequency
Grain Size (Verify 1/4" Maximum Size Down to No. 200 Sieve if sand is used)	ASTM D 422	1,500 yd3
Permeability (if #89 Stone or sand is Used)	ASTM D 2434	3,000 yd3

If tests indicate that in-place material does not meet the requirements, the material will be removed, replaced and retested.

Option 2 – Stone and Geotextile

Material
The stone shall consist of clean, non-carbonate earth material, natural or manufactured, that is substantially free of debris, plant or organic material. Material shall conform to the Georgia Department of Transportation Standard Specifications for Construction of Roads and Bridges, 800.01, for No. 89 Stone, Group III. The material shall have a minimum permeability of 1x10⁻⁴ cm/sec. Samples shall be collected and tested in accordance with Table 3.7.

The 16 oz./yd² cushion geotextile shall be a non-woven, needle punched fabric constructed from 100 percent polypropylene or polyester. The fabric shall be uniform and homogeneous in appearance and composition, and shall be free from tears, cuts, or any defect that may affect serviceability. The 16 oz./yd² cushion geotextile fabric shall meet the in Table 3.8.

Table 3.8

Property	Test Method	Required Geotextile Properties	
		16 oz. Geotextile Values (Minimum)	14 oz. Geotextile Values (Minimum)
Weight	ASTM D 3776	15.5 oz/sy	13.5 oz/sy
Grab Tensile Strength	ASTM D 4632	400 pounds	200 pounds
Grab Elongation	ASTM D 4632	50%	50%
Trapezoidal Tear Strength	ASTM D 4533	135 pounds	110 pounds
Puncture Resistant	ASTM D 4833	160 pounds	140 pounds
Mullen Burst Strength	ASTM D 3786	675 psi	400 psi

Cushion geotextile shall be deployed prior to placement of the leachate collection stone. The geotextile fabric shall be handled in such a manner as to ensure it is not damaged in any way.

Leachate collection stone shall be placed in a single loose lift of sufficient thickness to obtain two feet of final depth, and in a manner that minimizes possible damage to the liner system. After installation is complete, equipment operations on top of the Leachate Collection Layer shall be restricted.

Option 3 – Drainage Geocomposite (Base Leachate Collection System and Final Cover)

The geocomposite shall be manufactured by heat bonding a non-woven geotextile to both sides of an HDPE geonet. No burn through of the geotextile shall be permitted. No glue or adhesive shall be permitted. The geonet component of the geocomposite shall be comprised of two or more overlapping extruded polyethylene strands, designed and manufactured specifically for the purpose of conveying fluids and to facilitate drainage. The following properties, test methods and test frequencies shall be used by the manufacturers and quality assurance manager:

GEONET PROPERTY	TEST METHOD	MANUFACTURER QC TEST FREQUENCY	CONFORMANCE QA TEST FREQUENCY	REQUIRED TEST VALUE
DENSITY (MIN. AVE.)	ASTM D792 OR ASTM D1505	1 PER 100,000 SF	1 PER 250,000 SF	0.940 g/cc
COMPRESSIVE STRENGTH (MIN. AVE.)	ASTM D6364	1 PER 100,000 SF	1 PER 250,000 SF	20,000 PSF
CARBON BLACK CONTENT (RANGE)	ASTM D1603(2)	1 PER 100,000 SF	1 PER 250,000 SF	2-3%

GEOCOMPOSITE PROPERTY	TEST METHOD	MANUFACTURER QC TEST FREQUENCY	CONFORMANCE QA TEST FREQUENCY	REQUIRED TEST VALUE
PEEL STRENGTH (MIN. AVE.)	ASTM D7005	1 PER 100,000 SF	1 PER 250,000 SF	0.75 LB/IN
TRANSMISSIVITY(1) (MIN.)	ASTM D4716	1 PER PROJECT	1 PER PROJECT	(SEE NOTE 1)

Notes:

- Transmissivity shall be measured in a 12-inch x 12-inch box with adjacent conditions matching detail, 100 hour duration and 0.02 gradient. The value shall be at least 1.56 x 10⁻³ m³/sec at 858 psf, 1.04 x 10⁻³ m³/sec at 3,540 psf, 9.92 x 10⁻⁴ m³/sec at 5,328 psf and 3.05 x 10⁻⁵ m³/sec at 25,220 psf.
- Other methods such as D421B (muffle furnace) or microwave methods are acceptable if an appropriate correlation to D1603 (tube furnace) can be established.

The geotextile fabric component of the geocomposite shall be nominal 8 oz./sy non-woven, needle punched fabric constructed from 100 percent polypropylene or polyester. The geotextile component shall have a minimum puncture resistance of 70 pounds. The drainage geocomposite shall be handled in such a manner as to ensure it is not damaged in any way.

On slopes, the geocomposite shall be anchored in the anchor trench and rolled down the slope in such a manner as to continually keep the material in tension. In the presence of wind, material shall be weighted with sandbags until protective soil cover is installed. Care shall be taken to assure that the underlying HDPE geomembrane is not damaged during placement of the drainage geocomposite.

Option 3 – Protective Cover Layer

The protective cover layer shall consist of clean earth material that contains no particles greater than 2 1/2-inches in the maximum dimension. Material for the Protective Cover Layer shall be placed in a single loose lift of sufficient thickness to obtain two feet of final depth, and in a manner that minimizes possible damage to the underlying geosynthetics. A typical method would be to place the material with equipment exerting a low contact stress such that the equipment is always on at least two feet of material. The actual placement method used shall be approved by the CQA Engineer prior to construction. After installation is complete, equipment operations on top of the Protective Cover Layer shall be restricted.

Care shall be taken to assure that stones, mud, and dirt are not entrapped under the geocomposite during placement. Adjacent panels of drainage geocomposite shall be overlapped and joined in compliance with the manufacturer's recommendations.

The rock toe drain shall replace the last ten feet of Protective Cover material in the low end of the cell and shall be placed across the entire width of the cell. Care shall be taken to assure that the underlying geosynthetics are not damaged during placement of the rock toe.

Option 3 – Rock Toe Drain

The rock toe drain shall conform to the Georgia Department of Transportation Standard Specifications for Construction of Roads and Bridges, 800.01 for No. 57 Stone, Group II.

Option 3 – Extra Geomembrane Layer

The extra layer of 60 mil geomembrane to be placed beneath the drainage geocomposite in the area of the rock toe drain shall be installed and inspected as described in Section 3.3 of this CQA Plan with one addition. The extra layer of geomembrane shall be welded to the underlying primary geomembrane liner.

Option 3 – Cushion Geotextile

The 14 oz./yd² cushion geotextile around the rock toe drain shall be a non-woven, needle punched fabric constructed from 100 percent polypropylene or polyester filaments. The fabric shall be uniform and homogeneous in appearance and composition, and shall be free from tears, cuts, or any defect that may affect serviceability. The 14 oz./yd² cushion geotextile fabric shall meet the criteria in Table 3.8.

Final Cover Option 4 – Geotextile

The 8 oz./yd² geotextile for final cover option 4 shall be a non-woven, needle punched fabric constructed from 100 percent polypropylene or polyester filaments. The fabric shall be uniform and homogeneous in appearance and composition, and shall be free from tears, cuts, or any defect that may affect serviceability, and shall have a minimum puncture resistance of 70 pounds.

SECTION 3.5 – GRAVEL AROUND LEACHATE PIPE

Gravel placed around the leachate collection pipe shall be natural or manufactured non-carbonate material conforming to size No. 4 per ASTM.

SECTION 3.6 – LEACHATE COLLECTION LINES

The Leachate Collection Line pipe will be High Density Polythylene (HDPE) with a SDR of 17 or 11) and will conform to ASTM F714 and the project specifications. The pipe installer will submit the manufacturer's certificate of compliance to the Owner or his designee prior to installation. The Owner requires certified lab data from the manufacturer to verify the physical properties of the materials supplied. The CQA Engineer will observe the pipe for cracks, foreign inclusions, and other deleterious defects.

The pipe shall be installed so that perforations are not located directly at the pipe invert. Sections of the polyethylene pipe and fittings shall be joined into continuous lengths on the job site above ground. The joining method shall be the butt fusion method and shall be performed by qualified persons and in strict accordance with the pipe manufacturer's recommendations. The butt fusion equipment used in the joining procedures shall be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, temperature requirements, alignment and fusion pressures. Fused segments of polyethylene pipe shall be handled so as to avoid damage to the pipe.

As directed by the Engineer, Hydrostatic Testing shall be performed on all non-perforated HDPE leachate force main piping. The hydrostatic test pressures shall be 50 psi. The pressure shall be maintained within a maximum variation of 5 percent during the entire leakage test. Leakage measurements shall not be started until a constant test pressure has been established. The test shall be conducted for a minimum of six hours.

SECTION 3.6 – 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 undrained for 24 hours and shear at 0.04 in/min with undrained condition. The conditions for the geomembrane and the geocomposite or geotextile vs the protective cover material as well as the geomembrane vs the geocomposite or geotextile 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, 52 psi and 104 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 requirements.

SECTION 4 – CERTIFICATION

A Professional Engineer registered in the State of Georgia will provide certification that the liner and leachate collection system are constructed according to the approved plans and CQA program.

As each cell or phase is constructed, a CQA Report will be submitted to the EPD with the Registered Engineer's certification that the cell or phase was constructed according to approved permit plans. The following will also be submitted:
* A summary of construction, sampling and testing methods, and recommendations.
* Summary of Geotechnical Laboratory test data.

- Copies of daily field reports.
- Copies of Subgrade Acceptance Forms signed by the Geomembrane Installer.
- As-built drawings indicating the elevations of the completed subgrade prior to liner base placement, the top of the completed liner base, and the top of the completed leachate collection system.
- As-built drawing for the geomembrane liner shall include a panel payout locating roll numbers of HDPE liner material, required destructive tests, required repairs to the liner due to defects, punctures, or failed tests. Along with this as-built, the names of the seaming crew and the seaming machine used for each seam shall be submitted.
- A summary of all test data for soils, including failures, and geosynthetic testing shall be submitted in the final report. Additionally, photographs of the project will be made available for review, if requested by EPD.

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6930
LEVEL II CERTIFICATION

PROJECT:

PINE BLUFF SOLID WASTE MANAGEMENT FACILITY

CHEROKEE COUNTY, GA

WASTE MANAGEMENT

13089 EAST CHEROKEE DRIVE
BALLGROUND, GA 30107
770-479-2936

REVISIONS	
0 - Initial Issue	12/8/00
1 - Revised Drainage Geocomposite	
Fabric	3/27/03
2 - Revised Specifications and Testing Standards	9/23/03
3 - Revised Protective Soil Cover Specifications per EPD	7/13/06
4 - Geomembrane Specifications & Testing Standards	9/25/06
5 - CCR Management	4/3/17

GEORGIA
Environmental Protection Division
Solid Waste Management Program

MINOR MODIFICATION APPROVAL

COAL COMBUSTION RESIDUAL GROUNDWATER, SURFACE WATER AND UNDERDRAIN MONITORING ANALYTE REQUIREMENTS

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.

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

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 MONITORING AND CONTAMINANT FATE AND TRANSPORT. I FURTHER 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(1)2.(b)].


EVAN B. PERRY
GEORGIA P.G. REGISTRATION NO. 1744



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PROJECT:

PINE BLUFF SOLID WASTE MANAGEMENT FACILITY


CHEROKEE COUNTY, GA



13089 EAST CHEROKEE DRIVE
BALLGROUND, GA 30107
770-479-2936

REVISIONS

0 - Initial Issue	12/8/00
1 - CCR Management - Added Sheet 50A	4/5/17
2 - CCR Monitoring	5/17/17

GEORGIA
Environmental Protection Division
Solid Waste Management Program
MINOR MODIFICATION APPROVAL
SOLID WASTE PERMIT NO. 028-039D(SL)
APPROVED BY:  DATE: 5/22/17

Drawn by: JLY Checked by: 

PROJECT NUMBER:

I002-415

April 2017

GROUNDWATER MONITORING PLAN

Sheet 50A

RECEIVED
MAY 19 2017
SOLID WASTE MANAGEMENT PROGRAM

DESIGN AND OPERATING PLAN
WASTE PROCESSING
AND
SOLIDIFICATIONS/STABILIZATION AREA

Developed For:

USA Waste Services, Inc.
Pine Bluff Solid Waste Management Facility
Permit No. 028-039 D(SL)

DESIGN AND OPERATING PLAN

1. PROGRAM OVERVIEW

Solidification removes free liquids. It also prevents dissolution and loss of waste constituents by either physically absorbing mobile constituents and/or structurally isolating the constituents in a solid, crystalline or polymeric matrix in such a manner that the resulting by-product is an easily manageable solid.

The stabilization/solidification area ("Area") to be constructed and utilized at the Pine Bluff facility is a fixed, concrete and/or steel structure to perform "batch" type treatment of bulk liquids and wastes that fail the paint filter test. The area consists of a concrete or steel treatment basin, unloading ramp with containment curbing, unloading/transfer area and bulk agent/reagent storage area. To limit the amount of direct rainfall entering the basin, it will be covered.

Utilization of this facility by USA Waste Services, Inc. at the Pine Bluff facility, (Georgia Department of Natural Resources Environmental Protection Division ("EPD") Permit No. 028-039 D(SL) will allow the facility to accept liquid wastes and materials that fail EPA Method 9095 (Paint Filter Test). Further, this area will provide an avenue to mix fine particulate wastes with landfill leachate to control airborne particulate wastes with landfill leachate to control airborne particulate matter emissions.

Construction and operation of the Area is consistent with current land use zoning, as well as conforming to current Circular 14 criteria (on file at EPD).

2. TREATMENT PROCESS

Treatment of wastes containing free liquids and bulk liquids will be achieved by converting these wastes into a stable landfillable material. This stabilized material will be of suitable quality that will enable the material to pass the "Paint Filter Test". This will be obtained by introducing suitable bulking agents and solidification reagents to the wastes and then mechanically mixing to form a homogeneous mixture. Sufficient mixture time will be allowed to allow the mixture to properly hydrate.

2.1. Process Description

The solidification/stabilization process utilized is a "batch type" system. In such a system, a certain volume of waste is introduced into an impermeable basin of known volume and treated. Once treated the stabilized contents of the basin are removed before the introduction of the next batch of waste destined for treatment. The system is designed and operated so that the flow of waste into the basin is controlled at all times.

The bulking agent(s) and reagent(s) will be added to the waste material and mixed mechanically (via backhoe or trackhoe) until thoroughly combined. The mixture will then be left for a short period of time in the basin to conclude that hydration has taken place. The mixture will then be removed and placed in the curing and loading area.

2.2. Bulking Agents

BULKING AGENTS SUCH AS CLAY RICH SOIL, FINE PARTICULATE WASTE MATERIALS, WOOD ASH, AUTO SHREDDER RESIDUE (AKA "AUTO FLUFF"), AND SAWDUST MAY BE PERIODICALLY UTILIZED IN CONJUNCTION WITH SOLIDIFICATION REAGENTS DURING THE STABILIZATION PROCESS. NO CCR WASTES WILL BE USED AS A BULKING AGENT.

2.3. Solidification Reagents

The system will typically utilize cement kiln dust, fly ash or portland cement in the treatment process. NO CCR WASTES WILL BE USED AS A SOLIDIFICATION REAGENT.

A typical analysis for each of these proposed reagents is as follows:

Analysis of Typical Cement Kiln Dust	
Constituent	Concentration (% by Weight)
Silicon Dioxide	17.00
Aluminum Oxide	4.70
Iron Oxide	2.70
Calcium Oxide	53.90
Magnesium Oxide	0.90
Sulfur Trioxide	6.20
Potassium Oxide	0.71
Chlorine	<0.10

Analysis of Typical Fly Ash	
Constituent	Concentration (% by Weight)
Silicon Dioxide	47.1
Aluminum Dioxide	18.2
Iron Oxide	19.2
Calcium Oxide	7.0
Magnesium Oxide	1.1
Sodium and Potassium Oxide	3.95
Sulfur Trioxide	2.8

Analysis of Typical Portland Cement	
Constituent	Concentration (% by Weight)
Silicon Dioxide	20.91
Aluminum Oxide	5.63
Ferric Oxide	2.44
Calcium Oxide	65.35
Magnesium Oxide	1.03
Sulfur Trioxide	3.01
Insoluble Residue	0.21

2.4. Reagent Chemistry

The stabilization/solidification process involves several physical and/or chemical reaction mechanisms:

- Hydration of cementitious materials in the reagents
- Absorption of the waste liquid by the solid reagent
- Absorption of selective waste constituents
- Neutralization of acidic wastes by the excess (free) alkalinity of the reagents
- Alkaline hydrolysis

3. DESIGN CONSIDERATIONS

3.1 Identification

The general location of the Pine Bluff Landfill ("facility") is depicted on Sheet C01. The location of the solidification area ("area") is within the permitted boundaries of the facility and is depicted on Sheet C02.

The area will be clearly marked by signs as the treatment area. Signs will be posted warning that authorized personnel and vehicles are only allowed in the area. In addition, a sign will be posted indicating the types of wastes that may not be brought into the area.

3.2 Security

Unauthorized access to the area will be controlled through means of the site perimeter fencing. Any entrance will have a gate that can be closed and locked to prevent access.

3.3 Storm water Control and Management

There are two avenues of consideration in regards to stormwater control and management in the area: Run-on/Run-off and Direct Precipitation.

3.3.1 Run-on/Run-off

Run-on/Run-off will be controlled by gutters and berms placed around the area. One set will divert uncontaminated water away from the area to prevent contamination, while other curbs and gutters will divert a limited amount of contaminated water directly into the treatment basin or into containment sumps which can be pumped into above grade storage. The locations of such control features are indicated on Sheet C03.

3.3.2 Direct Precipitation

To prevent or limit the amount of precipitation falling directly on the area the basin will be covered when not in use.

3.4 Design of Area and Basin

The design of the solidification area to be utilized is depicted on Sheets C03 and C04.

3.4.1 Construction Materials

The basin will be constructed of reinforced concrete with a minimum thickness of 12 inches. The concrete will be rated to a minimum strength of 4000 psi. An alternate design consists of the basin being constructed of steel plate. The minimum thickness of steel will be 1/16 inch. The outer surfaces will be treated with a corrosion inhibitor.

3.4.2 Freeboard Level

The basin will be maintained with no less than 1.5 feet of freeboard at all times.

3.4.3 Overflow Protection

The basin will be equipped with a level alarm or visual device that will alert facility personnel unloading waste that the fluid or waste level has reached maximum allowable.

3.4.4 Secondary Containment

The secondary containment will be comprised of HDPE liner with a minimum thickness of 80 mil. A sump area with lysimeter will be constructed such that periodic sampling may occur to insure the integrity of the primary containment system (the basin).

3.5 Reagent/Bulking Agent Storage

Solidification reagents will be kept in either roll-off boxes or piled and corralled with concrete barriers. To control dust and fugitive emission of fine particulate matter, storage areas shall be covered when not in use. A fine mist water spray system may also be utilized to control fugitive emissions. Storage areas shall be situated adjacent to the solidification basin.

3.6 Dust Control

Dust and emission of fine particulate matter will be controlled during the addition of bulking agents and/or solidification reagents to waste materials. Dust and emission control will be accomplished by introducing the bulking agents and/or solidification reagents to waste materials below the surface of the pits. When possible, the unit should be operated on calm days. A fine mist water spray system may also be utilized to control fugitive emissions.

3.7 System Inspection

The storage area(s) and solidification basin will be inspected quarterly by facility personnel for deterioration and/or leakage.

4.0 OPERATING PROCEDURES

4.1 Waste Acceptance

Wastes accepted for treatment under this program follow the same protocols for the acceptance of any special waste at the facility. Such falls under the guidelines of the facility's present hazardous waste screening and detection program which meets the requirements of Section 258.20 of 40 CFR Part 258.

4.1.1 Profiling

Prior to the acceptance of any liquid, sludge or waste at the facility, the waste stream must be profiled and approved.

The USA Waste Services, Inc. Technical Sales Representative is responsible for coordinating with an authorized representative of the waste generator to complete the appropriate profile sheets. The appropriate forms should be filled out completely and all available backup data such as analytical data, MSDS information or process knowledge narratives provided.

Required Information

- A complete Waste Profile Sheet
- Copies of all pertinent analysis on the waste

4.1.2 Review and Approval

Information obtained during profiling will be submitted to the USA Waste Services, Inc. Special Waste Coordinator. The Coordinator will review all materials submitted and establish acceptance, handling and treatment criteria to be followed at the accepting facility. A waste authorization code will be issued by the Coordinator to identify that the waste stream is acceptable at the facility. No unapproved waste streams will be accepted.

4.1.3 Bench Scale Studies

In some cases, bench scale studies to demonstrate that a particular waste stream can be stabilized will be necessary. These studies will either be performed directly by the waste generator or by USA Waste Services, Inc.

4.1.4 Waste Compatibility

In some cases, waste compatibility studies may be required to be performed on a particular waste stream or wastes to determine if such are acceptable to be placed in the treatment basin at any one time.

4.2 Area Operations

The site manager has control over the acceptance of wastes that need to be stabilized prior to disposition.

4.2.1 Supervision

The area will be supervised by an USA Waste Services employee at all times that there is activity in the area.

4.2.2 Scheduling of Incoming Loads

In most cases, waste to be treated will be scheduled by the site manager. On occasion, a waste load may arrive at the facility that will require treatment prior to disposal. In this event, the waste will be screened to verify it is compatible with waste materials contained within the basin or those scheduled to be delivered prior to acceptance.

4.2.3 Manifestation

A completed, USA Waste Services, Inc. "Non-Hazardous Waste Manifest" will be required to accompany each load of waste covered under this program arriving at the facility. The manifest must be fully completed and signed by an authorized representative of the generator.

No load of waste will be accepted at the facility when a completed manifest or appropriate State or Local regulatory agency shipping form does not accompany it.

4.2.4 Load Verification

Upon arrival at the facility, each load of waste shall be checked for conformity against the original profile. The quantity of waste will also be verified.

4.2.5 Treatment Schedule

Treatment will be done on a "batch" basis. Scheduling will depend on volume/types of waste streams to be treated.

4.2.6 Vector Control

The area will be operated and maintained to reduce the possibilities of any vectors. Waste will not be left in the treatment basin for any prolonged period of time. Periodically, the loading and unloading areas will be washed. The area will be kept free from garbage.

5.0 RECORDS AND REPORTING

5.1 Location On-Site

All records pertaining to wastes accepted for treatment at the facility will be kept at the facility's main office.

5.2 Reporting

Wastes slated for disposal shall be recorded and submitted quarterly upon EPD's "Solid Waste Disposal Report" along with all other waste accepted for disposal.

6.0 CONTINGENCY PLANNING

Facility management is experienced with dealing with various events that may require contingency planning. Whereas each situation may be different, facility personnel will be trained to act in an effective and environmentally sound manner.

6.1 Unscheduled Loads

Unscheduled loads will be held at the facility's entrance (space permitting). The landfill will make efforts to accept the unscheduled load and work it into its schedule. In the event that the load cannot be accommodated, the generator and transporter of the waste load will be notified and the load rejected.

6.2 Incompatible Wastes

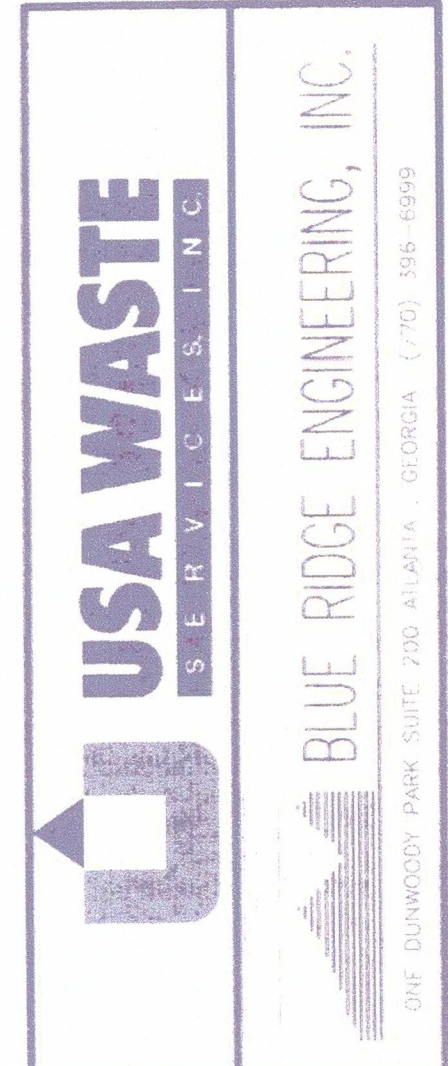
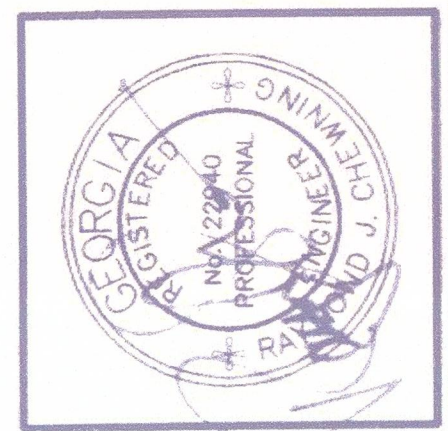
Any load (s) of waste that is determined to be incompatible with wastes contained within the treatment basin will be rejected or held at the generator's request until wastes contained within the basin are removed and the basin is made available for the incompatible waste.

6.3 Ineffectiveness of Treatment

Any waste that has been ineffectively treated will be retreated. If retreatment fails, the waste will be removed from the basin and shipped to an appropriately approved treatment/disposal facility.

6.4 Spill Control and Cleanup

Any spills around the area will be immediately contained and cleaned up.



Project No.	028-039 D(SL)
Design By	JMO
Drawn By	JMO
Checked By	B&C
Date	3/18/98
Scale	AS SHOWN
CADD FILE NAME	AB_SOLID.DWG

GEORGIA
Environmental Protection Division
Solid Waste Management Program
MINOR MODIFICATION APPROVAL
SOLID WASTE PERMIT NO. 028-039 D(SL)
APPROVED BY: [Signature] DATE: 5/22/12

USA WASTE SERVICES, INC.
PINE BLUFF LANDFILL
SOLIDIFICATION / STABILIZATION UNIT
NARRATIVES

Drawing No.
C05
File Number: 028-039 D(SL)-004

ACC
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PROJECT:
**PINE BLUFF
SOLID WASTE
MANAGEMENT
FACILITY**

CHEROKEE COUNTY, GA

WM
WASTE MANAGEMENT

13089 EAST CHEROKEE DRIVE
BALLGROUND, GA 30107
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REVISIONS

0 - Initial Issue	5/5/98
1 - Added Auto Shredder Residue as a Bulking Agent	4/31/12
2 - CCR Management	4/5/17

Drawn by:	MAL	Checked by:	[Signature]
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PROJECT NUMBER:
I002-415

April 2017

SOLIDIFICATION
NARRATIVE

Sheet C05

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SOLID WASTE
MANAGEMENT PROGRAM