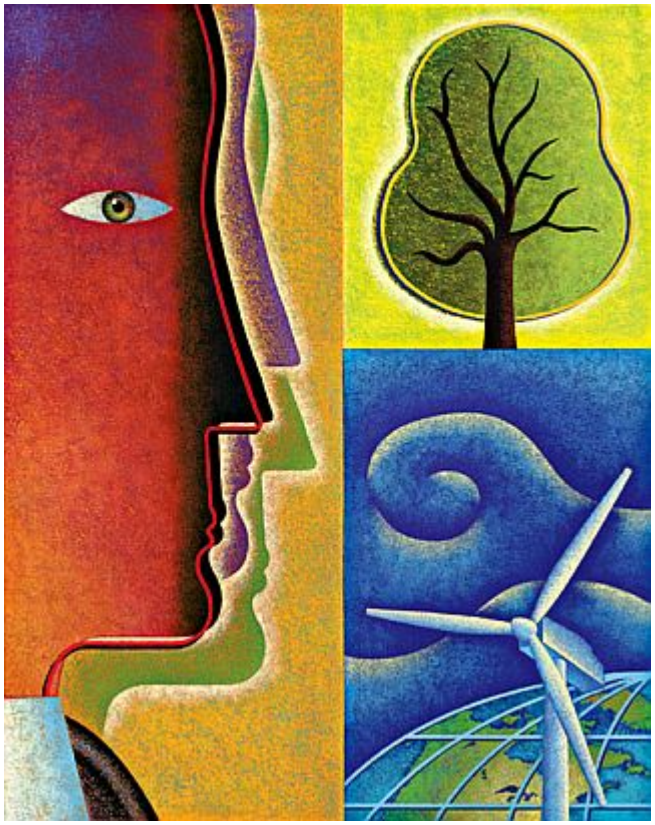
Resource Conservation and Recovery Act (RCRA)
Part B Permit Application

Johnson Controls Battery Group, Inc.
Florence Recycling Center Battery Warehouse
1800 Paper Mill Road, Florence, South Carolina

June 2010



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Johnson Controls Battery Group, Inc.
Florence Recycling Center Battery Warehouse
SCR 000 771 451

1739 Paper Mill Road, Florence, South Carolina

December 2009
Revised June 2010

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Section A
Part A Application

This section provides the Resource Conservation and Recovery Act (RCRA) Part A Permit Application in accordance with R.61-79.270.13 for the proposed Battery Warehouse at the proposed Johnson Control Battery Group, Inc. (JCBGI) Florence Recycling Center. The Part A Permit Application includes United States Environmental Protection Agency (USEPA) Form 8700-23 (OMB #2050-0034). Attachments to the Part A Permit Application are provided as figures in this section as follows:

- Figure A-1 Topographic Map showing one mile beyond the facility boundary
- Figure A-2 Proposed Site Layout

The property on which the facility is proposed to be constructed is currently undeveloped. The proposed facility will recycle spent lead-acid batteries and nonhazardous lead plant scrap (metallic lead scrap from the battery manufacturing facilities) to produce the following products:

- Lead ingots to produce new lead-acid batteries
- Polypropylene pellets to produce new battery casings
- Dried sodium sulfate crystals as a commodity in general commerce

In accordance with R.61-79.266.80, a RCRA Part B permit is required for storage of batteries at facilities that store spent lead-acid batteries before reclaiming them in a manner other than regeneration. The permitted unit is the Battery Warehouse, which receives and stores spent lead-acid batteries that need to be managed as hazardous waste prior to recycling.

A pre-application public meeting was held on November 3, 2009, at 7:00 PM, at the Southeastern Institute of Manufacturing and Technology in Florence, South Carolina. Copies of the public notifications are provided in Attachment 1. Also included in Attachment 1 is a summary of the presentation, a list of attendees that signed in, and a list of questions or comments from the public.

RCRA Subtitle C Site Identification Form
and
Hazardous Waste Permit Information Form

Read all instructions before completing the forms.

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SEND COMPLETED FORM TO: The Appropriate State or EPA Regional Office.

United States Environmental Protection Agency

RCRA SUBTITLE C SITE IDENTIFICATION FORM

1. Reason for Submittal (See instructions on page 14.)

MARK ALL BOX(ES) THAT APPLY

Reason for Submittal:

- ■ To provide Initial Notification of Regulated Waste Activity (to obtain an EPA ID Number for hazardous waste, universal waste, or used oil activities)
- ❑ To provide Subsequent Notification of Regulated Waste Activity (to update site identification information)
- ■ As a component of a First RCRA Hazardous Waste Part A Permit Application
- ❑ As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment #_____)
- ❑ As a component of the Hazardous Waste Report

2. Site EPA ID Number (page 15)

EPA ID Number | S | C | R | | 0 | 0 | 0 | | 7 | 7 | 1 | | 4 | 5 | 1 |

3. Site Name (page 15)

Name: Johnson Controls Florence Recycling Center

4. Site Location Information (page 15)

Street Address: 1800 Paper Mill Road

City, Town, or Village: Florence | **State:** SC

County Name: Florence | **Zip Code:** 29506

5. Site Land Type (page 15)

Site Land Type: ■ Private ❑ County ❑ District ❑ Federal ❑ Indian ❑ Municipal ❑ State ❑ Other

6. North American Industry Classification System (NAICS) Code(s) for the Site (page 15)

A. | 3 | 3 | 1 | 4 | 9 | 2 |

B. | | | | | | |

C. | | | | | | |

D. | | | | | | |

7. Site Mailing Address (page 16)

Street or P. O. Box: 5757 Green Bay Ave. X-10

City, Town, or Village: Milwaukee

State: Wisconsin

Country: USA | **Zip Code:** 53201-0591

8. Site Contact Person (page 16)

First Name: Timothy | **MI:** J | **Last Name:** Lafond

Phone Number: 414.524.2745 **Extension:** | **Email address:** timothy.j.lafond@jci.com

9. Operator and Legal Owner of the Site (pages 16 and 17)

A. Name of Site's Operator: Johnson Controls Battery Group, Inc. | **Date Became Operator (mm/dd/yyyy):** anticipated 2012

Operator Type: ■ Private ❑ County ❑ District ❑ Federal ❑ Indian ❑ Municipal ❑ State ❑ Other

B. Name of Site's Legal Owner: Johnson Controls Battery Group, Inc. | **Date Became Owner (mm/dd/yyyy):** anticipated 2010

Owner Type: ■ Private ❑ County ❑ District ❑ Federal ❑ Indian ❑ Municipal ❑ State ❑ Other

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9. Legal Owner (Continued) Address	**Street or P. O. Box:** 5757 Green Bay Ave. X-10	
	City, Town, or Village: Milwaukee	
	State: Wisconsin	
	Country: USA	**Zip Code:** 53201-0591

10. Type of Regulated Waste Activity
Mark "Yes" or "No" for all activities; complete any additional boxes as instructed. (See instructions on pages 18 to 21.)

A. Hazardous Waste Activities
Complete all parts for 1 through 6.

Y ☐ N ☐ **1. Generator of Hazardous Waste**
If "Yes", choose only one of the following - a, b, or c.

- ■ a. LQG: Greater than 1,000 kg/mo (2,200 lbs./mo.) of non-acute hazardous waste; or
- ☐ b. SQG: 100 to 1,000 kg/mo (220 - 2,200 lbs./mo.) of non-acute hazardous waste; or
- ☐ c. CESQG: Less than 100 kg/mo (220 lbs./mo.) of non-acute hazardous waste

In addition, indicate other generator activities.

Y ☐ N ■ d. United States Importer of Hazardous Waste

Y ☐ N ■ e. Mixed Waste (hazardous and radioactive) Generator

Y ☐ N ■ **2. Transporter of Hazardous Waste**

Y ■ N ☐ **3. Treater, Storer, or Disposer of Hazardous Waste (at your site)** Note: A hazardous waste permit is required for this activity.

Y ■ N ☐ **4. Recycler of Hazardous Waste (at your site)**

Y ■ N ☐ **5. Exempt Boiler and/or Industrial Furnace**
If "Yes", mark each that applies.
- ☐ a. Small Quantity On-site Burner Exemption
- ■ b. Smelting, Melting, and Refining Furnace Exemption

Y ☐ N ■ **6. Underground Injection Control**

B. Universal Waste Activities

Y ☐ N ☐ **1. Large Quantity Handler of Universal Waste (accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste generated and/or accumulated at your site. If "Yes", mark all boxes that apply:**

	Generate	Accumulate
a. Batteries	☐	☐
b. Pesticides	☐	☐
c. Thermostats	☐	☐
d. Lamps	☐	☐
e. Other (specify) _____	☐	☐
f. Other (specify) _____	☐	☐
g. Other (specify) _____	☐	☐

Y ☐ N ■ **2. Destination Facility for Universal Waste**
Note: A hazardous waste permit may be required for this activity.

C. Used Oil Activities
Mark all boxes that apply.

Y ☐ N ■ **1. Used Oil Transporter**
If "Yes", mark each that applies.
- ☐ a. Transporter
- ☐ b. Transfer Facility

Y ☐ N ■ **2. Used Oil Processor and/or Re-refiner**
If "Yes", mark each that applies.
- ☐ a. Processor
- ☐ b. Re-refiner

Y ☐ N ■ **3. Off-Specification Used Oil Burner**

Y ☐ N ■ **4. Used Oil Fuel Marketer**
If "Yes", mark each that applies.
- ☐ a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner
- ☐ b. Marketer Who First Claims the Used Oil Meets the Specifications

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11. Description of Hazardous Wastes (See instructions on page 22.)

A. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.

D002	D004	D006	D008			

B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes. Please list the waste codes of the State-regulated hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed for waste codes.

12. Comments (See instructions on page 22.)

Greenfield proposed for lead-acid battery recycling.

RCRA permit being prepared for storage of batteries prior to recycling.

13. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.
For the RCRA Hazardous Waste Part A Permit Application, all operator(s) and owner(s) must sign (see 40 CFR 270.10 (b) and 270.11).
(See instructions on page 22.)

Signature of operator, owner, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
	TIMOTHY J. LAFOND, DIRECTOR	06/04/2010

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EPA ID NO: | S | C | R | | 0 | 0 | 0 | | 7 | 7 | 1 | | 4 | 5 | 1 |

OMB #: 2050-0034 Expires 11/30/2005

United States Environmental Protection Agency

HAZARDOUS WASTE PERMIT INFORMATION FORM

1. Facility Permit Contact (See instructions on page 23)	**First Name:** Timothy	**MI:** J	**Last Name:** Lafond
	Phone Number: 414.524.2745		**Phone Number Extension:**
2. Facility Permit Contact Mailing Address (See instructions on page 23)	**Street or P.O. Box:** 5757 Green Bay Ave. X-10		
	City, Town, or Village: Milwaukee		
	State: Wisconsin		
	Country: USA		**Zip Code:** 53201-0591
3. Operator Mailing Address and Telephone Number (See instructions on page 23)	**Street or P.O. Box:** 5757 Green Bay Ave. X-10		
	City, Town, or Village: Milwaukee		
	State: Wisconsin		
	Country: USA	**Zip Code:** 53201-0591	**Phone Number** 414.524.2745
4. Legal Owner Mailing Address and Telephone Number (See instructions on page 23)	**Street or P.O. Box:** 5757 Green Bay Ave. X-10		
	City, Town, or Village: Milwaukee		
	State: Wisconsin		
	Country: USA	**Zip Code:** 53201-0591	**Phone Number** 414.524.2745
5. Facility Existence Date (See instructions on page 24)	**Facility Existence Date (mm/dd/yyyy):** Construction is expected to commence in September 2010. Operation is expected to commence in 2012.		

6. Other Environmental Permits (See instructions on page 24)

A. Permit Type *(Enter code)*	B. Permit Number	C. Description
N		Construction Phase Storm Water
E		Storm Water (no discharge)
E	1020	Sanitary and Industrial Wastewater (Florence POTW)
E	104-0129-CA	Air Permit - Non-PSD Synthetic Minor
R	SCR000771451	Storage Permit for Incoming Batteries

7. Nature of Business (Provide a brief description; see instructions on page 24)

Automotive Lead-Acid Battery Recycling. Facility will reclaim lead, sodium sulfate, and polypropylene plastic from spent lead-acid batteries.

8. Process Codes and Design Capacities (See instructions on page 24) - Enter information in the Sections on Form Page 3.

A. PROCESS CODE - ***Enter the code from the list of process codes in the table below that best describes each process to be used at the facility. Fifteen lines are provided for entering codes. If more lines are needed, attach a separate sheet of paper with the additional information. For "other" processes (i.e., D99, S99, T04 and X99), enter the process information in Item 9 (including a description).***

B. PROCESS DESIGN CAPACITY- ***For each code entered in Section A, enter the capacity of the process.***

1. **AMOUNT -** ***Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.***
2. **UNIT OF MEASURE -** ***For each amount entered in Section B(1), enter the code in Section B(2) from the list of unit of measure codes below that describes the unit of measure used. Select only from the units of measure in this list.***

C. PROCESS TOTAL NUMBER OF UNITS - ***Enter the total number of units for each corresponding process code.***

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	Disposal:	
D79	Underground Injection Well Disposal	Gallons; Liters; Gallons Per Day; or Liters Per Day
D80	Landfill	Acre-feet; Hectare-meter; Acres; Cubic Meters; Hectares; Cubic Yards
D81	Land Treatment	Acres or Hectares
D82	Ocean Disposal	Gallons Per Day or Liters Per Day
D83	Surface Impoundment Disposal	Gallons; Liters; Cubic Meters; or Cubic Yards
D99	Other Disposal	Any Unit of Measure in Code Table Below
	Storage:	
S01	Container	Gallons; Liters; Cubic Meters; or Cubic Yards
S02	Tank Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S03	Waste Pile	Cubic Yards or Cubic Meters
S04	Surface Impoundment Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S05	Drip Pad	Gallons; Liters; Acres; Cubic Meters; Hectares; or Cubic Yards
S06	Containment Building Storage	Cubic Yards or Cubic Meters
S99	Other Storage	Any Unit of Measure in Code Table Below
	Treatment:	
T01	Tank Treatment	Gallons Per Day; Liters Per Day
T02	Surface Impoundment Treatment	Gallons Per Day; Liters Per Day
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; Btu Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million Btu Per Hour
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; Gallons Per Day; Liters Per Hour; or Million Btu Per Hour
T80	Boiler	Gallons; Liters; Gallons Per Hour; Liters Per Hour; Btu Per Hour; or Million Btu Per Hour

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	Treatment (continued):	
T81	Cement Kiln	For T81-T93:
T82	Lime Kiln	
T83	Aggregate Kiln	Gallons Per Day; Liters Per Day; Pounds
T84	Phosphate Kiln	Per Hour; Short Tons Per Hour; Kilograms
T85	Coke Oven	Per Hour; Metric Tons Per Day; Metric
T86	Blast Furnace	Tons Per Hour; Short Tons Per Day; Btu Per
T87	Smelting, Melting, or Refining Furnace	Hour; Liters Per Hour; Kilograms Per Hour; or Million Btu Per Hour
T88	Titanium Dioxide Chloride Oxidation Reactor	
T89	Methane Reforming Furnace	
T90	Pulping Liquor Recovery Furnace	
T91	Combustion Device Used In The Recovery Of Sulfur Values From Spent Sulfuric Acid	
T92	Halogen Acid Furnaces	
T93	Other Industrial Furnaces Listed In 40 CFR §260.10	
T94	Containment Building - Treatment	Cubic Yards; Cubic Meters; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; Btu Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million Btu Per Hour
	Miscellaneous (Subpart X):	
X01	Open Burning/Open Detonation	Any Unit of Measure in Code Table Below
X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; Kilograms Per Hour; Gallons Per Hour; Liters Per Hour; or Gallons Per Day
X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; or Million Btu Per Hour
X04	Geologic Repository	Cubic Yards; Cubic Meters; Acre-feet; Hectare-meter; Gallons; or Liters
X99	Other Subpart X	Any Unit of Measure Listed Below

UNIT OF MEASURE	UNIT OF MEASURE CODE
Gallons	G
Gallons Per Hour	E
Gallons Per Day	U
Liters	L
Liters Per Hour	H
Liters Per Day	V

UNIT OF MEASURE	UNIT OF MEASURE CODE
Short Tons Per Hour	D
Metric Tons Per Hour	W
Short Tons Per Day	N
Metric Tons Per Day	S
Pounds Per Hour	J
Kilograms Per Hour	R
Million Btu Per Hour	X

UNIT OF MEASURE	UNIT OF MEASURE CODE
Cubic Yards	Y
Cubic Meters	C
Acres	B
Acre-feet	A
Hectares	Q
Hectare-meter	F
Btu Per Hour	I

8. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 8 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. (2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
X	1	S	0	2	533.788	G	001	
	1	S	0	1	522,240.0	G	001	
	2				.			
	3				.			
	4				.			
	5				.			
	6				.			
	7				.			
	8				.			
	9				.			
1	0				.			
1	1				.			
1	2				.			
1	3				.			
1	4				.			
1	5				.			

NOTE: If you need to list more than 15 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 9.

9. Other Processes (*See instructions on page 25 and follow instructions from Item 8 for D99, S99, T04 and X99 process codes*)

Line Number (Enter #s in sequence with Item 8)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. (2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
X	2	T	0	4	100.000	U	001	In-situ Vitrification
					.			
					.			
					.			
					.			
					.			

10. Description of Hazardous Wastes (See instructions on page 25) - Enter information in the Sections on Form Page 5.

A. EPA HAZARDOUS WASTE NUMBER - ***Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.***

B. ESTIMATED ANNUAL QUANTITY - ***For each listed waste entered in Section A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in Section A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.***

C. UNIT OF MEASURE - ***For each quantity entered in Section B, enter the unit of measure code. Units of measure which must be used and the appropriate codes are:***

ENGLISH UNIT OF MEASURE	*CODE*	*METRIC UNIT OF MEASURE*	*CODE*
POUNDS	*P*	*KILOGRAMS*	*K*
TONS	*T*	*METRIC TONS*	*M*

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure, taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in Section A, select the code(s) from the list of process codes contained in Items 8A and 9A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the listed hazardous wastes.

For non-listed hazardous waste: For each characteristic or toxic contaminant entered in Section A, select the code(s) from the list of process codes contained in Items 8A and 9A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:

1. ***Enter the first two as described above.***
2. ***Enter "000" in the extreme right box of Item 10.D(1).***
3. ***Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 10.E.***

2. PROCESS DESCRIPTION: ***If a code is not listed for a process that will be used, describe the process in Item 10.D(2) or in Item 10.E(2).***

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. ***Select one of the EPA Hazardous Waste Numbers and enter it in Section A. On the same line complete Sections B, C and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.***
2. ***In Section A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In Section D(2) on that line enter "included with above" and make no other entries on that line.***
3. ***Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.***

EXAMPLE FOR COMPLETING Item 10 (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number		*A. EPA Hazardous Waste No. (Enter code)*				*B. Estimated Annual Quantity of Waste*	*C. Unit of Measure (Enter code)*	*D. PROCESSES*									
								(1) PROCESS CODES (Enter code)									*(2) PROCESS DESCRIPTION- (If a code is not entered in D(1))*
X	1	K	0	5	4	900	P	T	0	3	D	8	0				
X	2	D	0	0	2	400	P	T	0	3	D	8	0				
X	3	D	0	0	1	100	P	T	0	3	D	8	0				
X	4	D	0	0	2												Included With Above

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number		A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)									(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
	1	D 0 0 2	145,500	T	S	0	1							
	2	D 0 0 4												Included with 1
	3	D 0 0 6												Included with 1
	4	D 0 0 8												Included with 1
	5													
	6													
	7													
	8													
	9													
1	0													
1	1													
1	2													
1	3													
1	4													
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3	0													
3	1													
3	2													
3	3													
3	4													
3	5													
3	6													
3	7													
3	8													
3	9													

10. Description of Hazardous Wastes (Continued. Use this Additional Sheet(s) as necessary; number as 5 a, etc.)

Line Number	*A. EPA Hazardous Waste No. (Enter code)*	*B. Estimated Annual Quantity of Waste*	*C. Unit of Measure (Enter code)*	*E. PROCESSES (1) PROCESS CODES (Enter code)*	*E. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in E(1))*
4 0					

11. Map (See instructions on pages 25 and 26)

Attach to this application a topographic map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in this map area. See instructions for precise requirements.

12. Facility Drawing (See instructions on page 26)

All existing facilities must include a scale drawing of the facility (see instructions for more detail).

13. Photographs (See instructions on page 26)

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

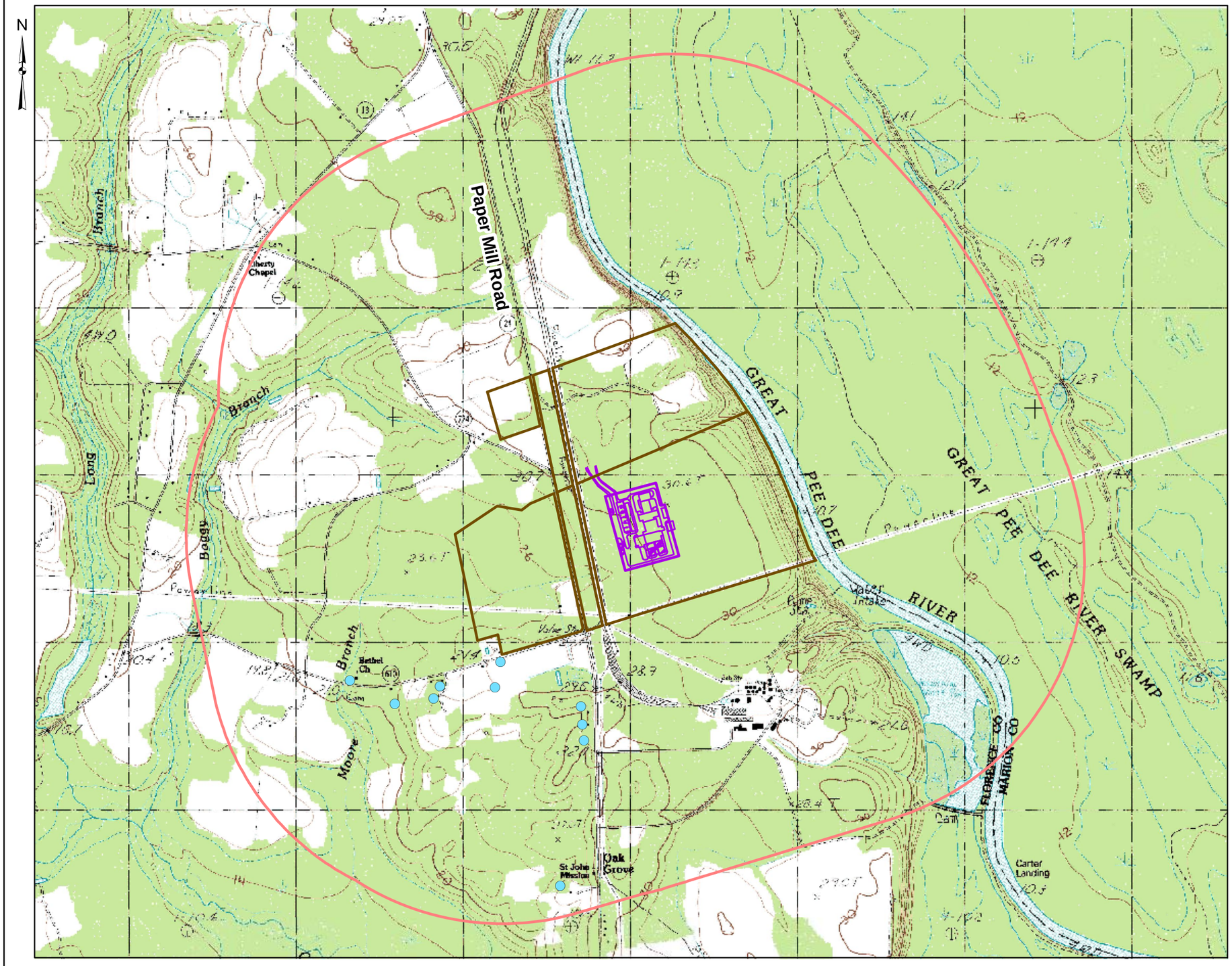
14. Comments (See instructions on page 26)

Greenfield Site - Construction anticipated to begin in September 2010.

Storage is in a single warehouse with a capacity of 522,240 batteries.

Each battery is a container. They vary in size but are typically 37 pounds each with about 1 gallon of battery acid.

Some materials that are not waste when reclaimed may also be placed in the Battery Warehouse. When present, pallets of non-waste material will reduce the capacity of the warehouse to store pallets of spent lead-acid batteries on a pallet for pallet basis.



LEGEND

- FACILITY FOOTPRINT
- BATTERY WAREHOUSE
- PROPERTY BOUNDARY
- PRIVATE WELL
- 1 MILE BUFFER AROUND PROPERTY BOUNDARY

NOTES

0 2000 4000

Feet

JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY

MILE MAP

DRAWN BY: TLH	SCALE AS NOTED	PROJECT NO.: 02452.09.001
CHECKED BY: JEP		DATE: JUNE 2010
APPROVED BY: WMB		FIGURE NO.: A-1

RMT
Patewood Plaza One, Suite 100
30 Patewood Drive
Greenville, SC 29615-3535
Phone: 864-281-0030
FAX: 864-281-0288

Map Document: (P:\Project JCBGI\ArcGIS\RCRAPermit_2010Revs\MileMap_FigA-1.mxd)
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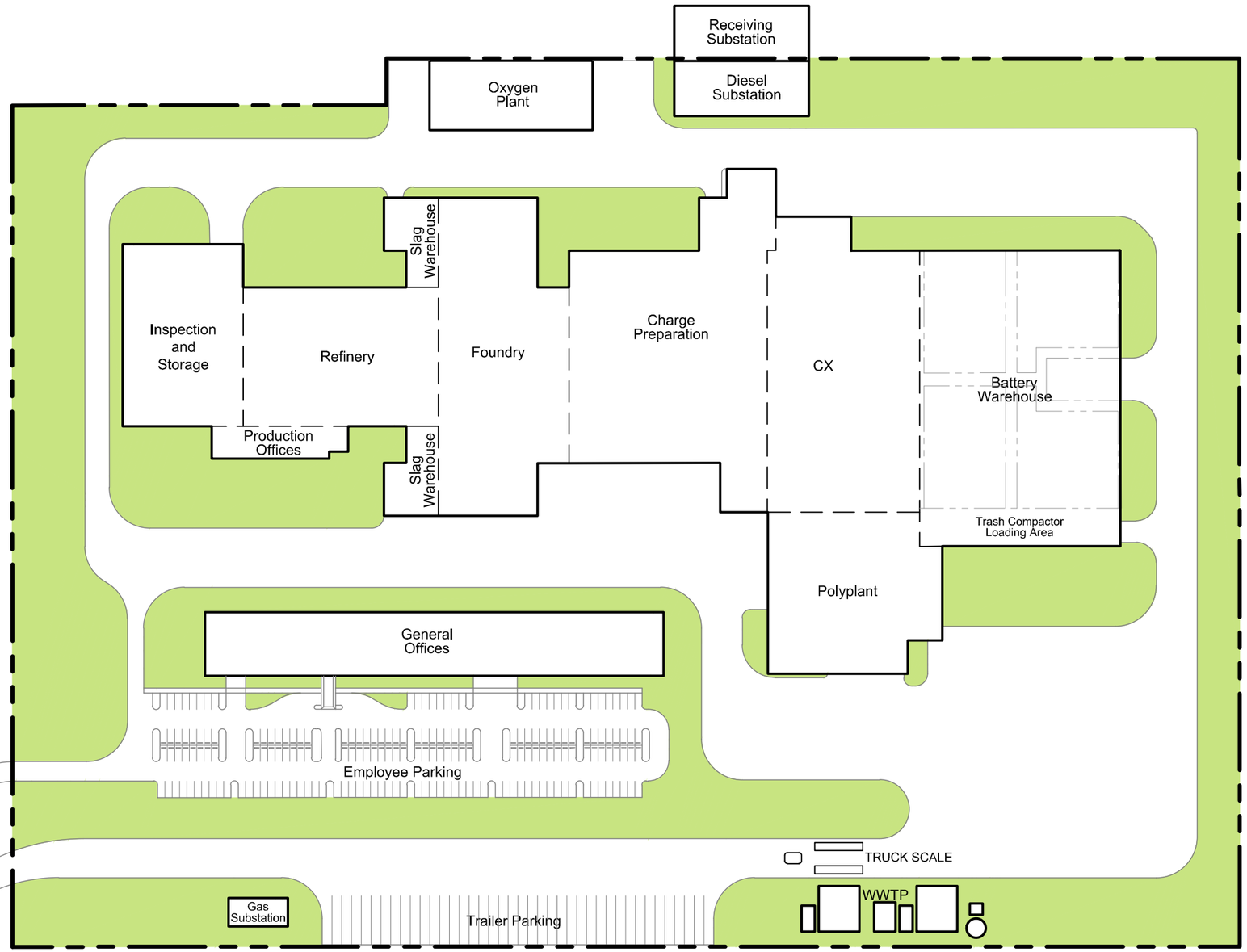

LEGEND

- FACILITY FOOTPRINT
- BUILDING
- BUILDING INTERNAL DIVISION
- CURB
- GRASS

N

0 150 300

PROJECT:
JOHNSON CONTROLS BATTERY GROUP
BATTERY RECYCLING FACILITY

SHEET TITLE:
SITE LAYOUT MAP

DRAWN BY: W BERRY	SCALE: See bar scale	PROJ. NO. 02452.09.001
CHECKED BY: JEP		FILE NO. 0245209-A-2.dwg
APPROVED BY: JEP	DATE PRINTED:	**Figure A-2**
DATE: June 2010		

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Site Pln_SC-SIPln-83ft_Rev-6-4-2010

Drawing Name: J:\02452\09.001\0245209-A-2.DWG
Operator Name: W Berry

Section B
Facility Description

This section provides a general description of JCBGI's proposed Battery Recycling Center in accordance with R.61-79.270.14(b). The portion of the facility subject to RCRA Part B permitting requirements will be the Battery Warehouse.

B.1 General Description

The proposed facility will incorporate state-of-the-art reclamation systems to break spent lead-acid batteries, separate the component parts, and produce products from those parts. The products of the facility will be lead ingots, dry sodium sulfate crystals, and pelletized polypropylene. In addition, the facility will receive lead plant scrap (which is not waste when recycled) that will be incorporated directly into the process to produce lead ingots. As a facility that will reclaim spent batteries and will store batteries prior to reclamation, the storage of spent lead-acid batteries prior to reclamation is subject to RCRA Part B permitting for storage in accordance with R.61-79.266 Subpart G. Hazardous waste storage at the proposed facility is in containers.

Figure B-1 presents a block flow diagram of the battery reclamation system. The reclamation system consists of a Wet End (Block 2), in which the batteries are broken and separated into their component parts, then processed into products, and a Dry End (Block 3 and Block 4) in which molten lead is produced and refined, then cast into ingots. Some products of the Wet End are fed into the Dry End reclamation processes, while other products are completed for off-site sale or use at the Wet End. Likewise, some byproducts of the Dry End are recycled either in the Dry End or the Wet End to maximize the recovery of lead by the facility.

The aspect of the recycling facility subject to RCRA Part B permitting is the storage of spent lead-acid batteries prior to reclamation. Spent batteries will be trucked to the facility from Johnson Controls, Inc. (JCI) service centers located mainly in the southeastern and mid-Atlantic regions of the country. Spent batteries will be received at the recycling facility into a warehouse that will be in a separate area from battery recycling operations. The batteries will arrive on pallets of 50 to 60 batteries. The batteries will be stacked three high on the pallets with the layers separated by cardboard and the entire pallet surrounded with stretch plastic wrap. Up to 60 pallets of spent batteries will be located at the Wet End, referred to in this application as the CX, for continuous feeding of the reclamation process. While located at the CX, the spent batteries will be attended and under the management of CX personnel. Pallet packaging will remain in place until the batteries on the pallet are being placed on the vibrating conveyor that feeds them into the closed reclamation process.

B.2 Topographic Map

The topography of the portion of the site anticipated for development is relatively flat. The Great Pee Dee River forms the eastern property boundary, and a bluff about 50 feet high rises from the river to the relatively flat remainder of the site. Natural topography in the portion of the property proposed for development slopes to the southeast, away from the river. Figure B-2 is a contour map showing the site with the proposed Recycling Center footprint shown. The Battery Warehouse is highlighted. Required elements for the topographic map are provided on Figures B-2 through B-5 as follows:

- Scale and Date – Scale and date are shown on Figures B-2 through B-4
- The 100-Year Flood Plain Area – Figure B-3
- Surface Waters – Figure B-3
- Surrounding Land Use – Figure B-4
- Wind Rose – Figure B-5
- Map Orientation – Map orientation is shown on Figures B-2through B-4
- Legal Boundaries – Surveyed legal boundaries are shown on Figures B-2 through B-4.
- Access Control – Access control is shown on Figure B-2
- Injection and Withdrawal Wells (on site and off site) – No injection or withdrawal wells are proposed on the site; off-site withdrawal wells are shown on Figure B-4
- Buildings and Other Structures – Proposed structures are shown on Figure B-2
- Drainage and Flood Control Barriers – No flood control barriers are present or proposed for the site. The developed footprint of the site will have storm water collection and treatment. To the extent possible, treated storm water will be used as make-up process water. Extraneous treated storm water will be infiltrated rather than discharged to surface water.
- Location of the Treatment or Disposal Units and Decontamination Areas – No treatment or disposal units or decontamination areas are proposed for the site; the proposed storage unit (Battery Warehouse) is highlighted on Figures B-2 through B-4
- Location of Solid Waste Management Units – The facility is a Greenfield site; therefore, no existing solid waste management units (SWMUs) are present

B.3 Facility Location Information

The facility is located in Florence County, South Carolina. This location is not listed in Appendix VI of part 264 of the regulations; therefore no further information is required to demonstrate compliance with the seismic standard [R.61-79.264.18(a)].

As shown in Figure B-3, no part of the developed portion of the facility is located within a 100-year floodplain.

A demonstration of compliance of the proposed hazardous waste management units with South Carolina Location Standards (R.61-104) is provided as Attachment 2.

B.4 Traffic Patterns

The recycling facility will operate on a 24 hour per day, seven day per week schedule. However, it is anticipated that receiving and shipping will operate only two shifts per day. The average number of trucks per day bringing spent batteries to the facility is estimated at 40 to 45. Trucks will access the site from Interstate Highway I-95 either by way of Highway 327 or by way of Highways 38 and 301 to US Highway 76, then south on Paper Mill Road to the site. District DOT personnel have confirmed that the access route has capacity for the facility traffic, and stated that a left turn lane is anticipated to be required to accommodate the free flow of traffic once the facility is in operation.

In the event that Paper Mill Road north of the site is blocked, the alternative route is Paper Mill Road south to River Road, west to Francis Marion Road, then north to US Highway 76. This route has a weight restricted bridge, but the weight bearing capacity of the bridge is greater than the weight of trucks that will access the site. There are no other weight restrictions on bridges or road for the secondary entry route.

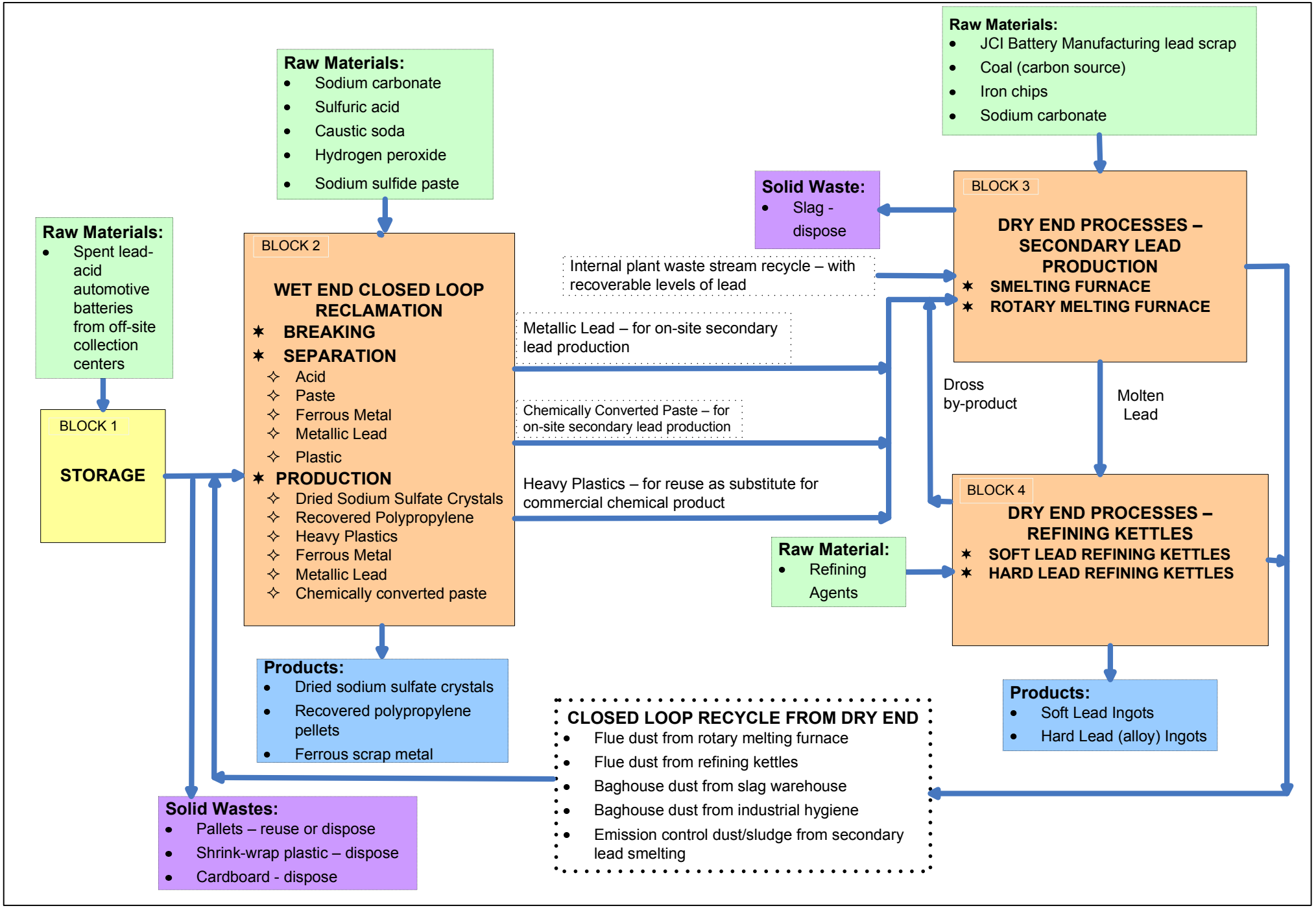
In addition to incoming spent batteries, other raw materials will be brought to the site and products and wastes will be shipped from the site. Overall traffic associated with the recycling facility is expected to average 40 to 60 trucks per day including incoming spent batteries.

Trucks arriving at the site will be staged in the truck parking lot, then proceed into the facility through a security gate to the truck scale. From there the trucks will be directed to the appropriate loading/unloading dock. All incoming spent batteries will be directed to one of four unloading docks on the south side of the Battery Warehouse. Incoming containers of non-waste lead plant scrap will generally be directed to the Charge Preparation Building for unloading, but may sometimes be directed to the Battery Warehouse. Figure B-6 shows anticipated traffic patterns at the facility. Work Instructions describing the procedures to be followed for management of spent batteries and containers of non-waste lead plant scrap are provided in Attachment 3. It is anticipated that a rail spur may be constructed along the south side of the Battery Warehouse in the future for incoming spent lead-acid batteries.

In addition to truck traffic, employees will commute to and from the facility each day. Employment is anticipated to include about 200 production workers divided between three

shifts. The entrance at Paper Mill Road will be designed to meet state and local regulations and requirements.

Roads within the facility will be constructed of asphalt with appropriate load-bearing capacity for loaded trailers weighing 44,000 pounds. The truck parking lot/staging area will be constructed of concrete with the same load-bearing capacity. Within the facility, traffic will be controlled with stop signs, yield signs, and speed limit signs. The speed limit will be set at 10 miles per hour.



P/PROJECT JCBGI/RCRA/PART B/FIGURES/Fig B1.VSD

RMT

JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY

BLOCK FLOW DIAGRAM OF FACILITY

FIGURE B-1

Legend

APPROXIMATE PROPERTY LINE
TAKEN FROM PARCEL MAP DATA

BATTERY WAREHOUSE

NOTES:

1. Survey contour features produced by photogrammetric methods from LIDAR (Light Detection and Ranging systems) data and aerial photography in accordance with National Map Accuracy Standards as published by the USGS.
   Contour Interval is 1', Date of LIDAR Acquisition: June, 2009
   Date of Photography: June 22, 2009
   For further details pertaining to survey production refer to
   IMC Job No. IMC4408

2. Additional contours derived from USGS Digital Elevation Model (DEM)
   Pee Dee, S.C. Quadrangle Rev date 1997
   Horizontal datum (NAD) 1927 Vertical datum (NGVD) 1929

3. Land survey/property boundary prepared by Ervin Engineering Co, Inc. 41 W. Evans St., P.O. Box 3 Florence, S.C. 29501

Great Pee Dee River

Entrance Road and Utility Corridor

Piney Mill Road

0 200 400 FEET

1" = 200'

1:2,400

PROJECT:
JOHNSON CONTROLS BATTERY GROUP
BATTERY RECYCLING FACILITY

SHEET TITLE:
TOPOGRAPHIC MAP

DRAWN BY:	WBERRY	SCALE:	PROJ. NO. 02452.09.001
CHECKED BY:	JEP	AS NOTED	FILE NO. 0245209-B2.mxd
APPROVED BY:	JEP	DATE PRINTED:	**FIGURE B-2**
DATE:	JUNE 2010		

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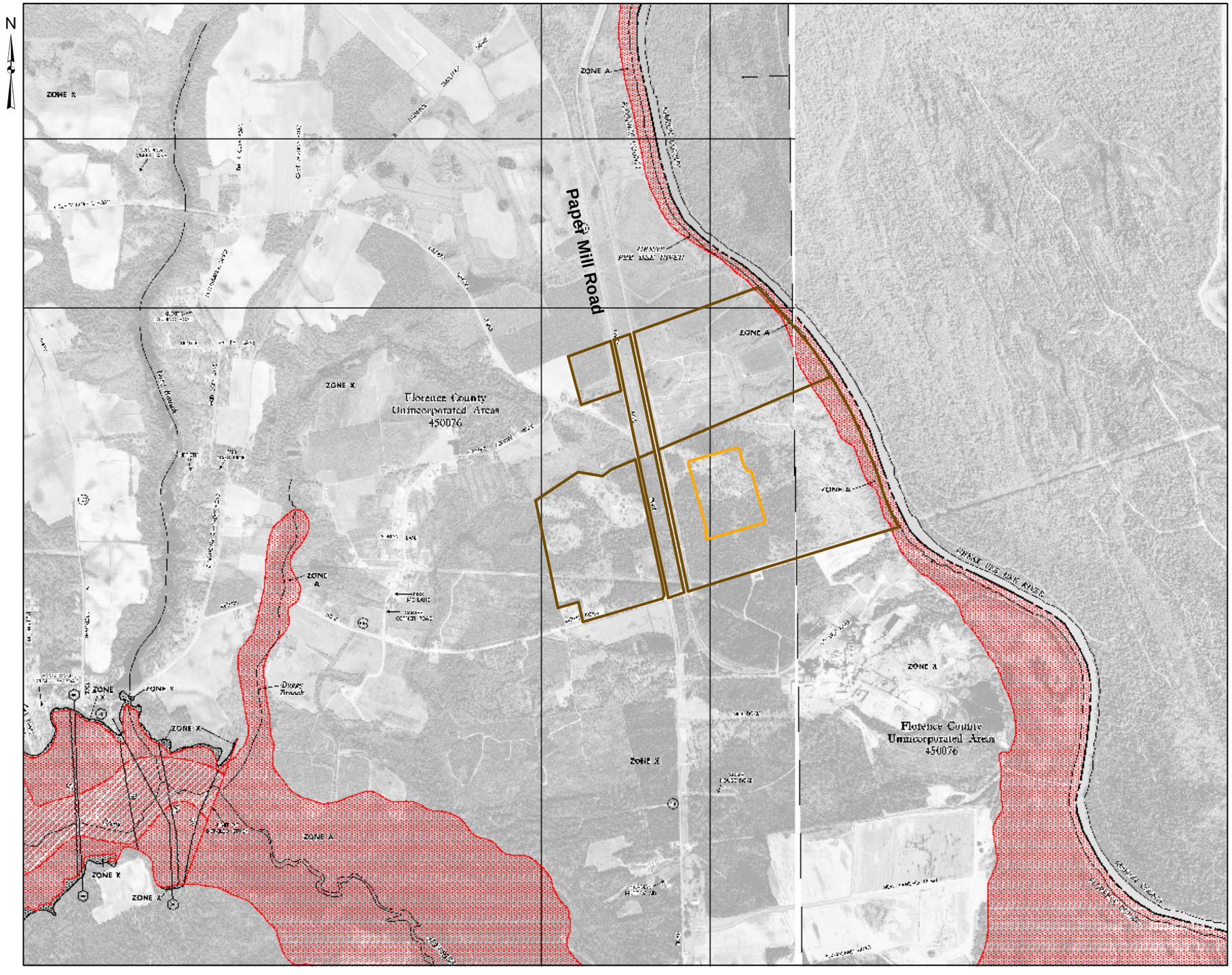

LEGEND

- LIMIT OF DISTURBANCE
- PROPERTY BOUNDARY - APPROXIMATE
- FEMA FLOOD ZONES

NOTES

100 YEAR FLOOD ZONES FROM FEMA MAPS 45041C0190D AND 45041C0195D

0 2000 4000

Feet

Map Document: (P:\Project JCBGI\ArcGIS\RCRAPermit_2010Revs\FEMAFloodZones_FigB-3.mxd)
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JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY

FLOOD ZONE MAP

DRAWN BY: TLH	SCALE AS NOTED	PROJECT NO.: 00-07682.05
CHECKED BY: JEP		DATE: MAY 2010
APPROVED BY: WMB		FIGURE NO.: B-3

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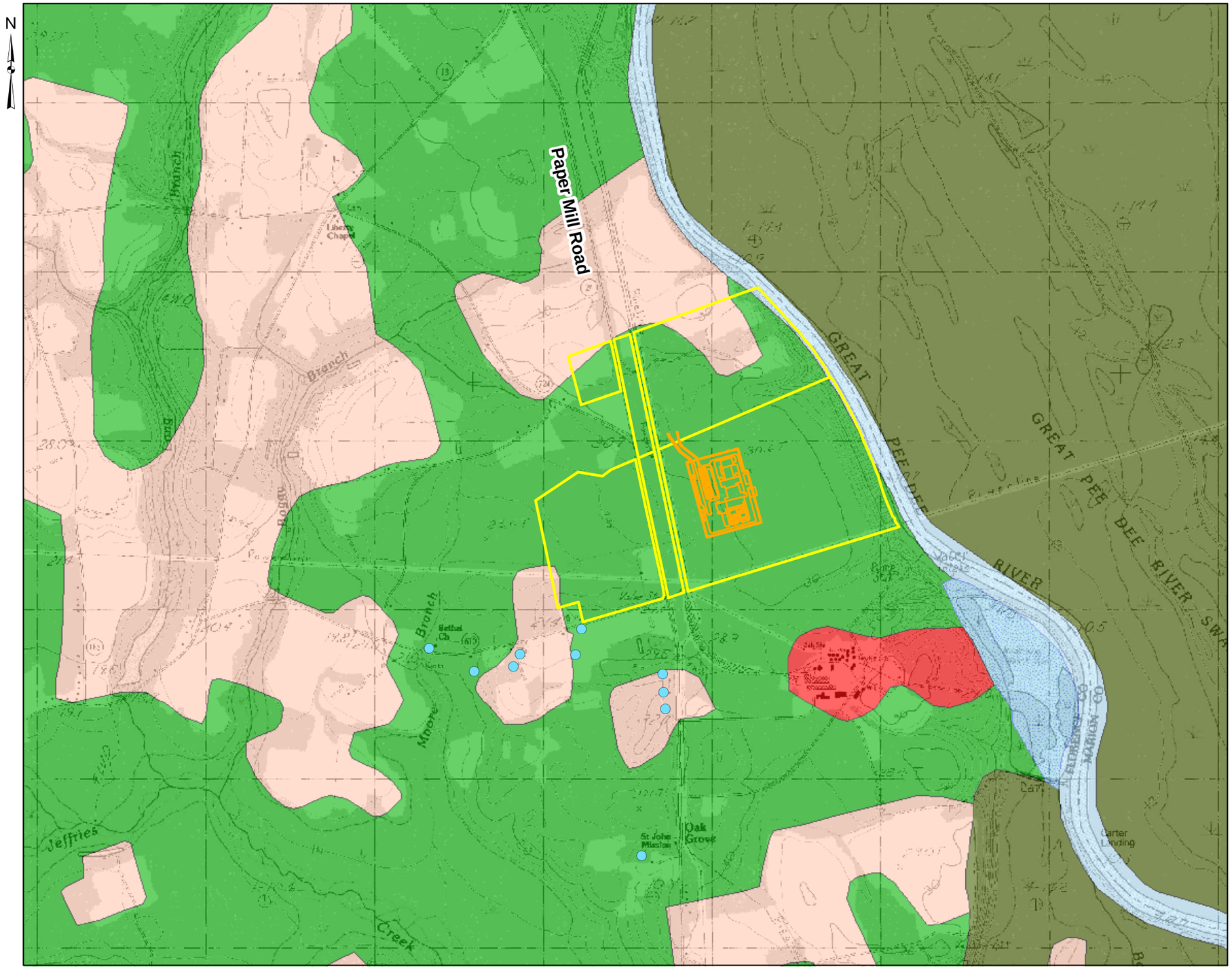

LEGEND

- FACILITY FOOTPRINT
- BATTERY WAREHOUSE
- PROPERTY BOUNDARY
- PRIVATE WELL

LAND COVER TYPES

- INDUSTRIAL
- CROPLAND AND PASTURE
- DECIDUOUS FOREST
- STREAMS AND CANALS
- FORESTED WETLANDS
- NONFORESTED WETLANDS

NOTES

Land Cover Types obtained from USGS Land Use and Land Cover (LULC) data interpretted from aerial photography taken during 1970's and 1980's .

0 2000 4000

Feet

Map Document: (P:\Project JCBGI\ArcGIS\RCRAPermit_2010Revs\LandUse_FigB-4.mxd)
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JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY

SURROUNDING LAND USE MAP

DRAWN BY: TLH	SCALE AS NOTED	PROJECT NO.: 02452.09.001
CHECKED BY: JEP		DATE: JUNE 2010
APPROVED BY: WMB		FIGURE NO.: B-4

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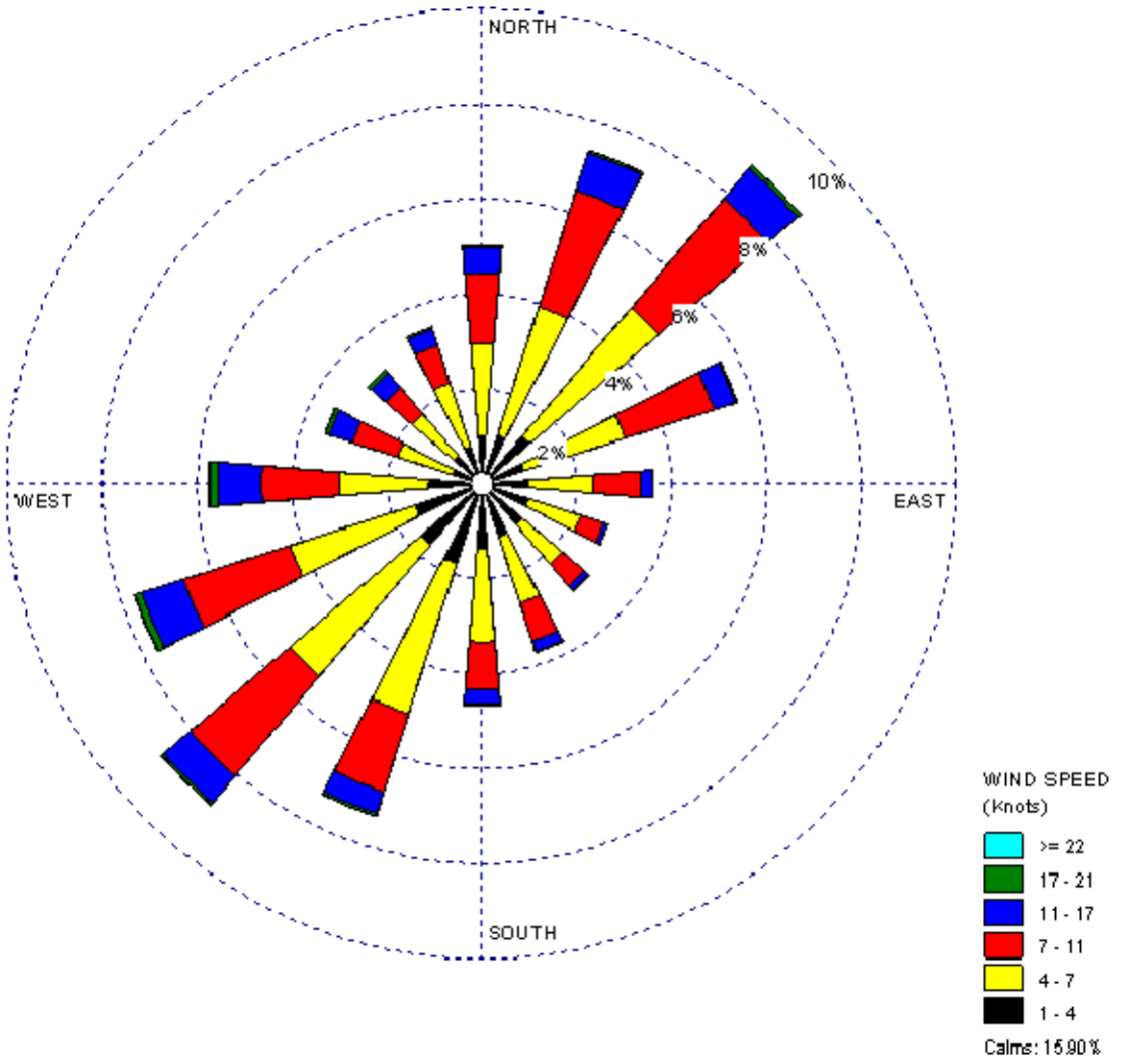
WIND ROSE PLOT:

FLORENCE ... 2002-06 ... Annual

DISPLAY:
Wind Speed
Direction (blowing from)



COMMENTS: per AERMET .sfc files	DATA PERIOD: 2002 2003 2004 2005 2006 Jan 1 - Dec 31 00:00 - 23:00	COMPANY NAME: **SC-DHEC**	
		MODELER: **Smutz**	
	CALM WINDS: 15.90%	TOTAL COUNT: 42197 hrs.	
	AVG. WIND SPEED: 6.08 Knots	DATE: **11/21/2008**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

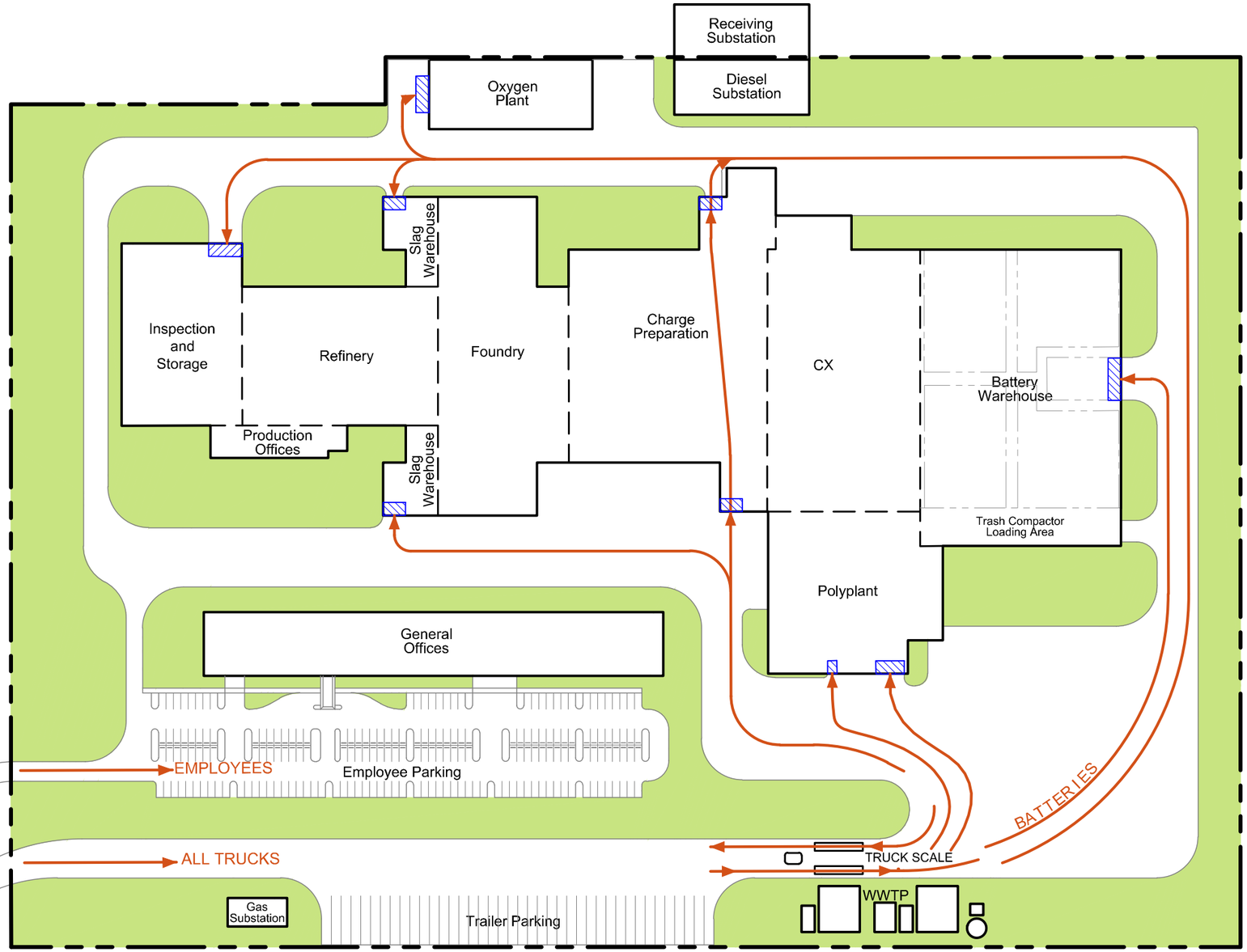
P/PROJECT JCBGI/RCRA/PART B/FIGURES/Fig B-5.VSD

RMT

JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY

WIND ROSE

FIGURE B-5



LEGEND

- FACILITY FOOTPRINT
- BUILDING
- BUILDING INTERNAL DIVISION
- CURB
- GRASS
- LOADING DOCK
- TRAFFIC ROUTE

N

0 150 300

PROJECT: **JOHNSON CONTROLS BATTERY GROUP BATTERY RECYCLING FACILITY**

SHEET TITLE: **FACILITY TRAFFIC PATTERNS**

DRAWN BY: W BERRY	SCALE: See bar scale	PROJ. NO. 02452.09.001
CHECKED BY: JEP		FILE NO. 0245209-B-6.dwg
APPROVED BY: JEP	DATE PRINTED:	**Figure B-6**
DATE: June 2010		

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Drawing Name: J:\02452\09.001\0245209-B-6.DWG
Operator Name: W Berry
Site Pln_SC-StPln-83ft_Rev-6-4-2010

Section C
Waste Characteristics

This section contains a description of the proposed recyclable materials to be received at the site. Recyclable materials that must be managed as hazardous waste when received at the site will be limited to intact spent lead-acid batteries and occasional or incidental non-intact spent lead-acid batteries. DUF batteries (ones that have never been filled with electrolyte) and rejected batteries that are not spent will also be received at the recycling facility. While non-spent batteries are not solid waste when reclaimed, they will be managed along with and in the same manner as spent lead-acid batteries. A discussion of other recyclable materials received at the facility is also provided in this section. Other recyclable materials to be received at the facility are not wastes when reclaimed.

C.1 Chemical and Physical Analyses

The materials managed at this facility are well defined from specific industrial processes. Therefore, characterization is based on generator knowledge coupled with a visual inspection that the material is consistent with its profile. Lead-acid batteries typically consist of the following components, as shown in Figure C-1. A single lead-acid battery generally weighs between 35 and 40 pounds and has the composition as described in the following breakout:

COMPONENT	APPROXIMATE PERCENT BY WEIGHT
Lead Components	
Lead oxide paste	36.0
Metallics (lead and lead alloy)	
Grids	21.5
Posts and Connectors	4.7
Plastic Components	
Case Materials, Vent Caps, Separators, etc.	10.3
Electrolyte	
Sulfuric acid	27.5

Intact batteries are viewed as individual containers for the contents of the battery. Most battery cases are constructed of polypropylene, which is compatible with the contents of a lead-acid battery. The contents of lead-acid batteries are characteristically hazardous for corrosivity

(D002), and lead toxicity (D008). Some batteries may also have the characteristics of cadmium or arsenic toxicity (D006 or D004, respectively) depending of the content of the lead alloys in the battery.

Non-intact batteries at the facility must either be transferred directly into the reclamation process or into another container. Containers for non-intact batteries will be either plastic or metal with polyethylene liners, compatible with the contents of lead-acid batteries. These containers will meet the applicable container management regulations, R.61-79.262.34 and R.61-79.264 Subpart I.

Suppliers of recyclable materials to the Florence Recycling Center will be required to have a "Supplier Agreement" with JCBGI. By signing the agreement, suppliers will agree to ship only specified materials and to package the materials in a specified manner. An example Supplier Agreement is provided in Attachment 4. In addition to intact spent lead-acid batteries, the facility may also receive the following recyclable materials from off the site.

- Batteries that might become non-intact during shipment
- Wet and dry lead-bearing scrap which may include the following:
  - Spent grids, posts, and separators
  - Lead plates and groups
  - Lead drosses, muds, and sludges
- Off-specification lead oxide
- Spent or defective battery cases, covers, and vents

Non-intact lead-acid batteries are considered waste when received at the facility. The other recyclable materials are not solid waste when reclaimed. Profiles for materials to be received at the site are provided in Attachment 4

Containers for non-waste recyclable material received at the facility will be either steel drums with a polyethylene liners, plastic drums, or pallet-sized plastic bins. These containers are compatible with the non-waste recyclable materials to be received at the facility. These containers will be marked with a description of their contents and their non-waste status when reclaimed.

C.2 Waste Analysis Plan

In accordance with R.61-79.266.80(b)(2), a Waste Analysis Plan is not required for incoming spent lead-acid batteries. Although the Supplier Agreement requires spent batteries to be intact when packaged for shipping, it is possible that some batteries will arrive at the site that are no

longer intact. The facility has procedures, described in Section D, for managing leaking batteries.

Upon arrival at the facility, shipments of batteries or other non-waste recyclable material will be weighed and the shipping papers will be checked. Each shipment will be required to state which of the profiles the material meets. Discrepancies in shipping papers will be resolved before the material is accepted into the facility. In general, packaging is not opened until the material enters the recycling process. If a drum of non-waste recyclable material is found not to conform to its profile upon removal of packaging, the material will be repackaged and returned to the supplier at the supplier's expense consistent with the Supplier Agreement.

C.3 Waste Analysis Requirements Pertaining to Land Disposal Restrictions

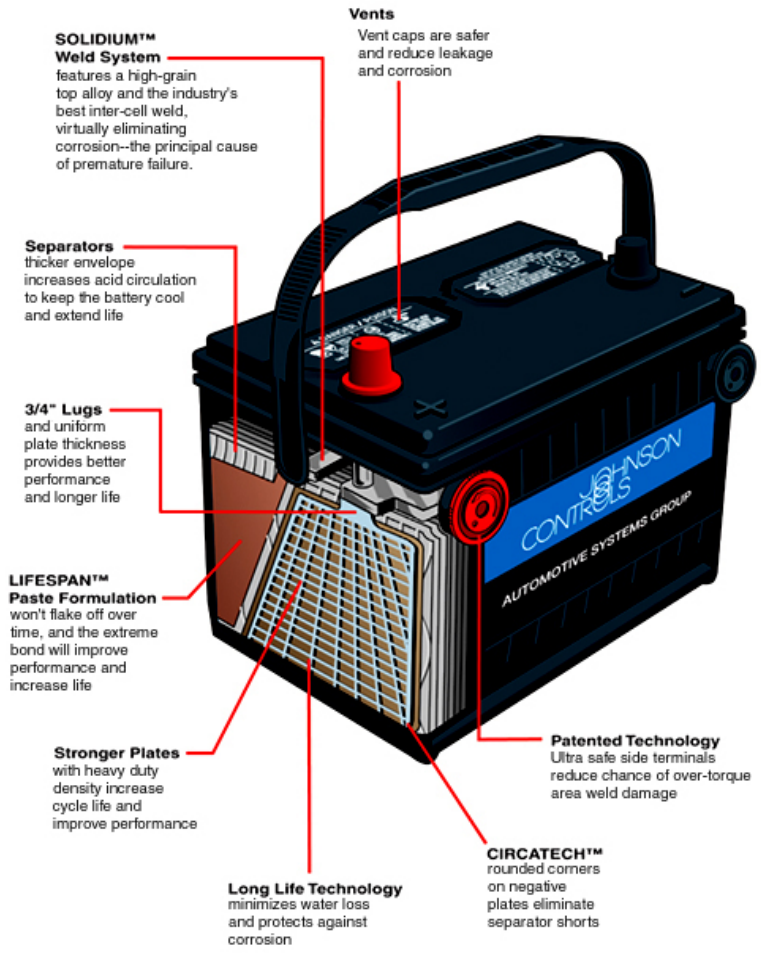
The battery recycling facility is not proposing to land apply hazardous waste. As a generator of hazardous waste for off-site disposal, the facility will comply with requirements for generators in R.61-79.268.7(a).

SLI Battery (Starting, Lighting, Ignition)

Weight Ratios

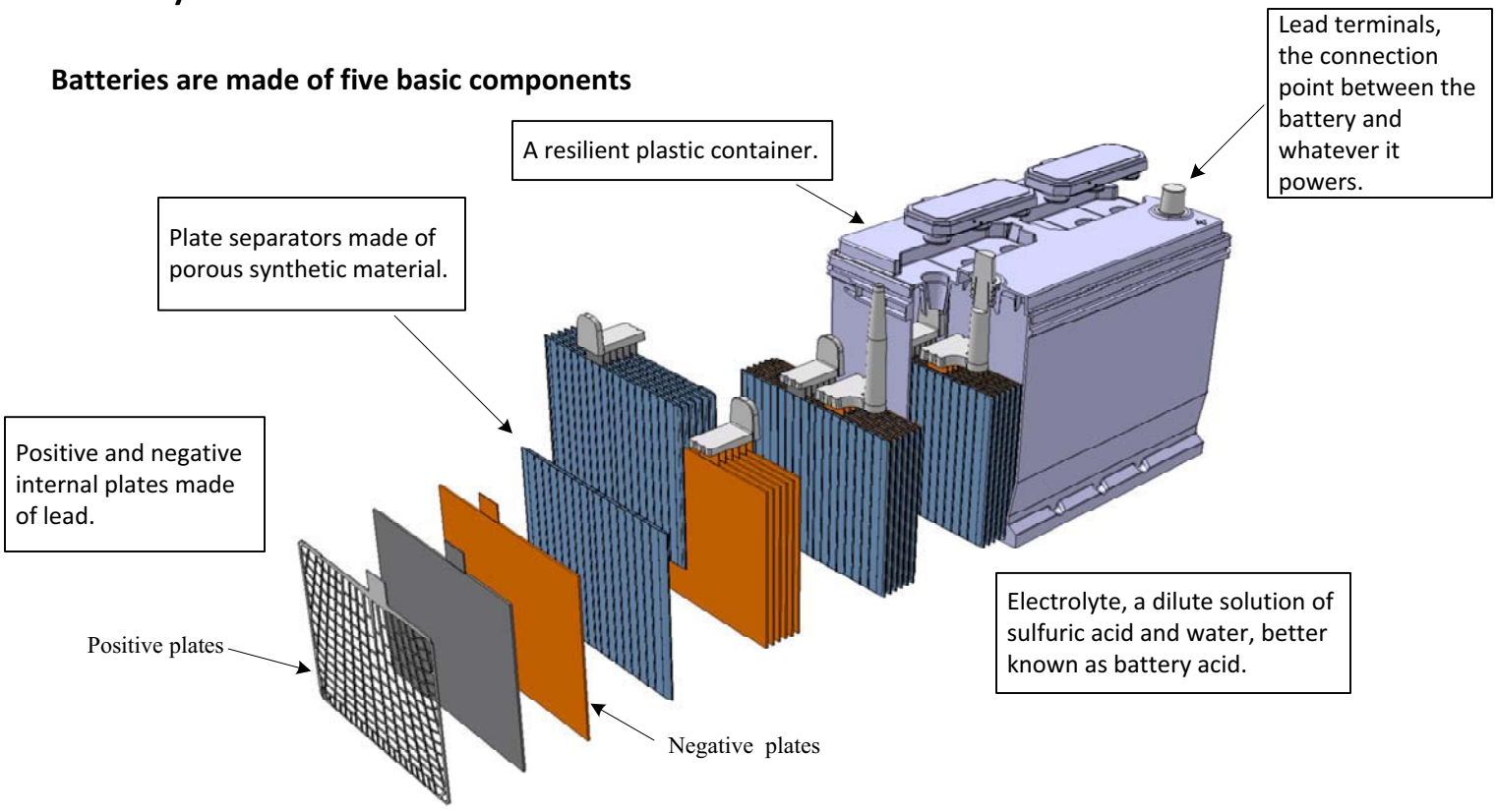
Active material:	36%
Grids:	21.5%
Electrolyte:	27.5%
Top Lead:	4.7%
Container, cover, vent, separator:	10.3%

(General industry standard)



Battery Construction

Batteries are made of five basic components



P/PROJECT JCBGI/RCRA/PART B/FIGURES/Fig C-1.VSD

RMT

JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY
COMPOSTION OF LEAD-ACID BATTERIES

FIGURE C-1

Section D
Process Information

This section describes how containers will be received and stored at the JCBGI Florence Recycling Center as required by R.61-79.264 Subpart I. Other activities at the facility – reclamation of the components of the lead-acid batteries and non-waste lead plant scrap – are not subject to RCRA Part B permitting requirements. Activities of the facility as a whole are described generally in Section B of this permit application. The proposed design, construction, and operation of the Battery Warehouse (permitted container storage area) to meet the regulatory requirements for storage in containers are discussed in more detail in this section. RCRA-permitted activities at the facility will be limited to storage in containers. No other hazardous waste management units are anticipated.

D.1 Containers with Free Liquids

The proposed Florence Recycling Center will receive spent lead-acid batteries into a single warehouse that is in a separate area from the reclamation processes. Spent batteries will be sent to this recycling facility from receiving centers operated by or associated with JCI. These receiving centers control the types and condition of the batteries sent for recycling. Although the Supplier Agreement described in Subsection C.1 requires spent lead-acid batteries to be intact and sealed when packaged for transport to the Florence Recycling Center, it is anticipated that non-intact batteries will occasionally be received at the facility. Procedures for managing intact and non-intact batteries are provided in this section. The facility will also receive batteries from JCI manufacturing facilities that are not "spent," and therefore not waste when reclaimed. Non-spent lead-acid batteries will be managed the same as spent batteries. Containers of non-waste recyclable lead plant scrap may also be managed in the Battery Warehouse. These containers can be delivered directly to the Charge Preparation area for direct processing in the smelter. If they are placed in the Battery Warehouse, these containers will be placed in the westernmost storage bay, managed the same as spent batteries, and reduce the spent-battery capacity of the warehouse by an equivalent number of pallets. Up to 800 drums of plant scrap may be processed at the Florence Recycling Center each month. A portion of these drums may be managed in the permitted Battery Warehouse.

Description of Containers

The permitted Battery Warehouse will manage spent lead-acid batteries prior to reclamation. A typical spent lead-acid battery is considered an individual container, which contains about one gallon of electrolyte, and weighs an average of 37 pounds. The

individual containers (batteries) will be delivered to the facility for reclamation on wooden or plastic pallets, with about 50 to 60 batteries per pallet. Each pallet will be wrapped with stretch plastic film to provide stability during transportation and storage. The compositional breakdown of a typical lead-acid battery is presented in Subsection C-1. This characterization is sufficient to allow the facility to manage this incoming waste stream properly. Ongoing chemical analyses will not be performed on incoming batteries beyond visual reconciliation of loads with a manifest or bill of lading tally on the number of pallets or weights. The facility has the capacity to process up to 289,956 tons per year (tpy) of spent lead-acid batteries, or 24,163 tons per month (tpm). The facility's permitted Battery Warehouse will be designed to hold up to 522,240 batteries or 9,662 tons.

Container Management Practice

Work Instructions for the management of spent batteries and non-waste recyclable lead material at the facility are provided in Attachment 3. The management practices are summarized in the following narrative.

A truck arriving at the site with a trailer load, or lot, of spent lead-acid batteries or nonhazardous lead plant scrap must first pass through the truck scale, or weighing station. At the weighing station, the shipping papers will be checked and the trailer will be weighed. The truck will then be directed to the appropriate dock for unloading. The empty trailer will be weighed again to determine the weight of batteries or nonhazardous lead plant scrap in the load. Incoming lots of batteries will be tracked by weight; with the number of batteries estimated by dividing the weight by the average weight of a single battery. Incoming pallets of non-waste lead plant scrap will be tracked by weight only.

At the permitted Battery Warehouse, each pallet will be inspected for evidence of non-intact batteries, the condition of the packaging, and labeling. For internal control purposes, each pallet will be labeled with a lot number and the number of pallets in the lot. By regulation, spent lead-acid batteries become a hazardous waste when they are received at the Florence Recycling Center. Although each battery is technically a container of hazardous waste requiring a hazardous waste label, the pallet packaging will not be removed until the batteries are ready to be placed in the reclamation process. Therefore, a hazardous waste label will be affixed to each wrapped pallet instead. Figure D-1 is an example hazardous waste container label. While stored, each pallet will be oriented such that its hazardous waste label is visible.

A forklift will move each pallet of batteries or nonhazardous lead plant scrap to its designated storage location. The pallets of batteries and non-waste lead plant scrap may

be stored on a rack system or stacked. If stacked, a stack of four pallets may be as high as 14 feet. Stacking decisions (*i.e.*, what pallets to stack and how high to stack them) will be made by warehouse personnel to ensure that the stacks are stable and do not obstruct aisle space needed for access and inspections. If racks are used, the rack system will be installed to ensure sufficient aisle space between racks for access and to allow for general inspections. If racks are used, the height of the top of the highest pallet may be up to 17 feet. A general layout of pallets is shown on Figure D-2. Aisle space shown in the figure is 5 feet wide. If racks are not used, the storage area floor will be marked to delineate aisle space. In the final warehouse design, the layout of pallets may differ based on equipment (*i.e.*, rack systems and forklifts) selected during final design. Figure D-3 shows an elevation view of four levels of pallets either on racks or stacked. If a rack system is used, it will be designed to withstand the loads required for full pallets of batteries (about 2,400 pounds). Final selection of forklifts to place and retrieve pallets will likewise take into account aisle space, the weight of a full pallet, and the maximum height needed to retrieve the top layer of pallets.

When a particular lot (trailer-load) of batteries is scheduled to be reclaimed, the pallets of batteries will be moved by forklift from their storage location to a temporary location within the permitted Battery Warehouse. Another vehicle from the CX area, or wet end recycling area, will move the pallets from the permitted Battery Warehouse to an area within the CX. Up to three lots of pallets may be temporarily located in the CX area to facilitate continuous feeding of the reclamation process. While located at the CX area, the batteries will be attended and under the management and supervision of CX personnel. At each movement of a pallet, the pallet identification will be checked and tracked. Also at each movement of a pallet, the condition of the pallet and packaging will be observed. Procedures for addressing non-intact batteries or pallets/packaging in poor condition are described in the Work Instructions (Attachment 3). If the battery breaker experiences a mechanical breakdown or otherwise stops functioning for a period of time longer than a work shift, batteries will be returned to the Battery Warehouse until the breaker is back in operation.

The packaging for each pallet will be removed at the location where the batteries enter the reclamation process. If a battery is included on the pallet that cannot be processed at the Florence Recycling Center, the battery will be set aside and managed as Universal Waste until it can be returned to the supplier per the Supplier Agreement. The packaging will be recycled when appropriate or managed as generated hazardous waste if battery contents were released to the packaging.

D.2 Secondary Containment

The permitted Battery Warehouse will be constructed of structural steel and concrete and will have a coated floor, containment curbs, walls, and a roof. Figure D-2 is a diagram of the permitted Battery Warehouse. The final, detailed design for the permitted Battery Warehouse will take into account site-specific foundation and loading conditions as described in *Determination of Compliance with Location Standards* (Attachment 2). Upon completion, the design will be provided to SC DHEC. The following narrative provides a summary of the conceptual permitted Battery Warehouse design.

Secondary Containment System Design and Operation

The floor of the permitted Battery Warehouse will be constructed of reinforced concrete with a chemical- and abrasion-resistant coating. The permitted Battery Warehouse will be divided into two separate storage bays, between which will be situated a single loading ramp area. The permitted Battery Warehouse will be contained by the coated concrete floor system and concrete curbing, which will extend along all four sides of each storage bay. The floor will be constructed of a six-inch thick, 4,250 pounds per square inch (psi), structural-steel reinforced concrete slab with a chemical- and abrasion-resistant coating that is compatible with the hazardous waste constituents being stored in the permitted unit. The floor system will be installed on a 40 mil high density polyethylene (HDPE) liner. Certified structural support calculations, when completed, will be included in Attachment 5. Specifications for the chemical-resistant coating and HDPE liner are provided in Attachment 5. The floor will not be sloped since the maximum capacity of an individual container is one gallon and the containers will be managed on pallets; therefore, any spilled material can be cleaned up using available spill kits. Sufficient secondary containment will be provided by a two-inch concrete curb system for each storage bay. The chemical-resistant coating will prevent leaked material or wash water from migrating through the concrete slab. Horizontal water stops will be installed in all control or construction joints, one-quarter inch saw-cut joints placed within 24 hours of the concrete pour.

Requirement for the Base or Liner to Contain Liquids

Primary containment for the spent lead-acid batteries will be the battery cases. Secondary containment will be provided by the floor and curb system within the permitted Battery Warehouse. The floor and curb system will have a primary barrier, an industrial chemical- and abrasion-resistant coating, that can withstand the movement of personnel, material, and equipment in the area during the facility's operating life, and is

compatible with the physical and chemical characteristics of the material that could be leaked or spilled in the area.

The coated concrete floor will provide the structural support for the palletized loads and prevent the migration of hazardous constituents into soil beneath or surrounding the permitted Battery Warehouse. All material management within the permitted Battery Warehouse under normal operating conditions will be in containers (*e.g.*, individual batteries). Material movement through the permitted Battery Warehouse will be via forklifts.

The secondary containment provided by the permitted Battery Warehouse will allow detection of leaks or spills from the batteries by visual inspection. This system will prevent migration of hazardous constituents or accumulated liquid out of the containment area to the soil, groundwater, or surface water at any time during the operating life of the facility. Figure D-4 provides a diagram of the containment system for the storage bays, including the HDPE liner underlying the building.

Containment System Drainage

Liquids spilled on the floor as a result of a leaking battery will be neutralized, drummed, and managed as a hazardous waste. The containerized waste will be manifested to a permitted treatment, storage, and disposal facility for management in accordance with the Federal Land Disposal Restrictions. A Work Instruction for responding to a spill is included in Attachment 3.

Containment System Capacity

The permitted Battery Warehouse must provide sufficient containment capacity to contain ten percent by volume of the containers in the permitted container storage area at full capacity. The batteries themselves are individual containers, which contain on average one gallon of electrolyte. Based on the permitted capacity of the container storage area (522,240 gallons), the total regulatory required containment is 52,224 gallons (10 percent of 522,240 gallons). The permitted Battery Warehouse, containing two storage bays and an unloading dock area, will measure 240 feet by 316 feet. Each of the two storage bays will have the capacity to store one-half of the permitted storage capacity of batteries (261,120 batteries). Each storage bay will have an area of 32,807 square feet and will be surrounded by a 1.5-inch concrete curb to provide containment. The secondary containment capacity of each storage bay will be 37,568 gallons, calculated as follows:

32,807 square feet x 1.5/12 feet x 7.48 gallons/cubic feet = 30,675 gallons

The total secondary containment capacity of the permitted Battery Warehouse will be 61,349 gallons, which is greater than the required containment capacity of 52,224 gallons. Attachment 6 will include the certified calculation of the secondary containment volume, when the final design of the permitted Battery Warehouse is completed.

Control of Run-on

The permitted storage area will be located inside a building that has a roof and walls and is provided with curbing to prevent run-on and run-off. In addition to the curbing, a storm water collection trench will be located along both sides of the permitted Battery Warehouse along its long axis. Therefore, additional precipitation run-on/run-off control is not required. The batteries will be stored on pallets so that they will not come in contact with any leaked material or routine floor wash water.

Removal of Liquids from Containment System

Any leaking batteries detected during routine inspections will be removed from the permitted Battery Warehouse and fed into the reclamation process as soon as possible. Forklifts will be used to remove pallets of batteries to locate the "leaker." The "leaker" will be removed by hand and either placed into a 55-gallon drum prior to processing or placed directly into the reclamation process. Another option will be for the whole pallet of batteries containing the "leaker" to be placed into the reclamation process, for immediate processing. Any spilled acid will first be neutralized, then cleaned up using brooms and shovels, and placed in a 55-gallon plastic drum. The drum of neutralized material will be manifested off site to a treatment, storage, and disposal facility for management in accordance with the Federal Land Disposal Restrictions. A Work Instruction for responding to a spill is included in Attachment 3.

D.3 Containers without Free Liquids

Some material managed at the permitted Battery Warehouse may consist of containers without free liquids. These include DUF batteries, which are batteries that were never filled with acid, and drums of reject battery casings. These containers will be managed in the same manner as containers with free liquids. In addition, some drums of recyclable lead material that is not waste when reclaimed may be placed within the Battery Warehouse. When in the Battery Warehouse, pallets of drums will be managed the same as pallets with batteries. For each pallet of drums present in the permitted Battery Warehouse, the capacity of the container storage area for storage of pallets of batteries will be decreased by one. When present, pallets holding drums of non-waste recyclable material will be limited to the far western end of the warehouse.

Figure D-1
Example Hazardous Waste Label

Spent lead-acid batteries stored prior to reclamation
must be managed as a

HAZARDOUS WASTE

Federal Law Prohibits Improper Disposal

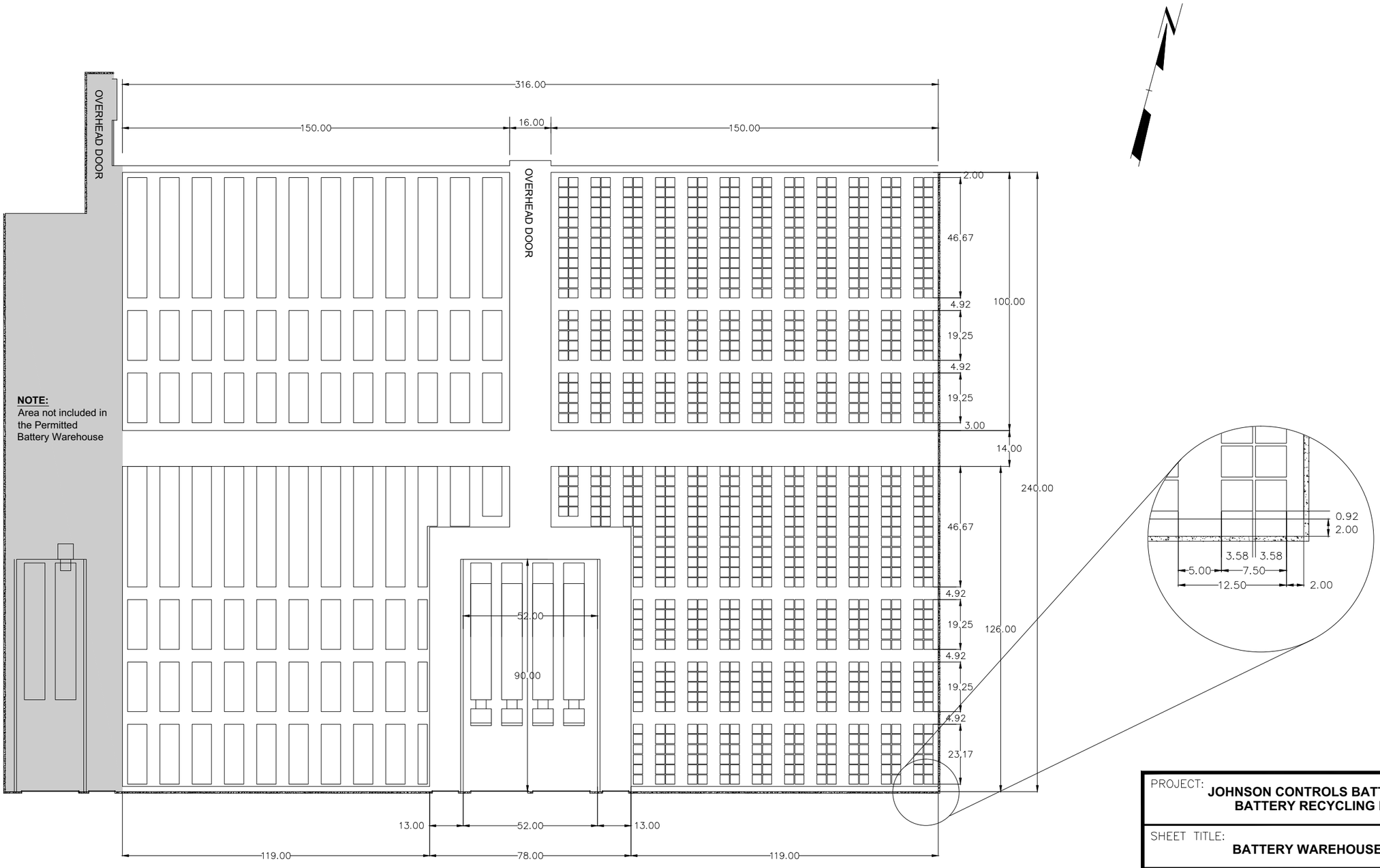
If found, contact the nearest police or
public safety authority or
the U.S. Environmental Protection Agency.

Johnson Controls Florence Recycling Center
1739 Paper Mill Road, Florence, SC 29506

EPA ID# SCR 000 771 451

Waste Codes D002, D004, D006, D008

Date Received:_____



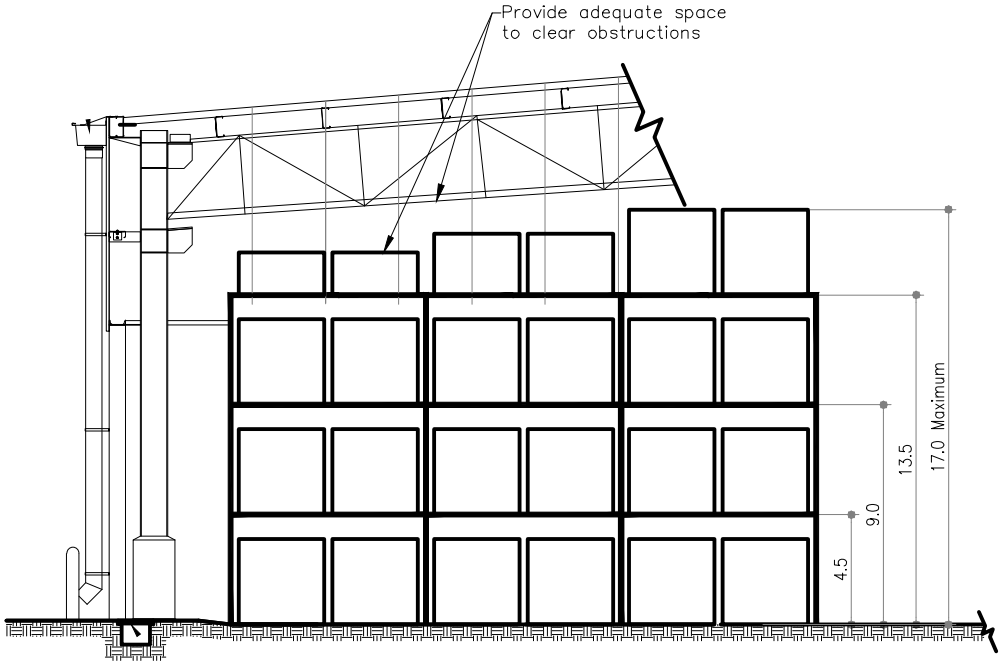
PROJECT:
JOHNSON CONTROLS BATTERY GROUP
BATTERY RECYCLING FACILITY

SHEET TITLE:
BATTERY WAREHOUSE LAYOUT

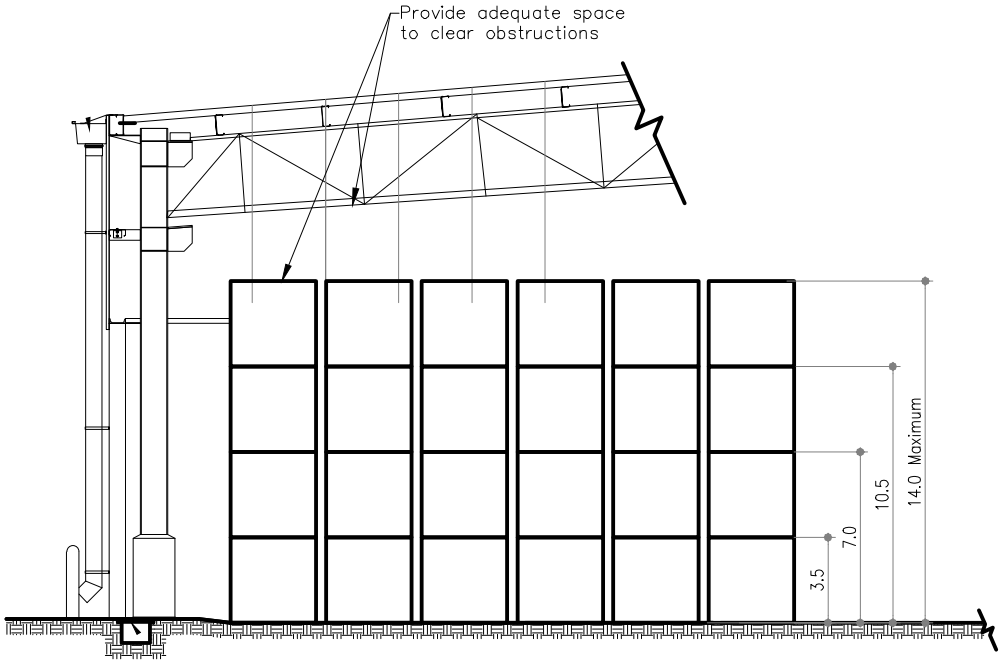
DRAWN BY: W BERRY	SCALE:	PROJ. NO. 02452.09.001
CHECKED BY: JEP	See bar scale	FILE NO. 0245209-D2.dwg
APPROVED BY: JEP	DATE PRINTED:	**Figure D-2**
DATE: June 2010		

RMT
30 Patewood Drive, Suite 100
Patewood Plaza One
Greenville, S.C. 29615
Phone: 864-281-0030
Fax: 864-281-0288

Drawing Name:
Operator Name: W Berry



Pallets on racks



Pallets without racks

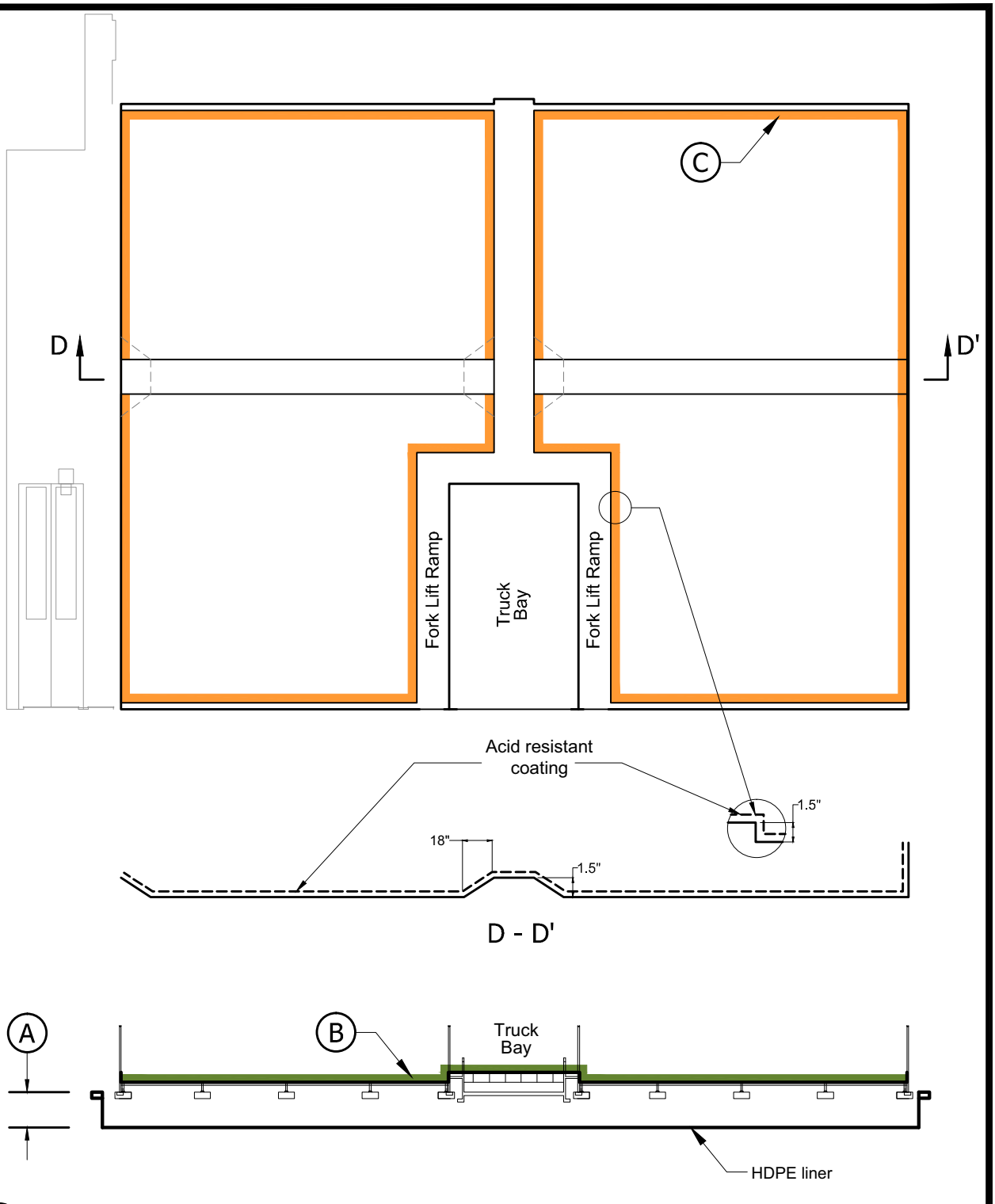
RMT
24 E Greenway Plaza, Suite 800
Houston, TX 77046
Phone: 713-450-1882
Fax: 713-450-1639

JOHNSON CONTROLS BATTERY GROUP
BATTERY RECYCLING FACILITY

FIGURE D-3
PALLET STORAGE ELEVATION VIEW

DRAWN BY:	W Berry
APPROVED BY:	J.P.
PROJECT NO.	02452.09.001
FILE NO.	0245209.001-D3.dwg
DATE:	June 2010

Drawing Name: J:\02452\09.001\0245209.001-D3.dwg
Operator Name: W Berry



A Depth of excavation and recompaction (equal to footing width)

B Acid-resistant coating

C Curb 1.5 Inch minimum height

Not To Scale

Note: All interior surfaces to a height of 1.5 inches above floor level will have an acid-resitant coating.

RMT
24 E Greenway Plaza, Suite 800
Houston, TX 77046
Phone: 713-450-1882
Fax: 713-450-1639

JOHNSON CONTROLS BATTERY GROUP
BATTERY RECYCLING FACILITY

FIGURE D-4
BATTERY WAREHOUSE CONTAINMENT

DRAWN BY:	W Berry
APPROVED BY:	J.P.
PROJECT NO.	02452.09.001
FILE NO.	0245209.001-D4.dwg
DATE:	June 2010

Drawing Name: J:\02452\09.001\0245209.001-D4.dwg
Operator Name: W Berry

Section E
Groundwater Monitoring

The Florence Recycling Center does not propose to include any regulated unit (*i.e.*, surface impoundment, waste pile, land treatment unit, or landfill (per R.61-79.264.90(a)(2)) requiring ground water monitoring. Therefore, this section is not applicable for the RCRA Part B permit.

Section F
Procedures to Prevent Hazards

In accordance with the requirements of R.61-79.270.14 (b)(4), (5), (6), (8), and (9), this section describes the proposed procedures, equipment, and facilities at the Florence Recycling Center for the prevention of hazards and for being prepared for hazardous conditions should they occur. JCBGI is not requesting any waiver of preparedness and prevention requirements under R.61-79.264.14(a)(1) and (2).

F.1 Security

The facility will prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of the Florence Recycling Center. The means for entry control will include 24-hour surveillance systems, lockable gates and fences, and warning signs. The proposed security systems and procedures are presented below. Figure F-1 shows the proposed locations for access control.

24-Hour Surveillance System

A 24-hour security guard and security camera will be used to provide site security against unauthorized entry into the active portion of the facility. The security guard will provide security for the trailer parking area and control entrance into the active portion of the site. In addition, a monitored security camera will provide 24-hour surveillance of the front gate entering the facility.

Barrier

The facility will be provided with a barrier to prevent unauthorized entry into the active portion of the site. The main entrance into the facility will be provided with a lockable gate that can be closed when the facility is not operating. A six-foot-high chain-link fence will be constructed around the entire developed portion of the property. All entrances or gates into the facility will be either secured with lockable gates, which will only be opened when being accessed by authorized personnel, or controlled using a security guard.

Warning Signs

To prevent unauthorized entry, the facility will post signage that reads "Danger—Unauthorized Personnel Keep Out." This signage will be posted at each entrance and in sufficient numbers at other locations along the fence to be seen from any approach to the

active portion of the facility. The signage will be written in plain English and will be legible from a distance of at least 25 feet.

F.2 Inspection Schedule

Regular inspections of the Battery Recycling Center will provide a control method that aids in the prevention of releases of material that might be hazardous to human health or the environment. The inspection program will consist of inspections conducted by facility personnel in accordance with a prescribed schedule. The inspection program will also include procedures for corrective action that will be implemented should any deficiencies be noted during an inspection.

General Inspection Requirements

The proposed schedule for inspections of monitoring equipment, safety and emergency equipment, security devices, permitted unit, and structural integrity of process equipment is presented on Table F-1. The table includes the area of the facility, the item to be inspected, the frequency of inspection, and the types of potential problems to inspect for.

The results of the inspections will be recorded on inspection log sheets. Example inspection log sheets are provided in Attachment 7. The inspection log sheets include entries for observations and actions taken and the condition of the item inspected. These log sheets will also record the date and time of inspection and the name of the inspector. Both the written inspection schedule and completed inspection logs will be maintained in the office of the Environmental Engineer for at least three years.

Frequency of Inspections

The frequency of inspection for each item in Table F-1 is based on the rate of possible deterioration of the equipment and the probability of environmental or health impact if the problem is not detected between inspections. Areas subject to spillage or leakage of hazardous wastes will be inspected daily or weekly.

Schedule of Remedial Action

Inspection personnel will be trained to notify the appropriate Operator or Area Supervisor whenever deficiencies are discovered during an inspection. The Operator or Area Supervisor will then prescribe the appropriate action. Following each inspection, inspection logs will be turned into the office of the Environmental Engineer who will be responsible for ensuring that deterioration

or malfunction discovered during inspection has been reported to Plant Maintenance by the Operator or Area Supervisor and that corrective action has been taken.

Specific Process Inspection Requirements

The facility will operate a permitted container storage area (Battery Warehouse). As required by R.61-79.264.174, facility personnel will inspect the Battery Warehouse on a weekly basis. The weekly inspections of the permitted Battery Warehouse will look for leaking containers (batteries), integrity and wear of rack system (if present), integrity and wear of the coated concrete floor and curbing, pallet storage, and aisle spacing.

The only proposed RCRA-permitted unit at the Battery Recycling Center will be the Battery Warehouse. Therefore, inspection requirements for tank systems, waste piles, surface impoundments, incinerators, landfills, land treatment, miscellaneous units, boilers and industrial furnaces, containment buildings, or drip pans are not applicable.

F.3 Preparedness and Prevention

The facility will be equipped with an internal communications or alarm system capable of providing immediate emergency instruction; a device, such as a telephone or a hand-held two-way radio, capable of summoning emergency assistance from local police department, fire department, or emergency response teams; portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment; and water at adequate volume and pressure to supply hose streams and automatic sprinklers. The location of the proposed emergency response equipment is shown on Figures G-1 through G-5.

Equipment Requirements

The specific equipment that will be maintained at the facility is described in the following subsections. JCBGI does not expect to request a waiver for required equipment under R.61-79.264.32.

The facility proposes to maintain the following equipment for responding to emergency situations:

- First aid kits will be located throughout the plant. These kits will be used for minor injury situations;
- Portable fire extinguishers, fire control equipment, spill control equipment and decontamination equipment will be maintained to respond to fire and spill emergencies. Emergency safety showers/eye wash stations will be located

throughout the facility. Supplies will also be available for spill containment and acid neutralization. Other miscellaneous equipment available for emergency response will include onsite fire hydrants, small hand tools for spill containment/ cleanup, and sodium carbonate/calcium carbonate for acid neutralization; and

– Water at adequate volume and pressure to supply fire hose streams and automatic sprinklers will be maintained for fire emergencies. Water will be also supplied to a number of emergency safety showers/eye wash stations.

All proposed facility communication and alarm systems, fire protection equipment, and spill control equipment will be tested and maintained as necessary to ensure its proper operation in time of emergency. These inspections will be performed monthly by the facility personnel or an independent contractor.

Internal and External Communication

Internal communications at the facility will be provided by landline telephones, two-way radios, cell phones, and an alarm system. Landline telephones and cell phones will also provide a means of external communication.

In the event of an emergency situation, the facility will activate the manual alarm system. The alarm system will be installed at the facility so that all employees, no matter where they work within the facility, can hear the alarm system. A system of short and long alarm signals will be used to inform employees what action to take in the event of an emergency. A short alarm signal will signal employees that an emergency situation has occurred, and for the emergency response team to respond to the situation. If the emergency cannot be controlled, a second long alarm will sound to initiate the facility's evacuation procedures and outside assistance will be requested. Emergency procedures are described in greater detail in Section G, Contingency Plan.

Employees that handle hazardous waste will have immediate access to a landline telephone or two-way radio to summon internal or external assistance. At each location where a landline telephone will be located, the facility will post information, adjacent to the telephone, that include the names of the Emergency Coordinator and alternates, the names and telephone numbers of the local police, fire department, hospital, local and state emergency response agencies, spill response contractor, and National Response Center (NRC). In addition, the facility will post the emergency contact information throughout the facility to ensure that any employee has immediate access to this information in case he needs to contact outside assistance for an emergency situation via a cell phone.

To ensure that employees are knowledgeable of alarm system signals, all employees will be required to attend contingency plan training prior to employment and annually thereafter. Employee training is discussed in Section H, Personnel Training.

Emergency Equipment

To ensure that sufficient emergency response equipment is located within the facility, the facility will install appropriate response equipment throughout the facility based on the type of emergency situation that may occur with a specific area. The facility will be equipped with an automatic sprinkler system, fire extinguishers, and hose reels to respond to fires. The exact location of each fire response system will be determined by a risk analysis that will be conducted prior to the construction of the recycling center. All forklifts operating at the facility will be equipped with fire extinguishers. In addition to fire response equipment, the facility will install spill response equipment at locations where spent lead-acid batteries and sulfuric acid are managed. The spill response equipment will include sodium carbonate or calcium carbonate, shovels, plastic drums, brooms, and decontamination equipment to be used in the event of an accidental spill.

Water and Fire Control

Water for fire control at the Florence Recycling Center will be provided to the plant using a 250,000 gallon water tower that will be located adjacent to the Charge Preparation area. The water for the water tower will be provided by the City of Florence. Backflow prevention devices will be installed between the water tank and the piping systems entering the facility to prevent cross-contamination of the facility's potable water source. The water tower will provide adequate volume and pressure to supply fire hoses and automatic sprinkler systems with water to respond to a fire at the facility.

Automatic sprinkler systems will be provided for the CX area, Polyplant area, Charge Preparation area, Foundry area, Refinery area, Inspection and Storage area, and General and Production Offices. Fire hoses will be provided for the CX, Charge Preparation, Foundry, Refinery, and Inspection and Storage areas.

Testing and Maintenance of Equipment

All facility communication and alarm systems, fire protection equipment, and spill control equipment will be tested and maintained as necessary to assure its proper operation in time of emergency. Inspections will be performed monthly by either facility personnel or an independent contractor.

Access to Communication or Alarm System

All personnel involved in operations where hazardous material, waste, or equipment is encountered will have immediate access to emergency communication through visual or voice contact with another employee. Closed circuit televisions in the control rooms will also be used to observe personnel engaged in hazardous operations.

Aisle Space Requirement

Aisle space will be maintained during normal operations and allow for the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility operation in an emergency.

Documentation of Arrangements with Local Authorities

As appropriate for the facility and the potential need for the services of these organizations, JCBGI will attempt to make arrangements with the Florence police department, Florence fire department, local hospital, and state/local emergency response teams to make them familiar with the types of wastes managed at the facility and the types of emergency response actions that may required to respond to an emergency situation. In addition, JCBGI will initiate agreements with state emergency response teams, emergency response contractors, and equipment suppliers to provide emergency response assistance.

Letters will be sent by certified mail and a response from the entity acknowledging receipt will be requested prior to the startup of the facility operations. Records or acknowledgments will be kept as part of the Contingency Plan, as discussed in Section G, Contingency Plan. A copy of the letters documenting arrangements with local authorities will be maintained in Attachment 8. If any state or local authority refuses to enter into such arrangement to provide emergency assistance, this will be documented in the Operating Record and a copy of the refusal letters will be maintained in Attachment 8.

Police/Fire Department

JCI will attempt to make arrangements with the Florence County Sheriff and nearby fire departments to make them familiar with the layout of the facility, properties of hazardous material and waste handled at the facility and other associated hazards, places where facility personnel would normally be working, entrances to and traffic patterns inside the facility, and possible evacuation routes. If more than one fire department might respond to an

emergency situation, JCBGI will initiate agreements designating the primary emergency authority to a specific fire department, and agreements with any others to provide support to the primary emergency authority. A copy of the letters will be maintained in Attachment 8.

Emergency Response Teams

JCBGI will also attempt to make arrangements with the Florence County Emergency Preparedness Department, which serves as the County disaster planner, to make them familiar with the layout of the facility, properties of hazardous materials and waste handled at the facility and other associated hazards, places where facility personnel would normally be working, entrances to and traffic patterns inside the facility, and possible evacuation routes. A copy of the letters will be maintained in Attachment 8.

Local Hospitals

JCBGI will attempt to make arrangements with the local hospitals (McLeod Hospital, and Carolina's Hospital System) to make them familiar with the properties of hazardous waste handled at the facility and the types of injuries or illnesses that could result from fires, explosions, or releases at the facility. A copy of the letters will be maintained in Attachment 8.

F.4 Prevention Procedures, Structures, and Equipment

The following subsections contain the proposed procedures, structures, and equipment that will be used at the Florence Recycling Center to prevent accidental spills, adverse impacts to storm and ground water, and adverse impacts to human health at and around the facility.

Unloading Procedures

Trailers loaded with pallets of batteries and drums of non-waste lead plant scrap and trucks of other delivered material will be unloaded by forklifts. All unloading activities will occur within areas of the facility where storm water run-off is controlled. The batteries will be unloaded at a covered unloading dock. The unloading activities will be conducted at designated areas located near the point of use to minimize exposure to rainfall and the potential of an accidental release.

Incoming trailer loads of spent lead-acid batteries will enter the facility at a location controlled by the Scale Operator. The Scale Operator will review the accompanying shipping papers, verify the contents of the trailer, record the delivery in the Operating

Log, generate a weight ticket, prepare the material identification documentation, then direct the driver to a specific loading dock at the permitted Battery Warehouse. Once the trailer is backed into the covered unloading dock of the permitted Battery Warehouse, the pallets of spent lead-acid batteries will be unloaded using forklifts. Each pallet of spent lead-acid batteries will be labeled (lot number and number of batteries) using the material identification documentation generated by the Scale Operator. A hazardous waste label will also be affixed to each pallet of spent lead-acid batteries as described in Section D. When off loaded, the pallet of lead acid batteries will be placed in a designated storage location. After unloading the pallets of spent lead-acid batteries, the empty trailer will be reweighed by the Scale Operator to generate a weight ticket.

The same process will be followed for incoming trailer loads of non-waste plant scrap. The Scale Operator may direct the driver either to the permitted Battery Warehouse for temporary storage or to the Charge Preparation area. Within the Charge Preparation area, the pallets of drums will be removed from the trailer using forklifts, than placed in a designated area prior to placement of the contents into the feed hopper. After unloading the pallets of drums of lead plant scrap, the empty trailer will be reweighed by the Scale Operator to generate a weight ticket.

Run-off

Run-off from the Florence Recycling Center will be controlled by a system including curbed pavement, storm sewers, storm water holding tank, wastewater treatment plant, and constructed wetland. All storm water that falls on the active portion of the facility will be contained using curbing and pavement. The contained storm water will be collected in a series of culverts and storm water drains. The first flush (the initial half-inch of a rainfall event, which would contain the most impacted storm water) from roofs will be collected and transferred to a 250,000 gallon on-site storm water holding tank. The collected storm water will be treated in the on-site wastewater treatment plant, and treated wastewater will be stored in a 300,000 gallon industrial water tank where it will be reused in the recycling process. Once the first flush is captured, the remaining storm water will bypass the storm water holding tank and discharge directly into a constructed wetland. Discharge from the constructed wetland would either be to infiltration or to irrigation. Storm water will not be discharged to surface water.

Water Supplies

The Florence Recycling Center will be equipped with an 80,000-gallon on-site water tank to store potable water and a 250,000-gallon fire control water tank, both of which will be filled with water provided by the City of Florence. This stored water will be made

available for potable, fighting fires, cleaning equipment, and controlling dust. Backflow preventers will be installed between both the water tanks and plant and water tanks and City water supply to prevent cross contamination of the water supply.

Equipment and Power Failure

JCBGI proposes to install a backup power diesel generator to ensure the safe shutdown of critical process equipment that could pose an environmental hazard or unsafe situation in the event of a power failure. The backup power will be used to provide electricity to critical portions of the facility (furnaces, refining kettles, and pollution control equipment). The backup power will ensure that the facility can conduct a safe and orderly shutdown of equipment in the event of an unexpected loss of electrical power while minimizing air emissions during these episodes, and will prevent the solidification of molten lead in the smelting and refining equipment. Backup power to other pieces of process equipment will not be required to prevent an unsafe or environmentally hazardous condition.

Personnel Protection Procedures

Standard PPE for all site workers will include a uniform, safety glasses, safety shoes with meta-tarsal protection, and protective hand-wear. Each employee working in the production area will be issued a personal hard hat and respirator. Standard half-mask or powered-air full-face mask respirators will be chosen based upon the results of lead-in-air samples and individual employee blood lead monitoring results in accordance with the Occupational Safety and Health Administration (OSHA) Lead Standard, 29 CFR 1910.1025. A detailed description of respiratory equipment and respiratory protection procedures used at the facility will be presented in the Respiratory Protection Program. When respirator cartridges become spent, replacement cartridges will be available at the Spare Parts Warehouse adjacent to Maintenance.

Specific jobs within the facility, especially within the CX area, Wastewater Treatment Plant area, and smelter and refining areas, may require additional protective equipment. Goggles or face shields and acid resistant rubber boots, coveralls, bibs, and gloves will be provided upon employment to certain employees working in these areas. The protective equipment will be maintained in the Spare Parts Warehouse as well as in the Office Building for use by visitors requiring them.

Procedures to Minimize Release to Atmosphere

Personal protective equipment is used to supplement engineering controls in ensuring the safety of employees. At the facility, these proposed engineering controls include

acid mist scrubbers, baghouse ventilation systems, and enclosed equipment including belt conveyors. Within the permitted Battery Warehouse, releases to the atmosphere are minimized by the fact that the containers stored in the warehouse remain closed. No proposed air pollution control equipment is specific to that area. The batteries are first opened when they enter the reclamation process. Ventilation and air emission controls are provided specific to the CX (battery breaker) area.

The Florence Recycling Center is subject to permitting under the Clean Air Act (CAA). The facility has applied for a non-prevention of significant deterioration (PSD), air construction permit that contains federally enforceable *Synthetic Minor* limits. The permit number is 1040-0129 CA. Air pollution control equipment at the site includes a plate scrubber, baghouses, high-efficiency particulate air (HEPA) filters, wet scrubbers, and afterburners. Roof vents in the permitted Battery Warehouse and CX area will continuously exchange air and protect employees from exposure to lead emissions due to non-routine, unexpected releases.

F.5 Prevention of Reaction of Ignitable, Reactive, and Incompatible Waste

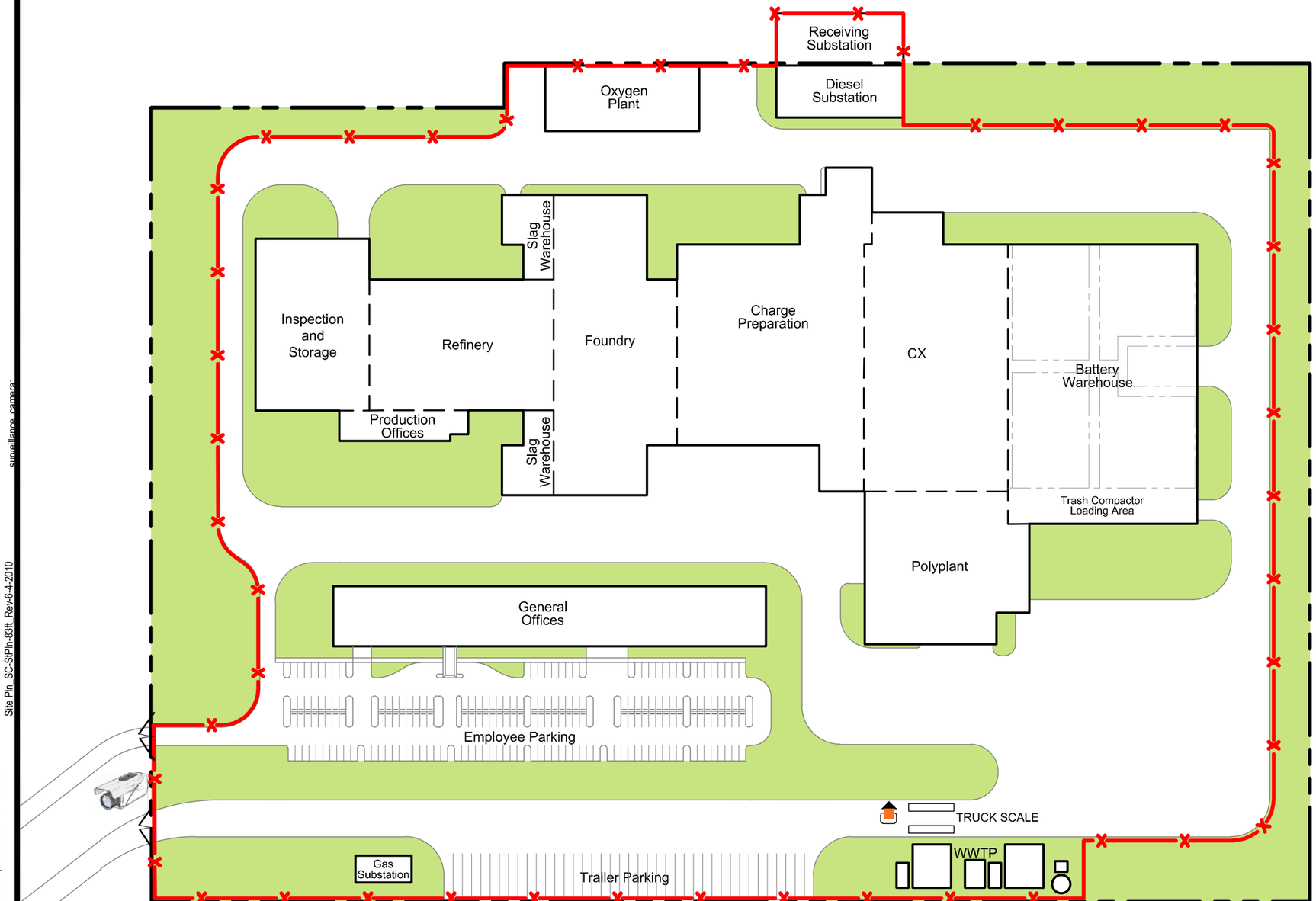
The proposed Florence Recycling Center will not accept ignitable, reactive, or incompatible waste. Therefore, the management of these types of waste is not applicable.

Table F-1
Inspection Schedule

ITEM/AREA	FREQUENCY	INSPECT FOR
Safety and Emergency Equipment		
Communication Devices	Quarterly	Access, Operation
Fire Extinguishers	Monthly	Operation, Location, Access, Chemical Level
Fire Hose Reels	Monthly	Location, Wear
Medical Kits	Monthly	Location, Access, Inventory, Instructions
Spill Kits	Monthly	Location, Access, Inventory
Emergency Showers and Eyewash Stations	Monthly	Access, Operation
Security Devices/Systems		
Signage	Quarterly	Location: Visibility, Structural Support
Lighting	Quarterly	Operation, Controls, Maintenance, Inventory, Power Source
Fence/Gates	Quarterly	Deterioration, Damage, Test Locks
Security Camera	Quarterly	Operation, Integrity, Location
Structures		
Floors, Walls, Roofs	Monthly	Structural Integrity, Fractures, Leaks
Drains	Monthly	Structural Integrity, Blockage
Structural Supports	Monthly	Structural Integrity, Corrosion
Container Storage Area (Battery Warehouse)		
Floor and Curbing	Weekly	Integrity, Cracks, Wear, Markings, Joints, Aisle Space, Run-on
Palletized Battery/Drum Storage	Weekly	Stacking, Alignment, Leakers, Spillage
Unloading Docks (Battery Warehouse)		
Concrete Pavement	Daily	Integrity, Cracks, Wear, Joints, Spillage
Trailer Storage Area		
Pavement	Daily	Integrity, Wear, Fencing, Spillage
Wet End (CX System)		
Floor System	Monthly	Integrity, Wear, Spillage
Process Equipment	Monthly	Operations, Leakage, Integrity
Process Tanks	Monthly	Operations, Leakage, Integrity
Process Piping	Monthly	Operations, Leakage, Integrity, Blockage

Table F-1
Inspection Schedule

ITEM/AREA	FREQUENCY	INSPECT FOR
Dry End (Smelting and Refining)		
Floor System	Monthly	Integrity, Wear, Spillage
Process Equipment	Monthly	Operations, Leakage, Integrity
Wheel Washing Areas		
Floor System	Monthly	Integrity, Wear, Tracking
Pollution Control Equipment		
Pavement	Monthly	Integrity, Wear, Spillage
Equipment	Monthly	Operations, Leakage, Integrity
Piping	Monthly	Operations, Leakage, Integrity, Blockage
Wastewater Treatment Plant		
Floor System	Monthly	Integrity, Wear, Spillage
Treatment Equipment	Monthly	Operations, Leakage, Integrity
Treatment Tanks	Monthly	Operations, Leakage, Integrity
Process Piping	Monthly	Operations, Leakage, Integrity, Blockage
Water Tanks		
Storm Water Tank	Monthly	Integrity, Operation, Foundation
Potable Water Tank	Monthly	Integrity, Operation, Foundation
Industrial Water Tank	Monthly	Integrity, Operation, Foundation



LEGEND

- FACILITY FOOTPRINT
- BUILDING
- BUILDING INTERNAL DIVISION
- CURB
- GRASS
- FENCE
- GATE
- SECURITY CAMERA
- GUARD

0 150 300

PROJECT: **JOHNSON CONTROLS BATTERY GROUP BATTERY RECYCLING FACILITY**

SHEET TITLE: **ACCESS CONTROL**

DRAWN BY: W BERRY	SCALE: See bar scale	PROJ. NO. 02452.09.001	
CHECKED BY: JEP		FILE NO. 0245209-F-1.dwg	
APPROVED BY: JEP	DATE PRINTED:	**Figure F-1**	
DATE: June 2010			

RMT
30 Patewood Drive, Suite 100
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Phone: 864-281-0030
Fax: 864-281-0288

surveillance camera

Site Pln_SC-StPln-83ft_Rev6-4-2010

Drawing Name: J:\02452\09.001\0245209-F-1.DWG
Operator Name: W Berry

Section G
Contingency Plan

The information presented in this section is submitted as required under R.61-79.264 Subpart D and R.61-79.270.14(b)(7), and applies to the entire JCBGI facility. As such, this plan has been developed to meet the requirements of R.61-79.264.50 through R.61-79.264.56 (Contingency Plan and Emergency Procedures) as applicable for minimizing hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water. The Contingency Plan will be finalized prior to initiating operations of the Florence Recycling Center. A copy of the Contingency Plan will be maintained as Attachment 9.

Upon approval by SC DHEC, this plan will become a condition of the Operating Permit for the facility. A copy of the approved plan and all revisions to the plan will be kept at the facility and submitted to local authorities that may be called upon to provide emergency services. The contents of the proposed Contingency Plan are presented in the following subsections.

G.1 Objective

The primary objective of this Contingency Plan is to establish appropriate and effective countermeasures in response to on-site operational emergencies that could occur at the Florence Recycling Center. These established procedures also apply to off-site occurrences that could directly threaten the facility.

Provisions of this plan will be carried out immediately in the event of fire, explosion, or significant unplanned release of hazards waste at the facility. A copy of the Contingency Plan will be maintained at the facility at all times. Additionally, copies of the Contingency Plan will be distributed to the following local authorities that may be called upon to provide emergency services or assistance: Florence County Sheriff's Department, Florence Fire Department, McLeod Hospital, and Carolina's Hospital System.

This Contingency Plan will be reviewed and amended, if necessary, whenever:

- The facility permit is revised
- The Contingency Plan fails in an emergency
- The facility changes in any way that materially increases the potential for emergency situations or changes in the response necessary in any emergency
- The list of Emergency Coordinators changes

- The list of emergency equipment changes.

G.2 Emergency Coordinators

An Emergency Coordinator will be on the facility premises or on call (*i.e.*, available to respond to an emergency by reaching the facility within a short period of time), with the responsibility for coordinating all emergency response measures. The Emergency Coordinator will be thoroughly familiar with all aspects of the Contingency Plan, all hazardous waste operations and activities at the facility, the location and characteristics of hazardous waste handled, the location of all hazardous waste records within the facility, and the facility layout. In addition, the Emergency Coordinator will have the authority to commit the resources needed to carry out the Contingency Plan.

G.3 Implementation

The Contingency Plan will describe the actions facility personnel will take to comply with the applicable regulatory requirements in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility.

The following situations will constitute an emergency requiring implementation of the Contingency Plan:

1. Injury to employee – When the injury is of a serious enough nature that medical attention above the level of first aid is required.
2. Major spills or releases – When the spill could cause the release of toxic material and/or corrosive liquid to the environment as follows:
   - The release/spill can be contained on site, but the potential exists for groundwater contamination;
   - The release/spill cannot be contained on site; or
   - The release/spill cannot be brought under control within ten minutes.
3. Fires and explosions – When a fire is discovered or an explosion occurs and the situation cannot be brought under control within a reasonable amount of time and with the equipment on-hand.

Emergency procedures will be executed for any event associated with hazardous material or hazardous waste involving any possible danger to personnel, equipment, or the environment. Situations that (1) occur entirely within the facility AND (2) are totally contained with no threat to personnel or the environment do not require formal implementation of the Contingency Plan;

however, applicable spill procedures in the Contingency Plan may also be used to facilitate cleanup operations for any minor spill events that may occur.

If the Emergency Coordinator determines that the facility has had a release, fire, or explosion that could threaten human health or the environment outside the facility, the following actions will be taken:

1. If assessment of the situation indicates that evacuation of local areas may be advisable, the Emergency Coordinator will immediately notify the appropriate authorities. They will be available to help appropriate officials decide whether local areas should be evacuated.
2. Immediately notify the appropriate agencies and local authorities and provide the following information:
   - Name and telephone number of reporter;
   - Name and address of facility;
   - Time and type of incident (*e.g.*, release, fire);
   - Name and quantity of material(s) involved to the extent known;
   - The extent of injuries, if any; and
   - The possible hazards to human health, or the environment, outside the facility.

If the incident involves a fire or explosion, the Emergency Coordinator is required to do further evaluations of the site to facilitate mitigation/cleanup operations. Extreme caution will be used in approaching the scene. Approach to the area will be from the upwind direction so that exposure to fumes is minimized and vision is not hampered by drifting smoke. The best approach will be determined and will allow for safe exit from the area by emergency response personnel. A visual survey for downed power lines and live wires will be made.

The Emergency Coordinator will note debris that might obstruct access by emergency response equipment. Constant communication between the Emergency Coordinator and facility personnel will be maintained. If emergency response equipment is required, a route upwind from the scene will be determined. The Emergency Coordinator will maintain control over the situation until further assistance arrives as necessary.

G.4 Emergency Actions

The Emergency Coordinator will arrive at the scene of the emergency as soon as possible after being notified of an imminent or actual release, fire, or explosion.

The Emergency Coordinators will have the authority to make the judgment call to start and then commit the resources needed to carry out the Contingency Plan. If necessary, the

Emergency Coordinator may also delegate their authority to responsible employees to carry out components of this Contingency Plan.

This section describes the procedures that will be followed if an emergency occurs at the site.

Notification

The Contingency Plan will include a list of internal and external emergency contact telephone numbers including the following:

– 24-hour DHEC Emergency Response Hotline	1-888-481-0125
– Florence EQC Field Office	843-661-4825
– Florence County Sheriff	843-665-2121
– Florence County Emergency Management	843-665-7255
– Local Fire/Rescue	911

Whenever there is an emergency situation, the Emergency Coordinator (or a responsible employee chosen by the Emergency Coordinator) will immediately

1. Activate internal facility alarms or communications systems, where applicable, to notify all facility personnel;
2. Notify appropriate state or local agencies with designated response roles if their help is needed; and
3. Stop process operations if justified.

Identification of Hazardous Materials

The assessment of the situation may be made by observation, review of facility records and manifests, or by chemical analysis, if necessary. The Emergency Coordinator will collect as much information as necessary to determine the seriousness of the situation and the correct response measures. He will determine the nature and source of any spilled or leaking material. Meteorological conditions (wind, temperature, precipitation, visibility, cloud cover, forecast) that may affect emergency response procedures will also be checked by the Emergency Coordinator. The Emergency Coordinator will determine the wind conditions at the time of an emergency to the extent practical.

Hazard Assessment

An assessment will also be made by the Emergency Coordinator that addresses the possible hazards to human health and the environment that may result from the release, fire, or explosion. The assessment will consider both direct and indirect effects (*e.g.*, the

effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off from water or chemical agents used to control fire and heat induced explosions). If the situation requires, they will arrange for a qualified person to obtain samples for analysis. The assessment will include the following:

1. Public health hazards (*e.g.*, respiratory, groundwater, surface water, etc.);
2. Downwind/downstream hazards;
3. Whether outside assistance will be required;
4. Potential fire and explosion hazards;
5. Feasibility and risk involved in the cleanup;
6. Feasibility of mitigation (*e.g.*, neutralization, etc.);
7. Suitability and availability of protective clothing and respiratory protection; and
8. Possibility of chemical reactions with incompatible material.

Control Procedures

Employees will be aware of their status as Non-Designated or Designated employees. Designated employees will take on more responsibility in emergency situations. Temporary employees/contractors are considered Non-Designated employees. Response steps are as follows:

First Employee/Non-Designated

If the first employee is Non-Designated, then he will take note of an emergency situation (overflow incident, breach of containment system, injury, spill or release, fire or explosion) and:

1. Immediately verbally communicate with nearby co-workers and inform the Area Supervisor/Designated employee;
2. Immediately alert the Area Supervisor/Designated employee and Emergency Coordinator whenever a potential, imminent, or actual emergency situation is observed;
3. Never attempt to correct an out-of-control situation while alone; and
4. As directed by the Emergency Coordinator, exit through the nearest available exit and gather in the pre-designated assembly area and do not return until the "all-clear" signal is given.

First Employee/Area Supervisor/Designated Employee

If the first employee is Designated or an Area Supervisor, then:

1. Call the Emergency Coordinator either directly through the plant telephone system or a two-way, hand-held radio, or by calling the security guard at the security guard station. The Emergency Coordinator or Security Guard must be told:
   - Who is calling;
   - What has taken place;
   - Where the emergency exists;
   - What actions are being taken; and
2. Report of any injuries;
3. Ensure that all personnel that have not been designated to remain in the area of the emergency have exited the scene of the emergency, and are accounted for; and
4. Identify any injuries and render first aid or obtain assistance, if necessary, as soon as possible.

Designated and Non-Designated Employee Response

Designated employees will remain in the area only if there is not an immediate threat to life or health. They will remain only so long as it takes to render first aid to an injured employee or to secure critical operations prior to exiting the area. Some of these employees will be trained in general first aid and CPR. The Shift Supervisor or Designated employee will perform the following tasks:

1. Assist any individuals that require help;
2. Call the Emergency Coordinator who will then notify, or instruct the Security Guard to notify, appropriate authorities (fire department, police, paramedics, etc.) and other facility personnel as appropriate; and
3. Ensure that all personnel who have not been designated to remain have exited the scene of the emergency and are accounted for;

Non-Designated employees are to:

1. Discontinue operating any equipment or machinery and ensure that the equipment or machinery is in the "stop" or "off" position;
2. Exit through the nearest available exit in an orderly manner and gather in the pre-designated assembly area; and

3. Not return to the scene of the emergency until the "all clear" sign is given. Only remain in the area if specifically requested to do so by the Area Supervisor in charge.

Prevention of Recurrence or Spread of Fires, Explosions, or Releases

The Emergency Coordinator will take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures will include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

If the facility stops operations in response to a fire, explosion, or release, the Emergency Coordinator will assign a responsible employee to monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

Storage and Treatment of Released Material

The Emergency Coordinator will provide for treatment, storage, or disposal of recovered waste, contaminated soil or surface water, or any other material that resulted from the release, fire, or explosion at the facility. Whenever possible, recovered lead bearing material will be reclaimed at the facility or transferred to another permitted secondary lead recycling facility for recycling. Other spilled material and/or lead-contaminated material that cannot otherwise be reclaimed will be managed in accordance with applicable regulations.

Incompatible Waste

The Emergency Coordinator will ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed. Currently, JCBGI does not expect to manage incompatible wastes at the Florence Recycling Center.

Post Emergency Equipment Management

The Emergency Coordinator will ensure that equipment used in an emergency is cleaned and made fit for its intended use before operations are resumed. This includes, where necessary, recharge or replacement of fire extinguishers, wash down and/or repair of mobile equipment, cleaning and replacing firefighting equipment to its proper

storage area, restocking emergency medical kits, and the restocking of absorbent material and neutralizing chemicals.

Notification of Federal, State, and Local Authorities before Resuming Operations

The Emergency Coordinator will note in the facility Operating Record the time, date, and details of any incident that requires implementing the Contingency Plan. Within 15 days after the incident, the Emergency Coordinator will submit a written report to SC DHEC. The report will include the following information:

1. Name, address, and telephone number of the individual making the report;
2. Name, address, and telephone number of the facility;
3. Date, time, and type of incident (*e.g.,* fire, explosion);
4. Name and quantity of material(s) involved;
5. The extent of injuries, if any;
6. An assessment of actual or potential hazards to human health or the environment, where this is applicable;
7. Estimated quantity and disposition of recovered material that resulted from the incident;
8. Cause of occurrence;
9. Period of occurrence, including exact dates and times;
10. Time occurrence expected to continue (if not already corrected); and
11. Steps taken or planned to reduce, eliminate, and prevent recurrence.

Container Spills and Leakage

In the event that there is acid spillage from a container (spent lead-acid batteries), the acid will be neutralized with sodium carbonate or calcium carbonate and the material will be placed into a 55-gallon plastic drum. The drum will be managed as a hazardous waste and transferred to a permitted treatment, storage, and disposal facility for management in accordance with the Federal Land Ban Restrictions. After removing the spill, the area will be vacuumed or washed down and any resulting wash water will be collected and transferred to the onsite wastewater treatment plant for treatment.

In the event that a large number of containers (spent lead-acid batteries) are leaking at once, causing an emergency situation, the Emergency Coordinator will be alerted. At the instruction of the Emergency Coordinator, the leaking containers and/or batteries will be placed in a 55-gallon plastic drum and either immediately processed or

scheduled for processing at a later date. Any spilled acid will be neutralized and placed in a 55-gallon plastic drum. The affected areas will then be vacuumed or washed down with water. Wash down water will be collected and transferred to the onsite wastewater treatment plant for treatment.

JCBGI does not propose to manage hazardous waste at the Florence Recycling Center in any units other than containers, so responses to spills and releases from tanks, surface impoundments, containment buildings, or drip pads are not applicable.

G.5 Emergency Equipment

The location of proposed emergency equipment at the Florence Recycling Center is shown on Figures G-1 through G-5. Figure G-1 shows the location of fire hoses, Figure G-2 shows the location of fire extinguishers, Figure G-3 shows the location of spill kits, Figure G-4 shows the location of first aid kits, and Figure G-5 shows the location of shower/eyewash stations. JCIBG proposes to maintain several emergency response systems including alarm systems, spill and fire control equipment, and other emergency supplies and equipment as described below:

The facility will maintain the following equipment for responding to emergency situations:

1. First aid kits will be located throughout the plant. These kits will be used for minor injury situations;
2. Portable fire extinguishers, fire control equipment (including special extinguishing agents such as foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment will be maintained to respond to fire and spill emergencies. Emergency safety showers/eyewash stations will be located throughout the facility. Supplies will also be available for spill containment and acid neutralization. Other miscellaneous equipment available for emergency response will include on-site fire hydrants, small hand tools for spill containment/cleanup, and sodium carbonate or calcium carbonate for acid neutralization; and
3. Water at adequate volume and pressure to supply fire hose streams and automatic sprinklers will be maintained for fire emergencies. Water will be also supplied to a number of emergency safety showers/eye wash stations.

All JCBGI communication and alarm systems, fire protection equipment, and spill control equipment will be tested and maintained as necessary to ensure its proper operation in time of emergency. These inspections will be performed monthly by the facility personnel or an independent contractor.

All emergency equipment and systems will be inspected according to the schedule in Subsection F-2 of this permit application. All employees will be trained in the proper use of the

emergency equipment and systems, as well as the locations of these items. The safety training program is addressed in Section H of this permit application.

G.6 Arrangements with Local Authorities

As appropriate for the JCBGI facility and the potential need for the services of state and local authorities, the following arrangements will be made:

1. Arrangements to familiarize the Florence County Sheriff's Department, Florence Fire Department, emergency response teams, and the local office of emergency services with the layout of the facility, properties of hazardous material and waste handled at the facility and other associated hazards, places where facility personnel would normally be working, entrances to and traffic patterns inside the facility, and possible evacuation routes;
2. Agreements designating primary emergency authority to the Florence County Sheriff's Department and a specific fire department, and agreements with any others to provide support to the primary emergency authority;
3. Agreements with state emergency response teams, emergency response contractors, and equipment suppliers;
4. Arrangements to familiarize local hospitals (McLeod and Carolina's) with the properties of hazardous material, waste, and used oil handled at the facility and the types of injuries or illnesses that could result from fires, explosions, or releases at the facility; and
5. Arrangements agreed to by the Florence County Sheriff's Department, Windy Hill Fire Department, McLeod and Carolina's hospitals, contractors, and state and local emergency response teams to coordinate emergency services.

Letters will be sent by certified mail and a response from the entity acknowledging receipt will be requested. Records or acknowledgments will be kept as part of the Contingency Plan. If any state or local authority refuses to enter into such arrangement, this will be documented in the Operating Record.

G.7 Evacuation Plan for Facility Personnel

The determination of a need for evacuation will be made based on the type and location of the emergency. The Emergency Coordinator will determine which areas need to be evacuated in an emergency and will inform supervisors in each production area by direct verbal communication or by two-way, hand-held radios or similar devices. If employees are unsure whether to leave and gather at the pre-designated assembly area, they should evacuate anyway until the Emergency Coordinator makes a determination. Employees must evacuate if directed to do so. A representation of the facility-wide evacuation routes and pre-designated assembly areas is included on Figure G-6. Upon completion of the final design of the facility, individual

evacuation diagrams for each building will be generated and posted within the individual buildings. These individual evacuation diagrams will be maintained in Attachment 9.

Once everyone has exited, all personnel will meet at a pre-designated assembly area to account for everyone from their individual departments. Any injuries will be identified and first aid will be administered as soon as possible. Entrance into the affected area will be restricted to those persons equipped with proper protective gear. Only those persons responding to the emergency will be allowed in the area. Personnel will remain at the pre-designated assembly areas until the situation is under control and the "all clear" signal is given.

Employees will be trained to exit their work areas and gather at the pre-designated assembly areas as directed by the Area Supervisor or Emergency Coordinator. Specific shut-down procedures and specific personnel roles will be established**.** Evacuation routes for the facility will be determined and posted in all work areas. Each employee will be trained to know the appropriate evacuation route(s) and pre-designated assembly area for their area.

G.8 Reports and Record Keeping

As specified in R.61-79.264.56(j), within 15 days after the incident, the Emergency Coordinator will submit a written report to SC DHEC. The report will include the following information, as required:

1. Name, address, and telephone number of the owner/operator;
2. Name, address, and telephone number of the facility;
3. Date, time, and type of incident (e.g., fire, explosion);
4. Name and quantity of material(s) involved;
5. The extent of injuries, if any;
6. An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
7. Estimated quantity and disposition of recovered material that resulted from the incident.

G.9 Location and Distribution of Contingency Plan

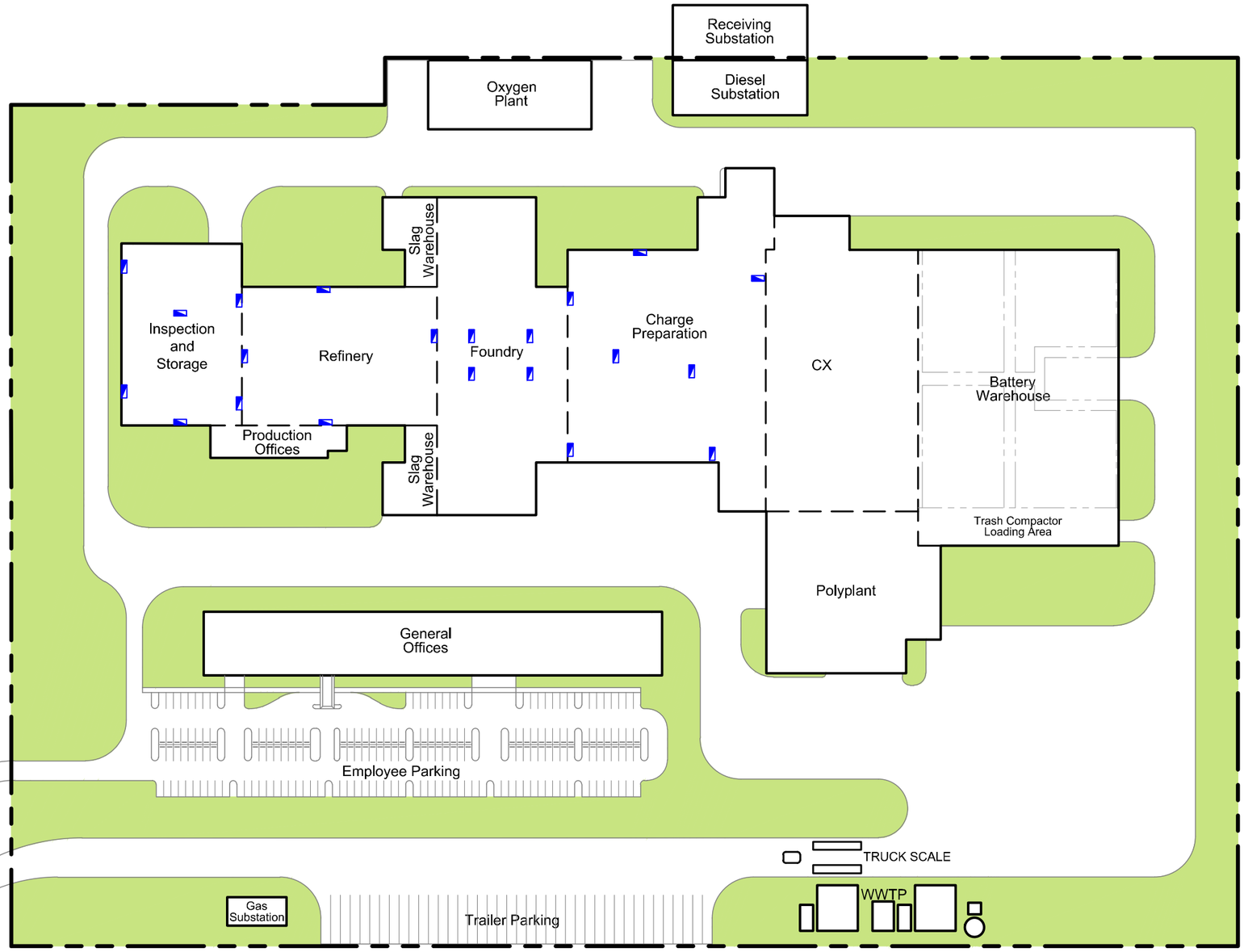
A copy of the Contingency Plan and all revisions will be maintained at the facility in the following locations:

1. Facility Manager's Office;
2. Environmental Engineer's Office;
3. Security Guard House;

4. Maintenance Shop Office;
5. Receptionist's Desk;
6. Health and Safety Office;
7. Human Resources; and
8. Production Offices (one in each department of the facility).

An up-to-date copy of the Contingency Plan will also be maintained at the home of the Emergency Coordinator, all alternates, and Area Supervisors. Additionally, a copy will be submitted to the following off-site locations:

1. South Carolina Department of Health and Environmental Control;
2. Windy Hill Fire Department;
3. Florence County Sheriff's Department;
4. McLeod Hospital
5. Carolina's Hospital System; and
6. Emergency response teams that may be called upon to provide emergency services.



LEGEND

- FACILITY FOOTPRINT
- BUILDING
- BUILDING INTERNAL DIVISION
- CURB
- GRASS
- FIRE HOSE

0 150 300

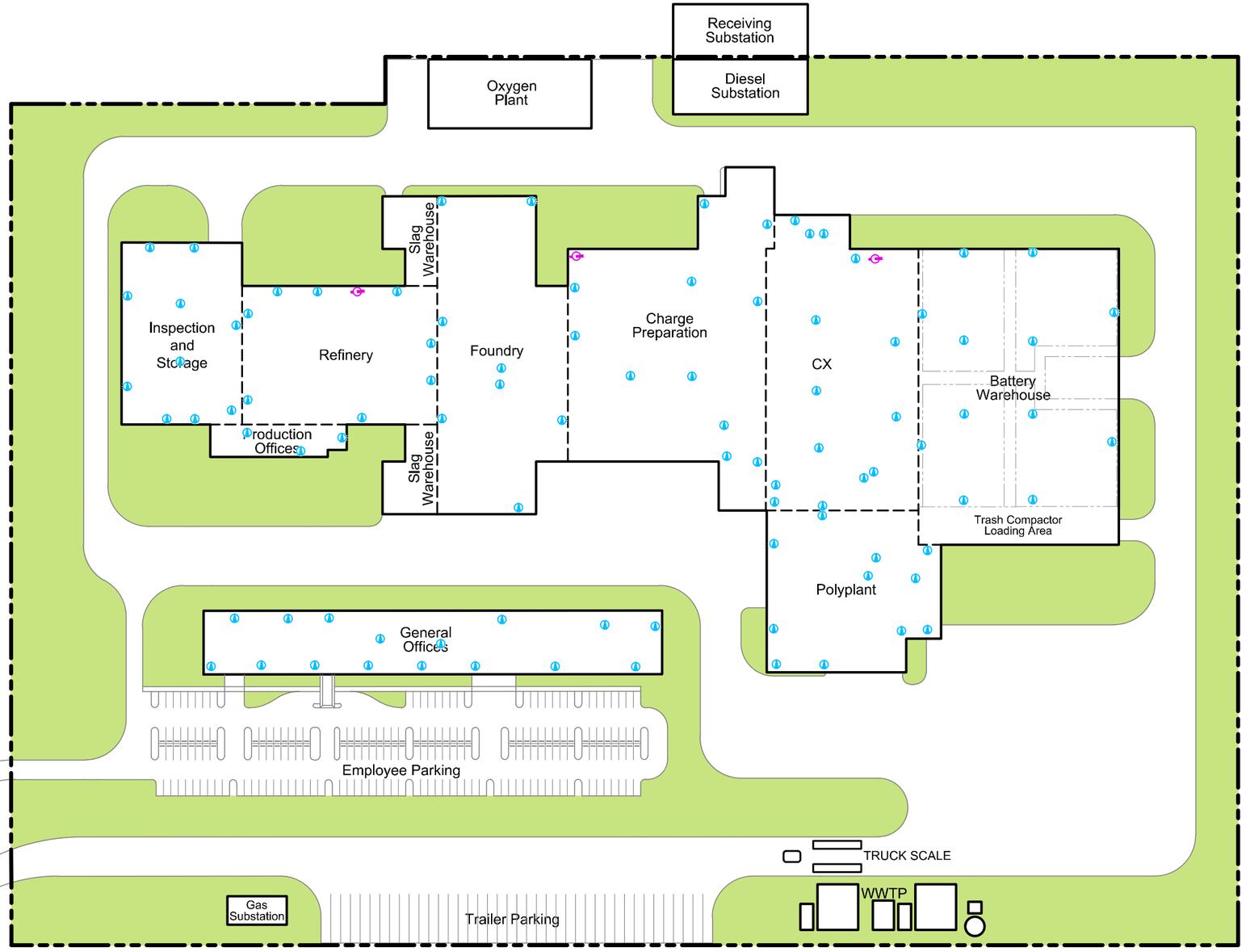
PROJECT: **JOHNSON CONTROLS BATTERY GROUP BATTERY RECYCLING FACILITY**

SHEET TITLE: **FIRE HOSE LOCATIONS**

DRAWN BY: W BERRY	SCALE: See bar scale	PROJ. NO. 02452.09.001
CHECKED BY: JEP		FILE NO. 0245209-G-1.dwg
APPROVED BY: JEP	DATE PRINTED:	**Figure G-1**
DATE: June 2010		

RMT
30 Patewood Drive, Suite 100
Patewood Plaza One
Greenville, S.C. 29615
Phone: 864-281-0030
Fax: 864-281-0288

Drawing Name: J:\02452\09.001\0245209-G-1.DWG
Operator Name: W Berry
Site Pln_SC-SIPln-83ft_Rev-6-4-2010



LEGEND

- FACILITY FOOTPRINT
- BUILDING
- BUILDING INTERNAL DIVISION
- CURB
- GRASS
- FIRE EXTINGUISHER TYPE ABC
- FIRE EXTINGUISHER TYPE BC

N

0 150 300

PROJECT: **JOHNSON CONTROLS BATTERY GROUP BATTERY RECYCLING FACILITY**

SHEET TITLE: **FIRE EXTINGUISHER LOCATIONS**

DRAWN BY: W BERRY	SCALE: See bar scale	PROJ. NO. 02452.09.001
CHECKED BY: JEP		FILE NO. 0245209-G-2.dwg
APPROVED BY: JEP	DATE PRINTED:	**Figure G-2**
DATE: June 2010		

RMT
30 Patewood Drive, Suite 100
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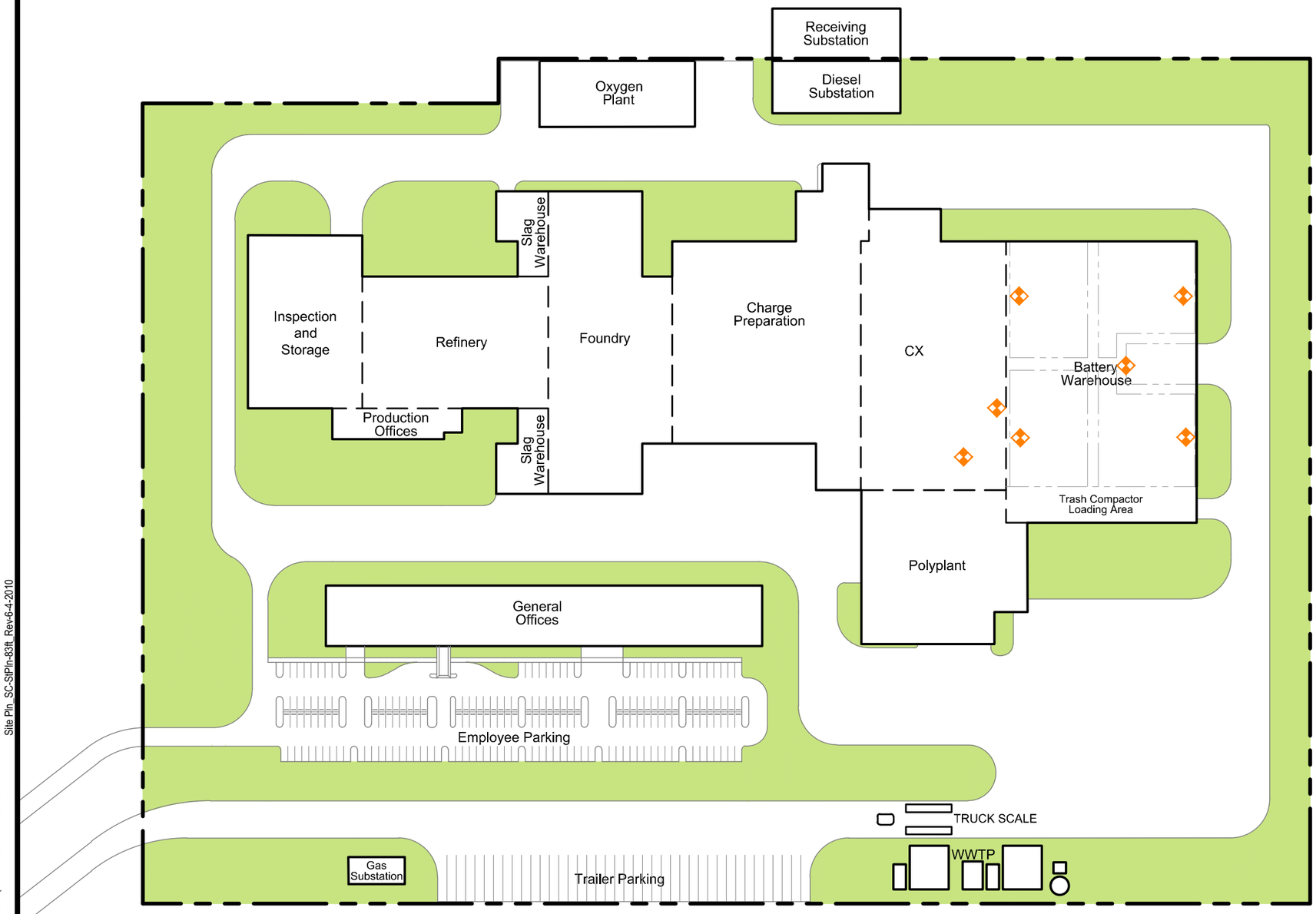
Phone: 864-281-0030
Fax: 864-281-0288

Drawing Name: J:\02452\09.001\0245209-G-2.DWG
Operator Name: W Berry
Site Pln_SC-StPln-83ft_Rev6-4-2010



LEGEND

- FACILITY FOOTPRINT
- BUILDING
- BUILDING INTERNAL DIVISION
- CURB
- GRASS
- SPILL KIT

0 150 300

PROJECT:
JOHNSON CONTROLS BATTERY GROUP
BATTERY RECYCLING FACILITY

SHEET TITLE:
SPILL KIT LOCATIONS

DRAWN BY: W BERRY	SCALE:	PROJ. NO. 02452.09.001	
CHECKED BY: JEP	See bar scale	FILE NO. 0245209-G-3.dwg	
APPROVED BY: JEP	DATE PRINTED:	**Figure G-3**	
DATE: June 2010			

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30 Patewood Drive, Suite 100
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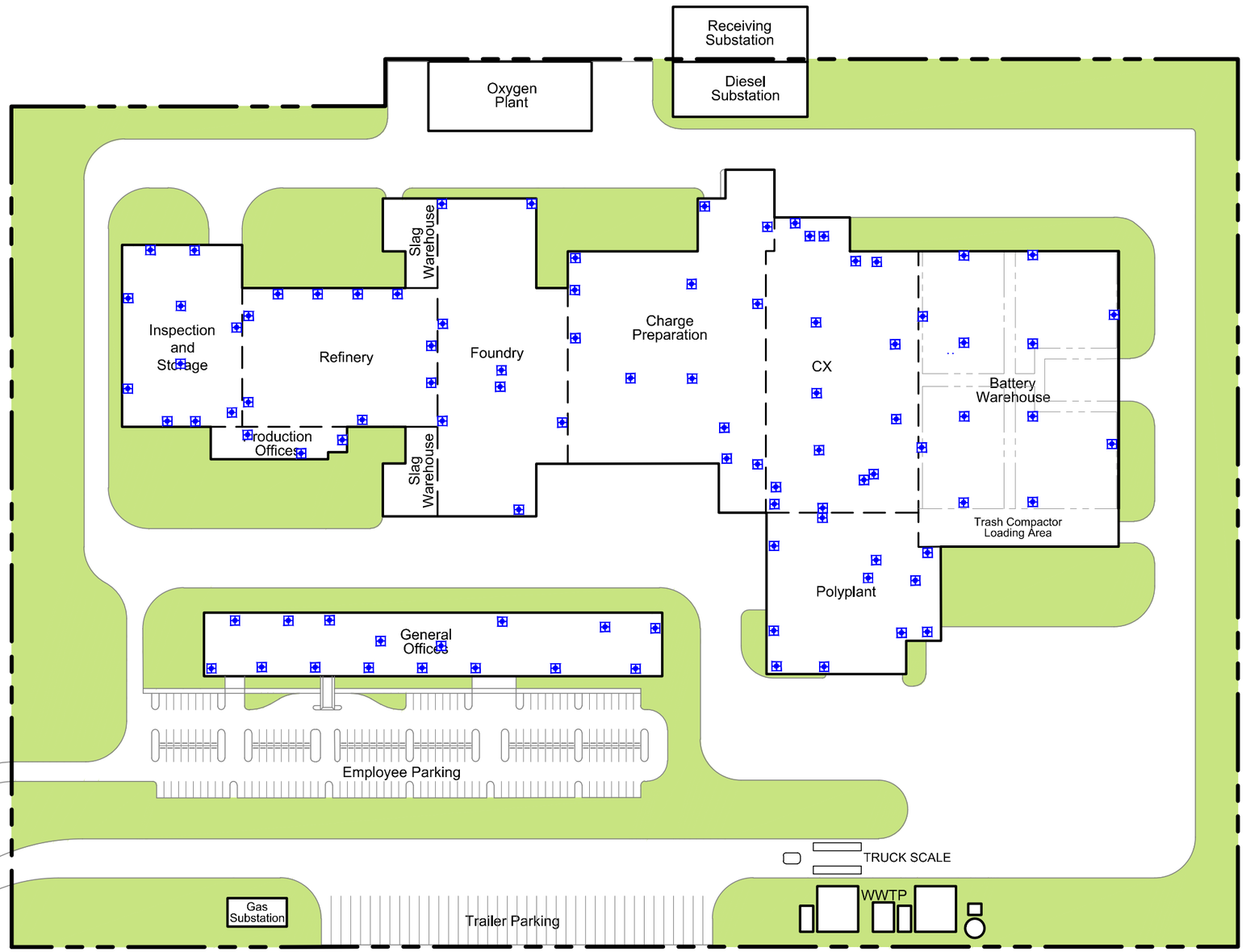
Phone: 864-281-0030
Fax: 864-281-0288

Drawing Name: J:\02452\09.001\0245209-G-3.DWG
Operator Name: W Berry
Site Pln_SC-SIPln-83ft_Rev6-4-2010



LEGEND

- FACILITY FOOTPRINT
- BUILDING
- BUILDING INTERNAL DIVISION
- CURB
- GRASS
- FIRST AID KIT

0 150 300

PROJECT:
JOHNSON CONTROLS BATTERY GROUP
BATTERY RECYCLING FACILITY

SHEET TITLE:
FIRST AID KIT LOCATIONS

DRAWN BY: W BERRY	SCALE: See bar scale	PROJ. NO. 02452.09.001
CHECKED BY: JEP		FILE NO. 0245209-G-4.dwg
APPROVED BY: JEP	DATE PRINTED:	**Figure G-4**
DATE: June 2010		

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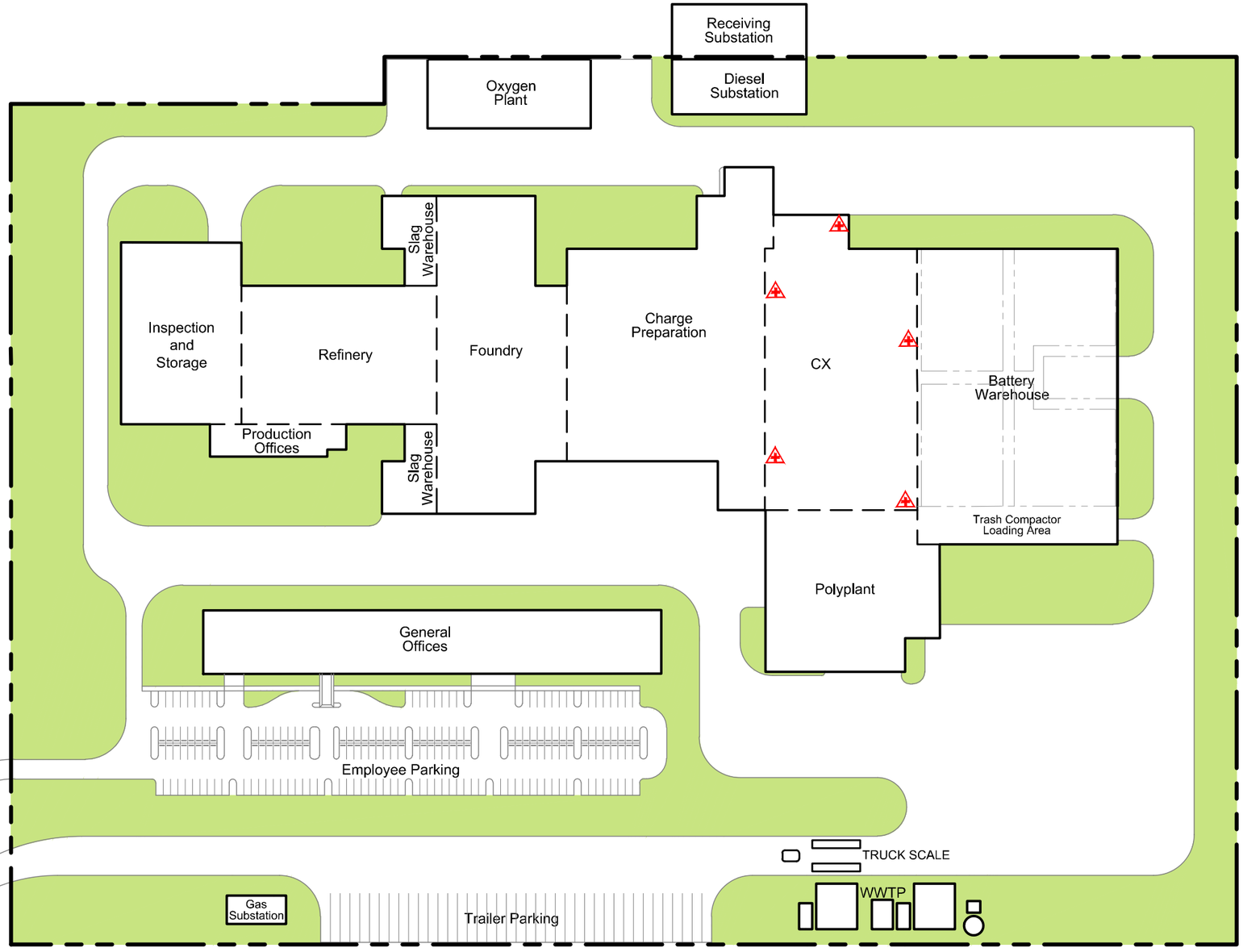
Drawing Name: J:\02452\09.001\0245209-G-4.DWG
Operator Name: W Berry
Site Pln_SC-StPln-83ft_Rev6-4-2010



LEGEND

- FACILITY FOOTPRINT
- BUILDING
- BUILDING INTERNAL DIVISION
- CURB
- GRASS
- SHOWER / EYEWASH STATION

0 150 300

PROJECT: **JOHNSON CONTROLS BATTERY GROUP BATTERY RECYCLING FACILITY**

SHEET TITLE: **SHOWER / EYEWASH STATION LOCATIONS**

DRAWN BY: W BERRY	SCALE: See bar scale	PROJ. NO. 02452.09.001
CHECKED BY: JEP		FILE NO. 0245209-G-5.dwg
APPROVED BY: JEP	DATE PRINTED:	**Figure G-5**
DATE: June 2010		

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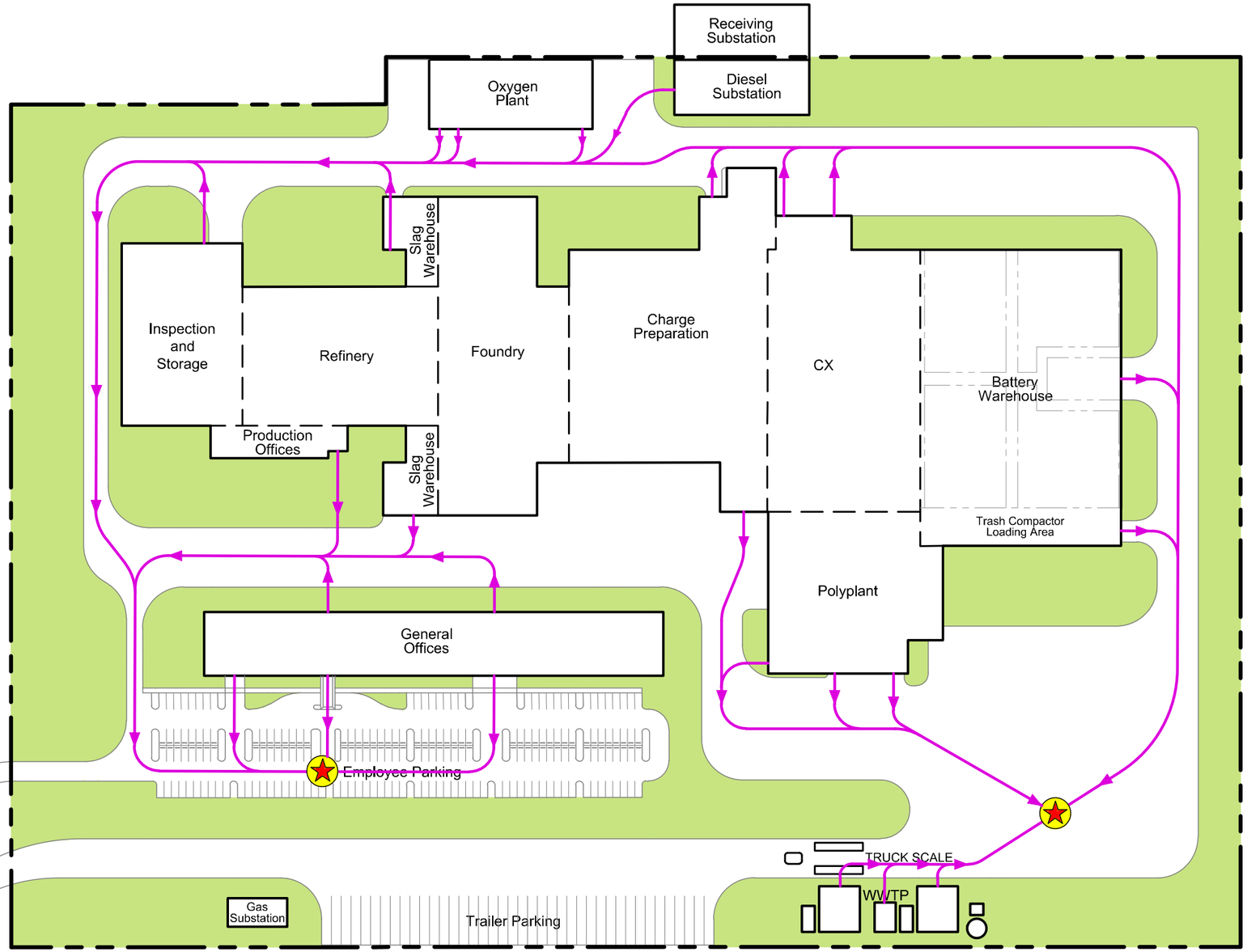
Fax: 864-281-0288

Drawing Name: J:\02452\09.001\0245209-G-5.DWG
Operator Name: W Berry
Site Pln_SC-SitPln-83ft_Rev4-4-2010



LEGEND

- FACILITY FOOTPRINT
- BUILDING
- BUILDING INTERNAL DIVISION
- CURB
- GRASS
- EVACUATION ROUTES
- ASSEMBLY POINTS

N

0 150 300

PROJECT:
JOHNSON CONTROLS BATTERY GROUP
BATTERY RECYCLING FACILITY

SHEET TITLE:
EVACUATION ROUTES

DRAWN BY: W BERRY	SCALE: See bar scale	PROJ. NO. 02452.09.001	
CHECKED BY: JEP		FILE NO. 0245209-G-6.dwg	
APPROVED BY: JEP	DATE PRINTED:	**Figure G-6**	
DATE: June 2010			

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Operator Name: W Berry
Site Pln_SC-StPln-83ft_Rev6-4-2010

Section H
Personnel Training

The information in this section is included as required by R.61-79.264.16, Personnel Training, and OSHA regulation 29 CFR 1910.120(p)(7). A proposed outline of both the introductory and continuing training programs is presented. Also, a brief description of how the training will be designed to meet actual job tasks is provided. The Training Program will be finalized prior to initiating operations of the Florence Recycling Center. A copy of the Training Program will be maintained as Attachment 10.

H.1 Outline of Introductory and Continuing Training Programs

Employees will be trained in safe work practices and hazard recognition regarding their respective duties or job assignments. Both on-the-job training and classroom training will be provided. Training will include permitted storage in the Battery Warehouse, generator issues throughout the facility, and facility-wide emergency, health, and safety procedures.

On-the-job Training

An inexperienced individual will be instructed, shown, or otherwise demonstrated to by an experienced or trained person the safe manner in which to perform his duties.

Classroom Training

An experienced supervisor/trainer will present information, lead discussions, answers questions, and conduct training in a classroom setting.

Job Titles and Duties

Figure H-1 is an organization chart showing job categories at the facility. Most facility employees will potentially be involved with some aspect of hazardous waste management such as generator issues or administration of hazardous waste documentation. Battery Warehouse and CX employees will be involved with management and handling of spent lead-acid batteries prior to reclamation.

Attachment 10 will contain a summary of the job content, activities, responsibilities, and general qualification requirements for the employees involved in hazardous waste operations. A record of employees occupying the various job categories described in this section will be maintained at the facility.

Training Content, Frequency, and Techniques

The employees at the Florence Recycling Facility will receive a combination of on-the-job, classroom instruction, and computer training. The training program is divided into General Introduction, E-Learning, RC Procedures, GPAS Training, and Floor Training. In addition, employees that operate heavy equipment like forklifts, front-end loaders and mobile cranes, will be required to obtain operator certifications. This training program will ensure that all employees are training in methods to perform their work activities in a safe and environmentally friendly manner.

The following training program will be implemented at the Florence Recycling Center:

Hourly and Salaried Employees:

General Introduction (2 day program)

1. Welcome, General JCBGI and Plant Aspects (1 hour)
2. Social Work (1 hour)
3. Team Work and Innovation (1 hour)
4. Industrial Hygiene (1 hour)
5. Quality (1 hour)
6. Lean Manufacturing (2 hours)
7. Safety/Environmental (10 hours)

Training for Hourly Employees:

Floor Training (1 month program)

1. General Introduction
2. Learning-Watching (1 week)
3. Learning-Supporting (1 week)
4. Learning-Doing (1 week)

Operators Certification Program (4 day classroom program)

1. Quality (3 hours)
2. Safety and Environmental (7 hours)
3. Maintenance (2 hours)
4. Hygiene (3 hours)
5. Process (4 hours)

6. Forklift (4 hours)
7. Front-end Loader (4 hours)
8. Mobile Crane (2 hours)

Operators Certification Program (3 month site program)

1. Quality (7 hours)
2. Safety and Environmental (7 hours)
3. Maintenance (2 hours)
4. Hygiene (3 hours)
5. Process (3 months)
6. Forklift (2 hours)
7. Front-end Loader (2 hours)
8. Mobile Crane (2 hours)

Training for Salaried Employees:

General Introduction (2 day program)

1. Welcome, General JCBGI and Plant Aspects (1 hour)
2. Social Work (1 hour)
3. Team Work and Innovation (1 hour)
4. Industrial Hygiene (1 hour)
5. Quality (1 hour)
6. Lean Manufacturing (2 hours)
7. Safety/Environmental (10 hours)

E-Training Program

1. Innovative Process
2. Battery Manufacturing
3. Quality – Environmental Document System
4. JCBGI Introduction
5. Emergency Preparation and Response
6. Safety Modules 1, 2, 3, and 4
7. Six Sigma Introduction

8. Digital Safety
9. Crisis Management
10. ISO 18001 Introduction

Training Director

The training director for the Florence Recycling Center will be the Environmental Coordinator. Prior to initial operations at the facility, JCBGI will designate the Environmental Coordinator, and submit his name and qualifications to SC DHEC.

The qualifications will include formal education, hazardous waste and safety training, and on-the-job experience.

Relevance of Training to Job Position

The Florence Recycling Center will have personnel in a variety of positions with different training needs. Training topics will be tailored to the types of activities and duties specific to each position. All personnel will receive hazard communication and Contingency Plan training. Formal descriptions of job categories and relevance of training will be developed prior to initial operations at the facility.

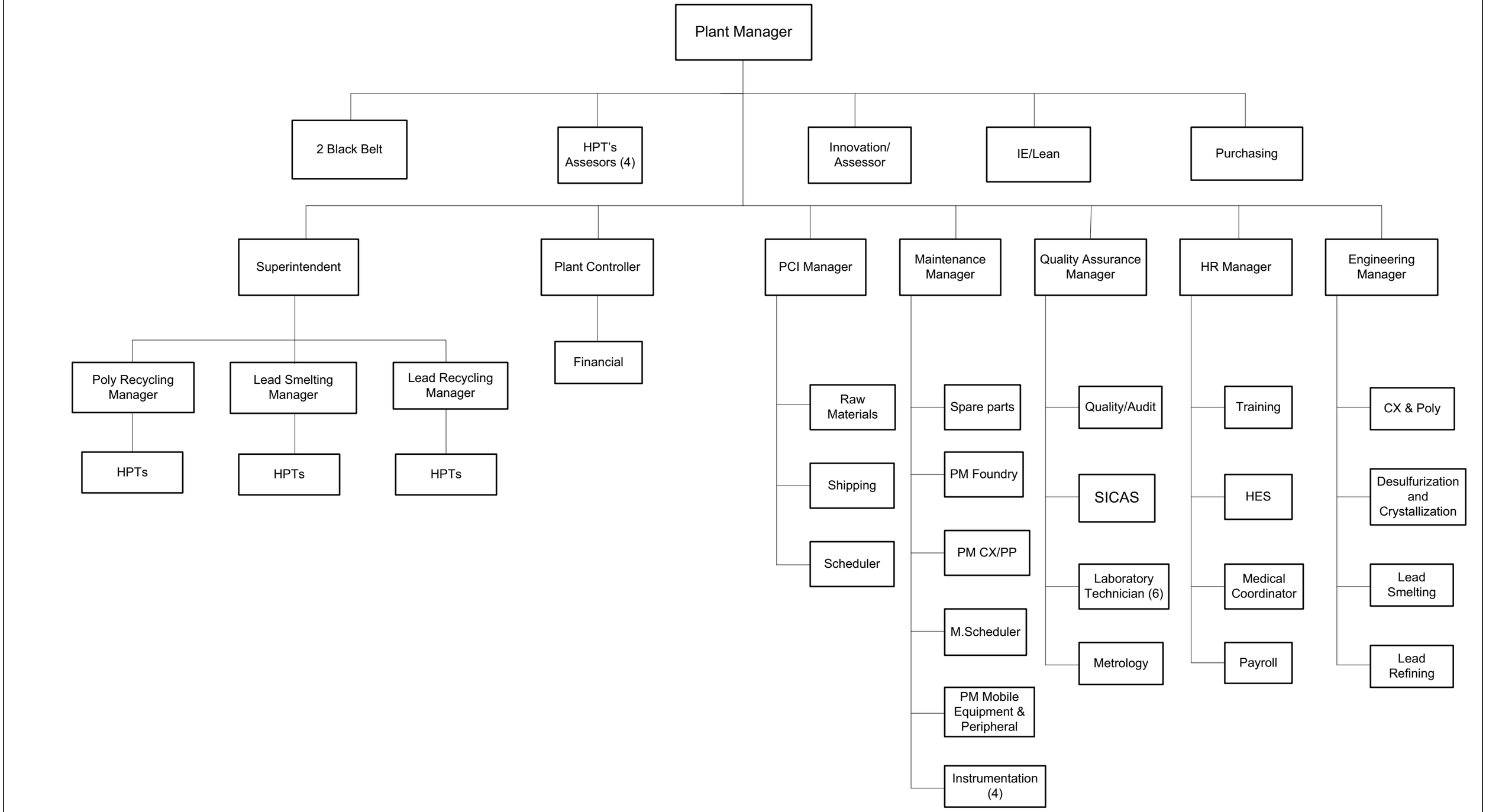
Training for Emergency Response

All operations personnel will be familiarized with the Contingency Plan, including location and uses of emergency equipment. New personnel will undergo on-site instruction in the proper implementation of the Contingency Plan before they are allowed to work without direct supervision.

H.2 Maintenance of Training Documents and Records

Details of the various types of training will be recorded in the facility's Operating Record. Training programs will be modified or changed based on facility modifications, employee needs, or at any time it is discovered a program is not effective.

Employee training certificates and training rosters will be maintained in the Employee Training file. Training records will be maintained in individual's employee files and may include specific forms or training rosters. They will be maintained at the facility for three years after employment has been terminated, or indefinitely for active employees.



P/PROJECT JCBGI/RCRA/PART B/FIGURES/Fig H-1.VSD

RMT

JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY

ORGANIZATION CHART

FIGURE H-1

Section I
Closure Plans, Post-closure Plans, and Financial Requirements

This section addresses closure plans, post-closure plans, and financial requirements as required by R.61-79.264 Subpart G and R.61-79.270.14(b)(13), (15), and (17).

I.1 Closure Plan

The Closure Plan applies to the permitted container storage area (Battery Warehouse). As such, this plan has been developed to meet the requirements of R.61-79.264.178 (Use and Management of Containers) as applicable for closure of the permitted Battery Warehouse. The plan contains a description of the procedures that will be followed when JCBGI partially or completely closes the permitted Battery Warehouse at its Florence Recycling Center during or at the end of the facility's operational life.

Upon approval by SC DHEC, this plan will become a condition of the Operating Permit for the facility. A copy of the approved plan and all revisions to the plan will be kept at the facility until closure is completed and certified in accordance with R.61-79.264.115.

The JCBGI Florence Recycling Center may amend this Closure Plan at any time during the active life of the facility by submitting a permit modification request to SC DHEC consistent with the regulations. The Closure Plan will be amended if changes in operating plans or facility design affect the Closure Plan. The revised Closure Plan will be submitted at least 60 days prior to a proposed change in the facility design or operation and no more than 60 days after an unexpected event that affects the Closure Plan. If the unexpected event occurs during partial or final closure activities, the revisions to the Closure Plan will be submitted within 30 days of the event.

Closure Performance Standard

JCBGI will close the facility in a manner that

- Minimizes the need for further maintenance;
- Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off or hazardous waste decomposition products to the ground or surface waters or to the atmosphere; and

– Complies with the closure requirements of Subpart G, including, but not limited to, the requirements of §264.178.

The objective of this closure plan is to ensure that the closure performance standard is satisfied by "clean closing" the facility. No hazardous waste or hazardous waste residues will be left in place following closure. Closure of the permitted Battery Warehouse will consist of removing the spent lead-acid battery inventory, decontaminating the containment systems, and disposing at an off-site facility decontamination residuals generated during closure.

Partial Closure and Final Closure Activities

Partial closure for the facility is not anticipated. Except in the event of upgrades or process modifications/improvements (with appropriate amendments and notifications), it is believed that the permitted Battery Warehouse will remain operable for the life of the recycling operations at this facility.

For the final closure of the facility, JCBGI will close the facility in a manner that controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, surface run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere. The permitted Battery Warehouse, a warehouse for storage of spent lead-acid batteries, will not generate leachate or decomposition products, therefore these are not addressed in the closure activities. The permitted storage will be inside a roofed structure, so surface runoff from storage is not anticipated to be addressed at closure. Closure activities that will be conducted, as necessary, are described below:

1. **Hazardous Waste:** When the determination is made to close the facility, the remaining inventory of spent lead-acid batteries will first be processed through the facility. However, if that option is not available, the inventory will be sent to an approved off-site secondary lead recycling facility. Spent lead-acid batteries are required by law to be reclaimed. Further, spent lead-acid batteries are considered universal waste rather than hazardous waste unless they are being stored at the same facility that reclaims them. Thus, disposal is not an option for batteries remaining at the facility at the time of closure.
2. **Hazardous Constituents:** Hazardous constituents that may be present in the form of residual surface contamination will be removed during the decontamination procedures as described in this Closure Plan. The resulting rinsate will be processed through the existing on-site wastewater treatment plant and the sludge generated from wastewater treatment will be processed through the existing

reclamation process. If the option of wastewater treatment at the on-site wastewater treatment plant is not available at the time of closure, the resulting rinsate will be transported to a permitted off-site industrial wastewater treatment plant for treatment. Residuals generated by wastewater treatment will be managed as hazardous waste.

3. **Contaminated Soil:** Because the permitted storage of spent lead-acid batteries will be inside a building with a concrete floor system over a 40-mil HDPE liner and the building will be surrounded by pavement, contaminated soil is not anticipated. At closure, the condition of the permitted Battery Warehouse will be inspected after the batteries are removed and the floor is decontaminated. If extensive cracks and gaps are observed, soil samples will be collected to evaluate the presence of underlying affected soil. Contaminated soil exceeding the clean-closure target concentrations will be removed, transported, and treated at an approved treatment, storage, and disposal facility to meet Land Disposal Restrictions. No soil contamination is anticipated at the time of closure based on the design of the Battery Warehouse floor system.

Maximum Waste Inventory

The maximum possible inventory of spent lead-acid batteries in the regulated unit at the time of closure is 522,240 batteries or 9,662 tons.

Schedule for Closure

Table I-1 presents the proposed closure schedule for the facility. The schedule includes an estimate of the expected year of closure, a schedule for final closure, the total time required to close the facility, and the time required for intervening closure activities that will allow tracking of the progress of closure. The facility intends to remain in operation as long as its permit is in effect and as long as its operation is commercially viable. For the purpose of developing a closure schedule, it is assumed that closure will occur 30 years after the date of this Part B Permit Application. The closure date will adjust at each permit renewal period. Partial closure for the facility in not anticipated.

Time Allowed for Closure

Written notification will be made to SC DHEC at least 45 days prior to the date that partial or final closure is expected to begin. Within 90 days after receiving the final shipment of spent lead-acid batteries, JCBGI will remove from the permitted Battery Warehouse all spent lead-acid battery inventory in accordance with the approved closure plan. The spent lead-acid batteries will either be recycled through the facility or sent to an approved off-site secondary

lead facility. Within 180 days after receiving the final shipment of batteries, JCBGI will complete final closure activities in accordance with the approved closure plan. Although spent lead-acid batteries will not be considered a hazardous waste at the time of closure (the facility will no longer intend to recycle them), JCBGI will initiate the removal of these batteries within 90 days and ensure closure of the permitted Battery Warehouse within 180 days after receiving the final volume of batteries. Within 60 days after completion of closure, certification of closure will be submitted to SC DHEC.

Extension for Closure Time

If JCBGI cannot recycle or remove the spent lead-acid batteries within 90 days or cannot complete final closure activities within 180 days, an extension may be requested from the Department. SC DHEC may approve a longer period if JCBGI complies with the applicable requirements for requesting a modification to the permit and makes the demonstrations required by R.61-79.264.113.

Closure Procedures

The following subsections describe the step-by-step closure procedures that JCBGI will follow when, at any point during its active life, the permitted Battery Warehouse ceases operations or when the facility ceases operations. The closure procedures are designed to remove the contents of the permitted Battery Warehouse and dispose or decontaminate equipment, structures, and soil in accordance with federal and state regulatory requirements. Closure activities will be conducted in the same level of personal protective equipment as required for regular work activities in the permitted Battery Warehouse (see Subsection F-4), with the potential to upgrade to additional protection if warranted.

The maximum possible inventory of spent lead-acid batteries in the regulated unit at the time of closure is 522,240 batteries or 9,662 tons. At the time of closure, the spent lead-acid batteries in the permitted container storage area will no longer be classified as a hazardous waste per R.61-79.266, Subpart G.

If the spent lead-acid batteries cannot be processed though the Florence Recycling Center at closure, they will be transported under a bill of lading to a RCRA permitted secondary lead recycling facility for recycling. The batteries will be packaged for transportation on pallets, the same way they are received (see Subsection D-1). Palletized batteries will be loaded into trailers using a forklift. Per R.61-79.268,

Subpart D, lead-acid batteries must be processed via thermal recovery of lead in a secondary lead recycling facility to meet the Federal Land Disposal Restrictions.

During closure, the regulated unit equipment, structures, and contaminated soil (if any) will be properly disposed of or decontaminated by removing hazardous wastes and hazardous waste constituents as specified under R.61-79.264.114. Additionally, equipment used during closure activities will be properly cleaned to remove hazardous waste constituents.

As part of the closure plan, the interior and exterior of the permitted Battery Warehouse will be decontaminated by rinsing using a high powered steam cleaner. All exposed surfaces will be rinsed and the resulting rinsate from the decontamination procedures will be collected and either (1) treated in the onsite wastewater treatment plant or (2) transported to a permitted off-site industrial wastewater treatment plant for treatment. The on-site treated wastewater will be discharged according to the existing publicly owned treatment works (POTW) permit.

A rinsate sample from the final rinse will be collected from the downstream end of the permitted Battery Warehouse bay and will be subjected to laboratory analysis. The analytical parameters will be based on the waste codes for the materials managed in the unit including D008 (lead), D006 (cadmium), D004 (arsenic), and D002 (pH). Should the analytical results from the rinsate (a liquid sample) be above the toxicity characteristic level for a particular metal, additional high pressure washing will be performed, and additional samples will be obtained and analyzed. If, after following this procedure three times, the analytical concentration is still above the toxicity characteristic level, the affected unit or structure will be removed and manifested to a certified treatment, storage, and disposal facility for treatment in accordance to the Federal Land Disposal Restrictions prior to disposal.

The following concentrations from Table 1 -- Maximum Concentration of Contaminants for the Toxicity Characteristic found in R.61-79.261.24 will be used to determine if a regulated unit is declared decontaminated:

HAZARDOUS CHARACTERISTIC	DECONTAMINATION STANDARD
D008 – Lead	5.0 mg/L Toxicity Characteristic Leaching Procedure (TCLP)
D006 – Cadmium	1.0 mg/L TCLP
D004 – Arsenic	5.0 mg/L TCLP
D002 – Corrosivity	Final rinsate samples will be tested to verify that they do not exhibit a characteristic of corrosivity

The potential for soil contamination will then be evaluated in the permitted Battery Warehouse. If extensive cracks and gaps are observed within the container storage area, samples of underlying soil will be collected and analyzed to evaluate whether the underlying soil was affected by the storage of spent lead-acid batteries. Since the permitted Battery Warehouse will be constructed with reinforced concrete, coring will be required to collect subsurface samples. Using a coring tool, a hole will be drilled through to the concrete, and the soil samples will be collected and analyzed for total lead, cadmium, and arsenic using USEPA-approved test methods. These samples will be collected, labeled, sealed, and transported to a certified laboratory for analysis. After sampling is completed, the borehole will be filled with a bentonite/cement mixture to preclude future movement of affected material into the borehole.

The analytical results will be compared to USEPA's Regional Screening Levels for residential land use or background soil concentrations, whichever is greater.

HAZARDOUS CONSTITUENT	USEPA REGIONAL SCREENING LEVEL
Lead	400 mg/kg
Cadmium	70 mg/kg
Arsenic	0.39 mg/kg or background

If additional sampling is required to determine the horizontal or vertical extent of affected soil, additional samples will be collected until target concentrations are achieved. Based on the soil sampling results, the facility will remove affected soil to the target concentrations. Based on the design of the permitted Battery Warehouse, soil sampling, analysis, and removal is not anticipated.

During closure activities conducted at the facility, three types of material may be generated. These materials include recyclable material, solid waste, and hazardous waste.

- **Recyclable hazardous waste** includes the spent lead-acid batteries stored in the container storage area and any other lead bearing material (sludges) generated in the onsite wastewater treatment plant at the time of closure. Although a hazardous waste when stored at a secondary lead recycling facility, these spent lead-acid batteries become a nonhazardous waste at the time of closure since the facility no longer intends to recycle the material. These spent lead-acid batteries are valuable feed material for the secondary lead industry. This material will be transported under a bill of lading (whole batteries) to a RCRA permitted secondary lead recycler for lead reclamation in accordance with all applicable Department of Transportation

(DOT) hazardous waste transportation requirements and will meet all applicable Federal Land Disposal Restrictions for lead-acid batteries.

- **Solid waste** material includes the decontaminated structures, decontaminated concrete removed during any soil sampling and removal, and other waste material that does not exhibit the characteristics of a hazardous waste or contains a listed waste as defined in R.61-79.261.3. This material will be transported and disposed of in a licensed solid waste landfill.
- **Hazardous waste** material, as defined by R.61-79.261.3, includes lead-contaminated soil, if any, removed during closure, and any structures requiring disposal which do not meet the decontamination requirement after cleaning. This material will either be treated on the site in accordance with regulations and disposed of off the site or transported under hazardous waste manifest to a permitted treatment, storage, and disposal facility for treatment and disposal in accordance with the Land Disposal Restrictions. Approval from SC DHEC will be obtained prior to treatment of non-inventory material on the site. The transportation of this material will be handled in accordance with all applicable DOT hazardous waste transportation requirements and will meet all applicable Federal Land Disposal Restrictions for lead contaminated material.

After decontamination is complete, an independent, South Carolina registered Professional Engineer will certify the closure of the permitted Battery Warehouse. The Professional Engineer will review the closure plan prior to the closure activities and will oversee the closure procedures to verify that the activities were conducted in accordance with the approved plan. A certification document will be prepared stating that the permitted Battery Warehouse has been closed in accordance with closure plan specifications.

I.2 Post-closure Plans

This subsection is not applicable for the Florence Recycling Center's permitted Battery Warehouse because hazardous wastes and hazardous waste constituents are anticipated to be removed or decontaminated during closure. If, during closure, it is determined that releases to soil have occurred and that the decontamination standard cannot be met by excavation of the soil, a post-closure plan will be submitted to SC DHEC for approval.

I.3 Notices for Disposal Facilities

This subsection is not applicable for closure of the Florence Recycling Center's permitted Battery Warehouse, which is not a disposal facility.

I.4 Closure Cost Estimate

This subsection presents the closure cost estimate for closure of the Florence Recycling Center's permitted Battery Warehouse. All estimates are based on third-party costs for closing the facility at its full capacity. The closure activities included in the cost estimate are described in Subsection I.1 of this permit application. The closure cost estimate is shown in Table I-2.

JCBGI will adjust the closure cost estimate for inflation on a yearly basis. The adjustments will be made using an inflation factor derived from the annual Implicit Price Deflator for Gross National Product as published by the United States Department of Commerce in its Survey of Current Business. The inflation factor will be the result of dividing the latest published annual Deflator by the Deflator for the previous year. The first adjustment will be made by multiplying the cost estimates by the inflation factor. The subsequent adjustments are made by multiplying the latest adjusted estimate by the latest inflation factor.

JCBGI will revise the closure cost estimate whenever a change in the plan increases (or decreases) the estimated cost. The revised cost estimate will be adjusted for inflation as previously described. If necessary, the closure plan will be modified in accordance with R.61-79.264.112(c). Within 60 days of an increase in the cost estimate, appropriate financial assurance documentation will be submitted to cover the additional costs. JCI will keep a copy of the latest closure plan and cost estimate, including annual inflation adjustments, at the facility during its operating years.

As required by R.61-79.264.142, the closure cost estimate is based on final closure at a point when the closure would be most expensive. The following are assumptions underlying the closure cost estimate:

- Maximum volume of material at closure is 522,240 lead-acid batteries or 9,662 tons. R.61-79.264.142 does not allow the closure cost estimate to incorporate salvage value or to incorporate zero cost for hazardous waste that has an economic value. Spent lead-acid batteries are a commodity with positive value of about $7 per battery. The closure cost estimate includes zero salvage value for the spent lead-acid batteries and includes labor and transportation costs for delivering the batteries to another facility for reclamation.
- Decontamination water (rinsate) is collected and transported to a permitted off-site industrial wastewater treatment plant for treatment. The estimated volume of rinsate is 12,006 gallons. The one-way distance to a permitted off-site industrial wastewater treatment plant estimated to be 175 miles.
- No soil contamination is present beneath the floor of the permitted Battery Warehouse.
- The permitted Battery Warehouse will be clean-closed; therefore, post-closure is not required.

- Inventory removal of the permitted Battery Warehouse will be conducted by a third party using forklifts.
- Inventory of spent lead-acid batteries will be transported via a bill of lading to a secondary lead recycling facility for reclamation. The one-way distance to a secondary lead recycling facility is estimated to be 490 miles.
- The final rinsate from the permitted Battery Warehouse closure activities will be analyzed for lead, cadmium, arsenic, and pH to make a hazardous waste determination for disposal.
- Engineering fees and contractor's overhead and profit (O&P) are estimated at five percent of the closure cost.

Based on the above assumptions, closure cost calculations were performed. These cost calculations are provided in Attachment 11. A summary of the closure cost estimate, which includes engineering fees and Contractor O&P, is present in Table I-2.

I.5 Financial Assurance for Closure

JCBGI will establish financial assurance for closure of the facility by the financial test and corporate guarantee for closure in accordance with R.61-79.264.143(f). Financial assurance documentation will be submitted to SC DHEC and updated annually or as changes to the estimates are made. Documentation for financial assurance for closure will be maintained in Appendix 11. The financial assurance documentation will be submitted to SC DHEC at least 60 days prior to the initial receipt of spent lead-acid batteries at the facility. Financial assurance will be maintained until the facility has received notification by SC DHEC that final closure of the facility has been certified and confirmed, as provided in R.61-79.264.143.

I.6 Post-closure Cost Estimate

JCBGI plans to complete clean closure of the permitted Battery Warehouse; therefore, post-closure is not required.

I.7 Financial Assurance Mechanism for Post-closure Care

JCBGI plans to complete clean closure of the permitted Battery Warehouse; therefore, post-closure financial assurance is not required.

I.8 Liability Requirements

This subsection provides information about liability requirements for the Florence Recycling Center.

Coverage for Sudden Accidental Occurrences

Upon initiation of operations at the Florence Recycling Center, JCBGI will carry liability insurance coverage for sudden accidental occurrences in the amount of at least $1 million per occurrence and an annual aggregate of $2 million. This insurance coverage will be maintained until the facility has received notification by SC DHEC that final closure of the facility has been certified and confirmed, as provided in R.61-79.264.147. Documentation of financial assurance for liability coverage will be maintained in Appendix 11. The documentation will be submitted to SC DHEC prior to the initial receipt of spent batteries at the facility.

Coverage for Non-sudden Accidental Occurrences

The Florence Recycling Center will not manage land-based regulated units; therefore, coverage for non-sudden accidental occurrences is not required.

Requests for Variance

JCBGI does not anticipate requesting a variance for liability requirements.

Use of State Required Mechanisms

This subsection is not applicable to the Florence Recycling Center.

State Assumption of Responsibility

JCBGI does not expect the State to assume financial responsibility for closure and liability requirements at the Florence Recycling Center.

Table I-1
Facility Closure Schedule

ID NO.	DESCRIPTION	DURATION (days)	SCHEDULED [1] START	SCHEDULED FINISH
1	30 day notice of intent to close the JCI facility	1	01/01/40	01/02/40
2	Final receipt of "wastes" at the JCI facility	1	01/02/40	01/03/40
3	Inventory management	90	01/03/10	04/03/40
4	Decontamination of regulated container storage area	21	04/03/40	04/24/40
5	Testing to verify that closure standards are met	21	04/24/40	05/15/40
6	Closure certification submittal	21	05/15/40	06/05/40

[1] Assumes that closure will occur 30 years from the date of the Part B Permit Application (assumed January 1, 2010)

Table I-2
Summary of Closure Cost Estimate

UNIT DESCRIPTION	TASK	ESTIMATED COST
Battery Storage Warehouse	Inventory Management	$441,093
	Area Decontamination	209,990
	Certification of Closure	11,760
Closure Subtotal Cost		**$662,843**
	Engineering Fees (5% of Subtotal)	33,143
	Contractor O&P (5% of Subtotal)	33,143
Subtotal – Additional Fees		**$66,286**
Total Closure Estimate		**$729,129**

Section J
Solid Waste Management Units

The Florence Recycling Center is being constructed on previously undeveloped property. No solid waste management units have been identified.

Section K
Other Federal Laws

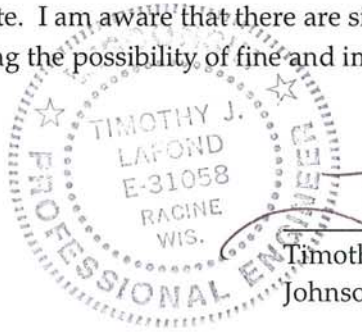
This section was prepared in accordance with R.61-79.270.3. This proposed facility is located in the vicinity of other industrialized property. None of the following federal laws are believed to be applicable to the issuance of this facility permit:

1. The Wild and Scenic Rivers Act, 16 U.S.C. 1273 et seq. (and the S.C. Scenic Rivers Act of 1974) - This permit does not include the construction of any water resources project, nor will it have any direct, adverse impact upon any wild and scenic river.
2. The National Historic Preservation Act of 1966, 16 U.S.C. 470 et. seq. - The permitting of this facility will not adversely impact any property listed or known to be eligible for listing in the National Register of Historic Places.
3. The Endangered Species Act, 16 U.S.C. 1531 et. seq. (and the S.C. Non-game and Endangered Species Act) - This permit will not jeopardize the continued existence of any endangered or threatened species, nor adversely affect its critical habitat. A table of threatened and endangered species reported in Florence and Marion Counties in South Carolina is provided in Attachment 12. Because of the absence of reported instances of listed species from the general vicinity and long-term management of the site for agriculture and, most recently, silviculture, encountering viable populations of listed species at the proposed facility is unlikely.
4. The Coastal Zone Management Act, 16 U.S.C. 1451 et seq (and the S.C. Coastal Tidelands and Wetlands Act) - The facility is not located within the Coastal Zone.
5. The Fish and Wildlife Coordination Act, 16 U.S.C. 661 et seq. - This permit does not include the impoundment, diversion or other control or modification of any body of water.

Additional information concerning the facility's compliance with other state and federal laws is included in the report on demonstration of compliance with the SC Location Standards [R.61-104] included as Attachment 2 to this permit application.

Section L
Part B Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."



Timothy J. Lafond, Director
Johnson Controls Battery Group, Inc.

6/4/10
Date

Attachment 1
Pre-Application Public Meeting

This attachment includes the following items:

- Notices of Public Meeting:
  - Newspaper Advertisement and Certification of Publication
  - Radio Advertisement Script and Certification of Broadcast
  - Sign at the property (drawing and photograph)
  - Cover letter for mailing list
- Summary of the presentation and comments from the public
- Sign in sheets

Public Notice

30-Day Notice for Public Information Meeting
Resource Conservation and Recovery Act (RCRA) Part B Permit Pre-Application

Johnson Controls Battery Group, Inc. (JCBGI)
Proposed Storage Warehouse for Spent Automotive Lead-acid Batteries

Notice is hereby given that JCBGI intends to submit an application for a RCRA permit to store spent automotive lead-acid batteries in a warehouse to be constructed at a proposed state-of-the-art battery recycling center on Paper Mill Road near Florence, SC.

Before submitting this application, JCBGI will hold a public meeting to inform citizens of its proposed hazardous waste management activities and respond to questions from the public. DHEC staff will also be at the meeting to answer questions. At this meeting, attendees may voluntarily provide their names and addresses so that they may receive additional information about the facility from JCBGI and DHEC. Attendees may also submit written comments to DHEC regarding JCBGI's permit application.

For more information about the proposed facility go to www.FlorenceRecyclingCenter.com or contact Timothy Lafond, Executive Director, Environmental Engineering and Risk Mgt. 3046 Bill Crisp Blvd, Florence, SC 29506, Telephone: (843) 292-4500

Please note the following information regarding the meeting:

- The meeting will be held on November 3, 2009, at 7:00 PM, at the Southeastern Institute for Manufacturing and Technology located at 1951 Pisgah Road in Florence.
- The purpose of the meeting is to solicit questions and inform the public about JCBGI's intent to submit an application for a RCRA hazardous waste storage facility and to answer questions from citizens.
- If approved, the proposed hazardous waste storage warehouse will be constructed at a battery recycling center proposed for Paper Mill Road near Florence, SC. Spent batteries are required to be handled as hazardous waste when received at a facility that also recycles the batteries. **This facility will not dispose of or treat hazardous waste.** The spent batteries will be reclaimed as lead ingots, poly-propylene plastic for new battery casings, and sodium sulfate crystals. Hazardous waste activities will be limited to receiving and storing batteries prior to recycling on-site.
- Citizens with disabilities are encouraged to contact JCGBI at least 72 hours in advance of the meeting if they need special aids or services to participate in the meeting.

South Carolina Department of Health and Environmental Control (SC DHEC)
Contact Person: Stephen Crowell, 2600 Bull Street, Columbia, SC, 29201, Telephone: (803) 896-4183.

CAROLINA PUBLISHING

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			Balance Forward					1,278.96
10/02	10/02	I0000043552-1002	KATHERINE MCNEILL/PUBLIC NOTICE - JOHNSO	SCA Morning News	3.00 x 5.0000	15	1	451.43
10/14		P16556	Payment - Lockbox 00044246 I0000023439-0830#Cla					(651.00)

PREVIOUS AMOUNT OWED:	1,278.96
NEW CHARGES THIS PERIOD:	451.43
PAYMENTS THIS PERIOD:	-651.00
DEBIT ADJUSTMENTS THIS PERIOD:	0.00
CREDIT ADJUSTMENTS THIS PERIOD:	0.00

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Gross $
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Katie Prentiss

INVOICE AND STATEMENT OF ACCOUNT

AGING OF PAST DUE ACCOUNTS

* UNAPPLIED AMOUNTS ARE INCLUDED IN TOTAL AMOUNT DUE

sal™

21 CURRENT NET AMOUNT	22 30 DAYS	60 DAYS	Over 90 DAYS	* UNAPPLIED AMOUNT	23 TOTAL AMOUNT DUE
$451.43	$976.50	$0.00	$0.00	$348.54	$1,079.39

24 ADVERTISER INFORMATION

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Radio Script: Johnson Controls Public Notice

This Public Announcement provides a 30-day notice that Johnson Controls Battery Group intends to submit an application to the South Carolina Department of Health and Environmental Control for a RCRA hazardous waste permit to store spent in a warehouse to be constructed at a proposed battery recycling center on Paper Mill Road near Florence, South Carolina.

This permit is necessary because state and federal regulations require a hazardous waste storage permit for facilities that receive and store spent lead-acid batteries and also recycle the batteries. The facility will not dispose of or treat hazardous waste.

Before submitting this application, Johnson Controls Battery Group will hold a public meeting to inform the community of its proposed hazardous waste management activities and respond to questions from the public.

At this meeting, attendees may voluntarily provide their names and addresses so that they may receive additional information about the facility from Johnson Controls Battery Group and DHEC. Attendees may also submit written comments to DHEC regarding the permit application.

The public information meeting will be held on November 3, 2009, at 7:00 PM at the Southeastern Institute for Manufacturing and Technology located at 1951 Pisgah Road in Florence.

Citizens with disabilities are encouraged to contact Johnson Controls Battery Group's contact person at least 72 hours in advance of the meeting if they need special aides or services to participate in the meeting.

The facility's contact person is Timothy Lafond, Executive Director, Environmental Engineering and Risk Management. He can be contacted at 843-292-4500, or by writing at 3046 Bill Crisp Blvd., Florence, SC 29506.

For more information go to www.florencerecyclingcenter.com.

Client: Johnson Controls
Product: Johnson Controls
Campaign: RCRA Public Notice

Station Order

Rawle Murdy
Post Office Box 1117
Charleston, SC 29402
843 577-7327

Rev #.: 1
Flight From: 09/28/2009 to 10/04/2009

Estimate No.:
Contract No.:
Job No.:

Buyer Name: Carolyn Mailloux
Sweeps: Spring 09

Actg. Order No.: 7489
WS Order No.: 8645
Contract No.:

Market: FLORENCE, SC
Station: WJMX-AM
Station Contact: Jan Rinker

Item#	Days/ Times	DP/ Len	Program Title/ Comml Tag	Station Gross Rate/ Total	Sep 28	Total Spots	MSA P 18+ (R)
1	-----S-	SA		$125.00	1	1	0.6
	12:00P-03:00P	120		$125.00			$208.33
				$125.00	1	1	
					0.6		

Monthly Totals

Month	Spots	GRP/GRIs	Station Gross Dollars	Station Gross CPP/CPM
Oct	1	0.6	$125.00	$208.33
	1	0.6	$125.00	$208.33

Comments

Campaign Remarks:
Station to record :30 secont spot and air on Saturday, October 3 from 12noon to 3p 1 time.

By:_____


NOTICE - PUBLIC INFORMATION MEETING
Resource Conservation and Recovery Act (RCRA)
Hazardous Waste Storage Permit
DATE and TIME:
November 3, 2009 at 7:00 PM
LOCATION:
Southeastern Institute of Manufacturing and Technology
MEETING PURPOSE:
Inform the public: Johnson Controls Battery Group, Inc. (JCBGI) plans to submit an application for a RCRA-permitted storage facility on Paper Mill Road near Florence. The application will be submitted following the pre-application meeting.
FACILITY DESCRIPTION:
JCBGI plans to construct a new, state-of-the-art battery recycling facility that includes a warehouse to receive and store spent automotive lead-acid batteries. This facility will not dispose of or treat hazardous waste. RCRA-permitted hazardous waste activities will be limited to receipt and storage of batteries prior to recycling. The batteries will be separated into their component parts and reclaimed. For more information go to www.florencerecyclingcenter.com.
SPECIAL ACCESS:
Please contact the person listed below at least 72 hours (3 days) before the meeting if you need special access to participate in the meeting.
CONTACT:
Timothy Lafond, Telephone: 843-292-4500
5757 N. Green Bay Avenue, X-10, Milwaukee, WI 53209

From: Bailey, Mark
Sent: Tuesday, December 01, 2009 4:10 PM
To: Peterson, Joyce
Subject: FW: Public Meeting Sign
Attachments: HPIM0943.jpg

Sign pic

From: Mark [mailto:mark@printimagesolutions.com]
Sent: Thursday, October 01, 2009 2:12 PM
To: Bailey, Mark
Subject: Public Meeting Sign

Mark,

Everything is taken care of for you. I will e-mail you an invoice for the final total that we drew from you card.

Thanks again for the opportunity,

Mark Deremo
Print Image SOLUTIONS
a graphic communications company
714 South Coit Street
Florence, SC 29501
e-mail: mark@printimagesolutions.com
Ph. 843-662-8984
fax. 843-662-8933

www.printimagesolutions.com

October 1, 2009

You have been identified to be on the mailing list for information regarding Johnson Controls Battery Group, Incorporated's proposed Florence Recycling Center either because your residence is within one-half mile from the site, you have been included in previous mailings, or you are an elected official of a community within 20 miles of the site.

The advertisement on the back of this page will be published in the *Morning News* on October 2, 2009, in fulfillment of notification requirements for a public meeting at which Johnson Controls will inform interested members of the community of their plans to apply for a storage permit associated with the proposed battery recycling facility on Paper Mill Road near Florence.

Contact information and information about the time and location of the meeting are included on the attached notification. Please attend the meeting or contact us if you have questions or comments.

Johnson Controls, Inc.(JCI) RCRA Pre-application Public Meeting Summary

Meeting Date: November 3, 2009
Meeting Time: 7 PM EST
Location: SiMT, Florence, SC

There were approximately 30 attendees at the meeting (see attached sign-in sheets). Representatives of SC DHEC Department of Air and RCRA were also present. JCI was represented by Timothy Lafond and Sarah Carrigiano. JCI's consultant, RMT, Inc. (RMT), was represented by Jeff Pierce and Mark Bailey.

The meeting began with a presentation by Tim Lafond describing the project. RMT then did a presentation on RCRA (defined RCRA, described its applicability to this project, and the RCRA permitting process going forward). These two presentation lasted approximately 45 minutes and were followed by approximately 45 minutes of question and answer.

During the meeting the following question topics were raised:

- Whether or not JCI plans to purchase additional property to build an industrial park or subcontracting to other industry
- Deposition to facility and surrounding property
- Site closure insurance cost and its revision over time
- Requirements for notifying the public in the event of an accident or emergency situation
- Paper Mill Road site archeological significance
- Truck traffic controls and specifically "jack-breaking"
- Truck accidents and precautionary measures
- Number of batteries per pallet
- Whether or not JCI is exploring siting a hybrid battery plant in Florence also
- Hazardous material reporting requirements and clean up team
- Types of hazardous materials coming into the facility
- JCI corporate record for spills and violations
- Plans to meet with DOT
- Air emissions and related human effects
- The efficacy of air dispersion modeling
- The SC DHEC mission statement and economic development
- Required set back from the river
- Truck washing procedures
- Ambient air monitoring station location
- Proposed truck routes

No additional written comments or questions were received by JCI or RMT.

JOHNSON CONTROLS, INC.
RCRA Pre-Application Public Meeting

November 3, 2009

Name and Address (please print)	Phone Number & Email Address
STEVEN FIJALKOWSKI 5955 CARNEGIE BOULEVARD SUITE 300 CHARLOTTE NC 28209	Phone: 704 363 4596 Email: SFIJALKOWSKI@JCI.COM
Damon Scott	Phone: Email:
Marshall Yarborough Calvin Yarborough	Phone: 843-669 2183, 843 685 5751 Email: THYMESAMRD@aol.com
MIKE KING. 1272 E SEVEN MILE Rd PAMPLICO SC 29583	Phone: 843-493-0816 Email: RIVERWATCH@AOL.COM
Timothy W Bouch PO BOX 59 CHARLESTON SC 29402	Phone: 843 937-8841 Email: ~~TBouch~~
JoAnne M Bozz 6326 Liberty Chp. Rd	Phone: 6658622 Email: Bozzjar@aol.com
Eli°52 Swain° 1418 Fair Oaks Ln	Phone: 843-229-6824 Email: ———
David James III 915 S. Firetower Rd Florence SC 29506	Phone: 843-662-7054 Email:
Gloria Cooper 413 Paper Mill Rd Florence SC 29506	Phone: 843 669-0705 Email: GlsCook@msn.com
Randy G Godbold 6039 LIBERTY CHAPEL FLO SC 29506	Phone: Email: LGRANDYB@YAHOO
Timothy G. Martin 6719 Liberty Chapel Rd	Phone: Email:
Elaine D Harrington 1015 Brickhouse Rd	Phone: 843 669-0639 Email: edh47@msn.com
	Phone: Email:

JOHNSON CONTROLS, INC.
RCRA Pre-Application Public Meeting

November 3, 2009

Name and Address (please print)	Phone Number & Email Address
	843 752 5441
Linda M Hayes	Phone: 864 593 4926
542 Cary Rd Latta 29565	Email: LManning Haye@Yahoo.Com
Peggy Brannon Florence	Phone:
	Email:
	Phone: 669-3003
Cathy Quick	Email: cquick@sc.rr.com
	Phone: 843-472-2963
Steve Vandenberg	Email: SteveVandenberg@sfheron.com
	Phone:
	Email:
	Phone:
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JOHNSON CONTROLS, INC. RCRA Pre-Application Public Meeting November 3, 2009	
Name and Address (please print)	**Phone Number & Email Address**
Barrett Coggins 266 Catfish Rd. Ulmer, SC 29565	**Phone:** 910-220-7152
	Email: barbcoggins@yahoo.com
Jim Anderson	**Phone:** 843-662-8113
	Email: [illegible]@columbia.com
	Phone:
	Email:
	Phone:
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Attachment 2
Demonstration of Compliance
South Carolina Location Standards

RMT

• ENVIRONMENT • ENERGY • ENGINEERING

Demonstration of Compliance with South Carolina Location Standards (R.61-104)

Johnson Controls Battery Group, Inc.
Florence Recycling Center Battery Warehouse

1800 Paper Mill Road, Florence, South Carolina

December 2009
Revised June 2010

Joyce E. Peterson, P.E.

30 Patewood Drive, Suite 100 • Greenville, SC 29615-3535 • (864) 281-0030 • (864) 281-0288 FAX • www.rmtinc.com

CREATING BALANCE℠

Table of Contents

List of Figures

List of Appendices

Introduction

The purpose of this document is to demonstrate that the proposed Johnson Controls Battery Group, Inc. (JCBGI) spent battery recycling center is in compliance with the South Carolina Location Standards (R.61-104) for the hazardous waste storage area located at the battery recycling facility. The objective of this regulation is to limit the location of hazardous waste treatment, storage, and disposal (TSD) facilities to those areas where there will be minimal adverse effects on human health and the environment. The scope of this regulation is limited to issues of public health and protection of the environment.

The proposed battery recycling facility will receive spent lead-acid batteries from other Johnson Controls, Inc. (JCI) facilities and from JCI's customers and reclaim the component part of the batteries by breaking them, then segregating and reclaiming the component parts. In accordance with 40 CFR 266, such facilities require a Resource Conservation and Recovery Act (RCRA) Part B permit for storage because batteries reclaimed in this manner are considered "spent material," thus solid waste. Other materials received at the facility for reclamation are not considered solid waste when reclaimed. Likewise some intermediates at the facility are not considered solid waste when reclaimed and others are considered site-generated wastes, and thus managed under RCRA generator regulations without a Part B permit.

The proposed facility will be located on Paper Mill Road in Florence, South Carolina, as shown on Figure 1. Within the proposed facility, a single warehouse is provided for receipt of incoming spent batteries. Its location is shown on Figure 2. The proposed capacity of the warehouse is 522,240 lead-acid batteries. Each intact battery casing is regarded by the RCRA regulations as an individual container. Thus, the incoming Battery Warehouse will be designed and permitted as a RCRA hazardous waste container storage area.

Demonstration of compliance with South Carolina Department of Health and Environmental Control (SC DHEC) R.61-104 was accomplished by performing a literature search, visual site inspections on February 17, 2009, October 6 through 9, 2009, and October 26 through November 6, 2009. Existing engineering and geologic data were used, to the extent possible, to address specific regulatory criteria. The following sections provide information for each of the 17 criteria as presented in the regulation. In each section, the italicized text summarizes the requirements of the Location Standards, and the text immediately following documents compliance with the requirements.

N

Paper Mill Road

GREAT PEE DEE RIVER SWAMP

PEE DEE RIVER

FLORENCE CO

MARION CO

Liberty Chapel

Bethel Ch

St John Mission

Oak Grove

Carter Landing

Moore Branch

Boggy Branch

Long Branch

Power Line

Water Intake

Cem

LEGEND

- PROPERTY BOUNDARY
- FACILITY FOOTPRINT
- BATTERY WAREHOUSE

NOTES

0 2000 4000

Feet

JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY

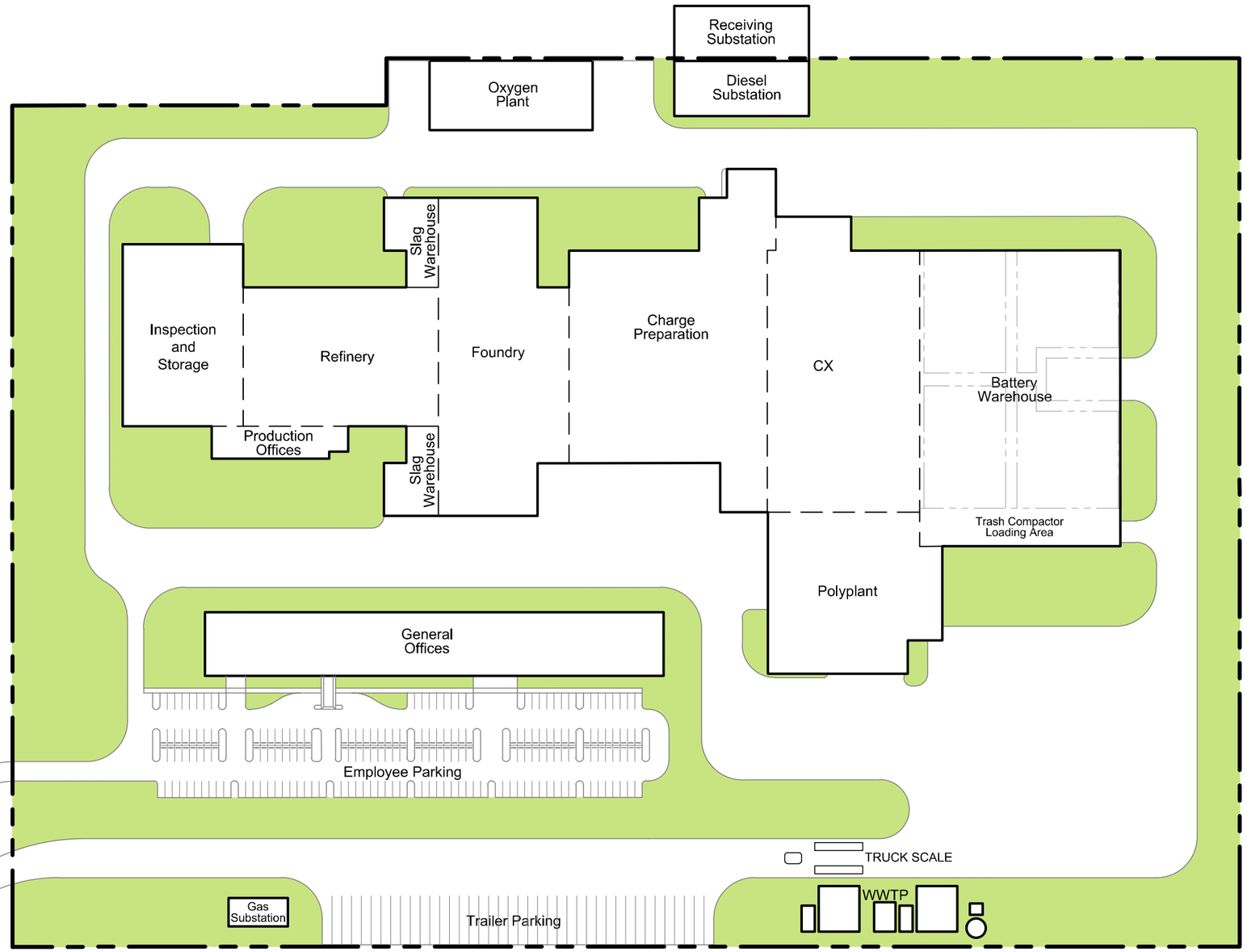
SITE LOCATION MAP

DRAWN BY: TLH	SCALE AS NOTED	PROJECT NO.: 02452.09.001
CHECKED BY: JEP		DATE: JUNE 2010
APPROVED BY: WMB		FIGURE NO.: 1

RMT

Patewood Plaza One, Suite 100
30 Patewood Drive
Greenville, SC 29615-3535
Phone: 864-281-0030
FAX: 864-281-0288

Map Document: (P:\Project JCBGI\ArcGIS\RCRAPermit_2010Revs\SiteLocationMap_Fig1.mxd)
6/4/2010 -- 7:34:00 PM



LEGEND

- FACILITY FOOTPRINT
- BUILDING
- BUILDING INTERNAL DIVISION
- CURB
- GRASS

N

0 150 300

PROJECT:
JOHNSON CONTROLS BATTERY GROUP
BATTERY RECYCLING FACILITY

SHEET TITLE:
SITE LAYOUT MAP

DRAWN BY: W BERRY	SCALE: See bar scale	PROJ. NO. 02452.09.001
CHECKED BY: JEP		FILE NO. 0245209-A-2.dwg
APPROVED BY: JEP	DATE PRINTED:	**Figure 2**
DATE: June 2010		

RMT
30 Patewood Drive, Suite 100
Patewood Plaza One
Greenville, S.C. 29615
Phone: 864-281-0030
Fax: 864-281-0288

Drawing Name: J:\02452\09.001\0245209-A-2.DWG
Operator Name: W Berry
Site Pln_SC-SIPln-83ft_Rev-6-4-2010

Criterion 1
Seismic Considerations

The Location Standards require a new nonland-based unit to be a minimum of 200 feet from a fault where displacement during the Holocene Epoch within the Quaternary Period has occurred.

Regional subsurface geologic cross sections contained in Owens (1989) and the South Carolina Department of Natural Resources (SC DNR) Structural Features Of South Carolina map (Maybin, 1998) were reviewed relative to regional Holocene Structural faulting. According to this data review, Holocene fault or fault zones are not apparent below the immediate area. The nearest fault appears to be located greater than 2 miles southeast of the site.

The Location Standards require that a new nonland-based unit demonstrate that the structural integrity of the unit will allow it to maintain confinement of the hazardous waste or hazardous waste constituents so that no adverse environmental or health effects will occur during and after any ground movement, liquefaction, or seismic wave motion equal to the maximum horizontal acceleration predicted with a 10 percent probability of occurrence at the site in 250 years.

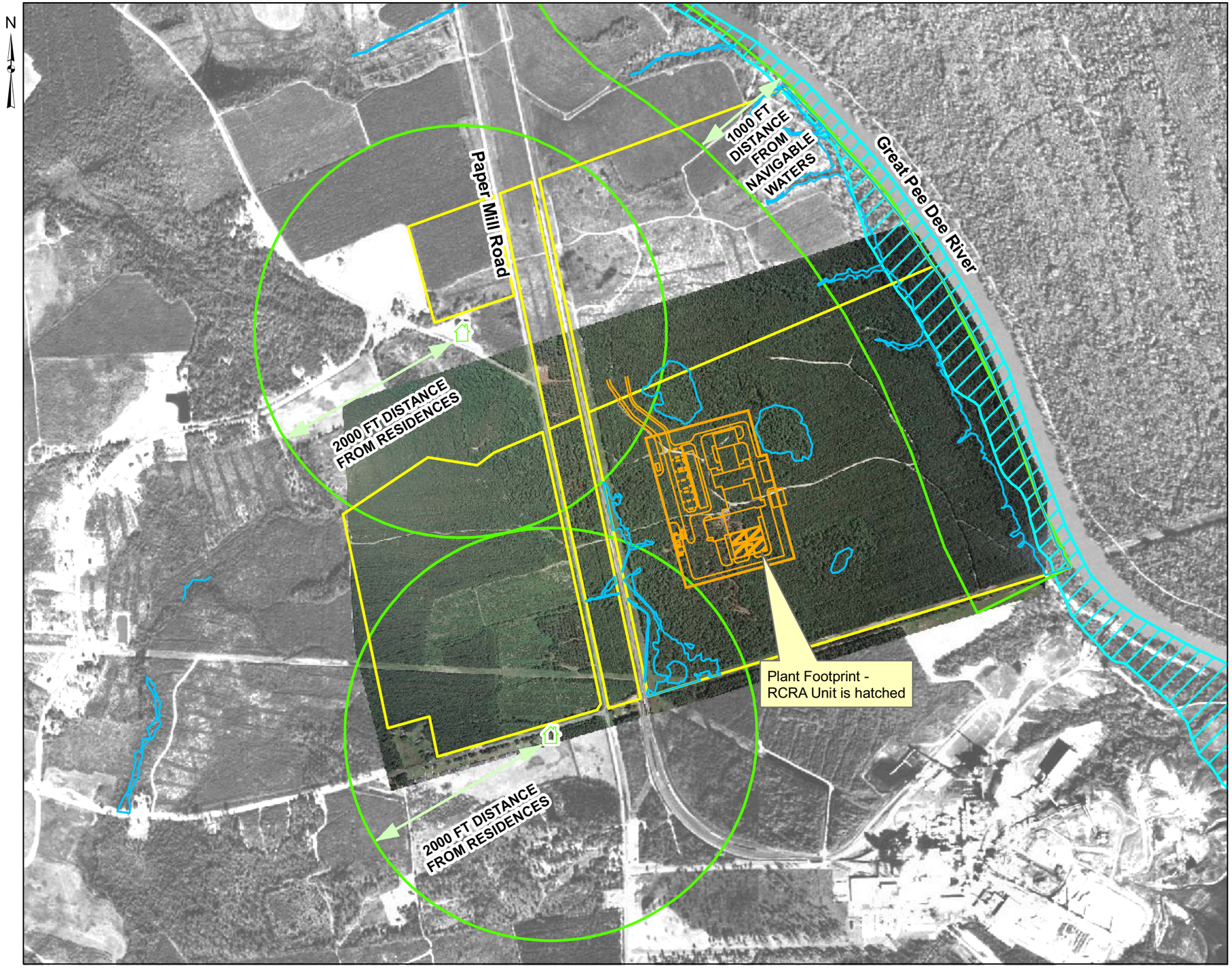
The proposed Battery Warehouse will be designed and constructed in accordance with Chapter 16 of the International Building Code (IBC). Therefore, the facility design will include provisions for seismic loads on all structures. As discussed in detail under Provision 2, a preliminary soils investigation has identified a few loose sand layers that may be susceptible to liquefaction during a seismic event. If, during the detailed foundation investigation, this potential is confirmed, the site would be categorized as Site Class "F," as defined under Table 1615.1.1 of the IBC. In accordance with Section 1515 of the code, this would require that a site-specific study be conducted to determine ground motion accelerations for earthquake load design. The maximum considered earthquake ground motion will be "that motion represented by an acceleration response spectrum having a 2-percent probability of exceedance within a 50-year period."

Criterion 2
Floodplains

The Location Standards require that a nonland-based unit not be located in a 100-year flood plain or within the historical migration zone of a coastal marine, lacustrine, and braided or meandering fluvial system unless it is demonstrated that such unit is designed, operated, and maintained to prevent washout of any hazardous waste by a 100-year flood and that such unit can withstand the effects of erosion during its active life.

Federal Emergency Management Agency (FEMA) flood zone delineation maps have been reviewed. The easternmost portion of the facility property is included in the 100-year flood plain of the Great Pee Dee River (see Figure 3). This portion of the property is currently undeveloped and will not be developed for construction of the battery reclamation facility. The hazardous waste unit is not located within the 100-year flood plain.

The hazardous waste units are not located within the historical migration zone of coastal marine, lacustrine, or braided or meandering fluvial systems. The present floodplain of the Great Pee Dee River is bounded on the west by a steep escarpment rising approximately 50 feet to the elevation at which the battery reclamation facility will be constructed. The hazardous waste unit is located approximately 2,000 feet west of the escarpment. While a geomorphic study of the ancestral Pee Dee River System was not conducted, the present flow path of the Great Pee Dee River is essentially straight along the eastern length of the property, reducing the amount of incutting of the river bank. Susceptibility to mass movement at the proposed location of the RCRA unit is discussed further for Criterion 6.



LEGEND

- RESIDENCE
- BUFFER ZONE BOUNDARY
- PROPERTY BOUNDARY - APPROXIMATE
- 100 YEAR FLOOD ZONE
- FACILITY FOOTPRINT
- BATTERY WAREHOUSE
- WETLAND BOUNDARY

NOTES

AERIAL IMAGES FROM TERRASERVER (1994) AND SUMMER 2009.

100 YEAR FLOOD ZONES FROM FEMA MAPS 45041C0190D AND 45041C0195D

0 1000 2000

Feet

JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY

SETBACKS

DRAWN BY: TLH	SCALE AS NOTED	PROJECT NO.: 02452.09.001
CHECKED BY: JEP		DATE: JUNE 2010
APPROVED BY: WMB		FIGURE NO.: 3

RMT
Patewood Plaza One, Suite 100
30 Patewood Drive
Greenville, SC 29615-3535
Phone: 864-281-0030
FAX: 864-281-0288

Map Document: (P:\Project JCBGI\ArcGIS\RCRAPermit_2010Revs\Setbacks_Fig3.mxd)
6/4/2010 -- 7:32:28 PM

Criterion 3
Underground Mines and Caves

The Location Standards prohibit the placement of any hazardous waste in any underground mine or cave.

According to the South Carolina Mines Inventory (Maybin, 1985) there are no underground mines within the vicinity of the facility. Site reconnaissance has also shown no evidence of mines or caves on the property.

Criterion 4
Karst

The Location Standards require that a new nonland-based hazardous waste unit not be located in karst terrain unless it is shown that the site is historically stable and that subsidence into or collapse of subsurface solution cavities as a consequence of instability caused by liquefaction of overburden or by the dissolution of soluble rocks will not occur. If the site cannot be shown to have been historically stable, it must be demonstrated that appropriate engineered measures are applied to ensure the unit's structural integrity and to contain or eliminate any adverse effects to human health and the environment that may occur as a result of karst terrane.

Karst terrane results from the dissolution of carbonate rocks, such as limestone and dolomite, located near the ground surface. Karst areas are typically characterized by sinkholes, springs, and losing streams.

While regional geologic cross-sections (Owens, 1989) indicate a shelly coquina limestone unit present in the Florence-Georgetown area, this unit appears to pinch out south of the site. Eleven geotechnical borings drilled to depths of 45 to 50 feet below ground surface (bgs) found no evidence of the coquina unit beneath the site. Descriptions of the geotechnical borings are provided in Appendix A. Review of available topographic and geologic maps, as well as site reconnaissance found no evidence of surface features typical of a karstic environment.

Criterion 5
Poor Foundation Conditions

The Location Standards require that a new nonland-based unit located in regions where poor foundation conditions may exist demonstrate the absence of poor foundation conditions at, beneath, adjacent, and in the vicinity of the unit. If poor foundations conditions exist, it must be demonstrated that the problem conditions will be corrected by modifying subsurface soil conditions, unit location, or design and operation of the unit.

Subsurface exploration of the site was conducted in October, 2009 as part of a preliminary soils investigation. The foundation conditions of the site were explored by means of 11 soil borings drilled using an ATV-mounted hollow stem auger rig. Five of these borings (SB-1 through SB-5) were located in the area of the proposed Battery Warehouse unit.

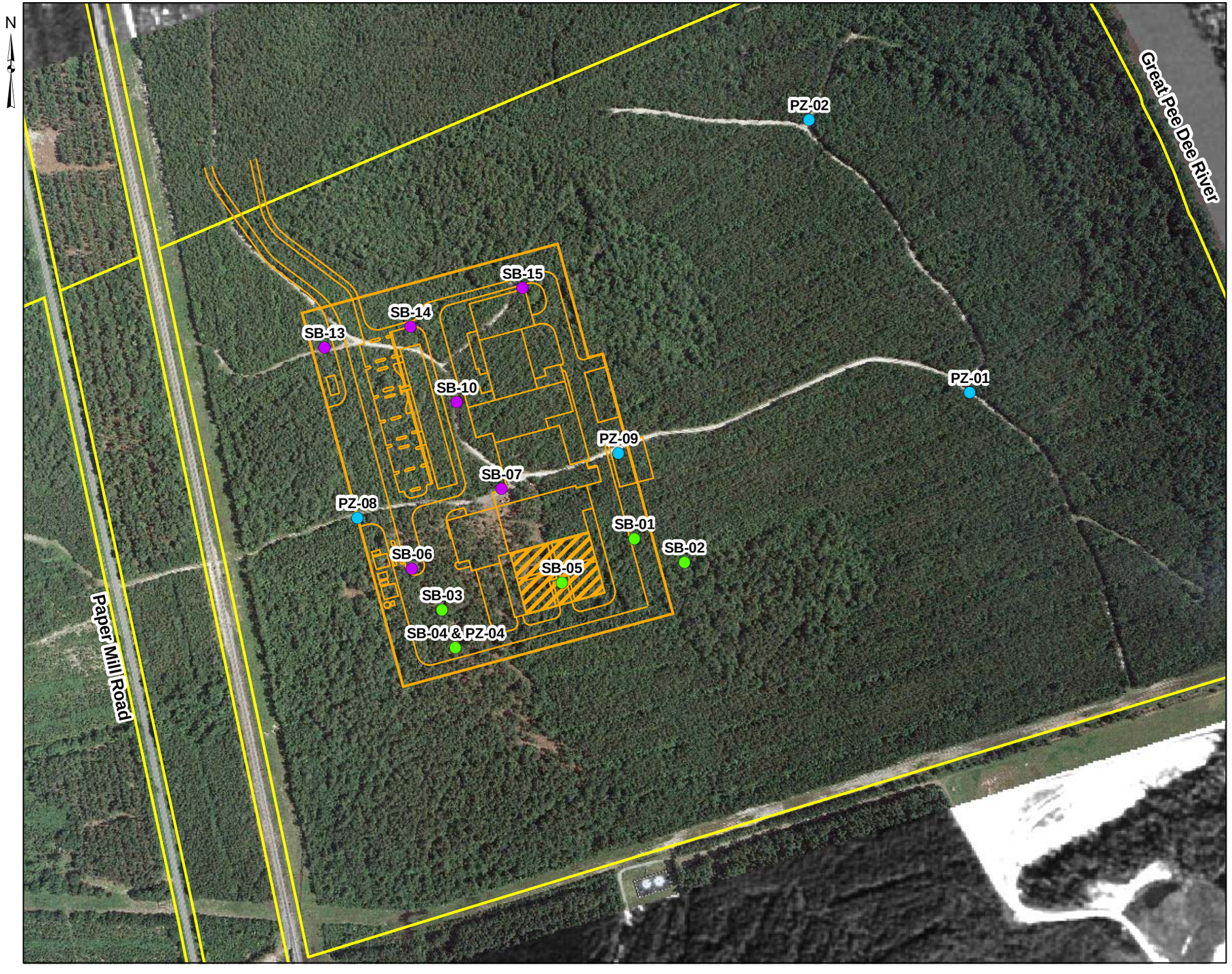
Boring locations are shown on Figure 4. The borings were advanced to depths of 40 to 50 feet bgs. Standard Penetration Tests (SPT) were performed at 5-foot intervals as the borings were advanced. The soils were logged and visually classified by an RMT engineer or geologist. Test boring logs are provided in Appendix A. Collected SPT samples were submitted to a geotechnical laboratory for testing that included moisture content, grain size distribution, and Atterberg Limits. Laboratory test data are included in Appendix A.

Results of the field and laboratory investigation indicate that the proposed Battery Warehouse site is underlain by interbedded layers of silty fine sands, clayey sands, sandy clays and clayey silts. A uniform stratum of stiff to hard sandy clay was encountered at a depth of approximately 30 to 35 feet bgs. The consistency of the soils in the upper 30 feet ranged from loose or soft to moderately dense or stiff. It is believed that some low blow count information was attributable to clean sands that up-flowed into the boring between sampling events. The upwelling of sand into the hollow auger stem was observed where there was a significant difference of hydraulic head between the inside of the boring and the surrounding groundwater table. Based on measurements of groundwater in piezometers in the vicinity, the groundwater table in the warehouse area is estimated to be located at a depth of between 6.5 and 9 feet below the existing ground surface.

The preliminary soils investigation indicates that the upper soils in the proposed warehouse building footprint are non-uniform. Many of the upper soils are geologically recent, unconsolidated fluvial deposits. In their present condition, they cannot be relied upon to provide competent foundation support. Based on RMT's review of soil maps of the near-surface soils (USDA Natural Resources Conservation Service) the weaker foundation materials

(at borings SB-2 through SB-5) appear to be generally consistent with the areas where Pa (Pantego Loam) soil units are mapped (see Figure 5). Isolated layers of the saturated soils, particularly the clean, fine sands and silts, are also potentially susceptible to seismic liquefaction. To provide adequate foundation conditions, the foundation soils will be modified by excavation, replacement, and/or compaction, as needed.

This will provide a dense, uniform fill mat beneath spread footings and slabs-on-grade. Typically, the excavation and replacement of soil would need to extend beneath the bottom of the footing to a depth at least equal to the footing width, in order to adequately distribute foundation loads.



LEGEND

- SOIL BORING LOCATION
- PIEZOMETER LOCATION
- RCRA UNIT SOIL BORING LOCATION
- FACILITY FOOTPRINT
- MODIFIED RCRA UNIT (HATCH COLOR)
- PROPERTY BOUNDARY

NOTES

AERIAL IMAGES FROM TERRASERVER (1994) AND SUMMER 2009.

0 400 800

Feet

JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY

SOIL BORING AND PIEZOMETER LOCATIONS

DRAWN BY: TLH	SCALE AS NOTED	PROJECT NO.: 02452.09.001
CHECKED BY: JEP		DATE: JUNE 2010
APPROVED BY: WMB		FIGURE NO.: 4

RMT
Patewood Plaza One, Suite 100
30 Patewood Drive
Greenville, SC 29615-3535
Phone: 864-281-0030
FAX: 864-281-0288

Map Document: (P:\Project JCBGI\ArcGIS\RCRAPermit_2010Revs\SoilBorings_Fig4.mxd)
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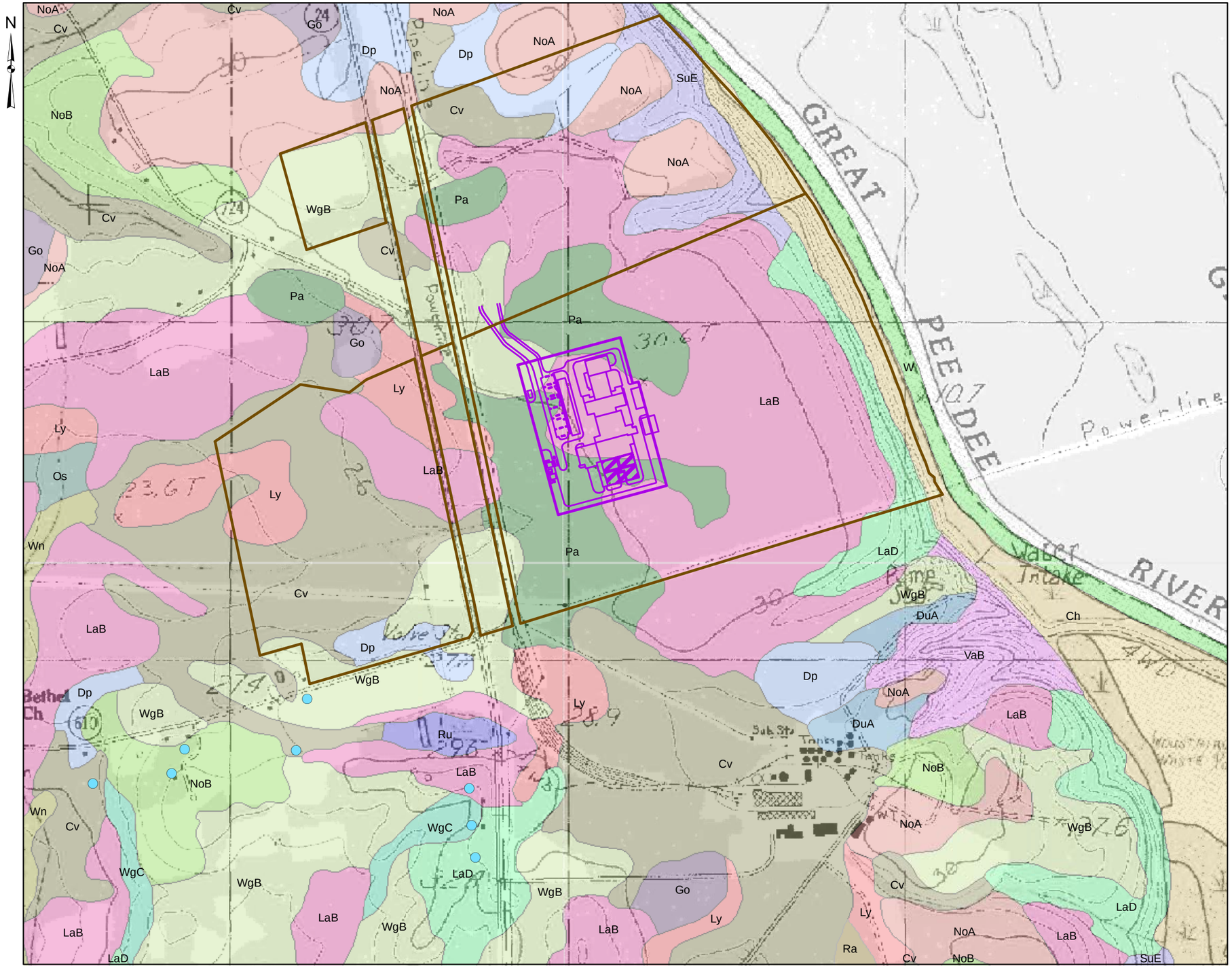

LEGEND

- FACILITY FOOTPRINT
- BATTERY WAREHOUSE
- PROPERTY BOUNDARY
- PRIVATE WELL

SOIL TYPES

Ch	Os
Cv	**Pa**
Dp	Ru
DuA	SuE
Go	VaB
LaB	W
LaD	**WgB**
Ly	WgC
NoA	Wn
NoB	

NOTES

Soil Type data obtained from U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Soil Survey Geographic (SSURGO) database published 1/8/2009.

Bold soil type in legend indicates that the type is found within the property boundary.

0 800 1600 2400

Feet

JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY

SOIL MAP

DRAWN BY: TLH	SCALE AS NOTED	PROJECT NO.: 02452.09.001
CHECKED BY: JEP		DATE: JUNE 2010
APPROVED BY: WMB		FIGURE NO.: 5

RMT
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FAX: 864-281-0288

Map Document: (P:\Project JCBGI\ArcGIS\RCRAPermit_2010Revs\SoilType_Fig5.mxd)
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Criterion 6
Areas Susceptible to Mass Movement

The Location Standards require that a new nonland-based unit located in a region where mass movement may occur demonstrate that the unit is not in an area susceptible to mass movement. If evidence of mass movement exists, appropriate engineered measures must be applied to ensure unit structural integrity.

The area of the proposed warehouse development is located approximately 2,000 feet from the banks of the Great Pee Dee River, and is therefore outside the influence of any river bank instability. The site topography is relatively planar, sloping gently toward the west at a rate of less than one percent. Because of the relatively flat topography, the site is not susceptible to mass soil movement due to land sliding, soil creep, or significant erosion.

Criterion 7
Groundwater Vulnerability

The Location Standards require that a new nonland-based unit meets the following groundwater vulnerability criteria unless appropriate engineered measures are applied to ensure the unit's structural integrity and to contain or eliminate any adverse effects to human health and the environment that may occur as a result of a release from the unit.

An underlying protective clay or silty clay unit with a thickness greater than 5 feet and a hydraulic conductivity less than 1 x 10^{-6} cm/sec must be present. The protective unit must have a high ion exchange capacity and should have a high organic content. The unit must be continuous from 200 feet in the hydraulically upgradient direction, 500 feet in the hydraulically sidegradient direction, and beneath the site downgradient to the nearest discharge point to shallow groundwater to the surface water.

A dark gray, lean clay containing varying amounts of very fine light grey sand lamanae and fine layering was encountered in each of the 11 geotechnical borings drilled at the site. The depth to the clay varied from approximately 30 to 40 feet bgs and was observed to be at least 5 feet thick at each location. Available geologic literature indicates that this unit is part of the Bear Bluff Formation of upper Pliocene age. Geologic maps and cross sections of the Bear Bluff (Owens, 1989) indicate that the clayey portion of the unit is continuous and extends at least 500 feet in each direction from the proposed building site. According to the geologic map (Owens, 1989), the Bear Bluff extends eastward from the site where it is exposed along the bank of the Pee Dee River. Falling head permeability tests performed on undisturbed samples of this clay indicate that it has a vertical hydraulic conductivity of approximately 1 x 10^{-8} cm/sec.

At all locations across the site, the potentiometric head in the shallow saturated geologic material overlying the confining unit must be lower than the potentiometric surface of the geologic material below the confining unit (i.e., an upward hydraulic gradient must exist).

Potentiometric head was evaluated only within the saturated unit above the confining clay. No information is available regarding the potentiometric head below the confining clay unit.

A minimum of 10 feet of separation must be maintained between the base of the unit and the natural high water table.

Water level data for monitoring wells completed in the shallow aquifer indicate that the water table may be less than 10 feet bgs. According to the topography and depth to water, it is

unlikely that a 10-foot separation between the hazardous waste units and seasonal high groundwater level can be maintained.

A minimum of 15 feet of vertical separation must be maintained between the base of the unit and the bedrock.

Bedrock was not encountered in any of the boreholes drilled; therefore, the minimum vertical separation required between the hazardous waste units and bedrock has been satisfied.

The unit cannot be located over an area where a stratum of limestone exhibiting secondary permeability with an average thickness of greater than 5 feet lies within 50 feet of the base of the unit.

Stratigraphic information from the 11 geotechnical borings drilled at the site indicates that limestone strata are not present at the facility.

The unit must be located so that a leak resulting in a groundwater discharge to a receiving surface water body would not contravene state water quality standards.

Five temporary piezometers were installed at the site to provide a general indication of depth and direction of groundwater flow. As shown on Figure 6, topography of the site is relatively flat across the property, dropping steeply to the east of the site along the Great Pee Dee River. Depth to groundwater ranged from approximately 6.5 to 9 feet bgs in piezometers installed on the west side of the property to approximately 16 to 23 feet bgs in piezometers located on the eastern portion of the property indicating groundwater flows to the east to southeast, discharging to the Great Pee Dee River, which has a 7Q10 of 1,440 cubic feet per second.

Appropriate engineered measures will be applied to ensure the unit's structural integrity. Structural issues are discussed under Criterion 1 and Criterion 5.

Groundwater will be protected by three levels of containment, which exceeds the requirements of RCRA regulations for containment. The primary containment for the hazardous waste will be the battery casings. Secondary containment will be provided by curbed areas with an acid-resistant coating. The third level of containment will be provided by a 40-mil high density polyethylene (HDPE) liner beneath the Battery Warehouse. Figure 7 provides a diagram of the containment systems. Preliminary specifications for the coating and liner are included in Appendix E.

NOTES:

1. Survey contour features produced by photogrammetric methods from LIDAR (Light Detection and Ranging systems) data and aerial photography in accordance with National Map Accuracy Standards as published by the USGS.
   Contour Interval is 1', Date of LIDAR Acquisition: June, 2009
   Date of Photography: June 22, 2009
   For further details pertaining to survey production refer to
   IMC Job No. IMC4408

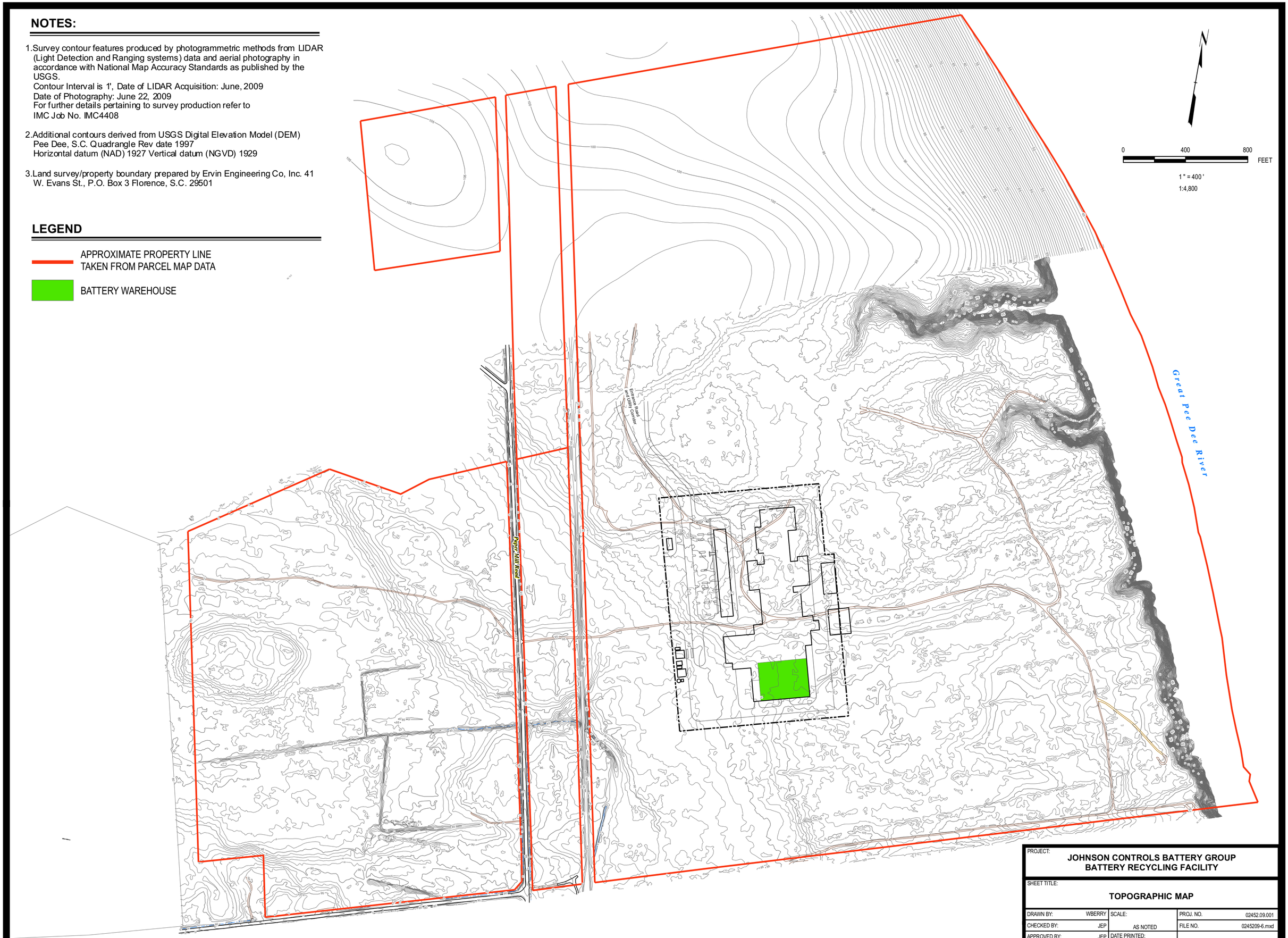
2. Additional contours derived from USGS Digital Elevation Model (DEM)
   Pee Dee, S.C. Quadrangle Rev date 1997
   Horizontal datum (NAD) 1927 Vertical datum (NGVD) 1929

3. Land survey/property boundary prepared by Ervin Engineering Co, Inc. 41 W. Evans St., P.O. Box 3 Florence, S.C. 29501

LEGEND

APPROXIMATE PROPERTY LINE
TAKEN FROM PARCEL MAP DATA

BATTERY WAREHOUSE



0 400 800 FEET

1 " = 400 '

1:4,800

PROJECT: JOHNSON CONTROLS BATTERY GROUP BATTERY RECYCLING FACILITY			
SHEET TITLE: TOPOGRAPHIC MAP			
DRAWN BY: WBERRY	SCALE: AS NOTED	PROJ. NO.	02452.09.001
CHECKED BY: JEP		FILE NO.	0245209-6.mxd
APPROVED BY: JEP	DATE PRINTED:	FIGURE 6	
DATE: JUNE 2010			

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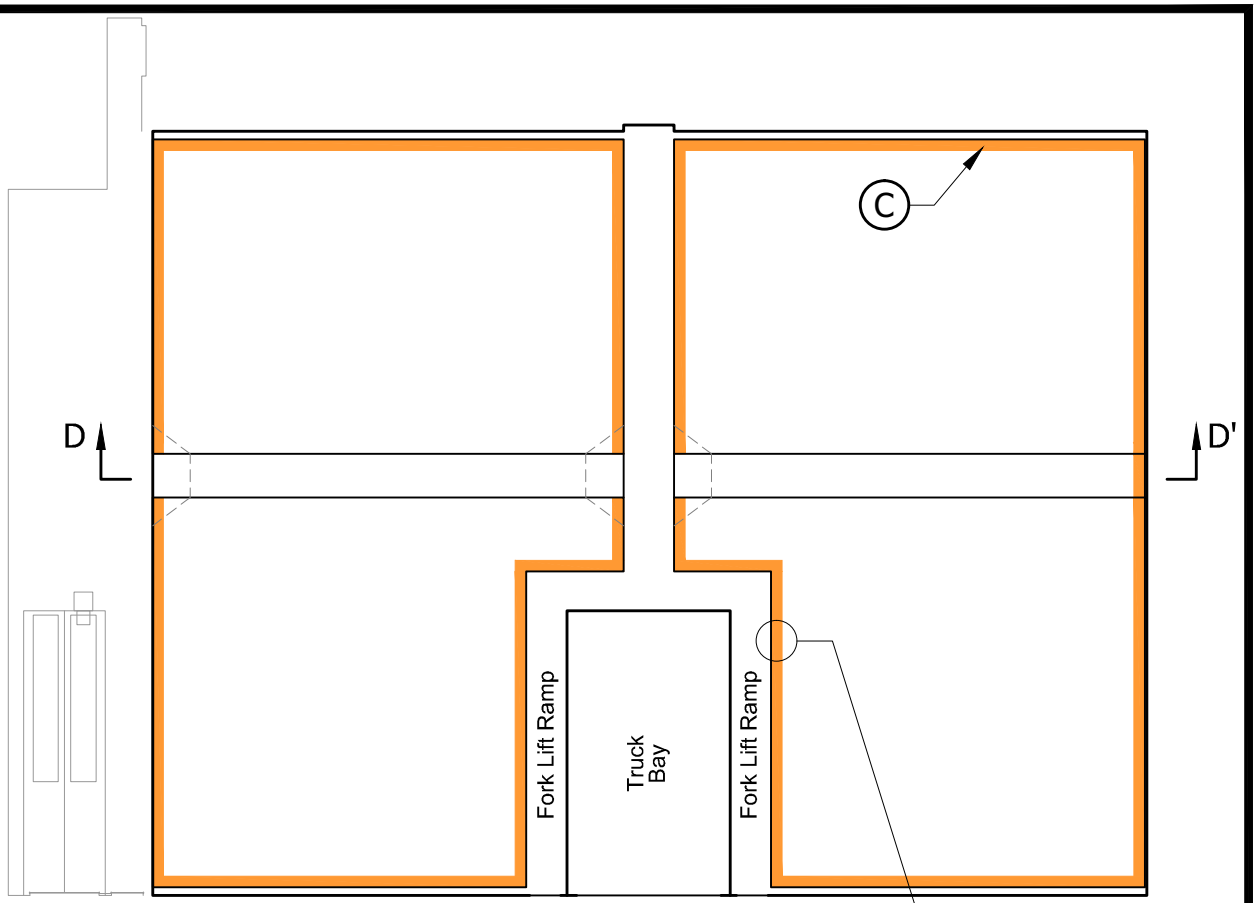
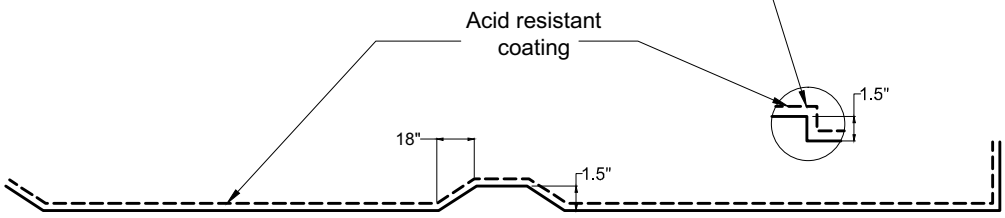
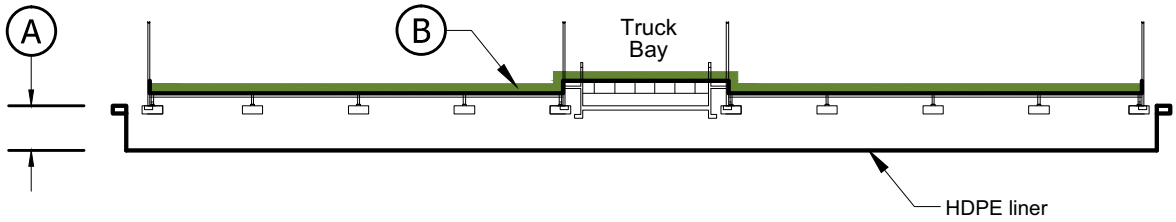




D - D'



A Depth of excavation and recompaction (equal to footing width)

B Acid-resistant coating

C Curb 1.5 Inch minimum height

Not To Scale

Note: All interior surfaces to a height of 1.5 inches above floor level will have an acid-resitant coating.

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Fax: 713-450-1639

JOHNSON CONTROLS BATTERY GROUP
BATTERY RECYCLING FACILITY

FIGURE 7
BATTERY WAREHOUSE CONTAINMENT

DRAWN BY:	W Berry
APPROVED BY:	J.P.
PROJECT NO.	02452.09.001
FILE NO.	0245209.001-D4.dwg
DATE:	June 2010

Drawing Name: J:\02452\09.001\0245209.001-D4.dwg
Operator Name: W Berry

Criterion 8
Complex Hydrogeology

The Location Standards require that a new nonland-based unit meets the following complex hydrogeology criteria unless appropriate engineered measures are applied to ensure the unit's structural integrity and to contain or eliminate any adverse effects to human health and the environment that may occur as a result of a release from the unit.

The hydrogeologic properties of the site must be adequately characterized, including a detailed description of the geologic units below the site, the hydraulic properties of each geologic unit, and the rate and direction of groundwater flow.

Geotechnical borings drilled at the site generally encountered 25 to 40 feet of fine silty sand with varying amounts of clay, overlying a dark gray, silty clay containing thin layers or lamanae of light grey fine sand. Falling head permeability tests performed on undisturbed samples of the silty clay unit provided hydraulic conductivity values of approximately 1×10^{-8} cm/sec, indicative of a hydraulic confining unit.

The geologic map and cross sections of the Florence and Georgetown Quadrangles (Owens, 1989) show two geologic formations underlying the site. The uppermost formation is the Bear Bluff Formation of upper Pliocene age which includes marine, barrier, backbarrier and fluvial facies within the Pee Dee and Cape Fear River basins. The marine or shelf facies of the Bear Bluff typically consists of a basal shelly horizon, which was not identified in geotechnical borings drilled at the site. The shell beds grade up into thick beds of bluish-green to dark-gray, very clayey silt. These beds are described as complex intercalations of sand and silty clay beds, which commonly contain abundant carbonaceous matter and locally contain light-brown uncarbonized wood fragments. These beds are considered to be backbarrier (lagoon and marsh) deposits. The barrier facies are described as laminated to thin-bedded, borrowed tidal-flat deposits overlying crossbedded sands of tidal-inlet deposits. Interfingering of the fluvial, barrier, and backbarrier facies of the Bear Bluff is common.

Below the Bear Bluff Formation is the Donoho Creek Formation of upper Cretaceous age. In the Pee Dee River valley at Mars Bluff, the Donoho Creek Formation is described as well-sorted crossbedded beach sands interfingering with intercalated thin beds of dark clay and light sand.

Descriptions of the 11 geotechnical borings are provided in Appendix A. While the descriptions provided for the borings are indicative of units included in the Bear Bluff Formation, the division between the Bear Bluff Formation and Donoho Creek Formation was not evident in the

field samples collected. While the well-sorted beach sands of the Donoho Creek Formation were not encountered, the dark grey clay and light sand units could represent either unit.

As described for Criterion 7, the direction of groundwater flow is estimated to be to the east-southeast, toward the Great Pee Dee River. Based on data from piezometers installed on the proposed site and groundwater flow rate and direction data from the adjacent property to the south of the proposed site, the estimated groundwater flow rate ranges from 5 to 85 feet per year.

The units must be in compliance with groundwater monitoring requirements under R.61-79.264 Subpart F.

This criterion does not apply because the unit at the facility is not subject to groundwater monitoring requirements.

The feasibility of conducting corrective action at the site must be demonstrated.

Observations during installation of the geotechnical borings and piezometers, along with data collected from these installations, did not indicate that conducting groundwater remediation would be unfeasible.

Appropriate engineered measures will be applied to ensure the unit's structural integrity. Structural issues are discussed under Criterion 1 and Criterion 5.

Criterion 9
Groundwater Resource Value

The Location Standards require that a new nonland-based unit not be located over Class GA groundwater, the recharge area for Class GA groundwater, a sole source aquifer, or the recharge area for a sole source aquifer unless appropriate engineered measures are applied to ensure the unit's structural integrity and to contain or eliminate any adverse effects to human health and the environment that may occur as a result of a release from the unit.

The hazardous waste unit is not located over Class GA groundwater, a recharge area for Class GA groundwater, a sole source aquifer, or a recharge area for a sole source aquifer.

United States Environmental Protection Agency (USEPA) Region 4 has identified three sole source aquifers in the southeast, none of which are located in South Carolina. SC DHEC has confirmed that as of the date of this application, no groundwater in South Carolina is classified as GA.

Criterion 10
Surface Water

The Location Standards require that a new nonland-based unit be more than 1,000 feet from any navigable waters and more than 1/2 mile upstream of a public drinking water supply intake from a river or stream in the same drainage basin unless it can be demonstrated that adequate storm water runon and runoff controls are in place and the result of any release of hazardous waste to the receiving surface water body will not contravene state water quality standards.

No new and expanding unit shall be located within a minimum of one-half mile of federally designated wild and scenic river or a state designated scenic river.

The Great Pee Dee River forms the eastern property boundary of the facility. The developed portion of the site will be located more than 1,000 feet from the river, as shown on Figure 3. A public drinking water supply inlet is not located within a half-mile downstream of the site. The industrial facility located immediately south of the proposed JCBGI facility has a water intake structure in the Great Pee Dee River approximately 750 feet from the JCBGI site. Water withdrawn from this intake structure is not used for drinking water purposes. The nearest public drinking water intake downstream from the site is located approximately 70 river miles from the site.

Storm water from the developed portion of the JCBGI Florence Recycling Center will be collected and managed with no surface water discharge. Although the storm water management design has not been finalized, the following conceptual design has been developed:

- The first flush of rainwater (first 0.5 inches of each rainfall event) from roofs and some other impervious surfaces will be captured in a 250,000-gallon tank.
- First flush storm water runoff captured in the 250,000-gallon tank will be treated by the process wastewater physical/chemical treatment system for discharge to the City of Florence POTW.
- Rainfall exceeding the capacity of the 250,000-gallon tank will be separately contained, treated in a storm water pond, with final disposition in one of the following:
  - Infiltrated to the groundwater table
  - Silvicultural irrigation

The proposed facility is not within one-half mile of federally designated wild and scenic river or a state designated scenic river. The portion of the Great Pee Dee River that is designated as a South Carolina Scenic River extends from the US Highway 378 Bridge at least 15 miles downstream from the proposed facility to the US Highway 17 Bridge at Winyah Bay.

Criterion 11
Air

The Location Standards require a new hazardous waste unit not to be located in an USEPA designated non-attainment area unless the owner or operator demonstrates, prior to operation, that the unit will be in compliance with the Department's Air Pollution Control Requirements for non-attainment areas. The Location Standards demonstration must include a description of air quality problems that may result from maximum operations of existing units. The description must include an assessment of the extent to which neighboring communities, wildlife, crops, vegetation, physical structures, public health, and the environment may be affected.

The JCBGI facility will be located in an area that is designated as attainment for all air quality parameters. While the facility as a whole is subject to air quality permitting, the RCRA-regulated unit, the Battery Warehouse, will not have regulated air emissions.

The site is a Greenfield facility. Minor changes in facility layout are anticipated with the final design. The Battery Warehouse is not a source of air emissions and any change in the exact footprint or location will not affect the air permit.

The Location Standards require preparation of operating plans for existing units in the event of an Air Stagnation Advisory (ASA) in the vicinity of the facility. The plan must describe actions that will be taken to minimize emissions during such an event.

While the facility as a whole is subject to air quality permitting, the RCRA-regulated unit, the Battery Warehouse, will not have regulated air emissions.

Criterion 12
Wetlands

The Location Standards require that a new nonland-based unit not be located in a wetland, nor adjacent to a wetland unless the long-term integrity of the unit to prevent migration of hazardous waste or hazardous constituents into the wetland is demonstrated.

For the purposes of the Location Standards, wetlands are defined as:

> ". . . those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands must possess three essential characteristics: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology."

This section summarizes the location of the existing units at the proposed incoming spent Battery Warehouse facility relative to wetlands. A more detailed description of the wetlands determination is included as Appendix B.

The site on which the proposed incoming Battery Warehouse is to be located was visited in October 2009 to identify and delineate areas exhibiting wetland characteristics. A complete wetlands delineation of the entire site was conducted in May 2010.

The delineation assessed vegetation, hydrology, and soils. Sequentially numbered pin flags were placed at the upland:wetland boundary. These pin flags were subsequently located and surveyed by a registered South Carolina surveyor. The delineated wetland boundaries are shown on Figure 3.

Areas on the portion of the site where the facility is to be located that satisfy the wetlands criteria are summarized as follows:

- An isolated, palustrine forested wetland on the northern side of the site (Wetland I).
- An isolated, palustrine, forested wetland (Wetland J) to the east of the site and south, southeast of Wetland I.
- A mixed palustrine forested and shrub/shrub wetland (Wetland C) west of the site and east of Paper Mill Road and that is crossed by the railroad line that crosses the site and that is crossed by the two overhead electric power transmission lines that cross the site. This wetland is adjacent to and drains to the west through a drainage ditch.

- An isolated, palustrine forested wetland on the southern side of the site (Wetland K)
- A palustrine, forested wetland adjacent to the Great Pee Dee River

The proposed incoming battery storage warehouse has been situated such that it is greater than 500 feet from the wetland areas identified on the site. Moreover, this warehouse will not be hydrologically connected to these wetland areas. It is concluded that the proposed incoming battery storage warehouse satisfies the wetlands criterion of the location standards.

Criterion 13
Other Environmentally Sensitive Areas

The Location Standards prohibit the location of a new nonland-based unit on prime farmland, within an area that may adversely affect an archeological or historical site, or within 1/2 mile of national parks, state parks, national wildlife refuges, major water impoundments, state heritage preserves, designated wilderness areas of a national forest, and areas of special national or regional natural, recreational, scenic, or historic value.

The plant site is located in an area of Lakeland sand, Pantego loam, and Wagram sand and therefore is not considered Prime Farmland. An excerpt from the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey regarding Prime Farmland is included in Appendix C.

Publicly available information maintained by the South Carolina Department of Archives and History and by the United States National Park Service National Register Information System (NRIS) database was reviewed regarding cultural resources potentially affected by the proposed JCBGI Battery Recycling Center. The NRIS database lists 22 culturally significant resources within Florence County. The tabulated NRIS listing of these sites is attached as Appendix D.

Two NRIS listed sites, Mt. Zion Rosemary School and Red Doe Plantation, are the nearest culturally significant resources to the site. Both of these cultural resources are located approximately 2 miles to the west of the site and are not expected to be adversely affected by it.

Mr. Keith Derting, File Manager for the South Carolina Institute of Archaeology and Anthropology, was contacted. He stated that the Institute has no records of known archaeological sites within a one-mile radius of the approximate center of the Site. Additionally, a field reconnaissance did not identify any archaeological resources. While the site has not previously been developed, prior farming and timber production have significantly disturbed the land.

No national parks, state parks, national wildlife refuges, major water impoundments, state heritage preserves, designated wilderness areas of a national forest, and areas of special national or regional natural, recreational, scenic, or historic value within South Carolina are located within one-half mile of the site.

Criterion 14
Buffer Zones

The Location Standards require the establishment of buffer zones for land-based units.

The hazardous waste units are not land based; therefore, this criterion does not apply to the proposed facility.

Criterion 15
Setbacks

The Location Standards require that a new non-land-based unit be located a minimum of 2,000 feet from any existing church, school, hospital, or other structure that is routinely occupied by the same person or persons more than 12 hours per day or by the same person or persons under the age of 18 years for more than 2 hours per day, except those owned by the applicant.

Figure 3 shows the location of the proposed incoming spent Battery Warehouse. The required setback distance from the nearest applicable structures is shown on the figure to demonstrate that the setback requirement is met by the proposed location of the facility.

Criterion 16
Transportation

The Location Standards require a new nonland-based unit to demonstrate that the transportation corridors will minimize the potential for and effects of hazardous spills and accidents in populated communities. The demonstration must include access to the facility on roads with adequate capacity, access on well constructed and maintained roads without weight restrictions, and access by alternative routes.

Routes of truck traffic into the proposed facility are shown on Figure 8. Trucks will access the site from Interstate Highway I-95 either by way of State Highway 327 or by way of State Highway 38 and US Highway 301 to US Highway 76, then south on Paper Mill Road to the site.

The recycling facility will operate on a 24 hour per day, 7 day per week schedule. However, it is anticipated that receiving and shipping will operate only two shifts per day. The average number of trucks per day bringing spent batteries to the facility is estimated at 40 to 45. In addition to incoming spent batteries, other raw materials will be brought to the site and products and wastes will be shipped from the site. Overall traffic associated with the recycling facility is expected to average 40 to 60 trucks per day including incoming spent batteries.

The access roads are used by many industries in addition to the proposed JCBGI Florence Recycling Center. Anticipated facility traffic will account for a minimal increase in overall traffic on the routes to Paper Mill Road. District DOT personnel have confirmed that the access route has capacity for the facility traffic, and stated that a left turn lane is anticipated to be required to accommodate the free flow of traffic once the facility is in operation.

In the event that Paper Mill Road north of the site is blocked, the alternative route is Paper Mill Road south to River Road, west to Francis Marion Road, then north to US Highway 76. This route has a weight restricted bridge, but the weight bearing capacity of the bridge is greater than the weight of trucks that will access the site. According to district DOT personnel, there are no other weight restrictions on bridges or road for the secondary entry route.

LEGEND

Truck Routes

Route Definition

From Northeast

From Southwest

Primary Local

Secondary Local

River or Stream

NOTES

0 2 4 6

Miles

Map Document: (P:\Project JCBGI\ArcGIS\RCRAPermit_2010Revs\TrafficRoutes_Fig8.mxd)
6/4/2010 -- 6:54:08 PM

RMT

JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY

FIGURE 8
TRAFFIC ROUTES TO SITE

Drawn By:	TLH
Approved By:	JEP
Project No.:	02452.09.001
File No.	
Date:	JUNE 2010

Criterion 17
Preparedness

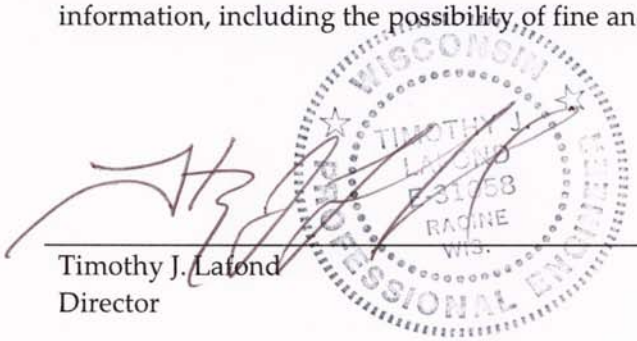
The Location Standards require that facilities with hazardous waste management units have agreements for appropriate emergency services with the Local Emergency Planning Committee.

Emergency planning procedures are included in Section G of the Part B Permit Application. Copies of the Contingency Plan will be submitted to organizations that may be contacted in the event of an emergency. These organizations include the following:

- SC DHEC;
- Windy Hill Fire Department;
- Florence County Sheriff's Department;
- McLeod Hospital;
- Carolina's Hospital System; and
- Emergency response teams that may be called upon to provide emergency services.

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge and belief, true, accurate and, complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Timothy J. Latond
Director

12/17/09
Date

References

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Maybin, Arthur H., III, *Structural Features of South Carolina*, South Carolina Department of Natural Resources Geological Survey.

Owens, James P., *Geologic Map of the Cape Fear Region, Florence 1° X 2° Quadrangle and Northern Half of the Georgetown 1° X 2° Quadrangle, North Carolina and South Carolina*, U.S. Geological Survey, 1989.

Low-Flow Frequency and Flow Duration of Selected South Carolina Streams in the Pee Dee River Basin through March 2007, Open-File Report 2009-1171. U.S. Geological Survey, 2009.

Appendix A
Geotechnical Data

The following table presents soil descriptions from the 11 geotechnical borings advanced at the site to investigate soil conditions. Boring logs are also provided for borings SB-01 through SB-05.

Geotechnical Boring Descriptions

BORING LOCATION	DEPTH	BLOW COUNT	DATE OF BORING	FIELD CLASSIFICATION
SB-01	4-5.5'	3-4-7	10/29/09	Silty Clay (CL) gray, with fine lt. gray sand. Grades to Silty Sand (SM), fine, orange, yellow and gray. Possible peat at 5.1 to 5.3 feet.
SB-01	9-10.5'	2-3-7	10/29/09	Sandy Clay (CL), fine grained, lt. gray
SB-01	14-15.5'	3-5-5	10/29/09	Silty Sand (SM), fine grained with sandy clay lamanae and layers
SB-01	19-20.5'	3-2-3	10/29/09	Fat Clay (CH), gray, soft
SB-01	24-25.5'	4-7-11	10/29/09	Silty Sand (SM), fine grained, dk. gray to black
SB-01	29-30.5'	4-13-17	10/29/09	Silty Sand (SM), fine grained, dl, gray to black
SB-01	34-35.5'	4-7-9	10/29/09	Silty Sand (SM) to Lean Clay (CL), dk. Gray, medium stiff.
SB-01	39-40.2'	Shelby Tube	10/29/09	Lean Clay (CL)
SB-01	44-45.5'	9-22-38	10/29/09	Silty Sand (SM), fine grained, some clay, dk. gray
SB-02	4-5.5'	1-1-2	10/29/09	Clayey Sand (SC), fine grained, gray, soft
SB-02	9-10.5'	2-6-8	10/29/09	Sandy Clay (CL), fine grained, medium stiff
SB-02	14-15.5'	2-5-7	10/29/09	Lean Clay (CL) to Clayey Sand (SC) to Silty Sand (SM)
SB-02	19-20.5'	5-5-4	10/29/09	Clayey Sand (SC) with thin, fat clay layers
SB-02	24-25.5'	4-5-7	10/29/09	Silty Sand (SM), fine grained, some clay
SB-02	29-30.5'	6-10-15	10/29/09	Silty Sand (SM), fine grained with thin clay layers
SB-02	34-35.5'	6-10-16	10/29/09	Clay (CL) with fine sand lamanae
SB-02	38-40'	Shelby Tube	10/29/09	Clay (CL)
SB-02	44-45.5'	10-27-41	10/29/09	Silty Sand (SM), fine grained with clay lamanae and layers
SB-03	4-5.5'	4-4-3	10/26/09	Silty Sand (SM), fine grained, lt. gray
SB-03	9-10.5'	4-4-4	10/26/09	Silty Sand (SM), fine grained, rust, orange, gray
SB-03	14-15.5'	3-3-4	10/26/09	Clayey Silt (ML), trace v. fine sand, gray with rust mottling
SB-03	19-20.5'	1-2-4	10/27/09	Silty Sand (SM), fine grained, trace clay

Geotechnical Boring Descriptions

BORING LOCATION	DEPTH	BLOW COUNT	DATE OF BORING	FIELD CLASSIFICATION
SB-03	24-25.5'	2-8-18	10/27/09	Silty Sand (SM), fine grained, trace clay
SB-03	29-30.5'	5-8-14	10/27/09	Silty Sand (SM), fine grained, trace clay
SB-03	34-35.5'	8-10-22	10/27/09	Lean Clay (CL), dk. gray with fine sand layers
SB-03	40-41'	Shelby Tube	10/27/09	Lean Clay (CL)
SB-03	44.5-46'	5-8-36	10/27/09	Silty Sand (SM), fine grained with clay layers
SB-03	46-47.5'	8-11-50/6	10/27/09	Silty Sand (SM), fine grained with clay layers
SB-04	4-5.5'	2-2-2	10/27/09	Silty Sand (SM), fine grained, some clay
SB-04	9-10.5'	2-4-5	10/27/09	Silty Sand (SM), fine grained with trace rounded gravel
SB-04	14-15.5'	2-3-5	10/27/09	Sandy Silt (ML), v. fine grained, some clay
SB-04	19-20.5'	3-5-10	10/27/09	Silty Sand (SM), fine grained, dk. gray
SB-04	24-25.5'	2-3-6	10/27/09	Silty Sand (SM), fine grained, dk. gray
SB-04	30-31.5'	8-9-10	10/27/09	Clay (CL), black
SB-04	32-33.5'	Shelby Tube	10/27/09	Clay (CL)
SB-04	33.5-35'	7-8-18	10/27/09	Silty Sand (SM), v. fine grained, trace clay
SB-04	39-40.5'	4-5-5	10/27/09	Clay (CL), dk. gray with fine sand layers
SB-04	44-45.5'	11-21-27	10/27/09	Silty Sand (SM), dk. gray
SB-05	5-6.5'	3-5-6	10/28/09	Silty Sand (SM), fine grained, white to tan
SB-05	10-11.5'	W.O.H.	10/28/09	Sandy Clay (CL), wet, gray, soft
SB-05	15-16.5'	7-5-4	10/28/09	Silty Sand (SM), fine grained, some clay
SB-05	20-21.5'	2-5-2	10/28/09	Silty Sand (SM), fine grained, some clay
SB-05	25-26.5'	4-9-24	10/28/09	Silty Sand (SM), fine grained, some clay
SB-05	30-31.5'	7-15-x	10/28/09	Silty Sand (SM) with dk. gray clay layers

Geotechnical Boring Descriptions

BORING LOCATION	DEPTH	BLOW COUNT	DATE OF BORING	FIELD CLASSIFICATION
SB-05	33-35'	Shelby Tube	10/28/09	Lean Clay (CL) with thin fine sand layers
SB-05	40-41.5'	13-14-19	10/28/09	Lean Clay (CL), dk. gray with thin fine sand layers
SB-05	45-46.5'	24-50/4	10/28/09	Silty Sand (SM), fine grained, little clay
SB-06	4-5.5'	3-3-2	10/28/09	Silty Sand (SM) to Silty Clay (CH)
SB-06	9-10.5'	3-2-2	10/28/09	Silty Sand (SM) to Clayey Sand (SC), fine grained
SB-06	14-15.5'	3-2-x	10/28/09	Sandy Silt (ML), v. fine grained
SB-06	19-20.5'	3-10-10	10/28/09	Silty Sand (SM), rust/yellow/tan, fine grained
SB-06	24-25.5'	10-15-12	10/28/09	Silty Sand (SM), fine grained, some clay
SB-06	29.5-31'	4-7-11	10/28/09	Silty Sand (SM) grading to Lean Clay (CL)
SB-06	33-35'	Shelby Tube	10/28/09	Lean Clay (CL)
SB-06	39-40.5'	7-15-25	10/28/09	Silty Sand (SM), fine grained, little clay
SB-06	44-45.5'	15-35-35	10/28/09	Silty Sand (SM), fine grained, some clay
SB-07	4-5.5'	4-4-7	11/02/09	Orange/gray mottled clayey fine sand (SC)
SB-07	9-10.5'	7-10-16	11/02/09	Orange/yellow/gray mottled. Damp. Silty fine sand. (SM)
SB-07	14-15.5'	4-6-8	11/02/09	Dark gray silty clay w/ organics (CL) and layer of orange clayey fine sand (SC)
SB-07	19-20.5'	3-4-5	11/02/09	Silty fine sand with clay (SM) and layer of white fine to medium sand (SW)
SB-07	24-25.5'	WOH-3-3	11/02/09	Silty fine to medium sand (SM)
SB-07	29-30.5'	4-9-19	11/02/09	Silty fine sand w/ trace of clay (SM)
SB-07	34-35.5'	4-7-9	11/02/09	Dark gray silty clay. Damp. (CL)
SB-07	39-40.5'	4-5-9	11/02/09	Dark gray silty clay. Damp. (CL)
SB-07	43-45'	Shelby Tube	11/02/09	N/A
SB-10	4-5.5'	4-4-6	11/03/09	Orange/brown fine sand with clay and silt (SP)

Geotechnical Boring Descriptions

BORING LOCATION	DEPTH	BLOW COUNT	DATE OF BORING	FIELD CLASSIFICATION
SB-10	9-10.5'	4-6-7	11/03/09	Orange/yellow/gray mottled. Clayey fine sand. (SC)
SB-10	14-15.5'	5-7-6	11/03/09	Orange/red mottled clayey fine sand (SC)
SB-10	19-20.5'	4-3-6	11/03/09	Orange and gray fat clay (CL)
SB-10	24-25.5'	3-5-7	11/03/09	Dark gray/black stiff clay. Dry. (CL)
SB-10	28-30'	Shelby Tube	11/03/09	N/A
SB-10	34-35.5'	4-20-40	11/03/09	Yellow/orange fine to medium sand with silt (SW)
SB-10	39-40.5'	4-6-11	11/03/09	Dark gray/black stiff clay. Dry. (CL)
SB-10	44-45.5'	4-10-5	11/03/09	Dark gray/black stiff clay. Dry. (CL)
SB-10	49-50.5'	7-10-15	11/03/09	Dark gray/black stiff clay. Dry. (CL)
SB-13	4-5.5'	4-7-10	11/04/09	Dark gray/orange clayey fine sand w/ silt (SC)
SB-13	9-10.5'	3-2-3	11/04/09	Orange/gray clay. Damp. (CL)
SB-13	14-15.5'	4-4-5	11/04/09	Orange/gray clay. Damp. (CL)
SB-13	19-20.5'	2-2-2	11/04/09	Gray/brown clayey fine sand w/ silt (SC)
SB-13	23-25	Shelby Tube	11/04/09	N/A
SB-13	29-30.5'	11-11-23	11/04/09	Dark gray/black organic clayey silt (ML) and layer of orange silty fine sand (SM)
SB-13	34-35.5'	9-25-29	11/04/09	Brown fine to medium sand (SW)
SB-13	39-40.5'	8-6-8	11/04/09	Brown fine to medium clayey sand (SC)
SB-13	44-45.5'	9-14-17	11/04/09	Dark gray/black stiff clay (marle). Dry. (CL)
SB-14	4-5.5'	4-4-5	11/04/09	Yellow/orange/gray mottled clayey fine sand (SC)
SB-14	9-10.5'	5-8-10	11/04/09	Yellow/orange/gray/red mottled clay with fine sand (CL)
SB-14	14-15.5'	4-8-10	11/04/09	Yellow/red clayey fine sand with silt (SC)
SB-14	19-21'	Shelby Tube	11/04/09	N/A

Geotechnical Boring Descriptions

BORING LOCATION	DEPTH	BLOW COUNT	DATE OF BORING	FIELD CLASSIFICATION
SB-14	24-25.5'	3-4-6	11/04/09	Orange/brown clayey fine sand with silt (SC)
SB-14	29-30.5'	4-8-10	11/04/09	Orange/brown to black clay with fine sand (CL)
SB-14	34-35.5'	16-35-30	11/04/09	Yellow/brown to black clayey fine sand (SC)
SB-14	39-40.5'	3-4-9	11/04/09	Dark gray/black stiff clay (marle). Dry. (CL)
SB-14	44-45.5'	4-8-16	11/04/09	Dark gray/black stiff clay (marle). Dry. (CL)
SB-14	49-50.5'	7-11-16	11/04/09	Dark gray/black stiff clay (marle). Dry. (CL)
SB-15	4-5.5'	3-5-6	11/03/09	Yellow/orange/gray mottled silty fine sand (SM)
SB-15	9-11'	Shelby Tube	11/03/09	N/A
SB-15	14-15.5'	2-6-14	11/03/09	Yellow/orange/red mottled silty clay (CL)
SB-15	19-20.5'	2-3-4	11/03/09	Red/gray mottled clay with fine sand and silt (CL)
SB-15	24-25.5'	4-7-10	11/03/09	Dark gray/black clay (CL) with layer of orange sandy silty clay (SC)
SB-15	29-30.5'	4-3-6	11/03/09	Dark gray/black silty fine sand with clay SM)
SB-15	34-35.5'	2-7-26	11/03/09	Yellow/orange/black sandy clay (SC) with layer of wet light brown fine to medium sand (SW)
SB-15	39-40.5'	6-10-19	11/03/09	Dark gray/black sandy clay (CL)
SB-15	44-45.5'	10-19-22	11/03/09	Dark gray/black stiff clay (marle). Dry. (CL)

SOIL BORING LOG

RMT

BORING NO. SB-01

Facility/Project Name:	Date Drilling Started:	Date Drilling Completed:	Project Number:
Johnson Controls	10/29/09	10/29/09	7682.09

Drilling Firm:	Drilling Method:	Surface Elev. (ft)	TOC Elevation (ft)	Total Depth (ft bgs)	Borehole Dia. (in)
Landprobe	HSA - SS	---	---	45.5	6

Boring Location:	Personnel	Drilling Equipment:
	Logged By - L. Clark Driller - R. Banks	CME-75

Civil Town/City/or Village:	County:	State:	Water Level Observations:
Florence	Florence	South Carolina	While Drilling: Date/Time Depth (ft bgs) After Drilling: Date/Time Depth (ft bgs)

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
				SILTY CLAY (CL), with fine light gray sand, gray, moist, moderately stiff. Brown organic layer (peat?) encountered at 5.1 - 5.3 feet bgs.	CL					
1 SS	100	3 4 7	5							
				SILTY SAND (SM), fine grained, mottled orange/yellow/gray, moist, moderately dense.	SM					
				SANDY CLAY (CL), fine grained, light gray with rust mottling, moist, stiff.	CL					
2 SS	83	2 3 7	10							
				SILTY SAND (SM), fine grained, with sandy clay lamanae and layers, wet, medium dense.	SM					
3 SS	28	3 5 5	15				22.3			
4 SS	100	3 2 3	20	**FAT CLAY (CH),** gray, with fine sand layers.	CH		48.9	55	23	PL = 32
				SILTY SAND (SM), fine grained, dark gray to black, moist, layered.	SM					
5	61	4 7								

SOIL BORING WELL CONSTRUCTION LOG 7682.09.GPJ RMT_CORP.GDT 7682.09 12/11/09

Signature:

Firm: RMT, Inc. 864 281 0030
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SOIL BORING LOG

RMT

BORING NO. SB-01

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
SS		11								
6 SS	56	4 13 17	30	As above.	SM		26.1	NV	NP	PL = NV
7 SS	89	4 7 9	35	**LEAN SANDY CLAY (CL),** dark gray, wet, medium stiff.						
8 ST	100		40		CL					
9 SS	100	9 22 38	45	**SILTY SAND (SM),** fine grained, some clay, dark gray, wet.	SM					
				E.O.B. @ 45.5' feet bgs.						
			50							
			55							

SOIL BORING LOG

RMT

BORING NO. SB-02

Facility/Project Name:	Date Drilling Started:	Date Drilling Completed:	Project Number:
Johnson Controls	10/29/09	10/29/09	7682.09

Drilling Firm:	Drilling Method:	Surface Elev. (ft)	TOC Elevation (ft)	Total Depth (ft bgs)	Borehole Dia. (in)
Landprobe	HSA - SS	---	---	45.5	6

Boring Location:	Personnel	Drilling Equipment:
	Logged By - L. Clark Driller - R. Banks	CME-75

Civil Town/City/or Village:	County:	State:	Water Level Observations:
Florence	Florence	South Carolina	While Drilling: Date/Time Depth (ft bgs) After Drilling: Date/Time Depth (ft bgs)

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
				CLAYEY SAND (SC), fine grained, light gray with small yellow mottling, trace of fine roots, wet, soft.	SC					
1 SS	45	1 1 2	5							
				SANDY CLAY (CL), fine grained, mottled gray/brick, rust, moist, medium stiff.	CL					
2 SS	100	2 6 8	10				25.2	54	25	PL = 29
				LEAN CLAY (CL), dark gray with light gray silty sand layers, wet, medium stiff.	CL					
3 SS	100	2 5 7	15	**CLAYEY SAND (SC),** fine grained, trace uncarbonized roots.	SC					
				SILTY SAND (SM), fine grained with thin clay laminae.	SM					
				CLAYEY SAND (SC), with thin layers of light gray fat clay and orange-rust silty fine sand, wet, stiff. Trace roots at base of spoon.						
4 SS	78	5 5 4	20		SC		29.4			
5	67	3 5		**SILTY SAND (SM),** with some clay, fine grained, gray to tan layered, wet, moderately dense.	SM		31.6			

SOIL BORING WELL CONSTRUCTION LOG 7682.09.GPJ RMT_CORP.GDT 7682.09 12/11/09

Signature:

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SOIL BORING LOG

RMT

BORING NO. SB-02

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
SS		7								
6 SS	50	6 10 15	30	As above, fine grained, gray to dark gray with few clay laminae and layers.	SM					
7 SS	83	6 10 16	35	**CLAY (CL),** dark gray with lamanae of fine sand, slightly moist and stiff.			61.0			
8 ST	100		40		CL					
9 SS	100	10 27 41	45	**SILTY SAND (SM),** fine grained, gray with dark gray clay laminae and layers.	SM					
				E.O.B. @ 45.5 feet bgs.						
			50							
			55							

SOIL BORING WELL CONSTRUCTION LOG 7682.09.GPJ RMT_CORP.GDT 7682.09 12/11/09

SOIL BORING LOG

RMT

BORING NO. SB-03

Facility/Project Name:	Date Drilling Started:	Date Drilling Completed:	Project Number:
Johnson Controls	10/26/09	10/27/09	7682.09

Drilling Firm:	Drilling Method:	Surface Elev. (ft)	TOC Elevation (ft)	Total Depth (ft bgs)	Borehole Dia. (in)
Landprobe	HSA - SS	---	---	47.5	6

Boring Location:	Personnel	Drilling Equipment:
	Logged By - L. Clark Driller - R. Banks	CME-75

Civil Town/City/or Village:	County:	State:	Water Level Observations:
Florence	Florence	South Carolina	While Drilling: Date/Time Depth (ft bgs) After Drilling: Date/Time Depth (ft bgs)

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
				SILTY SAND (SM), fine grained, light gray, moist, loose.	SM					
1 SS	89	4 4 3	5							
2 SS	100	4 4 4	10	Same as above, mottled rust/orange/gray.			21.5	25.0	1	PL = 24
				CLAYEY SILT (ML), with trace very fine grained sand, gray with fine rust mottling, wet, soft.	ML					
3 SS	100	3 3 4	15							
				SILTY SAND (SM), with trace clay, fine grained, wet, loose to moderately dense.	SM					
4 SS	45	1 2 4	20							
5	61	2 8					25			

SOIL BORING WELL CONSTRUCTION LOG 7682.09.GPJ RMT_CORP.GDT 7682.09 12/11/09

Signature:

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SOIL BORING LOG

RMT

BORING NO. SB-03

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
SS		18								
6 SS	34	5 8 14	30		SM					
7 SS	34	8 10 22	35	**LEAN CLAY (CL),** dark gray, with layers of light gray fine sand, moist, very stiff.	CL		42.3			
8 ST	100		40							
9 SS	67	5 8 36	45	**SILTY SAND (SM)**, fine grained, gray, layered with dark gray lean clay, wet, hard.	SM					
10 SS	67	8 11 50/6								
				E.O.B. @ 47.5 feet bgs.						
			50							
			55							

SOIL BORING LOG

RMT

BORING NO. SB-04

Facility/Project Name:	Date Drilling Started:	Date Drilling Completed:	Project Number:
Johnson Controls	10/27/09	10/27/09	7682.09

Drilling Firm:	Drilling Method:	Surface Elev. (ft)	TOC Elevation (ft)	Total Depth (ft bgs)	Borehole Dia. (in)
Landprobe	HSA - SS	---	---	45.5	6

Boring Location:	Personnel	Drilling Equipment:
	Logged By - L. Clark Driller - R. Banks	CME-75

Civil Town/City/or Village:	County:	State:	Water Level Observations:
Florence	Florence	South Carolina	While Drilling: Date/Time Depth (ft bgs) After Drilling: Date/Time Depth (ft bgs)

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
				SILTY SAND (SM), with clay, fine grained, gray with rust and black mottling, moist, loose.	SM					
1 SS	39	2 2 2	5							
2 SS	78	2 4 5	10	As above with trace of rounded fine gravel.			21.6			
				SANDY SILT (ML), with clay, very fine grained, moist, moderately stiff.	ML					
3 SS	72	2 3 5	15				38.7			
				SILTY SAND (SM), fine grained, dark gray with black mottling, wet, moderately dense.	SM					
4 SS	89	3 5 10	20				28.0	26	NP	PL = NP
5	67	2 3		As above, poorly graded with trace light gray clay inclusions and mica flakes, orange/brick/gray.						

SOIL BORING WELL CONSTRUCTION LOG 7682.09.GPJ RMT_CORP.GDT 7682.09 12/11/09

Signature:

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SOIL BORING LOG

RMT

BORING NO. SB-04

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
SS		6			SM					
6 SS	6	8 9 10	30	**LEAN CLAY (CL)**, black.	CL					
7 ST	100									
8 SS	133	7 8 18	35	**SILTY SAND (SM),** with trace clay, very fine grained, dark gray, wet, moderately dense. Sand becomes laminated with layer of dark gray lean clay at 34.5 ft bgs. **CLAY (CL),** dark gray, with light fine sand layers, slightly moist, moderately stiff.	SM CL					
9 SS	39	4 5 5	40							
10 SS	89	11 21 27	45	**SILTY SAND (SM),** dark gray, wet, moderately dense.	SM					
				E.O.B. @ 45.5 feet bgs.						
			50							
			55							

SOIL BORING WELL CONSTRUCTION LOG 7682.09.GPJ RMT_CORP.GDT 7682.09 12/11/09

SOIL BORING LOG

RMT

BORING NO. SB-05

Facility/Project Name:	Date Drilling Started:	Date Drilling Completed:	Project Number:
Johnson Controls	10/28/09	10/28/09	7682.09

Drilling Firm:	Drilling Method:	Surface Elev. (ft)	TOC Elevation (ft)	Total Depth (ft bgs)	Borehole Dia. (in)
Landprobe	HSA - SS	---	---	46.5	6

Boring Location:	Personnel	Drilling Equipment:
	Logged By - L. Clark Driller - R. Banks	CME-75

Civil Town/City/or Village:	County:	State:	Water Level Observations:
Florence	Florence	South Carolina	While Drilling: Date/Time Depth (ft bgs) After Drilling: Date/Time Depth (ft bgs)

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
				SILTY FINE SAND (SM), fine grained, white to tan, moist, loose.	SP-SM					
1 SS	61	3 5 6	5				19.3	NV	NP	PL = NP
				SANDY CLAY (CL), high plasticity, gray, wet, soft, grading to clayey fine sand.	CL					
2 SS	56	W.O.H.	10							
				SILTY SAND (SM), with clay, fine grained, gray, wet, slightly dense.	SM					
3 SS	56	7 5 4	15				18.5			
4 SS	0	2 5 2	20							

SOIL BORING WELL CONSTRUCTION LOG 7682.09.GPJ RMT_CORP.GDT 7682.09 12/11/09

Signature:

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SOIL BORING LOG

RMT

BORING NO. SB-05

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
5 SS	100	4 9 24								
			30							
6 SS	45	7 15 x		As above, with alternating layers of dark gray, lean clay.			33.7			
					SM					
7 ST	100		35							
			40							
8 SS	45	13 14 19		**LEAN CLAY (CL),** dark gray with thin layers of light gray fine sand.	CL		31.4	39	14	PL = 25
			45							
9 SS	133	24 50/4		**SILTY SAND (SM),** fine grained, little clay, gray and dark gray, layered.	SM		23.2			
				E.O.B. @ 46.5 feet bgs.						
			50							
			55							

SOIL BORING LOG

RMT

BORING NO. SB-06

Facility/Project Name:	Date Drilling Started:	Date Drilling Completed:	Project Number:
Johnson Controls	10/28/09	10/28/09	7682.09

Drilling Firm:	Drilling Method:	Surface Elev. (ft)	TOC Elevation (ft)	Total Depth (ft bgs)	Borehole Dia. (in)
Landprobe	HSA - SS	---	---	45.5	6

Boring Location:	Personnel	Drilling Equipment:
	Logged By - J. Hospodar Driller - R. Banks	CME-75

Civil Town/City/or Village:	County:	State:	Water Level Observations:
Florence	Florence	South Carolina	While Drilling: Date/Time Depth (ft bgs) After Drilling: Date/Time Depth (ft bgs)

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
				SILTY SAND (SM), fine grained, white to light gray, moist, layered, very loose.	SM		
1 SS	133	3 3 2	5	**FAT SILTY CLAY (CH),** dark gray, wet, soft.	CH		
2 SS	78	3 2 2	10	**CLAYEY SAND (SC),** fine grained, gray - orange, moist, very loose.	SC		
3 SS	72	3 2 x	15	**SANDY SILT (ML),** fine grained, gray - orange, rust, mottled, wet, very soft to soft.	ML		
4 SS	128	3 10 10	20	**SILTY SAND (SM),** fine grained, rust color grading to yellow - tan, some layering apparent, trace mica flakes, loose to medium dense.	SM		
5	100	10 15					

SOIL BORING WELL CONSTRUCTION LOG 7682.09.GPJ RMT_CORP.GDT 7682.09 12/11/09

Signature:

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SOIL BORING LOG

RMT

BORING NO. SB-06

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	COMMENTS
SS		12		As above, wet, tan with orange sandy clay mottles, medium dense.			
				As above, orange, brick, yellow mottled, moist to wet, poorly graded, trace mica flakes, medium dense.	SM		
6 SS	133	4 7 11	30	**LEAN CLAY (CL)**, dark gray with fine sand laminae, stiff.			
7 ST	100		35		CL		
8 SS	133	7 15 25	40	**SILTY SAND (SM),** fine grained, gray to dark gray, wet, slight dark gray clay layering, medium dense.			
					SM		
9 SS	133	15 35 35	45				
				E.O.B. @ 45.5 feet bgs.			
			50				
			55				

SOIL BORING LOG

RMT

BORING NO. SB-07

Facility/Project Name:	Date Drilling Started:	Date Drilling Completed:	Project Number:
Johnson Controls	11/2/09	11/2/09	7682.09

Drilling Firm:	Drilling Method:	Surface Elev. (ft)	TOC Elevation (ft)	Total Depth (ft bgs)	Borehole Dia. (in)
Landprobe	HSA - SS	---	---	45.0	6

Boring Location:	Personnel	Drilling Equipment:
	Logged By - L. Clark Driller - R. Banks	CME-75

Civil Town/City/or Village:	County:	State:	Water Level Observations:
Florence	Florence	South Carolina	While Drilling: Date/Time Depth (ft bgs) After Drilling: Date/Time Depth (ft bgs)

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	COMMENTS
				CLAYEY SAND (SC), fine grained, orange-gray, mottled, loose, wet.				
1 SS	44	4 4 7	5		SC		22.0	
2 SS	83	7 10 16	10	**SILTY SAND (SM)**, fine grained, orange-yellow gray, mottled, wet, medium dense.	SM		22.2	
3 SS	67	4 6 8	15	**CLAY (CL)**,with silt and organics, dark gray, wet, medium stiff.	CL		33.6	
				CLAYEY SAND (SC), fine grained, orange, loose.	SC			
				CLAY (CL),with silt and organics, dark gray, medium stiff.	CL			
4 SS	56	3 4 5	20	**SILTY SAND (SM)**, with clay, fine grained, loose, wet.	SM		32.0	
				SAND (SW), fine - medium grained, white, loose, wet.	SW			
				SILTY SAND (SM), with clay, fine grained.	SM			
5	133	WOH 3		Same as above, fine - medium grained, very loose, wet.			29.6	

SOIL BORING WELL CONSTRUCTION LOG 7682.09.GPJ RMT_CORP.GDT 7682.09 12/11/09

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SOIL BORING LOG

RMT

BORING NO. SB-07

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	COMMENTS
SS		3						
6 SS	133	4 9 19	30	Same as above, fine grained, w/ trace clay, loose to medium dense, wet.	SM		24.4	
7 SS	133	4 7 9	35	**CLAY (CL)**, with silt, dark gray, damp, wet, medium stiff to stiff.	CL		38.3	
8 SS	133	4 5 9	40				43.6	
9 ST	58		45	E.O.B. @ 45 feet bgs.				
			50					
			55					

SOIL BORING LOG

RMT

BORING NO. SB-10

Facility/Project Name:	Date Drilling Started:	Date Drilling Completed:	Project Number:
Johnson Controls	11/3/09	11/3/09	7682.09

Drilling Firm:	Drilling Method:	Surface Elev. (ft)	TOC Elevation (ft)	Total Depth (ft bgs)	Borehole Dia. (in)
Landprobe	HSA - SS	---	---	50.5	6

Boring Location:	Personnel	Drilling Equipment:
	Logged By - J. Hospodar Driller - R. Banks	CME-75

Civil Town/City/or Village:	County:	State:	Water Level Observations:
Florence	Florence	South Carolina	While Drilling: Date/Time Depth (ft bgs) After Drilling: Date/Time Depth (ft bgs)

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
				SAND (SP), with clay and silt, fine grained, orange - brown, moist, loose.						
1 SS	89	4 4 6	5		SP		12.4			
2 SS	100	4 6 7	10	**CLAYEY SAND (SC)**, fine grained, orange - yellow gray, mottled, moist, loose.	SC		16.2	32	11	PL = 21
3 SS	78	5 7 6	15	Same as above, orange-red.			19.4			
4 SS	133	4 3 6	20	**SANDY FAT CLAY (CH)**, orange-gray, wet, soft to medium sitff.	CH		33.1	50	27	PL = 23
5	133	3 5		**CLAY (CL)**, dark gray to black, dry, medium stiff, wet.	CL		49.5			

SOIL BORING WELL CONSTRUCTION LOG 7682.09.GPJ RMT_CORP.GDT 7682.09 12/11/09

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SOIL BORING LOG

RMT

BORING NO. SB-10

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
SS		7								
6 ST	75		30		CL		21.3			
7 SS	111	4 20 40	35	**SAND (SW)**, with silt, fine - medium grained, yellow-orange, wet, medium dense to dense.	SW					
8 SS	133	4 6 11	40	**CLAY (CL)**, dark gray to black, dry, medium stiff to stiff, wet.	CL		42.8			
9 SS	67	4 10 5	45							
10 SS	133	7 10 15	50							
				E.O.B. @ 50.5 feet bgs.						
			55							

SOIL BORING WELL CONSTRUCTION LOG 7682.09.GPJ RMT_CORP.GDT 7682.09 12/11/09

SOIL BORING LOG

RMT

BORING NO. SB-13

Facility/Project Name:	Date Drilling Started:	Date Drilling Completed:	Project Number:
Johnson Controls	11/4/09	11/4/09	7682.09

Drilling Firm:	Drilling Method:	Surface Elev. (ft)	TOC Elevation (ft)	Total Depth (ft bgs)	Borehole Dia. (in)
Landprobe	HSA - SS	---	---	45.5	6

Boring Location:	Personnel	Drilling Equipment:
	Logged By - L. Clark Driller - R. Banks	CME-75

Civil Town/City/or Village:	County:	State:	Water Level Observations:
Florence	Florence	South Carolina	While Drilling: Date/Time Depth (ft bgs) After Drilling: Date/Time Depth (ft bgs)

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	COMMENTS
				CLAYEY SAND (SC), with silt, fine grained, dark gray - orange, moist, loose.				
1 SS	78	4 7 10	5		SC		13.8	
2 SS	133	3 2 3	10	**CLAY (CL)**, orange gray, wet, soft.			29.2	
3 SS	56	4 4 5	15		CL		23.1	
4 SS	133	2 2 2	20	**CLAYEY SAND (SC)**, with silt, fine grained, gray brown, wet, very loose.	SC		31.7	
5 ST	100							

SOIL BORING WELL CONSTRUCTION LOG 7682.09.GPJ RMT_CORP.GDT 7682.09 12/11/09

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SOIL BORING LOG

RMT

BORING NO. SB-13

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	COMMENTS
					SC			
6 SS	133	11 11 23	30	**CLAYEY SILT (ML)**, dark gray - black, organic, very stiff.	ML		37.8	
				SILTY SAND (SM), fine grained, orange, medium dense.	SM			
				CLAYEY SILT (ML), dark gray - black, organic, very stiff.	ML			
7 SS	133	9 25 29	35	**SAND (SW)**, fine - medium grained, brown, wet, medium dense to dense.	SW		30.4	
8 SS	133	8 6 8	40	**CLAYEY SAND (SC)**, fine - medium grained, brown, wet, loose.	SC		24.1	
9 SS	44	9 14 17	45	**CLAY (CL)**, dark gray-black, stiff.	CL		41.7	
				E.O.B. @ 45.5 feet bgs.				
			50					
			55					

SOIL BORING WELL CONSTRUCTION LOG 7682.09.GPJ RMT_CORP.GDT 7682.09 12/11/09

SOIL BORING LOG

RMT

BORING NO. SB-14

Facility/Project Name:	Date Drilling Started:	Date Drilling Completed:	Project Number:
Johnson Controls	11/4/09	11/4/09	7682.09

Drilling Firm:	Drilling Method:	Surface Elev. (ft)	TOC Elevation (ft)	Total Depth (ft bgs)	Borehole Dia. (in)
Landprobe	HSA - SS	---	---	50.5	6

Boring Location:	Personnel	Drilling Equipment:
	Logged By - L. Clark Driller - R. Banks	CME-75

Civil Town/City/or Village:	County:	State:	Water Level Observations:
Florence	Florence	South Carolina	While Drilling: Date/Time Depth (ft bgs) After Drilling: Date/Time Depth (ft bgs)

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
				CLAYEY SAND (SC), fine grained, yellow-orange gray, mottled, moist, loose.						
1 SS	61	4 4 5	5		SC		17.9			
2 SS	44	5 8 10	10	**CLAY (CL)**, with sand, fine grained, yellow/orange/gray/red, mottled, wet, stiff.	CL		25.3			
3 SS	72	4 8 10	15	**SILTY SAND (SM)**, with silt, fine grained, yellow - red, medium dense, non plastic, wet.	SM		22.2			
4 ST	100		20	**FAT CLAY WITH SAND (CH)**, brownish yellow, medium stiff to stiff, medium plasticity, moist to wet, sand lenses present.	CH		36.9	62	34	PL = 28
5	133	3 4		Same as above, orange-brown.			37.1			

SOIL BORING WELL CONSTRUCTION LOG 7682.09.GPJ RMT_CORP.GDT 7682.09 12/11/09

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SOIL BORING LOG

RMT

BORING NO. SB-14

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
SS		6			CH					
6 SS	100	4 8 10	30	**CLAY (CL)**, with sand, fine grained, orange-brown to black, wet, medium stiff to stiff.	CL					
7 SS	100	16 35 30	35	**CLAYEY SAND (SC)**, fine grained, yellow-brown to black, wet, dense.	SC		32.0			
8 SS	133	3 4 9	40	**CLAY (CL)**, dark gray - black, dry, (marle), medium stiff to stiff.	CL					
9 SS	89	4 8 16	45							
10 SS	89	7 11 16	50							
				E.O.B. @ 50.5 feet bgs.						
			55							

SOIL BORING LOG

RMT

BORING NO. SB-15

Facility/Project Name:	Date Drilling Started:	Date Drilling Completed:	Project Number:
Johnson Controls	11/3/09	11/3/09	7682.09

Drilling Firm:	Drilling Method:	Surface Elev. (ft)	TOC Elevation (ft)	Total Depth (ft bgs)	Borehole Dia. (in)
Landprobe	HSA - SS	---	---	50.5	6

Boring Location:	Personnel	Drilling Equipment:
	Logged By - L. Clark Driller - R. Banks	CME-75

Civil Town/City/or Village:	County:	State:	Water Level Observations:
Florence	Florence	South Carolina	While Drilling: Date/Time Depth (ft bgs) After Drilling: Date/Time Depth (ft bgs)

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
				SILTY SAND (SM), fine grained, yellow/orange/gray, mottled, moist, loose.						
1 SS	44	3 5 6	5		SM		13.4	22	2	PL = 20
2 ST	58		10	**ELASTIC SILT WITH SAND (MH), brownish yellow, medium stiff to stiff, medium plasticity, moist.**	MH		33.7	74	34	PL = 40
3 SS	67	2 6 14	15	**SILTY CLAY (CL)**, yellow/orange/red, mottled, wet, medium stiff to stiff.			22.0			
4 SS	89	2 3 4	20	Same as above, with fine grained sand, red-gray, mottled, soft to medium stiff.	CL		33.2			
5	133	4 7					35.4			

SOIL BORING WELL CONSTRUCTION LOG 7682.09.GPJ RMT_CORP.GDT 7682.09 12/11/09

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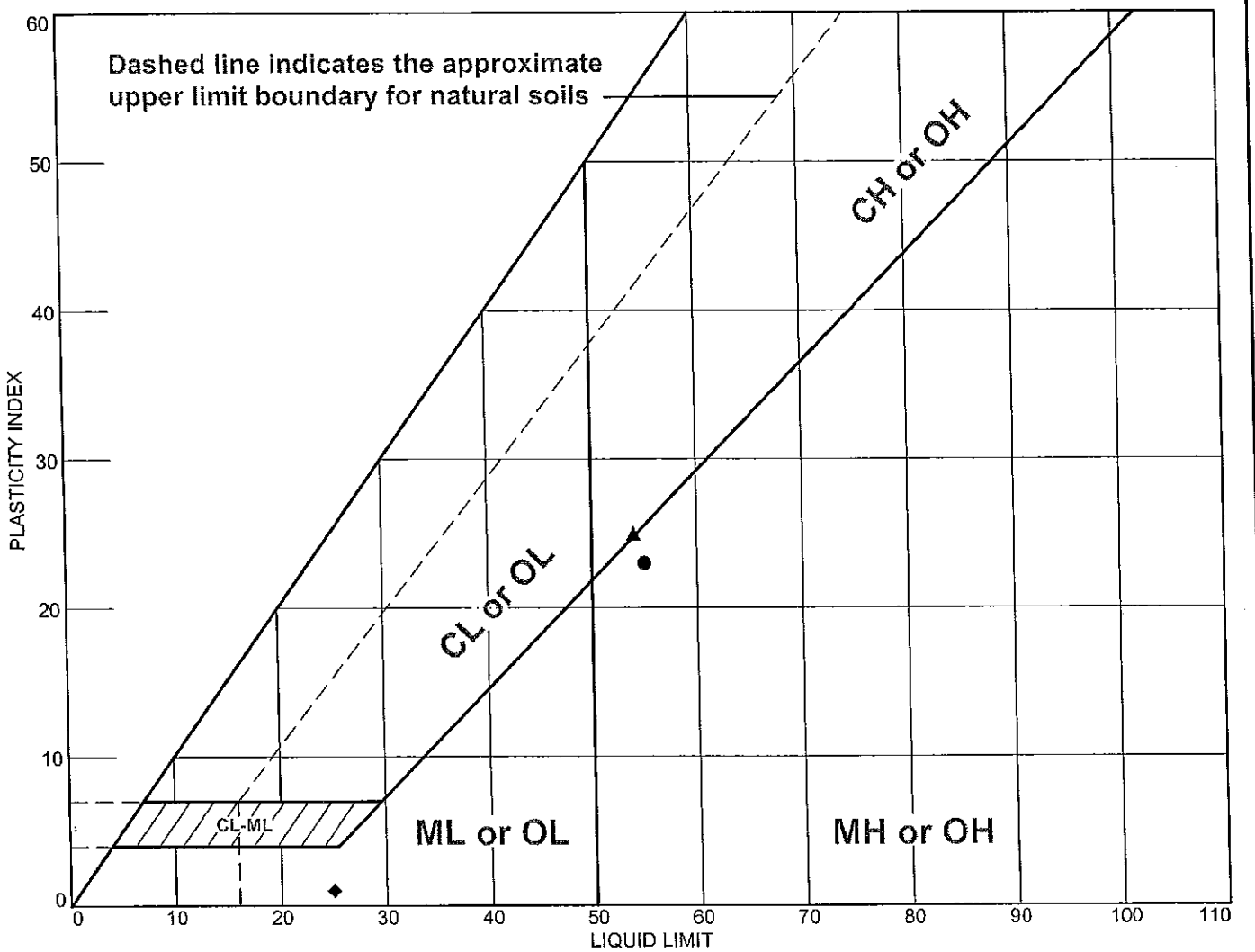
SOIL BORING LOG

RMT

BORING NO. SB-15

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	COMMENTS
SS		10		Layer of orange sandy silty clay, medium stiff to stiff.	CL					
6 SS	100	4 3 6	30	**SILTY SAND (SM)**, with clay, fine grained, dark gray to black, wet, very loose to loose.	SM		28.6			
7 SS	111	2 7 26	35	**CLAYEY SAND (SC)**, yellow/orange/black, loose to medium dense.	SC		31.6			
				SAND (SP), fine to medium grained, light brown, wet, loose to medium dense.	SP					
				CLAYEY SAND (SC), yellow/orange/black, loose to medium dense, wet.	SC					
8 SS	133	6 10 19	40	**CLAY (CL)**, sandy, dark gray-black, stiff to very stiff, wet.	CL		33.4			
9 SS	89	10 19 22	45	Same as above, no sand, (Marle) very stiff.			45.9			
10 SS	133	4 9 14	50							
				E.O.B @ 50.5 feet bgs.						
			55							

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Elastic silt with sand	55	32	23	100.0	76.8	MH
■	Poorly graded sand with silt	NV	NP	NP	94.0	8.3	SP-SM
▲	Sandy fat clay	54	29	25	96.6	64.5	CH
◆	Silty sand	25	24	1	99.5	19.9	SM
▼	Silty sand	26	NP	NP	80.2	14.1	SM

Project No. 7682.09 **Client:**

Project: Johnson Controls

Remarks:

● **Source of Sample:** SB **Sample Number:** SB-1, 19-20.5'
■ **Source of Sample:** SB **Sample Number:** SB-1, 29-30.5'
▲ **Source of Sample:** SB **Sample Number:** SB-2, 9-10.5'
◆ **Source of Sample:** SB **Sample Number:** SB-3, 8.5-10'
▼ **Source of Sample:** SB **Sample Number:** SB-4, 19-20.5'

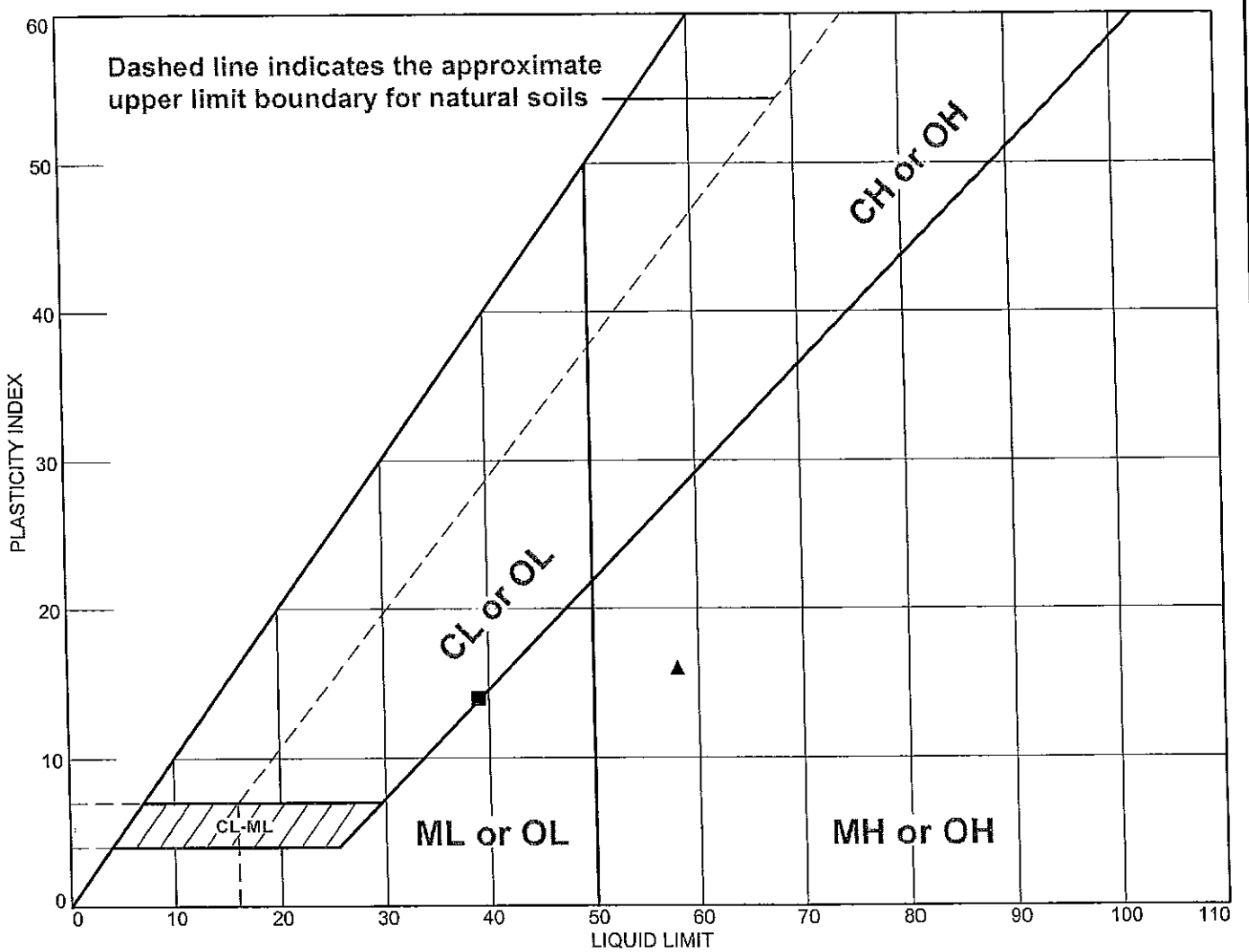
RMT, Inc.

Madison, Wisconsin

Figure:

✓ HJW

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Poorly graded sand with silt	NV	NP	NP	95.4	10.5	SP-SM
■	Clayey sand	39	25	14	98.6	44.7	SC
▲	Sandy elastic silt	58	42	16	94.7	56.0	MH

Project No. 7682.09 **Client:**

Project: Johnson Controls

● **Source of Sample:** SB **Sample Number:** SB-5, 5-6.5'
■ **Source of Sample:** SB **Sample Number:** SB-5, 40-41.5'
▲ **Source of Sample:** SB **Sample Number:** SB-6, 14-15.5'

Remarks:

RMT, Inc.

Madison, Wisconsin

Figure:

RMT, Inc.

Moisture Content / Dry Density Determination (ASTM D2216 or D4643)

QC:

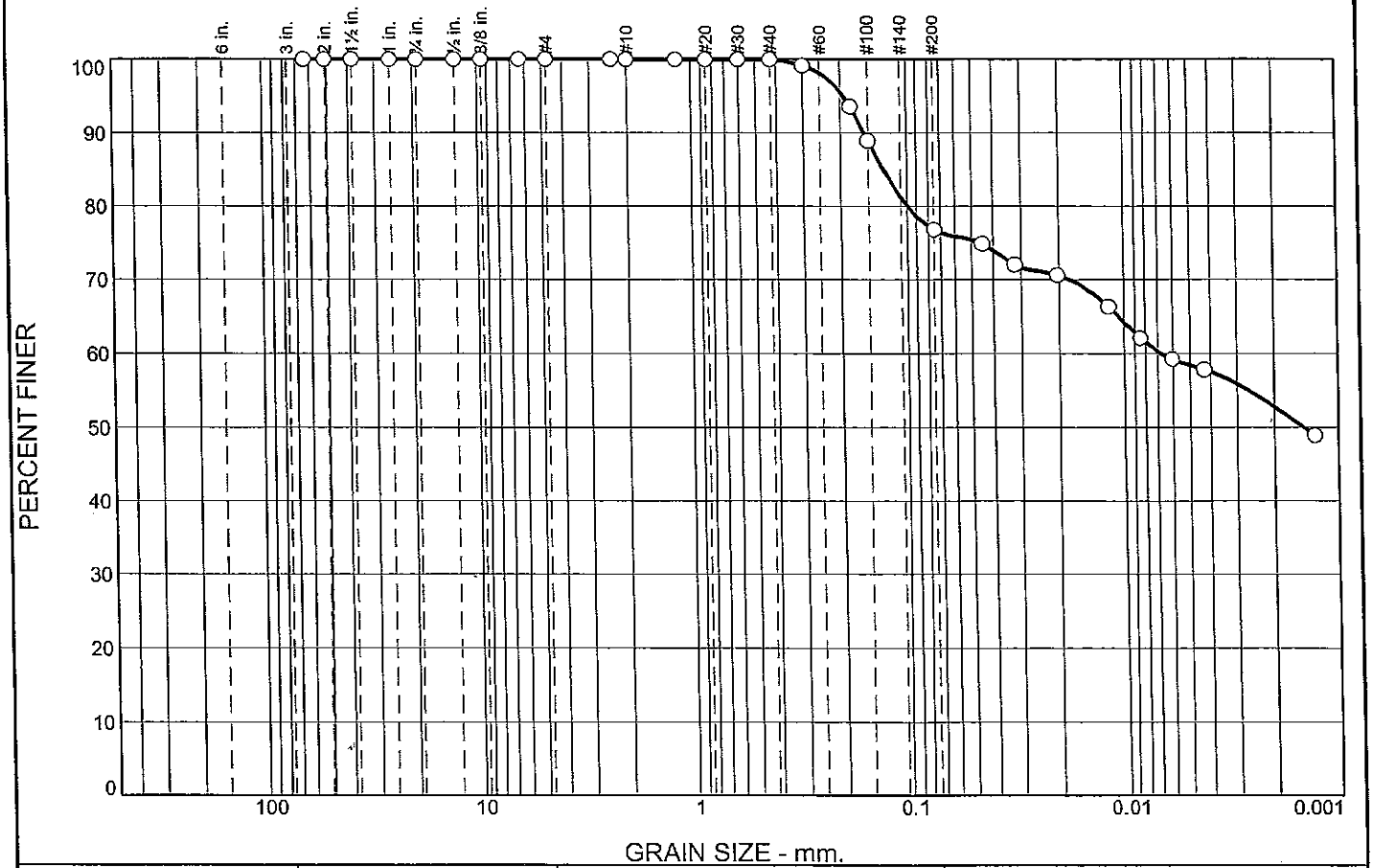
QA:

Project Name: Johnson Controls

Project #: 7682.09

	Sample Location	Moisture Tare Wt. (g)	Moisture Wet Wt. + Tare (g)	Moisture Dry Wt. +Tare (g)	Moisture (%)	Sample Diameter (in)	Sample Height (in)	Density Tare Wt. (g)	Density Wet Wt. + Tare (g)	Wet Density (pcf)	Dry Density (pcf)
1	SB-1, 14-15.5'	261.92	468.17	430.50	22.3						
2	SB-1, 19-20.5'	260.26	893.30	685.30	48.9						
3	SB-1, 29-30.5'	271.18	654.80	575.34	26.1						
4	SB-2, 9-10.5'	262.09	924.80	791.40	25.2						
5	SB-2, 19-20.5'	267.57	748.90	639.50	29.4						
6	SB-2, 24-25.5'	261.42	719.30	609.30	31.6						
7	SB-2, 34-35.5'	270.30	805.40	602.70	61.0						
8	SB-3, 8.5-10'	254.01	758.10	669.00	21.5						
9	SB-3, 24.5-26'	265.27	485.36	441.40	25.0						
10	SB-3, 34.5-36'	267.55	495.03	427.40	42.3						
11	SB-4, 9-10.5'	265.68	709.10	630.40	21.6						
12	SB-4, 14-15.5'	268.73	788.20	643.30	38.7						
13	SB-4, 19-20.5'	267.73	744.60	640.20	28.0						
14	SB-5, 5-6.5'	270.07	647.60	586.62	19.3						
15	SB-5, 15-16.5'	269.66	653.00	593.10	18.5						
16	SB-5, 30-31.5'	273.09	637.60	545.70	33.7						
17	SB-5, 40-41.5'	258.47	573.35	498.18	31.4						
18	SB-5, 45-46.5'	267.50	472.46	433.90	23.2						
19	SB-6, 9-10.5'	269.82	601.10	552.10	17.4						
20	SB-6, 14-15.5'	264.23	596.22	489.12	47.6						
21	SB-6, 19-20.5'	270.46	718.60	614.40	30.3						
22											
23											
24											
25											
26											
27											
28											
29											
30											

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.0	23.2	18.3	58.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#16	100.0		
#20	100.0		
#30	100.0		
#40	100.0		
#50	99.1		
#80	93.6		
#100	88.9		
#200	76.8		

* (no specification provided)

Material Description

Elastic silt with sand

Atterberg Limits

PL= 32 LL= 55 PI= 23

Coefficients

D_{90}= 0.1563 D_{85}= 0.1279 D_{60}= 0.0067
D_{50}= 0.0015 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= MH AASHTO= A-7-5(20)

Remarks

Source of Sample: SB
Sample Number: SB-1, 19-20.5'

Date: 11-16-09

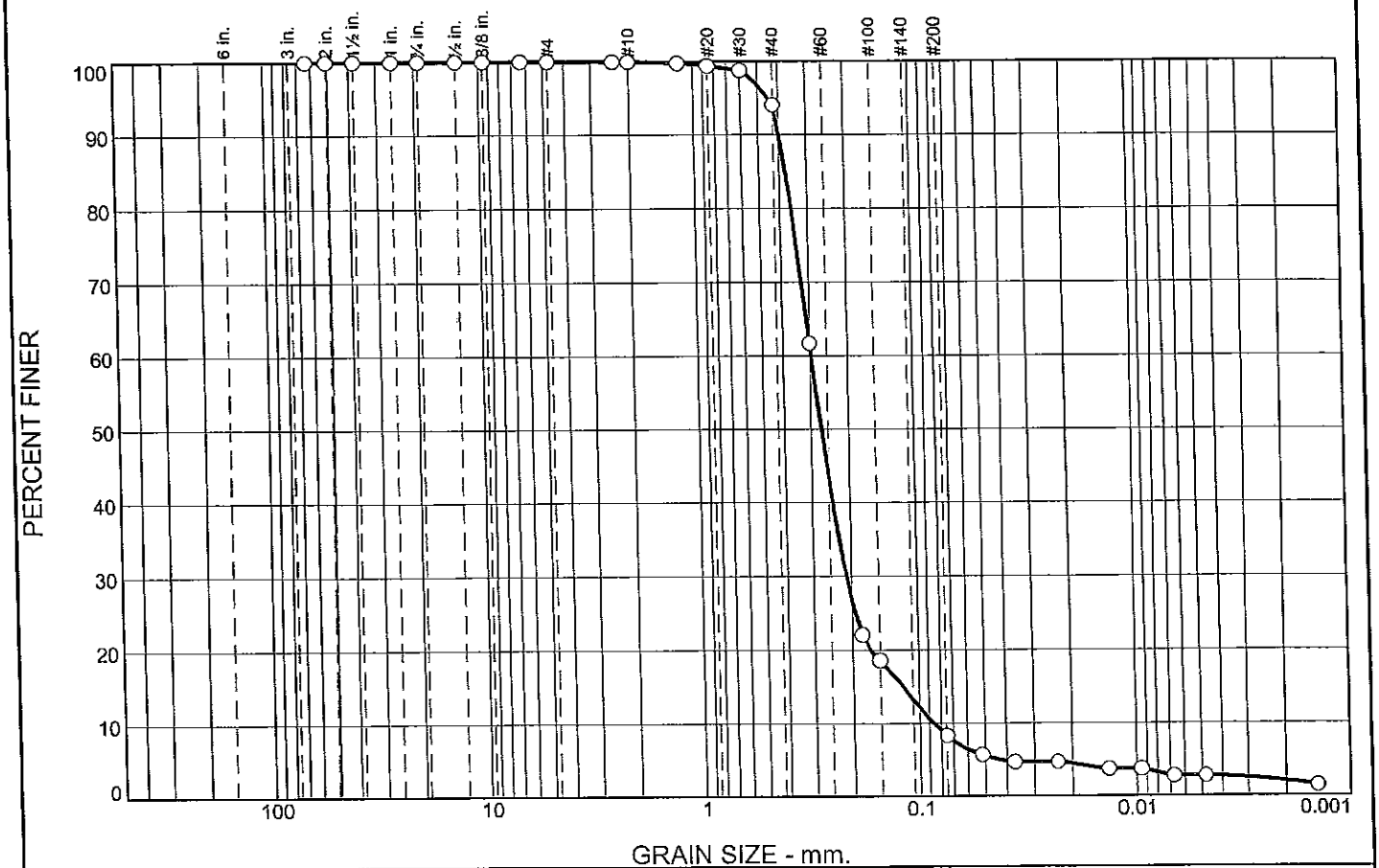
RMT, Inc.

Madison, Wisconsin

Client:
Project: Johnson Controls

Project No: 7682.09 **Figure:**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	6.0	85.7	5.5	2.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#16	99.8		
#20	99.4		
#30	98.8		
#40	94.0		
#50	61.7		
#80	22.1		
#100	18.6		
#200	8.3		

* (no specification provided)

Material Description

Poorly graded sand with silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 0.3991 D_{85}= 0.3756 D_{60}= 0.2952
D_{50}= 0.2679 D_{30}= 0.2110 D_{15}= 0.1183
D_{10}= 0.0859 C_u= 3.44 C_c= 1.76

Classification

USCS= SP-SM AASHTO= A-3

Remarks

Source of Sample: SB
Sample Number: SB-1, 29-30.5'

Date: 11-16-09

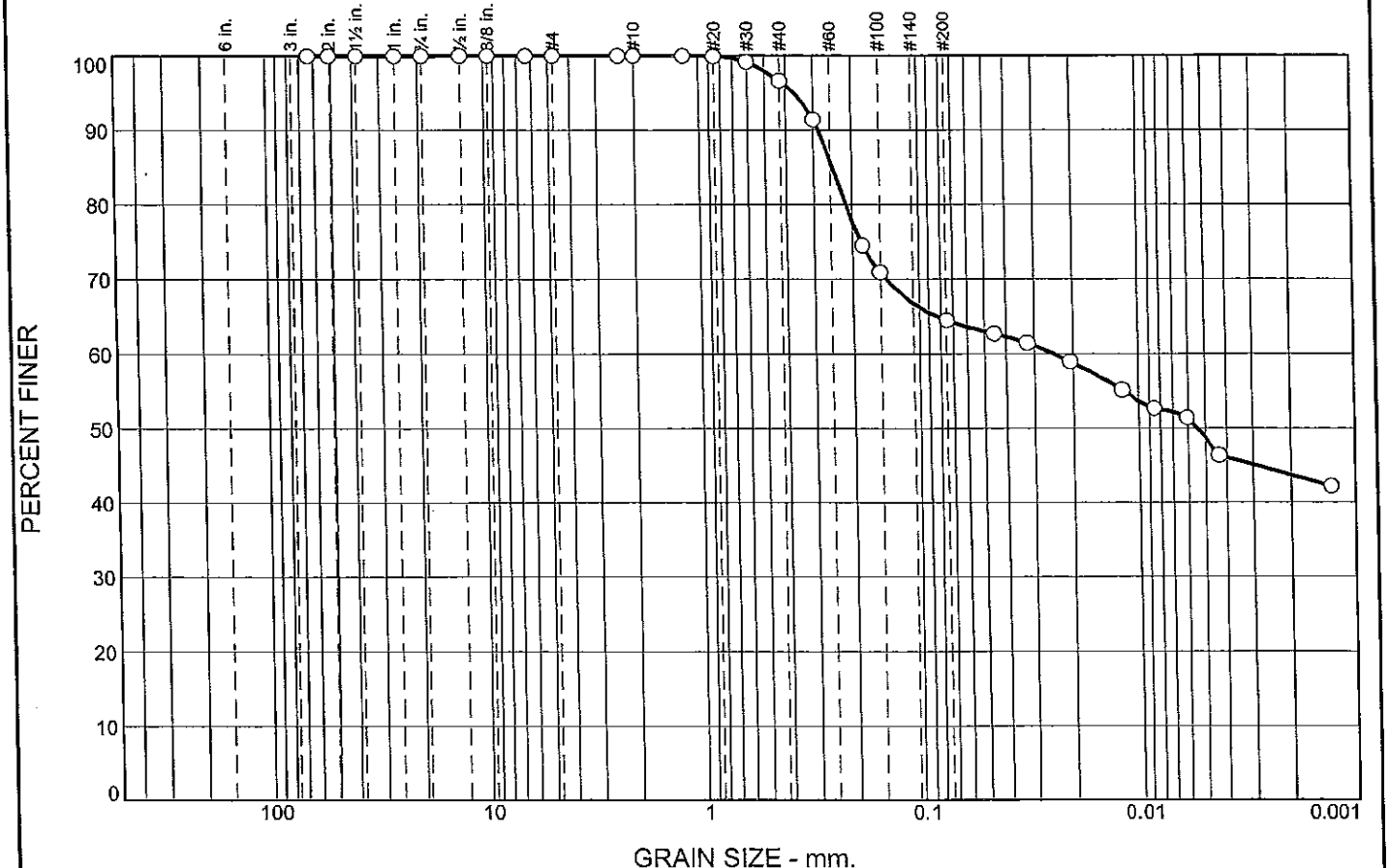
RMT, Inc.

Madison, Wisconsin

Client:
Project: Johnson Controls

Project No: 7682.09 **Figure:**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	3.4	32.1	15.7	48.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#16	100.0		
#20	99.9		
#30	99.2		
#40	96.6		
#50	91.4		
#80	74.5		
#100	70.9		
#200	64.5		

* (no specification provided)

Material Description

Sandy fat clay

Atterberg Limits

PL= 29 LL= 54 PI= 25

Coefficients

D_{90}= 0.2851 D_{85}= 0.2456 D_{60}= 0.0244
D_{50}= 0.0054 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO= A-7-6(15)

Remarks

Source of Sample: SB
Sample Number: SB-2, 9-10.5'

Date: 11-16-09

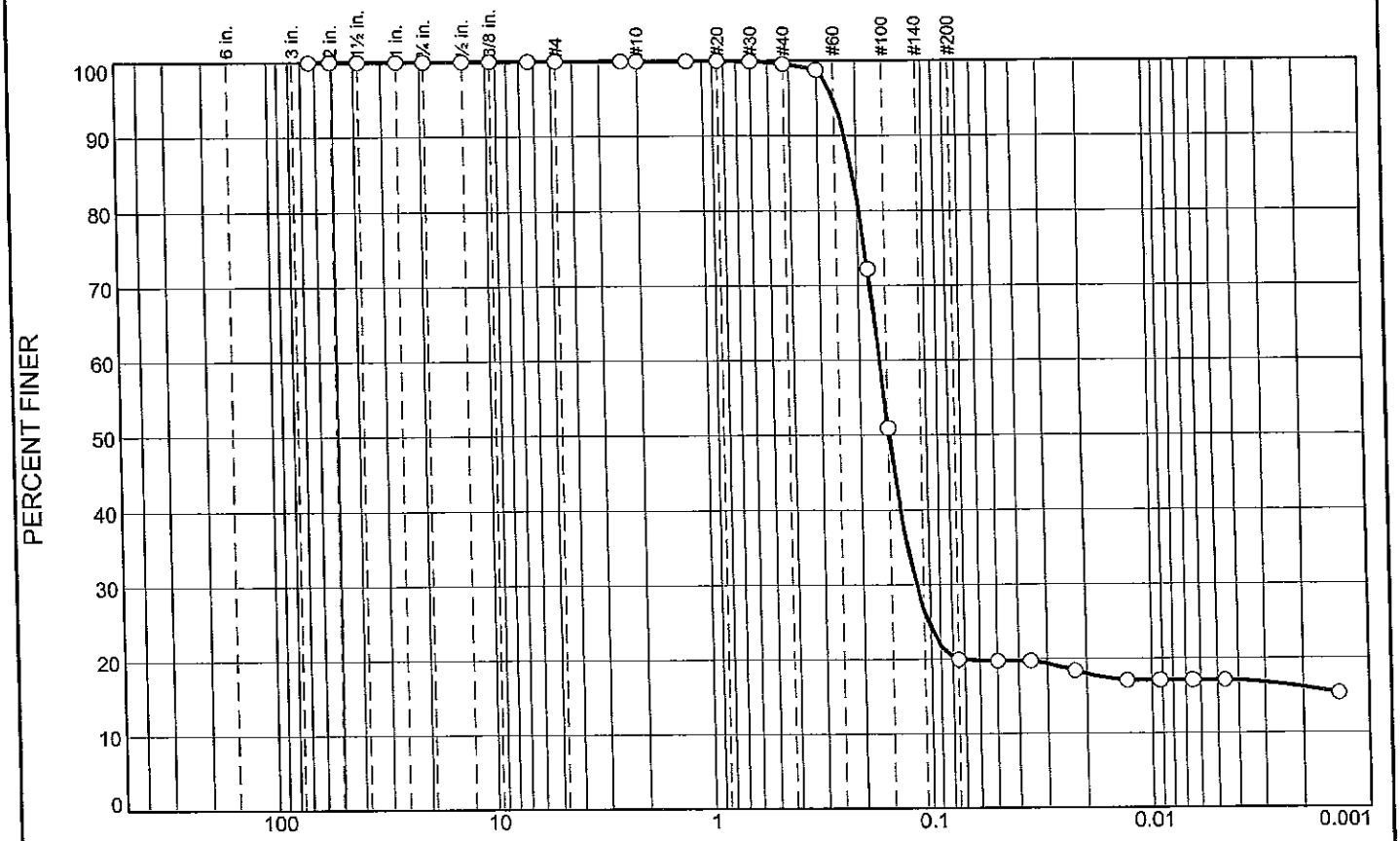
RMT, Inc.

Madison, Wisconsin

Client:
Project: Johnson Controls

Project No: 7682.09 **Figure:**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.5	79.6	2.8	17.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#16	100.0		
#20	100.0		
#30	99.9		
#40	99.5		
#50	98.8		
#80	72.2		
#100	50.9		
#200	19.9		

* (no specification provided)

Material Description

Silty sand

Atterberg Limits

PL= 24 LL= 25 PI= 1

Coefficients

D_{90}= 0.2252 D_{85}= 0.2079 D_{60}= 0.1621
D_{50}= 0.1487 D_{30}= 0.1149 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Source of Sample: SB
Sample Number: SB-3, 8.5-10'

Date: 11-16-09

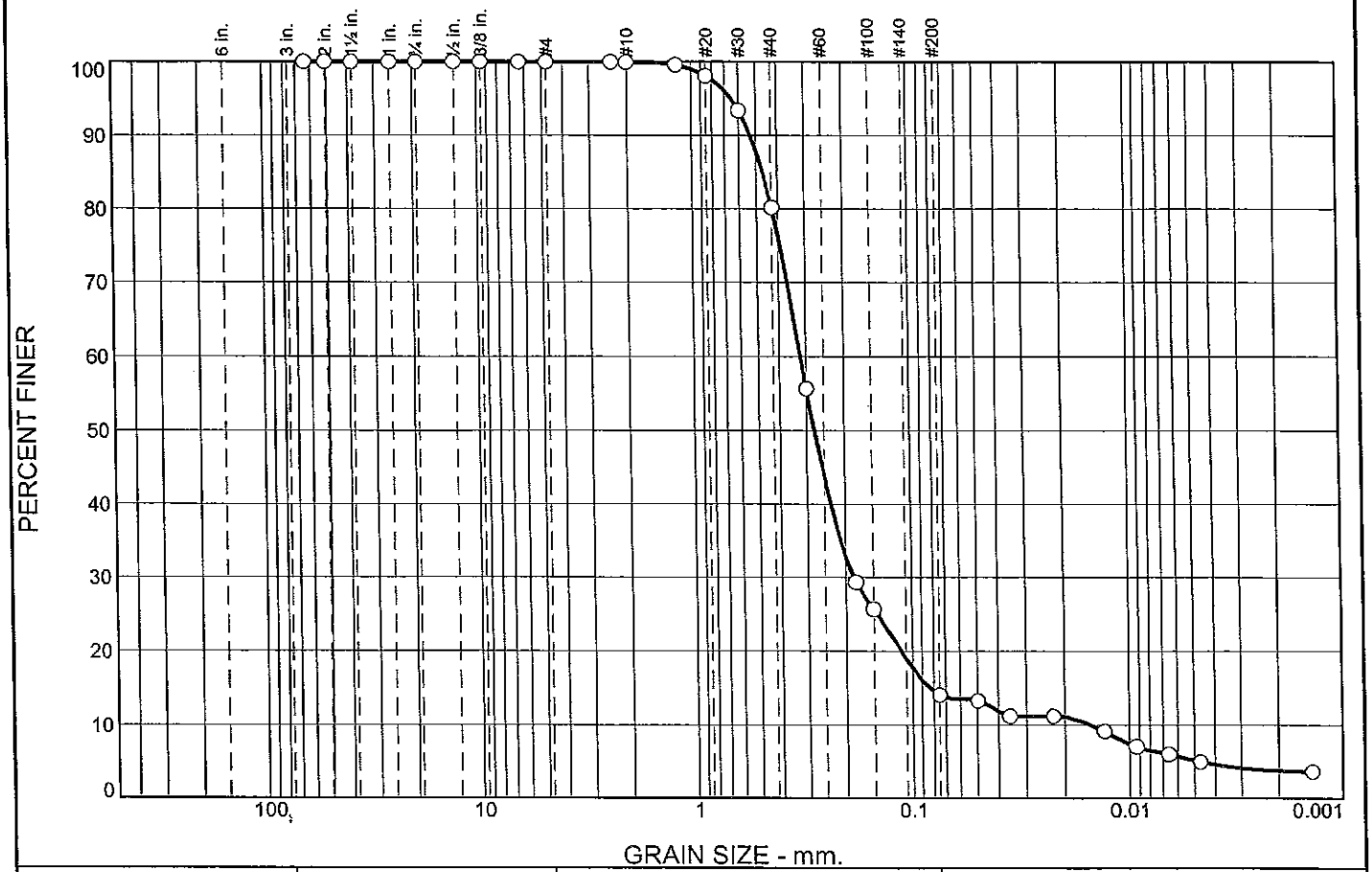
RMT, Inc.

Madison, Wisconsin

Client:
Project: Johnson Controls

Project No: 7682.09 **Figure:**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	19.8	66.1	8.9	5.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#16	99.6		
#20	98.1		
#30	93.4		
#40	80.2		
#50	55.6		
#80	29.4		
#100	25.7		
#200	14.1		

* (no specification provided)

Material Description

Silty sand

Atterberg Limits

PL= NP LL= 26 PI= NP

Coefficients

D_{90}= 0.5300 D_{85}= 0.4664 D_{60}= 0.3185
D_{50}= 0.2764 D_{30}= 0.1842 D_{15}= 0.0828
D_{10}= 0.0151 C_u= 21.12 C_c= 7.06

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Source of Sample: SB
Sample Number: SB-4, 19-20.5'

Date: 11-16-09

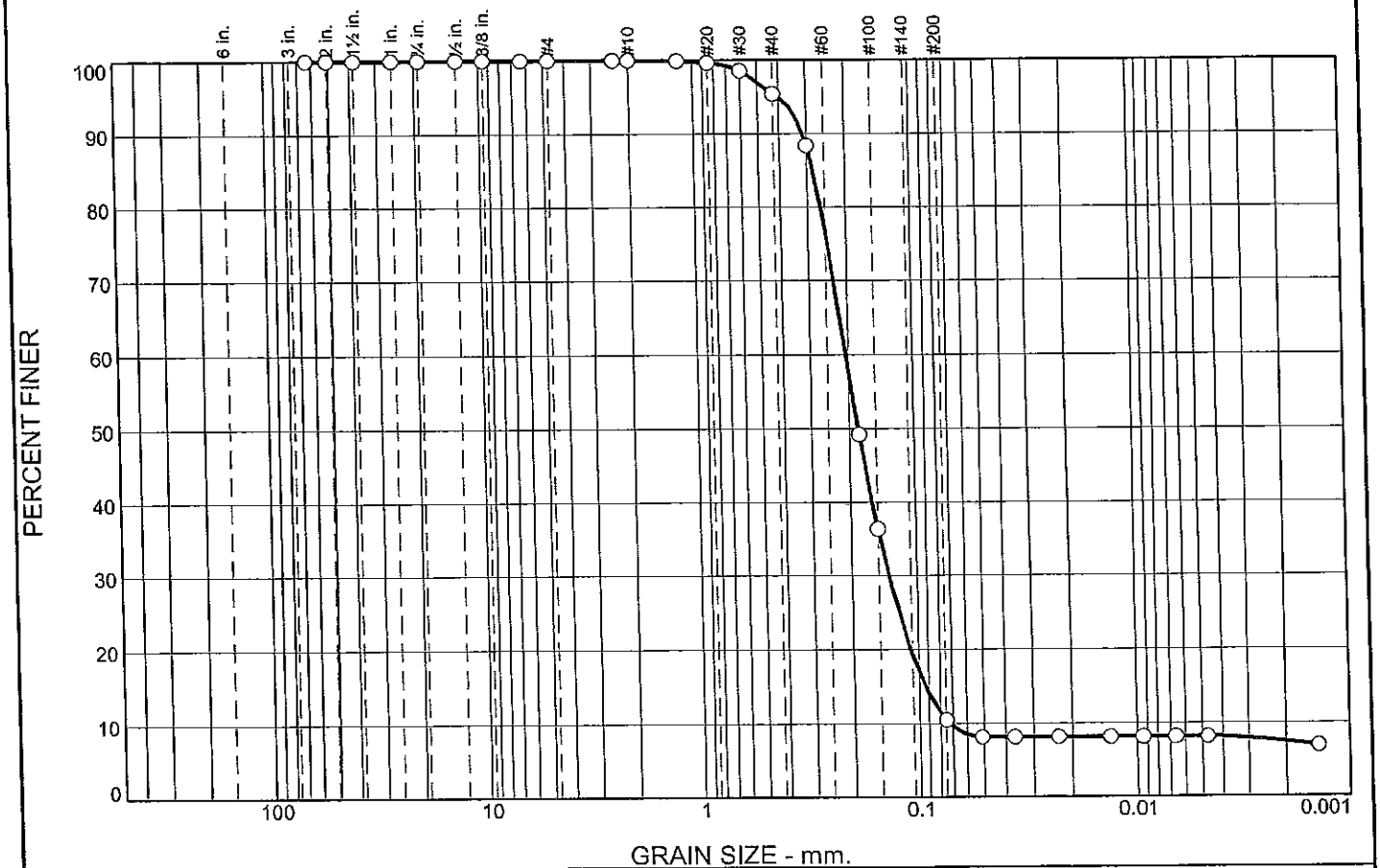
RMT, Inc.

Madison, Wisconsin

Client:
Project: Johnson Controls

Project No: 7682.09 **Figure:**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	4.6	84.9	2.3	8.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#16	99.9		
#20	99.6		
#30	98.6		
#40	95.4		
#50	88.4		
#80	49.2		
#100	36.4		
#200	10.5		

* (no specification provided)

Material Description

Poorly graded sand with silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 0.3119 D_{85}= 0.2814 D_{60}= 0.2047
D_{50}= 0.1818 D_{30}= 0.1345 D_{15}= 0.0929
D_{10}= 0.0722 C_u= 2.84 C_c= 1.22

Classification

USCS= SP-SM AASHTO= A-3

Remarks

Source of Sample: SB
Sample Number: SB-5, 5-6.5'

Date: 11-16-09

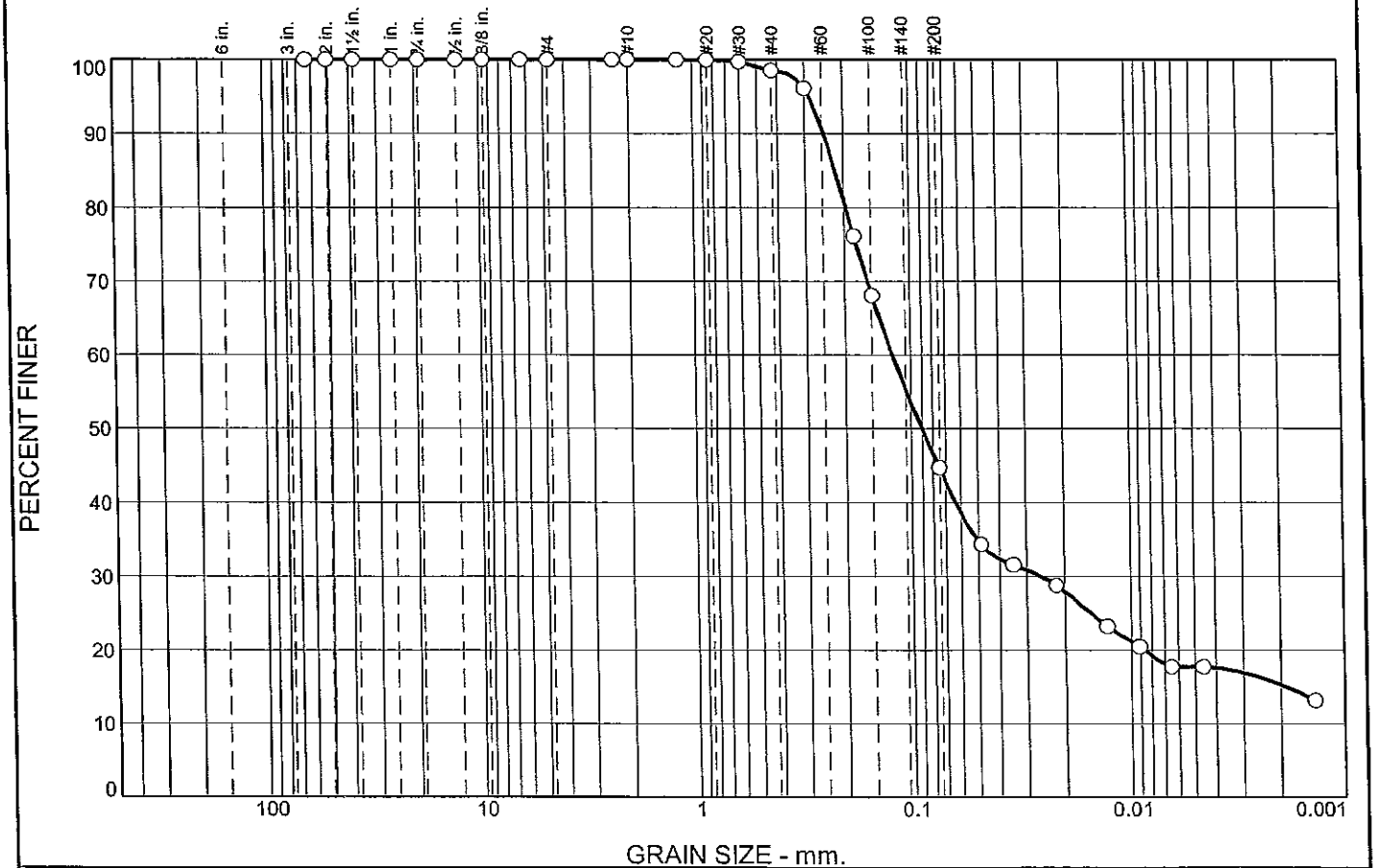
RMT, Inc.

Madison, Wisconsin

Client:
Project: Johnson Controls

Project No: 7682.09 **Figure:**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.4	53.9	27.0	17.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#16	100.0		
#20	100.0		
#30	99.7		
#40	98.6		
#50	96.1		
#80	76.2		
#100	68.1		
#200	44.7		

* (no specification provided)

Material Description

Clayey sand

Atterberg Limits

PL= 25 LL= 39 PI= 14

Coefficients

D_{90}= 0.2452 D_{85}= 0.2178 D_{60}= 0.1217
D_{50}= 0.0898 D_{30}= 0.0257 D_{15}= 0.0019
D_{10}= C_u= C_c=

Classification

USCS= SC AASHTO= A-6(3)

Remarks

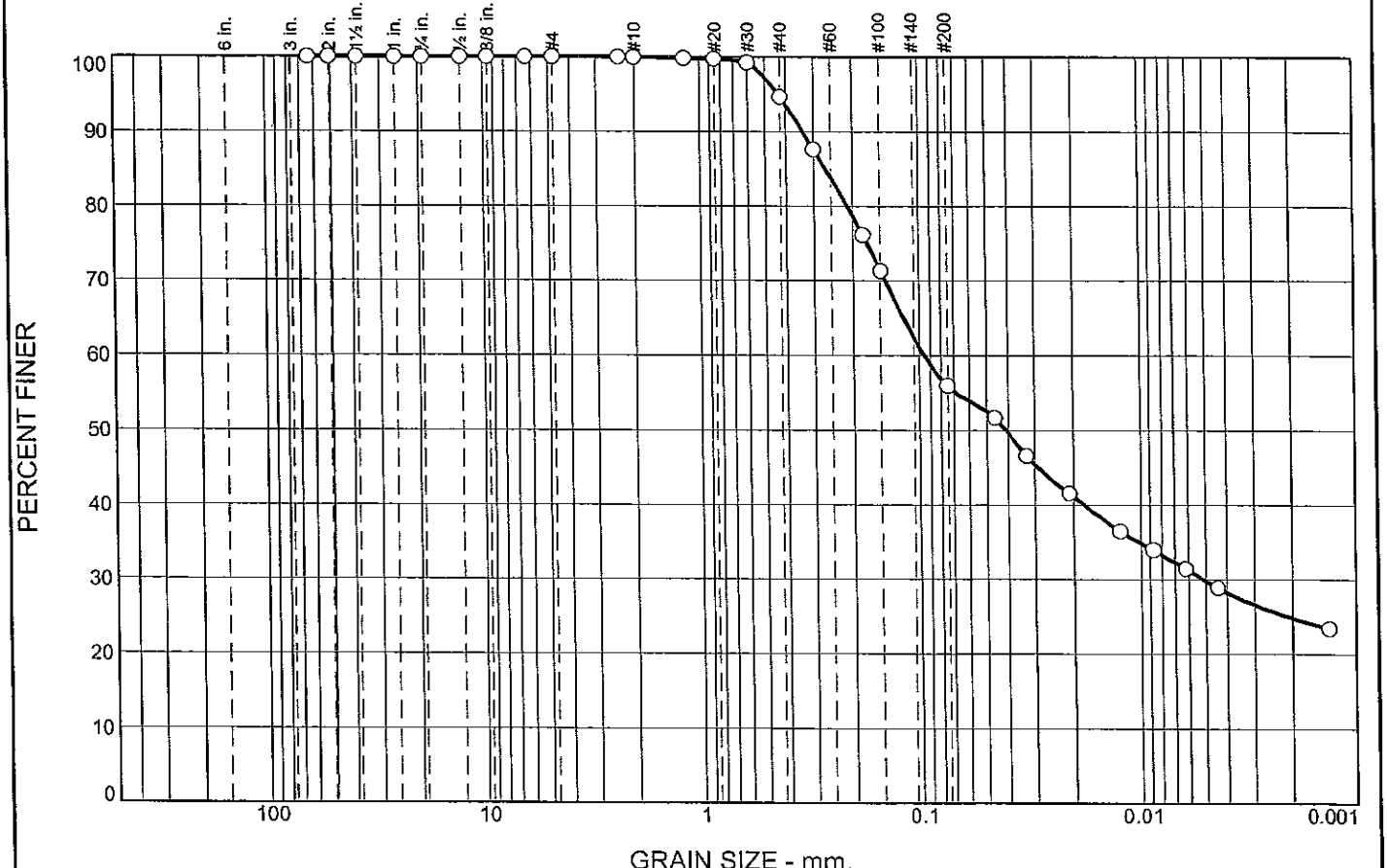
Source of Sample: SB
Sample Number: SB-5, 40-41.5'

Date: 11-16-09

RMT, Inc.
Madison, Wisconsin

Client:
Project: Johnson Controls
Project No: 7682.09
Figure:

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	5.3	38.7	26.2	29.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#16	99.8		
#20	99.8		
#30	99.3		
#40	94.7		
#50	87.6		
#80	76.2		
#100	71.3		
#200	56.0		

* (no specification provided)

Material Description

Sandy elastic silt

Atterberg Limits

PL= 42 LL= 58 PI= 16

Coefficients

D_{90}= 0.3358 D_{85}= 0.2648 D_{60}= 0.0952
D_{50}= 0.0406 D_{30}= 0.0052 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= MH AASHTO= A-7-5(9)

Remarks

Source of Sample: SB
Sample Number: SB-6, 14-15.5'

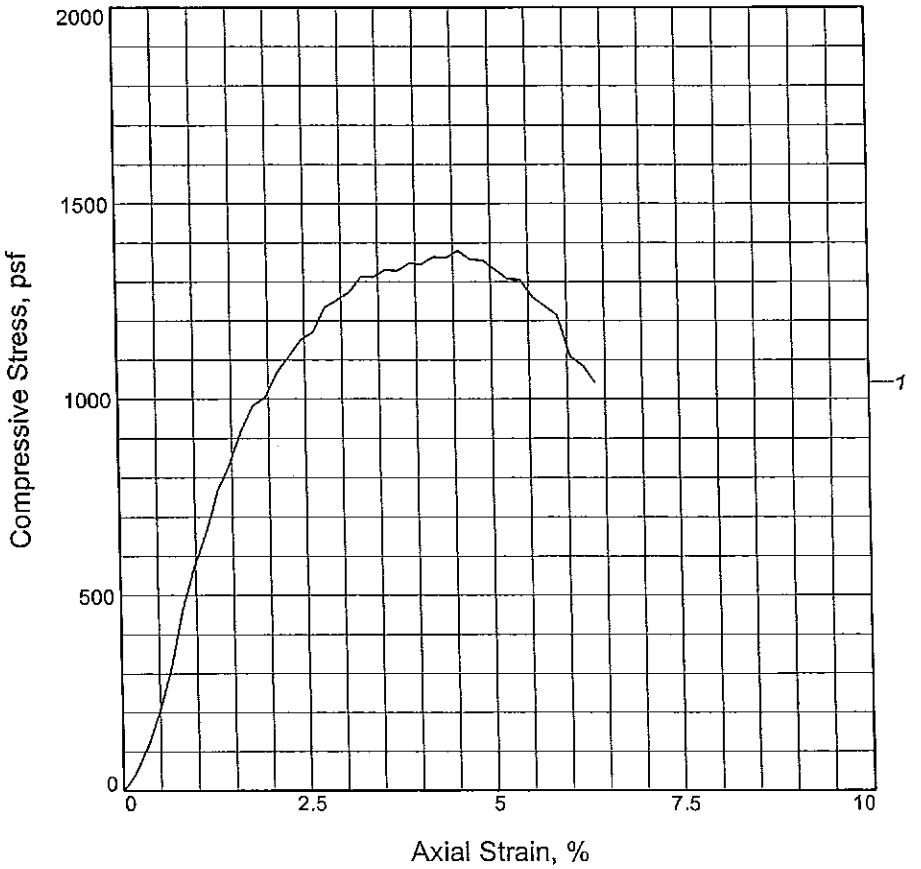
Date: 11-16-09

RMT, Inc.

Madison, Wisconsin

Client:
Project: Johnson Controls
Project No: 7682.09
Figure:

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	1381			
Undrained shear strength, psf	690			
Failure strain, %	4.6			
Strain rate, %/min.	0.50			
Water content, %	36.9			
Wet density, pcf	110.4			
Dry density, pcf	80.7			
Saturation, %	91.5			
Void ratio	1.0893			
Specimen diameter, in.	2.87			
Specimen height, in.	6.12			
Height/diameter ratio	2.13			

Description: Fat clay with sand

LL = 62	**PL** = 28	**PI** = 34	**Assumed GS**= 2.70	**Type:** Undisturbed

Project No.: 7682.09
Date Sampled:
Remarks:

Figure: _____

Client:

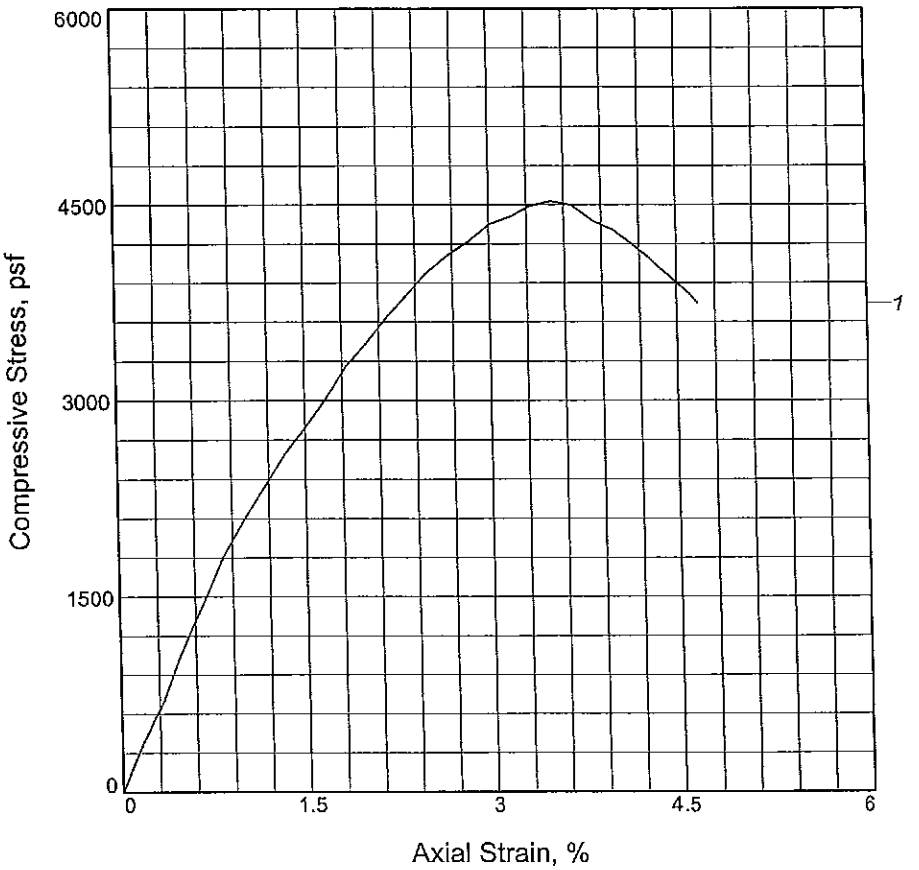
Project: Johnson Controls

Source of Sample: SB
Sample Number: SB-14, 19-21'

UNCONFINED COMPRESSION TEST

RMT, Inc.

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	4526			
Undrained shear strength, psf	2263			
Failure strain, %	3.5			
Strain rate, %/min.	0.50			
Water content, %	33.7			
Wet density, pcf	119.7			
Dry density, pcf	89.6			
Saturation, %	99.8			
Void ratio	0.9377			
Specimen diameter, in.	2.81			
Specimen height, in.	6.00			
Height/diameter ratio	2.14			

Description: Elastic silt with sand

LL = 74	**PL** = 40	**PI** = 34	**Assumed GS**= 2.78	**Type:** Undisturbed

Project No.: 7682.09
Date Sampled:
Remarks:

Figure: _____

Client:

Project: Johnson Controls

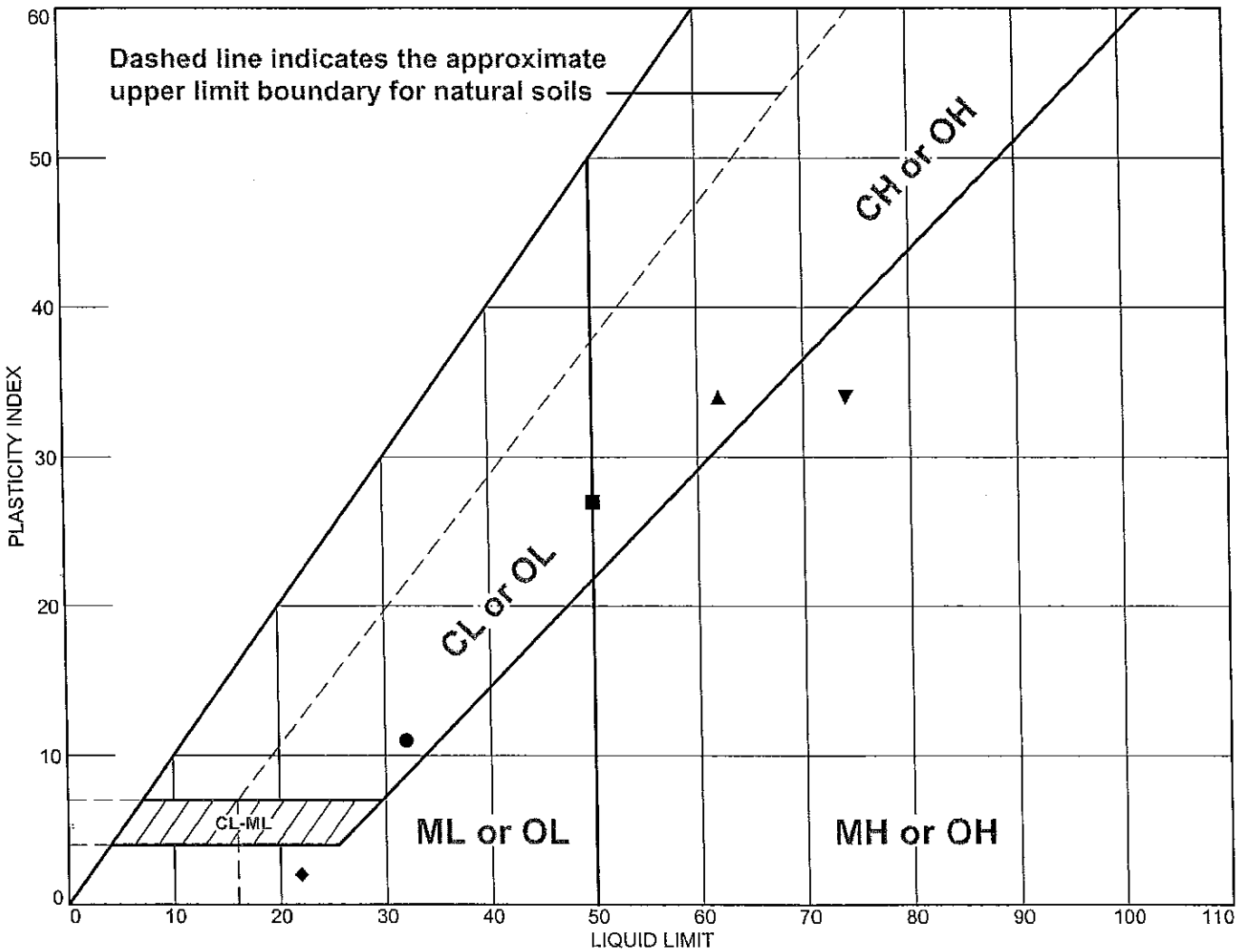
Source of Sample: SB
Sample Number: SB-15, 9-11'

UNCONFINED COMPRESSION TEST

RMT, Inc.

V HJW

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Clayey sand	32	21	11	78.2	31.0	SC
■	Sandy fat clay	50	23	27	93.4	58.1	CH
▲	Fat clay with sand	62	28	34	93.9	72.7	CH
◆	Silty sand	22	20	2	97.5	23.1	SM
▼	Elastic silt with sand	74	40	34	97.4	80.9	MH

Project No. 7682.09 **Client:**

Project: Johnson Controls

Remarks:

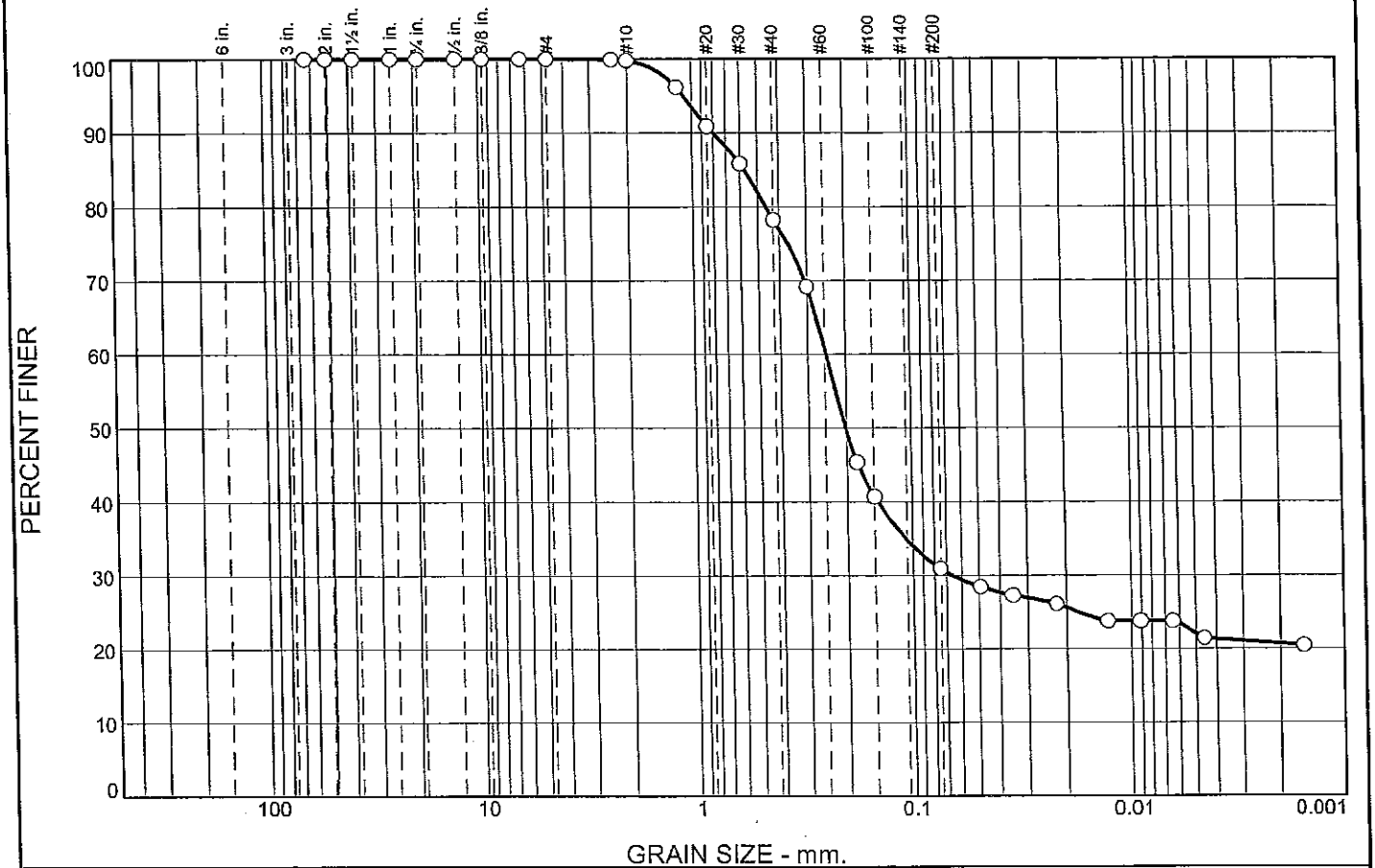
● **Source of Sample:** SB **Sample Number:** SB-10, 9-10.5'
■ **Source of Sample:** SB **Sample Number:** SB-10, 19-20.5'
▲ **Source of Sample:** SB **Sample Number:** SB-14, 19-21'
◆ **Source of Sample:** SB **Sample Number:** SB-15, 4-5.5'
▼ **Source of Sample:** SB **Sample Number:** SB-15, 9-11'

RMT, Inc.

Madison, Wisconsin

Figure:

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	21.6	47.2	8.9	22.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#8	99.9		
#10	99.8		
#16	96.2		
#20	90.9		
#30	85.8		
#40	78.2		
#50	69.2		
#80	45.4		
#100	40.7		
#200	31.0		

* (no specification provided)

Material Description

Clayey sand

Atterberg Limits

PL= 21 LL= 32 PI= 11

Coefficients

D_{90}= 0.8004 D_{85}= 0.5742 D_{60}= 0.2462
D_{50}= 0.2019 D_{30}= 0.0659 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SC AASHTO=

Remarks

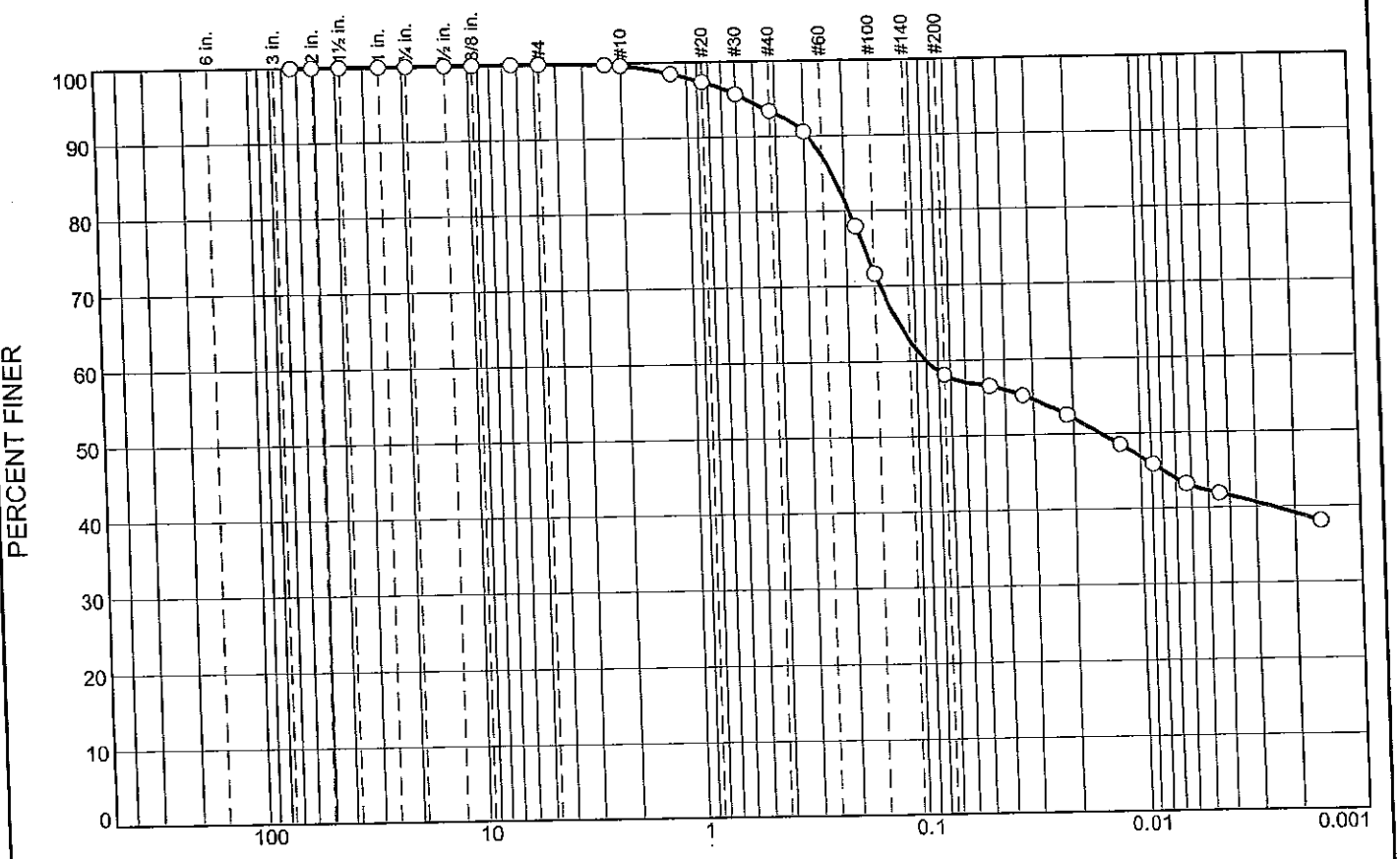
Source of Sample: SB
Sample Number: SB-10, 9-10.5'

Date: 12-1-09

RMT, Inc.	**Client:**
Madison, Wisconsin	**Project:** Johnson Controls
	Project No: 7682.09 **Figure:**

✓ HW JH

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.3	6.3	35.3	15.9	42.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#8	99.8		
#10	99.7		
#16	98.5		
#20	97.4		
#30	95.7		
#40	93.4		
#50	90.6		
#80	77.9		
#100	71.7		
#200	58.1		

* (no specification provided)

Material Description

Sandy fat clay

Atterberg Limits

PL= 23 LL= 50 PI= 27

Coefficients

D_{90}= 0.2885 D_{85}= 0.2274 D_{60}= 0.0897
D_{50}= 0.0150 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Source of Sample: SB
Sample Number: SB-10, 19-20.5'

Date: 12-1-09

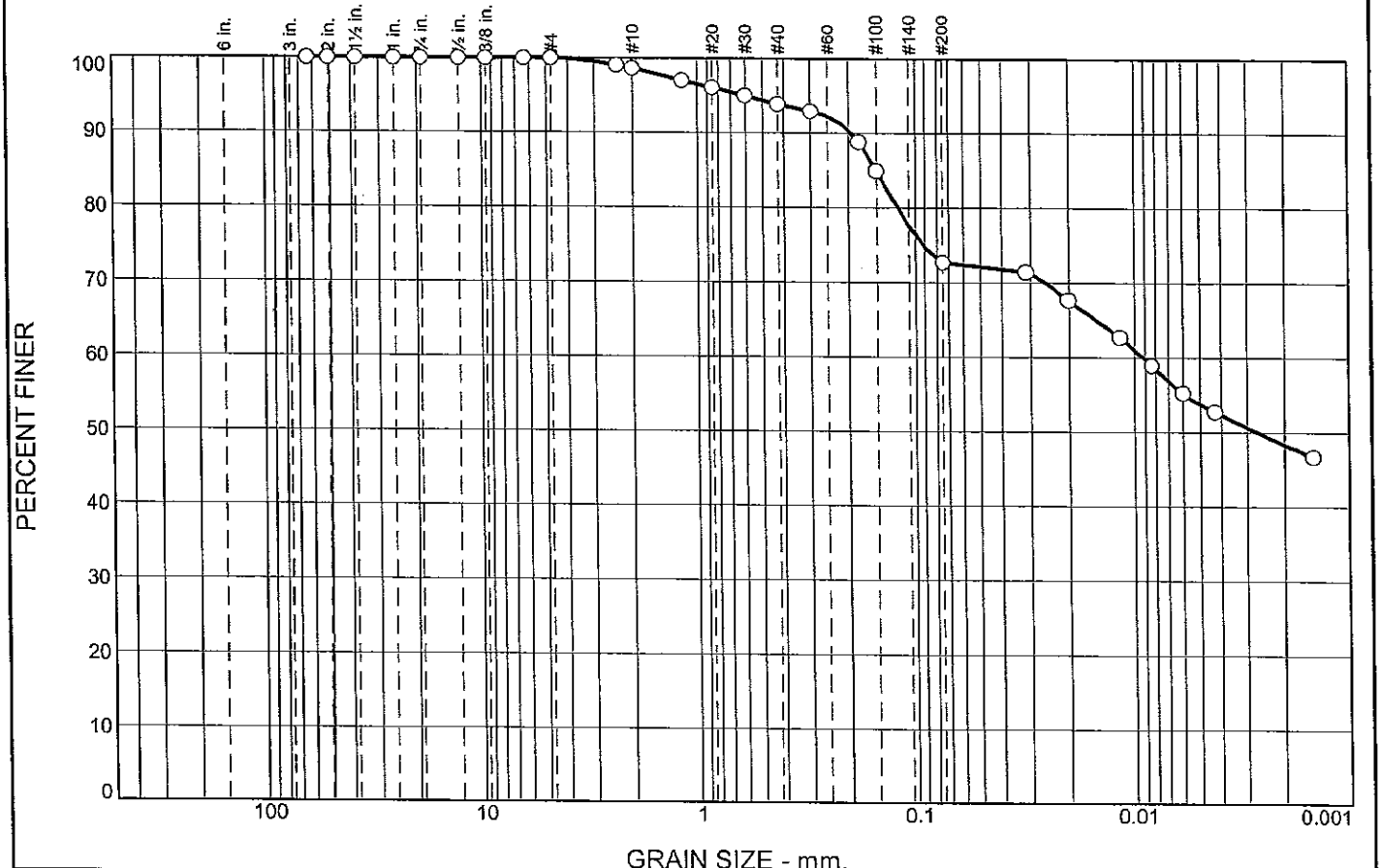
RMT, Inc.

Madison, Wisconsin

Client:
Project: Johnson Controls

Project No: 7682.09 **Figure:**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.3	4.8	21.2	18.9	53.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#8	99.1		
#10	98.7		
#16	97.1		
#20	96.1		
#30	95.0		
#40	93.9		
#50	92.9		
#80	88.8		
#100	84.9		
#200	72.7		

* (no specification provided)

Material Description

Fat clay with sand

Atterberg Limits

PL= 28 LL= 62 PI= 34

Coefficients

D_{90}= 0.1944 D_{85}= 0.1505 D_{60}= 0.0092
D_{50}= 0.0027 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Source of Sample: SB
Sample Number: SB-14, 19-21'

Date: 12-1-09

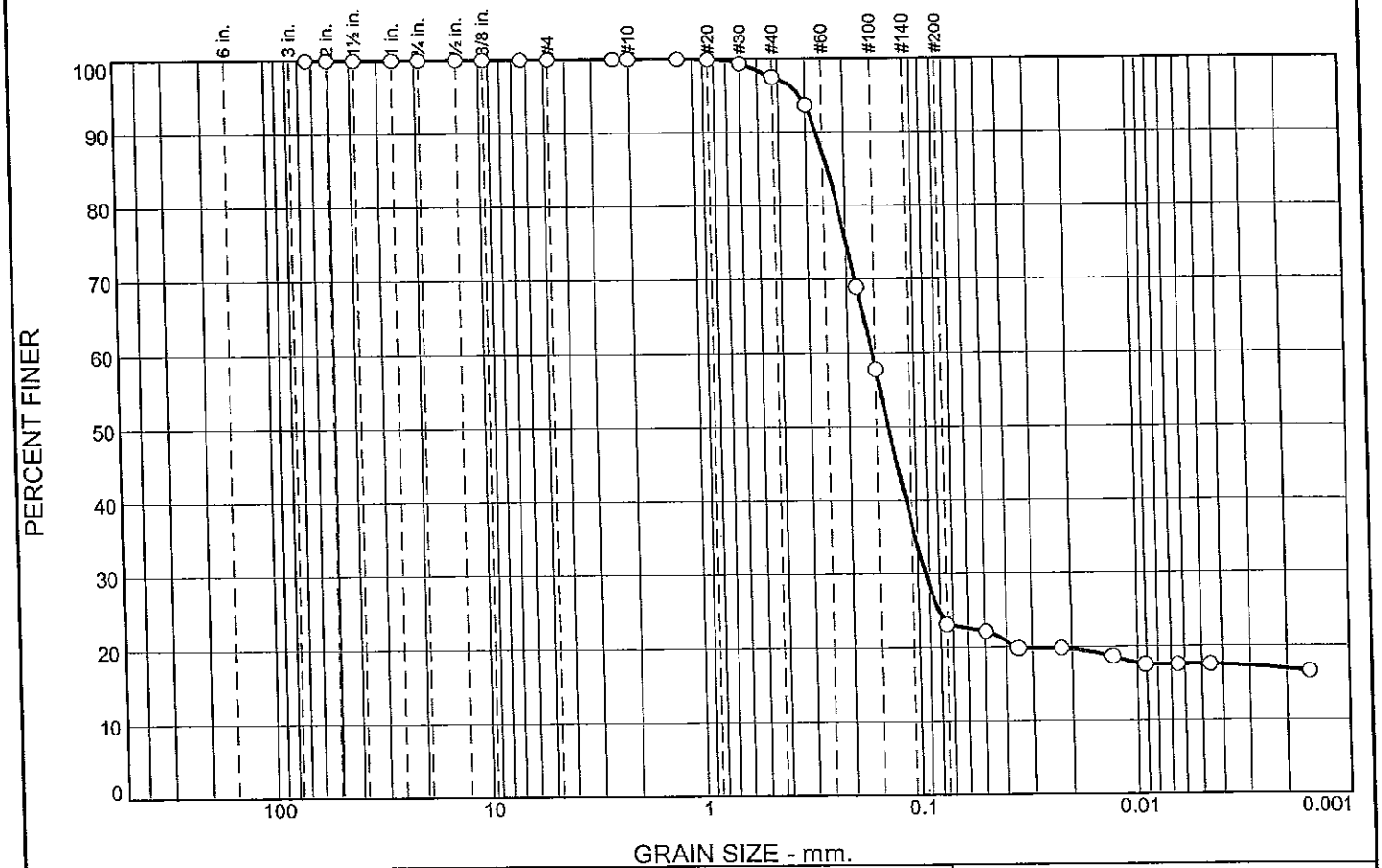
RMT, Inc.

Madison, Wisconsin

Client:
Project: Johnson Controls

Project No: 7682.09 **Figure:**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	2.5	74.4	5.5	17.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#16	100.0		
#20	99.9		
#30	99.3		
#40	97.5		
#50	93.6		
#80	68.9		
#100	57.9		
#200	23.1		

* (no specification provided)

Material Description

Silty sand

Atterberg Limits

PL= 20 LL= 22 PI= 2

Coefficients

D_{90}= 0.2683 D_{85}= 0.2396 D_{60}= 0.1553
D_{50}= 0.1324 D_{30}= 0.0928 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Source of Sample: SB
Sample Number: SB-15, 4-5.5'

Date: 12-1-09

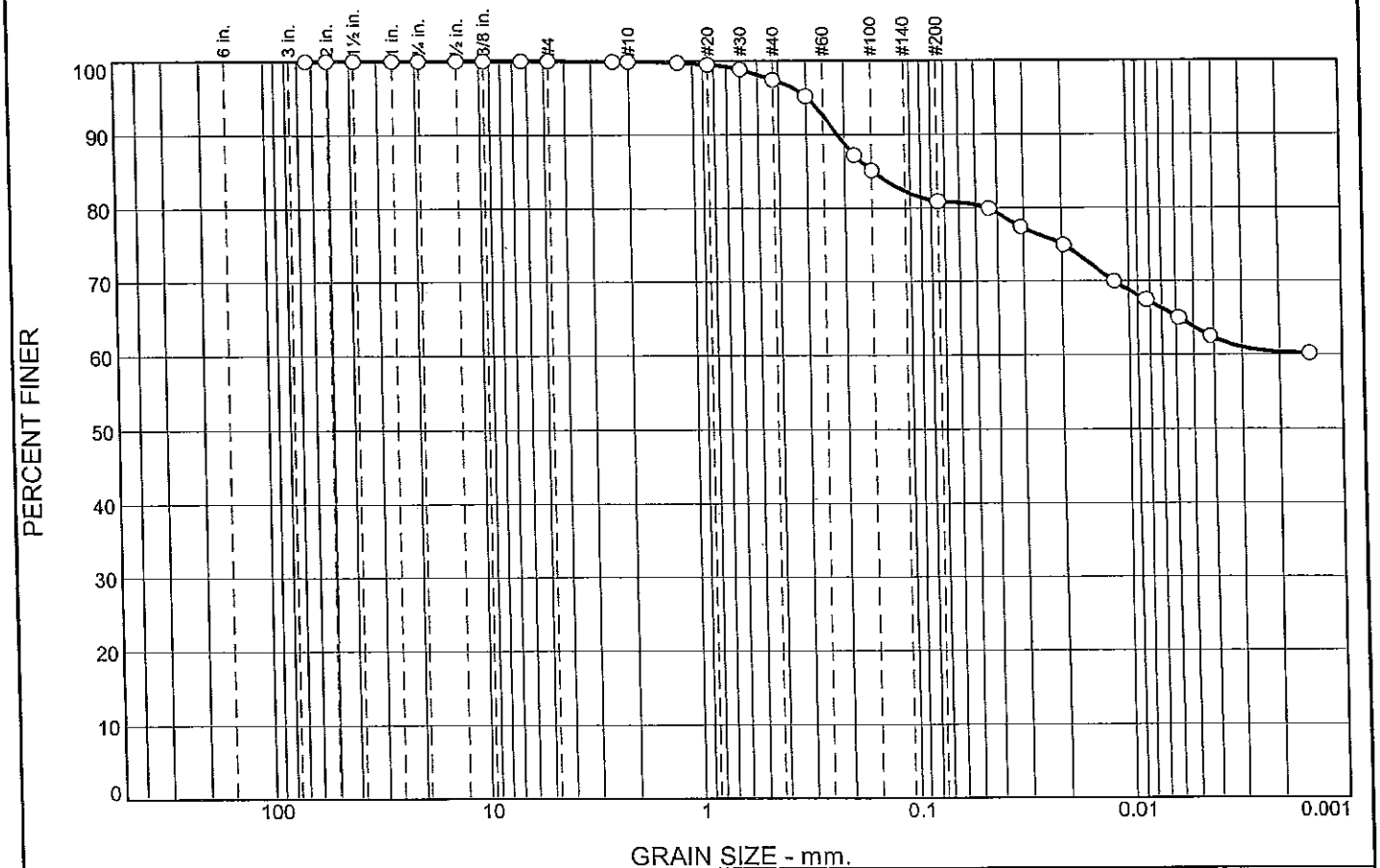
RMT, Inc.

Madison, Wisconsin

Client:
Project: Johnson Controls

Project No: 7682.09 **Figure:**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	2.5	16.5	17.1	63.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#8	99.9		
#10	99.9		
#16	99.7		
#20	99.5		
#30	98.8		
#40	97.4		
#50	95.2		
#80	87.2		
#100	85.1		
#200	80.9		

* (no specification provided)

Material Description

Elastic silt with sand

Atterberg Limits

PL= 40 LL= 74 PI= 34

Coefficients

D_{90}= 0.2144 D_{85}= 0.1484 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= MH AASHTO=

Remarks

Source of Sample: SB
Sample Number: SB-15, 9-11'

Date: 12-1-09

RMT, Inc.

Madison, Wisconsin

Client:
Project: Johnson Controls

Project No: 7682.09 **Figure:**

RMT, Inc.

Moisture Content / Dry Density Determination (ASTM D2216 or D4643)

QC:

QA:

Project Name: Johnson Controls

Project #: 7682.09

	Sample Location	Moisture Tare Wt. (g)	Moisture Wet Wt. + Tare (g)	Moisture Dry Wt. +Tare (g)	Moisture (%)	Sample Diameter (in)	Sample Height (in)	Density Tare Wt. (g)	Density Wet Wt. + Tare (g)	Wet Density (pcf)	Dry Density (pcf)
1	SB-14, 19-21'	261.81	1406.70	1098.10	36.9	2.87	6.12	261.81	1406.70	110.2	80.5
2	SB-15, 9-11'	250.59	1416.60	1123.00	33.7	2.81	6.00	250.59	1416.60	119.4	89.3
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
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14											
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25											
26											
27											
28											
29											
30											

RMT, Inc.

Moisture Content / Dry Density Determination (ASTM D2216 or D4643)

QC:

QA:

Project Name: Johnson Controls

Project #: 7682.09

	Sample Location	Moisture Tare Wt. (g)	Moisture Wet Wt. + Tare (g)	Moisture Dry Wt. +Tare (g)	Moisture (%)	Sample Diameter (in)	Sample Height (in)	Density Tare Wt. (g)	Density Wet Wt. + Tare (g)	Wet Density (pcf)	Dry Density (pcf)
1	SB-07, 4-5.5'	246.99	556.30	500.43	22.0						
2	SB-07, 9-10.5'	252.22	971.30	840.50	22.2						
3	SB-07, 14-15.5'	256.70	805.30	667.19	33.6						
4	SB-07, 19-20.5'	258.48	721.80	609.53	32.0						
5	SB-07, 24-25.5'	261.10	1399.70	1158.00	26.9						
6	SB-07, 29-30.5'	249.87	1598.70	1333.90	24.4						
7	SB-07, 34-35.5'	260.98	1073.00	848.30	38.3						
8	SB-07, 39-40.5'	254.06	680.50	550.99	43.6						
9	SB-10, 4-5.5'	251.52	946.10	869.70	12.4						
10	SB-10, 9-10.5'	263.51	1046.80	937.40	16.2						
11	SB-10, 14-15.5'	263.66	982.10	865.20	19.4						
12	SB-10, 19-20.5'	265.82	998.90	816.40	33.1						
13	SB-10, 24-25.5'	254.98	479.73	405.30	49.5						
14	SB-10, 34-35.5'	263.49	643.30	576.52	21.3						
15	SB-10, 39-40.5'	258.47	449.40	392.14	42.8						
16	SB-13, 4-4.5'	257.86	823.50	754.70	13.8						
17	SB-13, 9-10.5'	270.09	1398.60	1143.80	29.2						
18	SB-13, 14-15.5'	264.87	1011.80	871.60	23.1						
19	SB-13, 19-20.5'	257.72	1651.40	1315.80	31.7						
20	SB-13, 29-30.5'	255.57	1608.20	1236.20	37.9						

RMT, Inc.

Moisture Content / Dry Density Determination (ASTM D2216 or D4643)

QC:

QA:

Project Name: Johnson Controls

Project #: 7682.09

	Sample Location	Moisture Tare Wt. (g)	Moisture Wet Wt. + Tare (g)	Moisture Dry Wt. +Tare (g)	Moisture (%)	Sample Diameter (in)	Sample Height (in)	Density Tare Wt. (g)	Density Wet Wt. + Tare (g)	Wet Density (pcf)	Dry Density (pcf)
1	SB-13, 34-35.5'	263.74	1613.10	1298.90	30.4						
2	SB-13, 39-40.5'	270.87	778.30	679.67	24.1						
3	SB-13, 44-45.5'	263.20	414.79	370.17	41.7						
4	SB-14, 4-5.5'	268.19	871.50	780.08	17.9						
5	SB-14, 9-10.5'	267.59	727.80	634.95	25.3						
6	SB-14, 14-15.5'	265.88	1165.90	1002.60	22.2						
7	SB-14, 19-21'	261.81	1406.70	1098.10	36.9						
8	SB-14, 24-25.5'	259.62	1595.00	1233.50	37.1						
9	SB-14, 34-35.5'	267.80	1217.00	986.80	32.0						
10	SB-15, 4-4.5'	268.51	678.80	630.20	13.4						
11	SB-15, 9-11'	250.59	1416.60	1123.30	33.6						
12	SB-15, 14-15.5'	261.90	717.30	635.28	22.0						
13	SB-15, 19-20.5'	261.50	906.10	745.46	33.2						
14	SB-15, 24-25.5'	270.37	947.50	770.61	35.4						
15	SB-15, 29-30.5'	262.95	515.46	459.34	28.6						
16	SB-15, 34-35.5'	265.36	946.90	783.40	31.6						
17	SB-15, 39-40.5'	267.69	967.00	792.05	33.4						
18	SB-15, 44-45.5'	268.79	522.29	442.53	45.9						
19											
20											

RMT Soils Laboratory

Tube Extrusion Form

QC: HWJ

QA: JM

Project Name: Johnson Controls Sample Name: SB-14, 19-21'

Project #: 7682.09 Length (in) 30 Diameter (in): 3.00 Type: Shelby Tube

In.	Analysis	Depth(El)	Pp/Tv(tsf)	Fractures (x)	Visual Description
0		Top			
1					Silty sand, brownish yellow, medium dense, nonplastic, wet.
2					"
3					"
4					"
5					"
6					"
7					Silty clay, brownish yellow, soft, medium plasticity, wet.
8					"
9					"
10					"
11					Fat clay with sand,brownish yellow, medium stiff to stiff,
12					medium plasticity, moist to wet, sand lenses.
13					"
14					"
15					"
16					"
17	Qu, GS, AL, K				"
18					"
19					"
20					"
21					"
22					"
23					"
24		Bottom			"
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					

Analysis Codes:

Moisture(M), Density(D), Specific Gravity(Gs), (P200), Sieve(S), Grainsize(GS), Consolidation(CON), Atterberg Limits(AL), Shrinkage Limit(SL), Organic Content(O), Proctor(P), Permeability(k), Unconfined Compressive Strength(Qu), Triaxial Compression(Tx), Direct Shear(DS)

RMT Soils Laboratory
Tube Extrusion Form

QC: KJW
QA: DNF

Project Name: Johnson Controls | Sample Name: SB-15, 9-11.0'
Project #: 7682.09 | Length (in): 30 | Diameter (in): 3.00 | Type: Shelby Tube

In.	Analysis	Depth(El)	Pp/Tv(tsf)	Fractures (x)	Visual Description
0		Top			
1					Lean clay with sand, yellowish brown, soft to medium stiff,
2					medium plasticity, moist.
3					"
4					"
5					"
6					"
7					Elastic silt with sand, brownish yellow, medium stiff to stiff,
8					medium plasticity, moist.
9					"
10					"
11	CON, Qu				"
12	GS, AL, K				"
13					"
14					"
15		Bottom			"
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					

Analysis Codes:
Moisture(M), Density(D), Specific Gravity(Gs), (P200), Sieve(S), Grainsize(GS), Consolidation(CON),
Atterberg Limits(AL), Shrinkage Limit(SL), Organic Content(O), Proctor(P), Permeability(k),
Unconfined Compressive Strength(Qu), Triaxial Compression(Tx), Direct Shear(DS)

Appendix B
Wetlands Determination

The following is a report of the wetlands determination conducted at the site.

Wetland Delineation Report

Johnson Controls Battery Group, Inc.
Florence Recycling Center Battery Warehouse

1800 Paper Mill Road, Florence, South Carolina

December 2009
Revised June 2010

30 Patewood Drive, Suite 100 • Greenville, SC 29615-3535 • (864) 281-0030 • (864) 281-0288 FAX • www.rmtinc.com

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Section 1
Introduction

RMT, Inc. (RMT) was retained by Johnson Controls Battery Group, Inc. (JCBGI) to conduct a wetland delineation on the portion of a parcel proposed to be the site of a lead-acid battery reclamation facility to be located in Florence County, South Carolina. The purpose of this wetland delineation was to identify areas exhibiting wetland characteristics, and to determine areas on the site that satisfy the federal definition of "waters of the United States," including federally jurisdictional wetlands. Areas satisfying the definition of waters of the United States were located in the field and mapped using a global positioning system (GPS) instrument.

1.1 Background

JCBGI is proposing to construct a lead-acid battery reclamation facility on an approximately 422 acre parcel of land situated in eastern Florence County, South Carolina. This parcel is one of several parcels of land owned by Ingram Lumber Company that have been offered for sale and development by the Florence County Economic Development Partnership, and that encompass approximately 1,011 acres ("site" or "entire site"). Figure 1 is a site location map outlining the entire site and showing the parcels included therein. JCBGI has proposed developing the lead-acid battery reclamation facility on Parcel "C" shown on Figure 1, which encompasses approximately 422 acres. This report presents a wetland assessment of Parcel C. A wetland delineation of the entire site, including Parcel C, is being prepared for submittal to the United States Army Corps of Engineers (USACE). A copy of the delineation will be submitted to the Department when approved by the USACE. However, JCBGI's proposed development will have no wetland impacts.

Prior to acquiring the site, JCBGI has undertaken a number of environmental due diligence activities, including an identification of wetlands and other ecologically sensitive areas on the site. This initial wetland delineation report for Parcel C describes procedures that were followed to identify areas on Parcel C that satisfy the definition of "waters of the United States." As defined at 40 Code of Federal Regulations (CFR) Part 230.3(s), the term "waters of the United States" is defined as:

1 All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

2 All interstate waters including interstate wetlands;

3 All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purposes by industries in interstate commerce;

4 All impoundments of waters otherwise defined as waters of the United States under this definition;

5 Tributaries of waters identified in paragraphs (s)(1) through (4) of this section;

6 The territorial sea;

7 Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of Clean Water Act (CWA) (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

1.2 Setting

Parcel C, that portion of the site intended for development, encompasses approximately 422 acres, and is situated in the southeast corner of the Ingram/Pee Dee property. Parcel C is listed on Florence County tax records as Parcel No. 00367-01-002. This parcel is bisected from north to south by Paper Mill Road and a railroad spur that serves the nearby Smurfit Stone Container Corporation pulp and paper mill. The Great Pee Dee River borders Parcel C to the east. A complete wetlands delineation and survey has been conducted on the entire site (approximately 1,011 acres) in support of a Jurisdictional Determination (JD) request package that is being submitted to the USACE.

The entire site drains to the Great Pee Dee River, and lies within the Lower Pee Dee Watershed (United States Geological Survey [USGS] Hydrological Unit Code [HUC] 03040201). The Great Pee Dee River is considered by the State of South Carolina to be navigable where it flows past the site. The river is over 1,000 feet from the proposed facility.

Most of the site drains to the west through a man-made ditch that flows under the railroad spur line and Paper Mill Road, and that eventually drains through a shallow swale that flows across Parcels B and A before discharging into Moore's Branch. Moore Branch is a tributary to Jeffries Creek, which, in turn, is a tributary to the Great Pee Dee River. A ditch conveys flow in the eastern portion of the swale that flows from the site. To the west, the swale flows unconfined across an area that slopes gently to the west. The easternmost portion of the site drains directly to the Great Pee Dee River by a combination of unconfined surface flow and through several ravines along the eastern edge of the site.

The site is in the Inner Coastal Plain physiographic region. This region consists of shallow marine deposits that overlie relatively young sedimentary deposits. Older igneous and metamorphic rocks lie under the sedimentary deposits. Typically, the sedimentary strata thicken in an easterly direction.

The JCBGI site lies on a terrace overlooking the Great Pee Dee River. The river lies approximately 50 feet lower than the highest portions of the site. A steep bluff and narrow floodplain border the river.

Much of the site has been disturbed for several decades, initially for agricultural production and more recently for timber production. Most of the site is planted in pine, and managed by periodic thinning. Between the time of the initial field reconnaissance and the field investigation, timber had been harvested from some portions of the site.

1.3 Purpose

The primary purpose of this report is to present findings of a wetland assessment and partial delineation of Parcel C. This information was used by JCBGI to develop an overall site plan that minimizes site development activities that would encroach on or disturb federally jurisdictional wetlands and other waters of the United States.

Section 2
Data Review

2.1 Topographic Map

The site lies within the area mapped by the USGS 7.5 minute Pee Dee, South Carolina topographic quadrangle map. This map was used to prepare the site location map in Figure 1. This map shows most of the site to be wooded. Except for the Great Pee Dee River, no water-related features are mapped on the site.

A steep bluff overlooking the Great Pee Dee River is mapped on the easternmost portion of the site. The balance of the site is nearly level, and slopes gently to the west. Contours roughly indicate the location of the swale that drains to the west.

Several improvements are mapped on the site. A power transmission line is mapped as crossing the site from west to east. From north to south, a road, a railroad line, a power transmission line and a pipeline are mapped as crossing the site. No other structures are mapped on Parcel C.

2.2 Aerial Photographs

Figure 2 is an aerial image of Parcel C and immediately surrounding area. This figure is a composite of a black and white image taken in 1994 and a color image taken in 2009. The color image encompasses the entire site. As can be seen from Figure 2, most of the site is wooded. A small portion of the site west of Paper Mill road appears to be undergoing secondary plant succession. The power transmission lines, Paper Mill Road, and railroad line are clearly visible on this image. Several unimproved forest roads are visible on the site. The highly reflective surfaces of these roads are due to the sandy nature of the soils on this portion of Parcel C, as confirmed during the site visit.

2.3 National Wetland Inventory

The National Wetland Inventory (NWI), maintained by the United States Fish and Wildlife Service (USF&WS), has mapped this portion of South Carolina. NWI maps are prepared by interpretation of stereoscopic aerial photographs. Based on the interpretation of these images, areas exhibiting wetland characteristics are mapped as either linear features or polygons. Wetland areas are classified using the Cowardin system of wetland classification (Cowardin, et al., 1979). Wetland areas shown on NWI maps are not verified by field inspections, and are not to be used for jurisdictional determinations.

RMT downloaded electronic spatial shape files of the site and surrounding area from the NWI. Figure 3 shows that portion of the NWI map that encompasses Parcel C.

From east to west, the NWI map encompassing Parcel C identified the following potential wetland features.

WETLAND TYPE [(1)]	COMMENT
PFO1A	A small strip adjacent to the Great Pee Dee River is mapped as a Palustrine, Forested, Broad-leaved deciduous, Temporarily Flooded wetland. This wetland area was not field verified during the wetland delineation. However, in an earlier site visit, wetland vegetation and hydrology indicators were observed in the level terrace between the river and the bottom of the bluff.
PFO1C	Two areas along the terrace adjacent to the Great Pee Dee River are mapped as Palustrine, Forested, Broad-leaved Deciduous, Seasonally flooded wetlands. These wetland areas were not field verified during the wetland delineation. However, in an earlier site visit, wetland vegetation and hydrology indicators were observed in the level terrace between the river and the bottom of the bluff.
PSS1A	A portion of the terrace adjacent to the Great Pee Dee River is mapped as a Scrub/shrub, Broad-leaved deciduous, Temporarily flooded wetland. This wetland area was not field verified during the wetland delineation. However, in an earlier site visit, wetland vegetation and hydrology indicators were observed in the level terrace between the river and the bottom of the bluff.
PSS1/2Cd	Much of the northern third of the terrace adjacent to the Great Pee Dee River is mapped as a Palustrine, Scrub/shrub, Needle-leaved and Broad-leaved deciduous, Seasonally flooded, Partially drained or ditched wetland. This wetland area was not field verified during the wetland delineation. However, in an earlier site visit, wetland vegetation and hydrology indicators were observed in the level terrace between the river and the bottom of the bluff.
PFO1/2F	Much of the southern half of the terrace adjacent to the Great Pee Dee River is mapped as a Palustrine, Forested, Broad-leaved and Needle-leaved deciduous, Semi-permanently flooded wetland. This wetland area was not field verified during the wetland delineation. However, in an earlier site visit, wetland vegetation and hydrology indicators were observed in the level terrace between the river and the bottom of the bluff.
PFO4Bd	An area in the southern portion of the site is mapped as a Palustrine, Forested, Needle-leaved evergreen, Saturated, Partially drained/ditched wetland. This area was investigated during the wetland delineation. This area is in a portion of the site that is actively managed for timber production.
PFO1/2Fd	An area in the northern third of the site, approximately halfway between the river and Paper Mill Road is mapped as a Palustrine, Forested, Broad-leaved deciduous and needle-leaved deciduous, Semi-permanently flooded, Partially drained/ditched wetland. This area was investigated during the wetland delineation. This area is a shallow depression.

WETLAND TYPE [1]	COMMENT
PFO1/2Fd and PFO4/2Cd	An area on the northern edge of the site between the river and Paper Mill Road is mapped as a mixture of a Palustrine, Forested, Broad-leaved deciduous and needle-leaved deciduous, Semi-permanently flooded, Partially drained/ditched wetland and a Palustrine, Forested, Needle-leaved evergreen and needle leaved deciduous, Seasonally flooded, Partially drained/ditched wetland. This area was investigated during the wetland delineation. This area is a shallow depression.
PFO4/1Bd	A large triangular portion of the site east of Paper Mill Road is mapped as a Palustrine Forested, Needle-leaved Evergreen and broad-leaved deciduous Saturated, Partially drained/ditched wetland. Much of this area is managed for timber production. This area was field investigated during the wetland delineation.
PSS1Bd	A narrow strip in the utility corridors is mapped as a Palustrine, Scrub/shrub, Broad-leaved deciduous, Saturated, Partially drained/ditched wetland. This area is in the utility corridors and was field investigated during the wetland delineation.
PFO4Ad	An area between Paper Mill Road and the railroad line that crosses the site is mapped as a Palustrine, Forested, Needle-leaved evergreen, Temporarily flooded, Partially drained/ditched wetland. This area is managed for timber production, and was field investigated during the wetland delineation.
PFO4/1Bd	A triangular area between Paper Mill Road and the railroad line that crosses the site is mapped as a Palustrine, Forested, Needle-leaved evergreen, Broad-leaved deciduous, Saturated, Partially drained/ditched wetland. This area was field investigated during the wetland delineation.
PFO1/4Bd	An area of the site west of Paper Mill Road is mapped as a Palustrine, Forested, Broad-leaved deciduous needle-leaved evergreen, Temporarily flooded, Partially drained/ditched wetland. This area was not field investigated during the wetland delineation and is outside of the proposed limits of development.
PSS1Bd	An area west of Paper Mill Road and along the northern property line is mapped as a Palustrine, Scrub/shrub, Broad-leaved deciduous, Saturated, Partially drained/ditched wetland. This area was not field investigated during the wetland delineation and is outside of the proposed limits of development.
PFO4Ad	Four areas west of Paper Mill Road are mapped as Palustrine, Forested, Needle-leaved evergreen, Temporarily flooded, Partially drained/ditched wetlands. These areas were not field investigated during the wetland delineation. Two of these areas were inspected during an earlier site assessment, and did exhibit wetland vegetation and hydrology. These four areas are outside of the proposed limits of development.

[1] Wetland Type is the Cowardin System designation used for a wetland polygon.

2.4 Soil Survey

Information on soils on Parcel C was obtained from the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) (formerly the Soil Conservation Service [SCS]) Soil Survey Geographic database. Figure 4 is a soils map of Parcel C.

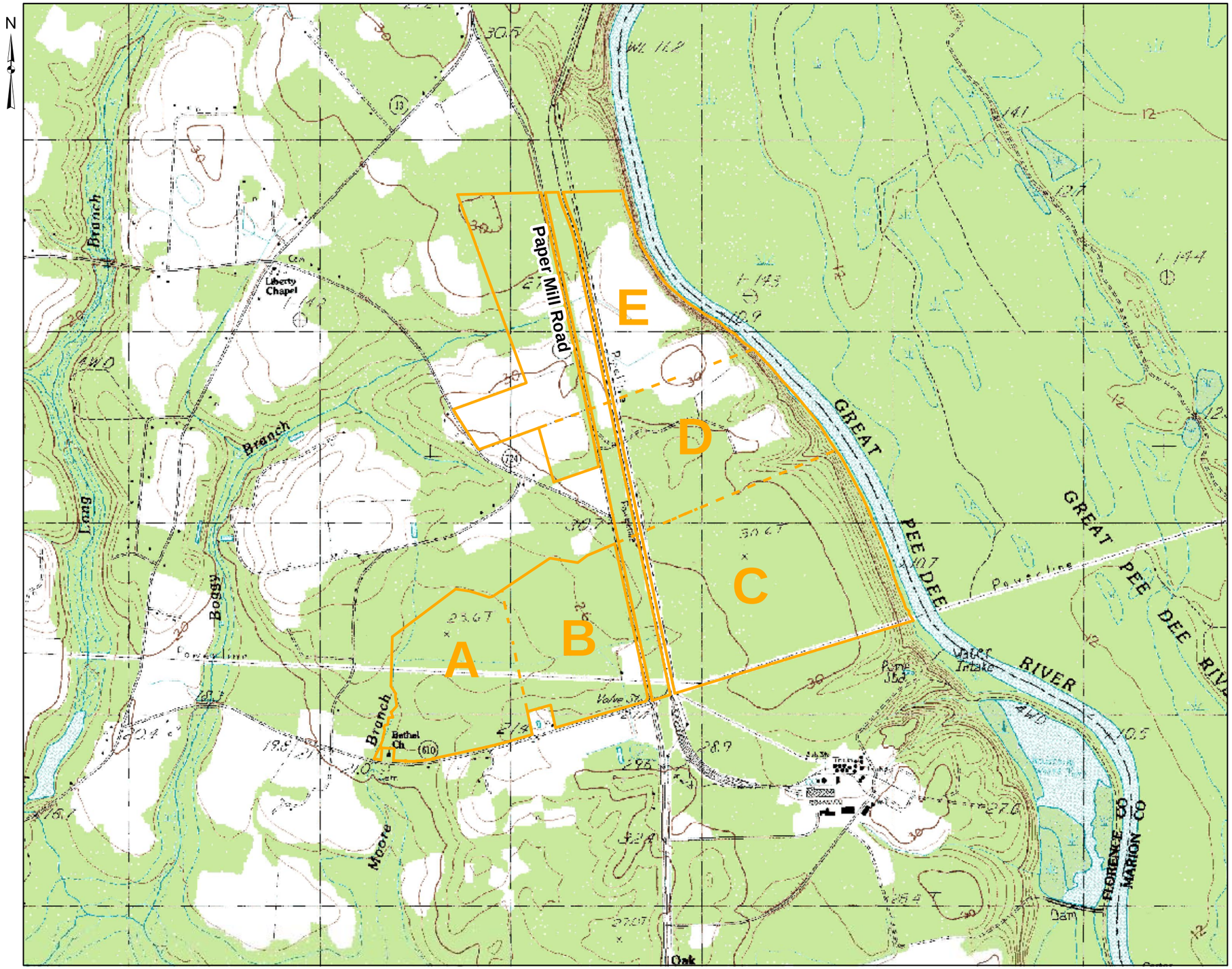
From east to west, soils mapped for Parcel C are described in the following narrative.

SOIL UNIT	MAP SYMBOL	COMMENT
Chastain-Chewacla-Congaree association	Ch	That portion of the site immediately adjacent to the Great Pee Dee River is mapped as this soil type. This is a frequently flooded soil derived from alluvial material. This is a hydric soil.
Sunsweet loamy fine sand, 10 to 25% slopes	SuE	This well drained soil found on marine terraces is mapped in the northeastern corner of the site, on the bluff overlooking the river. This is not a hydric soil.
Lakeland sand, 6 to 15 % slopes	LaD	Most of the bluff overlooking the river is mapped as this soil. This soil is found on marine terraces and is derived from sandy, marine deposits. This well drained soil is not hydric.
Lakeland sand, 0 to 6% slopes	LaB	Two portions of the site are mapped as this soil type, a large area on the eastern half of the site and a smaller area that straddles Paper Mill Road. This is a sandy, excessively drained soil that is derived from marine deposits.
Pantego loam	Pa	Two areas east of Paper Mill Road are mapped as this soil type. These areas encompass the low-lying areas east of Paper Mill Road. This is a very poorly drained, hydric soil.
Wagram sand, 0 to 6% slopes	WgB	Two areas of the site, one straddling the northern property line and the other the southern property line are mapped as this soil type. Wagram soils are loamy soils derived from marine terraces. This is a well drained soil that is not hydric. It may, however, have hydric soil inclusions.
Lynchburg sandy loam	Ly	Two areas of the site, one straddling Paper Mill Road and the other the western site boundary, are mapped as this unit. Lynchburg sandy loam is a poorly drained soil with a high water table. Two NWI identified wetlands roughly overlap the portions of the site mapped as Lynchburg soils.
Duplin fine sandy loam	Dp	This is a moderately well drained soil found on former marine terraces. This soil does not have a high water table and is not a hydric soil.
Coxville fine sandy loam	Cv	This soil is found in depressions and level areas on former marine terraces. This is a poorly drained, hydric soil with a high water table. Much of the western portion of the site is mapped as Coxville fine sandy loam.

2.5 Federal Emergency Management Agency Flood-prone Areas

The Federal Emergency Management Agency (FEMA) has published Flood Insurance Rate Maps (FIRM) for this portion of unincorporated Florence County. FIRM Map Numbers 45041C0190D and 45041C0195D were examined. Figure 5 shows portions of both maps that encompass the JCBGI site.

The only portion of Parcel C mapped as a flood prone area is the floodplain adjacent to the Great Pee Dee River, which is mapped as Flood Zone A. Zone A is the flood insurance rate zone that corresponds to a 1-percent annual chance of flooding, as determined in the Flood Insurance Study by approximate methods of analysis. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within Zone A.



LEGEND

PARCEL BOUNDARY

NOTES

0 2000 4000

Feet

Map Document: (P:\Project JCBGI\ArcGIS\RCRAPermit_2010Revs\SiteLocationMap_WetlandDelineationFig1.mxd)
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JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY

SITE LOCATION MAP

DRAWN BY: TLH	SCALE AS NOTED	PROJECT NO.: 02452.09.001
CHECKED BY: JEP		DATE: JUNE 2010
APPROVED BY: WMB		FIGURE NO.: 1

RMT
Patewood Plaza One, Suite 100
30 Patewood Drive
Greenville, SC 29615-3535
Phone: 864-281-0030
FAX: 864-281-0288

LEGEND

PROPERTY BOUNDARY - APPROXIMATE

NOTES

AERIAL IMAGES FROM TERRASERVER (1994, BLACK AND WHITE) AND SUMMER 2009 (COLOR).

0 750 1500

Feet

JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYLING FACILITY

AERIAL IMAGE

DRAWN BY: TLH	SCALE AS NOTED	PROJECT NO.: 00-07682.05
CHECKED BY: RWH		DATE: DECEMBER 2009
APPROVED BY: WMB		FIGURE NO.: 2

RMT

Patewood Plaza One, Suite 100
30 Patewood Drive
Greenville, SC 29615-3535
Phone: 864-281-0030
FAX: 864-281-0288

Map Document: (P:\Project JCBGI\ArcGIS\RCRAPermit\WetlandAerialImage.mxd)
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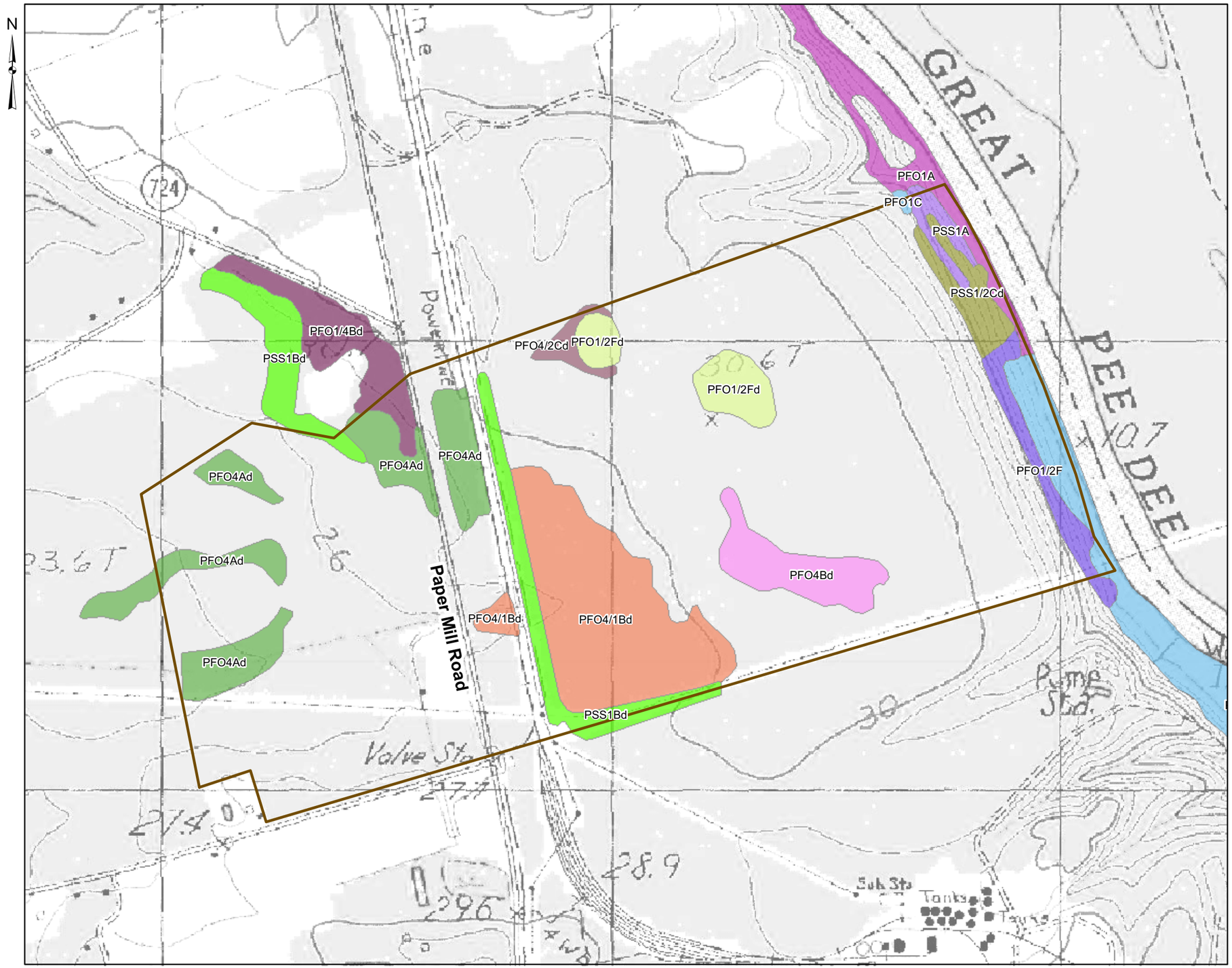

LEGEND

PROPERTY BOUNDARY - APPROXIMATE

NWI CLASSES

PFO1/2F	**PFO4/2Cd**
PFO1/2Fd	**PFO4Ad**
PFO1/4Bd	**PFO4Bd**
PFO1A	**PSS1/2Cd**
PFO1C	**PSS1A**
PFO4/1Bd	**PSS1Bd**

NOTES

NWI shapes obtained from www.fws.gov/Wetlands .

Bold NWM class in legend indicates that the class is found within the property boundary.

0 750 1500

Feet

JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY

NATIONAL WETLAND INVENTORY (NWI) MAP

DRAWN BY: TLH	SCALE AS NOTED	PROJECT NO.: 00-07682.05
CHECKED BY: JEP		DATE: DECEMBER 2009
APPROVED BY: WMB		FIGURE NO.: 3

RMT

Patewood Plaza One, Suite 100
30 Patewood Drive
Greenville, SC 29615-3535
Phone: 864-281-0030
FAX: 864-281-0288

Map Document: (P:\Project JCBGI\ArcGIS\RCRAPermit\NWI.mxd)
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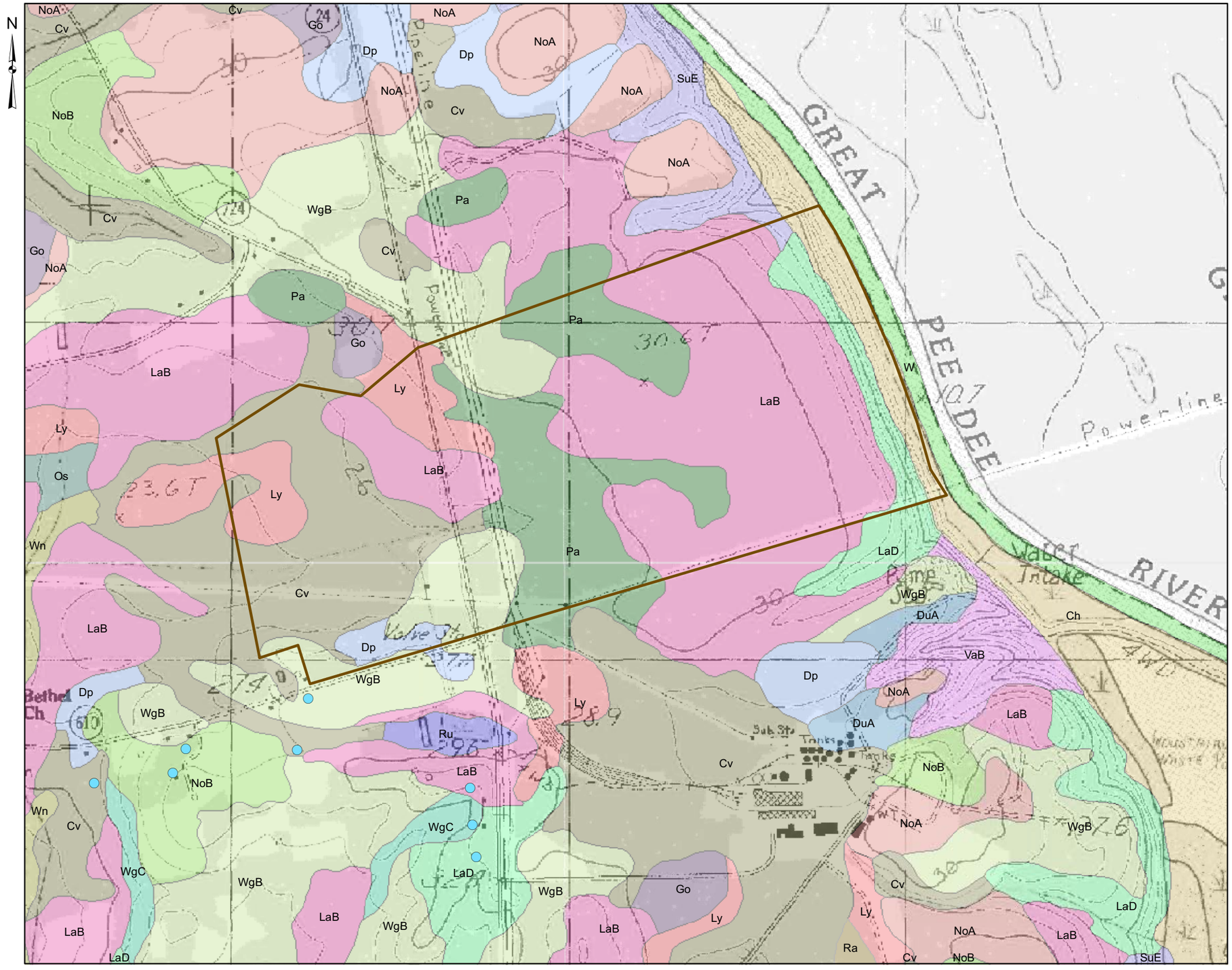


LEGEND

- PROPERTY BOUNDARY - APPROXIMATE
- PRIVATE WELL

SOIL TYPES

Ch	Os
Cv	**Pa**
Dp	Ru
DuA	SuE
Go	VaB
LaB	W
LaD	**WgB**
Ly	WgC
NoA	Wn
NoB	

NOTES

Soil Type data obtained from U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Soil Survey Geographic (SSURGO) database published 1/8/2009.

Bold soil type in legend indicates that the type is found within the property boundary.

0 800 1600 2400

Feet

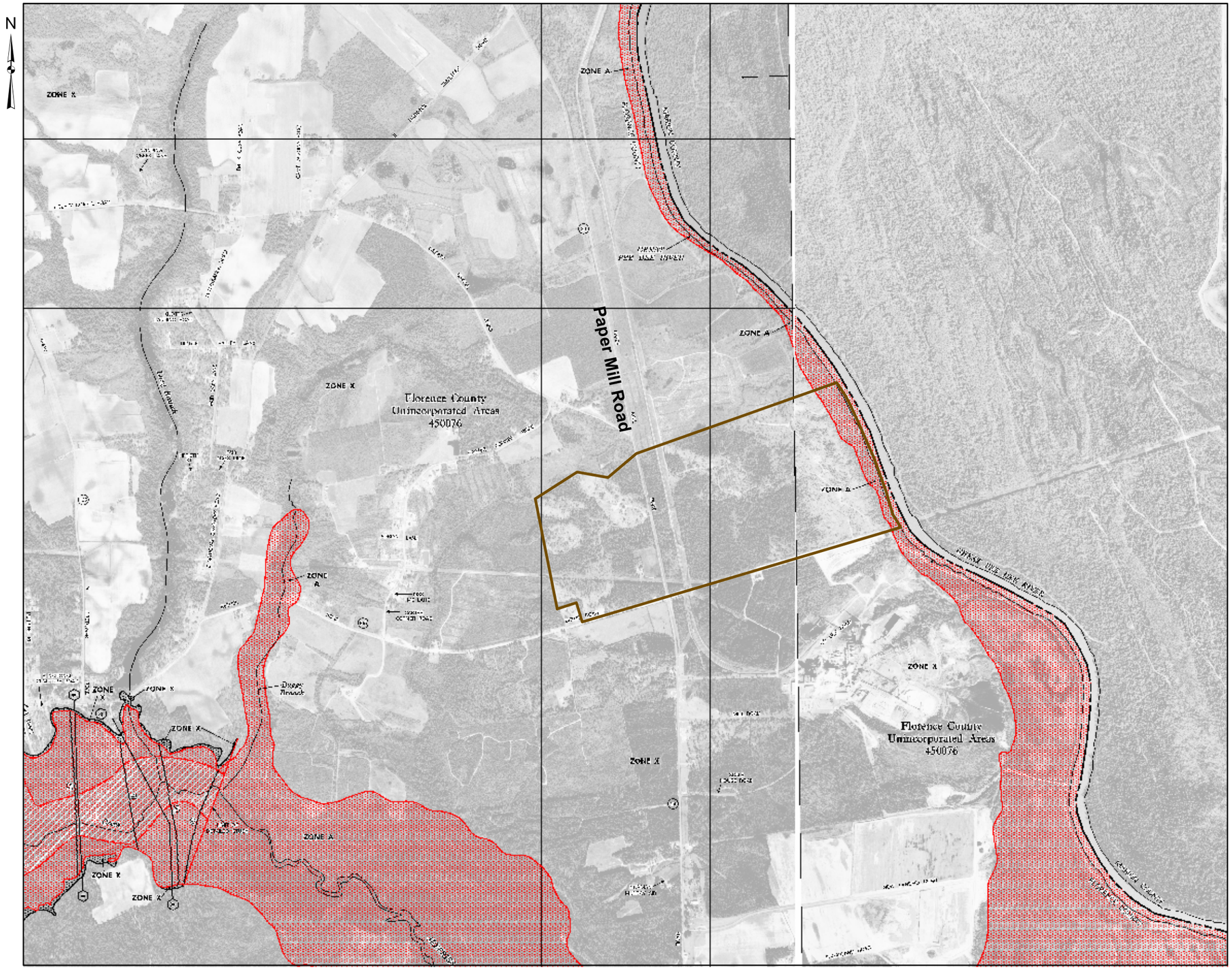
JOHNSON CONTROLS, INC.
FLORENCE, SOUTH CAROLINA

SOIL MAP

DRAWN BY: TLH	SCALE AS NOTED	PROJECT NO.: 00-07682.05
CHECKED BY: JEP		DATE: DECEMBER 2009
APPROVED BY: WMB		FIGURE NO.: 4

RMT
Patewood Plaza One, Suite 100
30 Patewood Drive
Greenville, SC 29615-3535
Phone: 864-281-0030
FAX: 864-281-0288

Map Document: (P:\Project JCBGI\ArcGIS\RCRAPermit\SoilType_Wetland.mxd)
12/10/2009 -- 3:03:51 PM



LEGEND

- PROPERTY BOUNDARY - APPROXIMATE
- FEMA FLOOD ZONES

NOTES

100 YEAR FLOOD ZONES FROM FEMA MAPS 45041C0190D AND 45041C0195D

0 2000 4000

Feet

JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY

FLOOD ZONE MAP

DRAWN BY: TLH	SCALE AS NOTED	PROJECT NO.: 00-07682.05
CHECKED BY: JEP		DATE: DECEMBER 2009
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Map Document: (P:\Project JCBGI\ArcGIS\RCRAPermit\FEMAFloodZones_Wetland.mxd)
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Section 3
Field Reconnaissance

From October 5 through October 9, 2009, Dr. Robert W. Hanley of RMT conducted a wetland field reconnaissance and delineation of Parcel C, that portion of the site on which JCBGI plans to develop an automotive battery reclamation facility. In May 2010, wetlands over the entire site were delineated and surveyed by registered South Carolina surveyor. As referenced in Section 1/1, the May 2010 delineation of the entire site is being prepared for submittal to the USACE.

Wetlands on the JCBGI site were delineated using the procedures described in the *Corps of Engineers Wetlands Delineation Manual – On-line Edition* (USACE, 1987). This procedure requires an analysis of vegetation, hydrology and soils. Vegetation was analyzed to identify the predominant species of herbs, shrubs and trees in a sampling location. Predominance of species included on the *National List of Plant species that Occur in Wetlands: 1996 Draft Revision* (USF&WS, 1996) indicates that the area exhibits wetland vegetation. Hydrology was analyzed by looking for indicators of prolonged surface saturation or flow. Soils were assessed by advancing a 1-inch diameter, stainless steel soil coring tube to a depth of at least 18 inches below ground surface (bgs). Data from the field reconnaissance were entered onto standard Wetland Delineation Data forms. Wetland delineation data forms are provided in Appendix A with wetland determination forms for specific areas of the site that were investigated. Sequentially numbered pin flags were placed at the presumed upland:wetland boundary. Photographs taken during the field reconnaissance are provided in Appendix B (Note: some of the dates on the photographs are incorrect due to a camera malfunction).

In addition to wetlands, the site was inspected for other waters of the United States, such as navigable waters, tributaries to navigable waters, and impounded waters with a direct surface connection to other waters. Boundaries of these waters were also located by placing pin flags at the presumed ordinary high water mark (OHW).

The pin flags in that area of the site on which the proposed development is to be located were subsequently located by using a GPS instrument. The GPS instrument used was a Trimble survey-grade device capable of obtaining sub-meter accuracy. The map showing the Parcel C upland:wetland boundaries, and boundaries of other waters of the United States (as denoted by the pin flags) is provided as Figure 6.

Wetland areas and waters of the United States on or adjacent to Parcel C identified during the initial field reconnaissance and delineated during the field investigations are described in the following narrative. The letter designations reflect additional wetland areas on the remainder

of the entire site, which will be described in the forthcoming wetland delineation report submitted to the USACE.

3.1 Wetland Area I – Northern Side of Parcel C

Wetland Area I is a forested area on the northern side of Parcel C, approximately one-half of the distance between Paper Mill Road and the Great Pee Dee River. The eastern portion of this wetland is dominated by hardwood species such as red maple, sweet gum, laurel oak, and water oak. The western portion of this wetland consists of loblolly pine with areas of dense undergrowth. Although dry at the time of the field investigation, stained leaves and water marks on tree trunks suggest that much of this wetland is seasonally flooded. This wetland is located in the portion of the site mapped as having Pantego loam soils. Soil samples from this wetland were consistent with the description for Pantego loam. This wetland encompasses approximately 4.65 acres.

Several ditches were observed in this wetland. These ditches appear to have been constructed to facilitate draining surface water runoff from adjoining lands that are managed for timber production. At the time of the field investigation, these ditches were overgrown, indicating that they are not maintained. No ditches appear to drain runoff from this wetland to other wetlands or surface water features.

Wetland I does not have a direct surface water connection to other wetlands or surface water features and is, therefore, isolated. This wetland is a palustrine, forested, broad-leaved deciduous and needle-leaved evergreen, seasonally flooded wetland (PFO1/4C). Since the ditches in this wetland do not appear to drain the wetland, it is not partially ditched or drained.

3.2 Wetland Area J – Middle of Parcel C

Wetland Area J is a forested area in the middle of Parcel C, approximately one-half of the distance between Paper Mill Road and the Great Pee Dee River. This wetland is a few hundred feet south, southeast of Wetland Area I. This wetland is dominated by hardwood species such as red maple, red bay, sweet gum, laurel oak and water oak. Shrubs dominate the understory. Although dry at the time of the field investigation, the center of this wetland has indications of seasonal flooding. The outer portion of this wetland has evidence of prolonged soil saturation. This wetland is located in the portion of the site mapped as having Pantego loam soils. Soil samples from this wetland were consistent with the description for Pantego loam. This wetland encompasses approximately 4.78 acres.

Wetland J does not have a direct surface water connection to other wetlands or surface water features and is, therefore, isolated. This center of this wetland is a palustrine, forested, broad-

leaved deciduous, seasonally flooded wetland that is surrounded by a palustrine, forested, broad-leaved deciduous, saturated wetland.

3.3 Wetland Area K – Southern Side of Parcel C

Wetland Area K is a forested area in the southern portion of the property, approximately one-half of the distance between Paper Mill Road and the Great Pee Dee River. This wetland is approximately 1000 feet south Wetland Area J. This wetland is dominated by hardwood species such as red maple, red bay, sweet gum, laurel oak and water oak. It is surrounded by a managed, loblolly pine forest. At the time of the May 2010 wetland delineation, this wetland and the immediately adjacent area appeared to have been recently thinned to harvest loblolly pine. Much of the understory vegetation appeared to have been cleared. Wetland K encompasses approximately 0.62 acres. Wetland K does not have a direct surface water connection to other wetlands or surface water features and is, therefore, isolated.

3.4 Wetland C – Near Utility Corridors

Wetland C is oriented from north to south and straddles the railroad line that crosses Parcel C. Where the railroad line and utilities cross this wetland, it has been cleared and growth of woody vegetation appears to be controlled by application of herbicides. Otherwise, this is a wooded wetland. The northern part of this wetland, which borders Paper Mill road, drains to the south. The southern part of this wetland drains to the north. A series of drainage ditches facilitate surface water runoff. These ditches converge and carry runoff to the west through a culvert under the railroad line. One unpaved road crosses this wetland. No culverts were seen where this road crosses the wetland. The road was saturated during the initial site reconnaissance. It was dry during the field investigation.

Between Paper Mill Road and the railroad line, this wetland is wooded and the predominant trees are loblolly pine, laurel oak, red maple, and water oak. East of the railroad line, the predominant trees are loblolly pine, water oak, and red maple. Where cleared, this wetland is dominated by soft rush, sedges, bushy bluestem, and a variety of facultative wetland and facultative herbaceous species. Most of this wetland exhibits Pantego loam soil characteristics, which is consistent with the soils mapped for this portion of the site. Evidence of prolonged soil saturation at or near the surface was observed in much of this wetland.

Wetland C encompasses approximately 11.7 acres. It drains to the west through a surface water ditch that discharges to Moore Branch. Moore Branch is a tributary to Jeffries Creek, which, in turn, is a tributary to the Great Pee Dee River, which is a navigable water. As such, Wetland C is adjacent to a tributary to a navigable water.

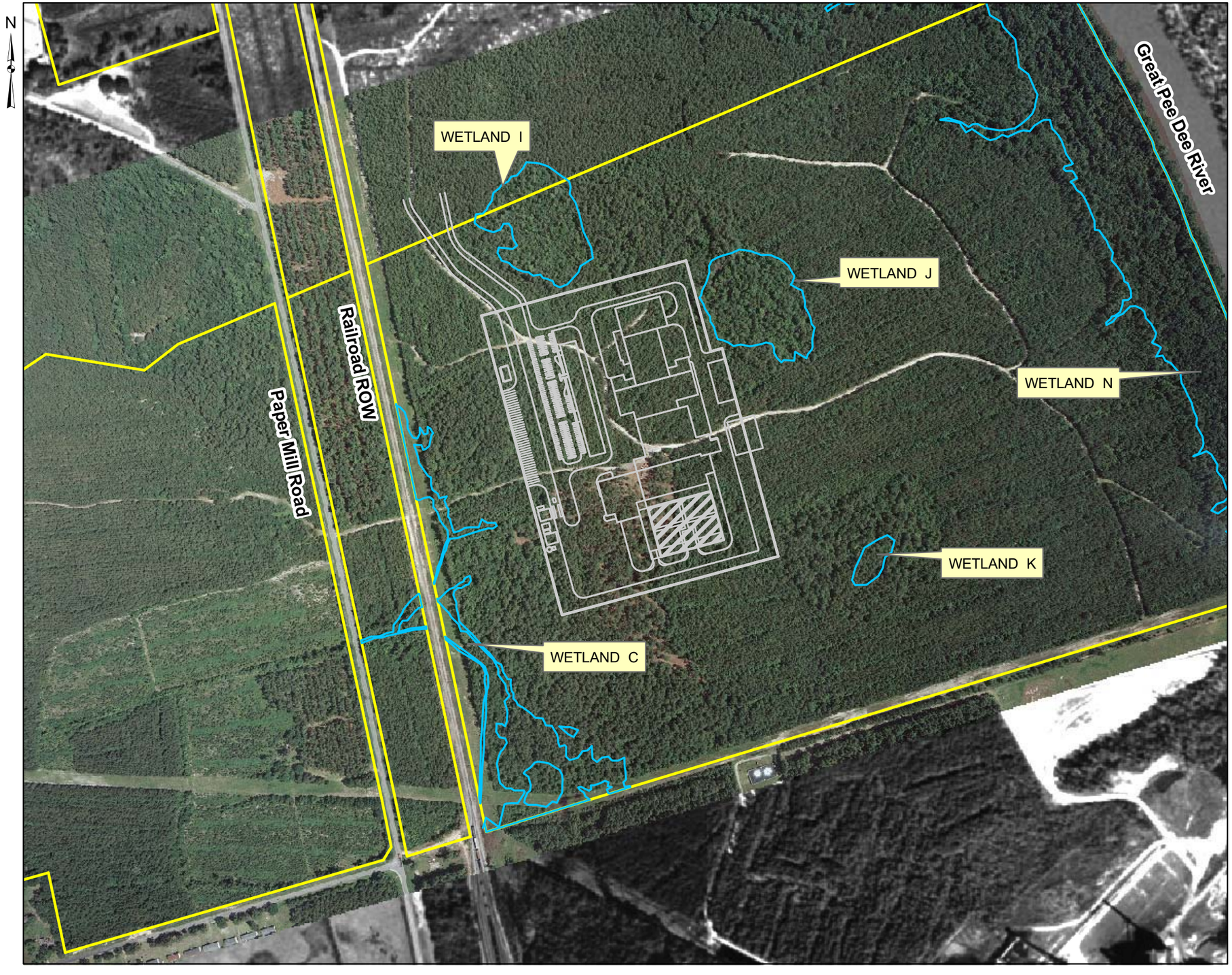
3.5 Wetland N – Great Pee Dee River Floodplain

This area was inspected during the initial site reconnaissance and fully delineated in May 2010. Vegetation in the floodplain is predominantly wooded, and consists of a mixture of obligate wetland trees such as bald cypress and swamp tupelo in areas that are permanently flooded or black gum, sweet gum, sycamore, and laurel oak in less frequently flooded areas. Some areas in the floodplain appear to be permanently flooded; however much of the floodplain is flooded either seasonally or temporarily. Only one substantial ravine conveying surface water from the high ground to the west to the floodplain was seen. This ravine had a small flowing stream at the time of the initial reconnaissance.

The floodplain exhibits a predominance of wetland vegetation and has evidence of prolonged wetland hydrology. This area encompasses approximately 38 acres.

3.6 Ditch Draining Parcel C

A man-made ditch drains Parcel C. This ditch arises east of the railroad line that crosses Parcel C. It flows north, northeast before turning to the west. The ditch flows through a culvert under the railroad line and follows an almost straight course under Paper Mill Road. West of Paper Mill Road where it crosses Parcels B and A, the ditch becomes more and more shallow and eventually becomes a shallow, poorly defined surface water conveyance. Eventually, flow conveyed by the ditch discharges into Moore's Branch. Wetland Area C drains though a second ditch that flows under the railroad before discharging into the ditch that drains the site.



LEGEND

- PROPERTY BOUNDARY
- FACILITY FOOTPRINT AND LAYOUT (ANTICIPATED)
- WETLAND BOUNDARY

NOTES

AERIAL IMAGES FROM TERRASERVER (1994, BLACK AND WHITE) AND SUMMER 2009 (COLOR).

0 500 1000

Feet

JOHNSON CONTROLS BATTERY GROUP, INC.
BATTERY RECYCLING FACILITY

WATERS OF THE UNITED STATES
AND WETLAND BOUNDARY MAP

DRAWN BY: TLH	SCALE AS NOTED	PROJECT NO.: 00-07682.05
CHECKED BY: JEP		DATE: JUNE 2010
APPROVED BY: WMB		FIGURE NO.: 6

RMT
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Map Document: (P:\Project JCBGI\ArcGIS\RCRAPermit_2010Revs\WetlandDelineation_Fig6.mxd)
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Section 4
Wetland Determination and Significant Nexus Analysis

4.1 Regulatory Framework

Two federal laws, the Rivers and Harbors Act of 1899 (RHA) and the CWA regulate activities in "waters of the United States." Section 10 of the RHA specifically regulates activities in navigable waters and makes it unlawful to "excavate or fill, or in any manner to alter or modify the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor of refuge, or inclosure (*sic*) within the limits of any breakwater, or of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of War prior to beginning the same." (33 U.S.C. 403).

The term "navigable waters" is defined as "…those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce." (33 CFR §329.4). For tidal waters, RHA jurisdiction extends to the Mean High Water, which is a tidal datum that is the average of high tides over a tidal averaging period (33 CFR §329.12). For non-tidal lakes, rivers and streams, RHA jurisdiction extends to upstream to the head of navigation, and shoreward to the ordinary high water mark, which is determined by observations of vegetation, debris and streambank profile (33 CFR §329.11). Navigable waters regulated by the RHA are commonly referred to by the regulatory agencies as traditionally navigable waters (TNWs). The RHA specifically grants regulatory powers to the USACE to enforce provisions of the act.

The CWA was enacted to "…restore and maintain the chemical, physical, and biological integrity of the Nation's waters." (33 U.S.C. 1251). The CWA defines navigable waters as "waters of the United States, including the territorial seas." (33 U.S.C. 1362.(7)), which differs from the RHA definition. Congress delegated administration of the CWA to the Administrator of the USEPA (33 U.S.C. 1251.(d). Section 404 of the CWA specifically authorizes the Administrator to regulate discharges of dredge and fill materials into "navigable waters," which includes all "waters of the United States."

Since the USACE had an existing permit program in place to regulate activities in TNWs, the USACE and USEPA agreed through a joint memorandum of understanding that the USACE would have primary responsibility for developing and implementing the CWA Section 404 permit program. This program is codified at 33 CFR §328, et seq.

The CWA Section 404 program encompasses both TNWs and, as more broadly enumerated by the CWA, "waters of the United States." Both the USACE and USEPA define waters of the United States as:

a. The term "**waters of the United States**" means
    1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
    2. All interstate waters including interstate wetlands;
    3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
        i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
        ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
        iii. Which are used or could be used for industrial purpose by industries in interstate commerce;
    4. All impoundments of waters otherwise defined as waters of the United States under the definition;
    5. Tributaries of waters identified in paragraphs (a)(1)-(4) of this section;
    6. The territorial seas;
    7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section.

       Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not waters of the United States.

    8. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the EPA.
b. The term "**wetlands**" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

c. The term "**adjacent**" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are "adjacent wetlands."

The USACE's definition is found at 33 CFR 329; and the USEPA's definition is found at 40 CFR 230.

Since initiating the CWA section 404 program, federal jurisdiction over wetlands has been repeatedly challenged. Many of these challenges have moved through the federal courts system, and have ultimately been argued in front of the U.S. Supreme Court. Key U.S. Supreme Court decisions regarding federal jurisdiction over waters of the United States, including wetlands are summarized briefly in the following narrative.

United States v. Riverside Bayview Homes

In this case, the USACE alleged that Riverside Bayview Homes had discharged fill materials into waters of the United States without first obtaining authorization from the USACE. The wetlands in question were adjacent to Lake St. Clair, Michigan, a navigable water. This case was first argued before the Federal District Court, which found for the plaintiff (USACE). On appeal, the U.S. Court of Appeals reversed the District Court's ruling. The USACE appealed this reversal to the U.S. Supreme Court, which ruled unanimously that the Court of Appeals erroneously reversed the District Court ruling, and found for the plaintiff. This U.S. Supreme Court ruling affirmed that federal jurisdiction under the CWA extends to wetlands adjacent to "waters of the United States," and affirmed that this term extends beyond TNWs, as defined by the USACE and USEPA.

American Mining Congress v. USACE

The American Mining Congress charged that the Tulloch Rule issued by the USACE to regulate incidental fallback from excavation activities exceeded the Agency's authority under the CWA. Following the District Court's Opinion declaring the 1993 **Tulloch Rule** "invalid and set aside," USEPA and the USACE issued Joint Guidance on *de minimis* discharges. This case was affirmed on appeal in National Mining Association v. USACE on June 19, 1998 by the U.S. Court of Appeals for the District of Columbia Circuit. Subsequently, a revised definition of "**discharge of dredge material**" was issued by the USACE and USEPA in the May 10, 1999 *Federal Register*. This definition includes discharges associated with ditching land clearing activities, such as side casting of materials excavated from a ditch and clearing and grubbing a site to prepare it for construction.

Solid Waste Agency of Northern Cook County (SWANCC) v. USACE

On January 9, 2001, the U.S. Supreme Court limited the USACE' CWA jurisdiction over "**isolated" wetlands** in SWANCC v. USACE. This U.S. Supreme Court decision overturned a decision rendered by the 7th Circuit Court of Appeals. Under the SWANCC decision the Supreme Court refuted the use of the Migratory Bird Rule, which the USACE had promulgated under authority of the Commerce Clause to establish jurisdiction over wetlands which are not adjacent to waters of the United States. Subsequent to this decision, the USACE and USEPA issued a January 19, 2001 memorandum offering guidance on how the SWANCC decision would be applied when determining jurisdictional status of isolated, intrastate wetlands.

Rapanos v. USACE

The U.S. Supreme Court consolidated the Sixth Circuit Court's decision in *United States v. Rapanos* with another Sixth Circuit Court decision, *Carabell v. USACE*. Both cases involved the scope of CWA jurisdiction over wetlands that developers argued were beyond the scope of federal authority. The Sixth Circuit Court of Appeals ruled, in both instances, that the wetlands at issue were subject to CWA jurisdiction since they were adjacent to tributaries of navigable waters and a nexus existed between the wetlands and "waters of the United States." The U.S. Supreme Court ruled 4:1:4 in favor of the plaintiffs to overturn the Sixth Circuit Court's decisions. However, since the U.S. Supreme Court's decision did not constitute a majority opinion, the concurring opinion of Justice Kennedy stands as the controlling opinion. Justice Kennedy rejected the plurality interpretation of "waters of the United States," as inconsistent with the language and purpose of the CWA, and advanced a test that would require the USACE to establish a significant nexus between wetlands and navigable waters on a case-by-case basis. Under Justice Kennedy's "significant nexus" test, "wetlands possess the requisite nexus, and thus come within the statutory phrase 'navigable waters,' if the wetlands, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as "navigable."

4.2 June 5 2007 Joint United States Army Corps of Engineers and United States Environmental Protection Agency Memorandum

On June 5, 2007 and in response to the U.S. Supreme Court Decision in Rapanos v. USACE, the USACE and USEPA issued a joint memorandum (June 2007 Memorandum) describing how the agencies would apply the Rapanos decision to determining the extent of federal jurisdiction,

including federally jurisdictional wetlands. The joint memorandum identifies the following waters and wetlands over which the USACE and USEPA will assert jurisdiction:

- TNWs, which are waters that are currently, were in the past or could be in the future used for commerce. Typically, navigable waters extend from the sea to the head of navigation. In the past, the USACE has asserted jurisdiction over waters with an average annual flow of 10 cubic feet per second or more. Some USACE jurisdictions, in conjunction with the States within that USACE District's service area, identify navigable waters.
- Wetlands adjacent to navigable waters. Adjacent wetlands border another water, but may or may not have a direct surface connection to that water. For example, a wetland that is separated from a navigable river by a levee (man-made or natural), but that does not directly discharge into the river is considered to be adjacent. Such a wetland is, according to the June 2007 Joint Memorandum, subject to federal jurisdiction because it is adjacent to a navigable water.
- Non-navigable, relatively permanent tributaries (RPWs) to navigable waters. RPWs, at a minimum, exhibit a continuous flow for at least one season (three months) during a typical year.
- Wetlands that directly abut RPWs. In order for a wetland to abut a RPW, it must border that tributary and have a direct surface connection to that tributary. The surface connection does not, in and of itself, have to be a RPW. For example, a bottomland hardwood forest that borders a RPW and that is regularly flooded by that tributary during high water events abuts that tributary.

The USACE and USEPA have determined that the Rapanos decision requires the agencies to determine on a case-by-case basis jurisdiction over the following types of waters and wetlands:

- Non-RPWs to TNWs, RPWs to TNWs and other non-RPWs. A non-RPW has a well defined bed and bank that usually exhibits an ordinary high water mark. Non-RPWs typically flow for short durations, and can be either intermittent or ephemeral streams.
- Wetlands adjacent to non-RPWs (presumably, this includes wetlands that abut non-RPWs, even though the guidance does not specifically address this type of wetland).
- Wetlands that are adjacent to but that do not directly abut RPWs. A wetland that is adjacent to but that does not directly abut a RPW would be a wetland that is separated from a RPW by a levee.

The agency's decision regarding the jurisdictional status of these waters and wetlands is to be based on a factual analysis to determine whether or not these waters have a significant nexus to a TNW. The analysis is to consider hydrological and ecological attributes of the non-RPW and adjacent wetlands. This analysis is to consider physical, chemical, and biological attributes to

determine whether or not they contribute significantly to the navigable water into which the waters in question discharge.

In the June 5 Guidance, both agencies assert that this guidance applies to isolated wetlands in the context the SWANCC decision. In SWANCC, the U.S. Supreme Court invalidated the Migratory Bird Provision of the USACE and USEPA definition of waters of the United States. However, the U.S. Supreme Court did not invalidate other means by which the agencies could assert jurisdiction over isolated, intrastate wetlands and waters. An isolated wetland is a wetland that has no direct surface connection to another wetland or water body, such as a sinkhole feature in karst terrain.

The following narrative presents a jurisdictional assessment of wetlands and waters of the United States on the JCBGI site. These areas have been avoided in JCBGI's planning of the facility.

4.3 Jurisdictional Determinations

4.3.1 Wetland I

Wetland IA is identified on the NWI and exhibits wetland vegetation, hydrology and soils. This wetland does not have a direct surface water connection to other wetlands or surface waters. However, the size of this wetland suggests that is could provide substantial habitat for migratory birds dependent on wetlands. This isolated wetland drains a considerable portion of the site, thereby serving to trap nutrients and other potential pollutants and preventing them from entering and affecting navigable waters or their tributaries. It is RMT's opinion that Wetland I exhibits wetland characteristics and could be deemed by the USACE to be subject to federal jurisdiction.

4.3.2 Wetland J

Wetland J is identified on the NWI and exhibits wetland vegetation, hydrology and soils. This wetland does not have a direct surface water connection to other wetlands or surface waters. However, the size of this wetland suggests that it could provide substantial habitat for migratory birds dependent on wetlands. This isolated wetland drains a considerable portion of the site, thereby serving to trap nutrients and other potential pollutants and preventing them from entering and affecting navigable waters or their tributaries. It is RMT's opinion that Wetland I exhibits wetland characteristics and could be deemed by the USACE to be subject to federal jurisdiction.

4.3.3 Wetland K

Wetland K is in an area identified on the NWI as a palustrine, forested wetland. This wetland exhibits marginal wetland hydrology, vegetation and soil features. It is little different from adjoining areas exhibiting upland characteristics. Wetland K is isolated. Its small size (approximately 0.62 acres) and marginal wetland attributes suggest that this wetland insignificantly contributes to the chemical, biological, and physical integrity of the Great Pee Dee River. In RMT's opinion, Wetland K is an isolated wetland with no significant nexus to a TNW and is, therefore, not subject to federal jurisdiction.

4.3.4 Wetland C

Wetland C is identified on the NWI and exhibits wetland vegetation, hydrology and soils. This wetland has a direct, although circuitous, surface water connection to a navigable water. Moreover, the size of this wetland suggests that is could provide substantial habitat for migratory birds dependent on wetlands. The size and proximity of this wetland to Moore's Branch suggests that it may have a significant nexus to the river. As such, Wetland C would be subject to federal jurisdiction.

4.3.5 Floodplain

The floodplain adjacent to the Great Pee Dee River, which is a TNW, is subject to federal jurisdiction.

4.3.6 Drainage ditch

The drainage ditch that conveys surface runoff to the west, and that drains most of the site, has a direct surface connection to a tributary to a navigable water. As per USEPA Region 4 guidance, drainage ditches, even if constructed in an otherwise upland area, that connect a wetland to a TNW or tributary thereto are subject to federal jurisdiction. Therefore, this drainage ditch is subject to federal jurisdiction.

Section 5
References

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United States Army Corps of Engineers. 1987. Corps of Engineers Wetland Delineation Manual (on-line edition). Technical Report Y-87-1, U.S. Army Engineer Waterways Research Station, Vicksburg, Mississippi.

United States Fish and Wildlife Service. 1996. 1996 National List of Vascular Plant Species That Occur in Wetlands. Draft. United States Fish and Wildlife Service, Washington, DC. On-line edition.

Appendix A
Wetland Inventory Forms

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina

Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: A – A'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: A1

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Pinus taeda	Tree	FAC	9	Euonymus caroliniana	Shrub	FAC-
2	Acer rubrum	Tree	FACW+	10	Collinsonia serotina	Herb	NI
3	Cornus florida	Shrub	FACU	11	Euphorbia pubentissima	Herb	NI
4	Liquidambar styraciflua	Tree	FAC	12			
5	Quercus nigra	Tree	FAC	13			
6	Cercis canadensis	Shrub	FACU	14			
7	Smilax glauca	Vine	FAC	15			
8	Vitis rotundifolia	Vine	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 40

Remarks: Managed pine forest. Some recent clearing activity. Recent understory growth.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>24___(in.)
Depth to Saturated Soil ___>24___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
Water Marks
Drift Lines
Sediment Deposits
Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
Oxidized Root Channels in Upper 12"
Water Stained Leaves
Local Soil Survey Data
FAC-Neutral Test
Other (Explain in Remarks)

Remarks: South facing gently sloping hillside. Near north end of property.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 - 4					Degraded vegetation
4 - 14		10 YR 4/3			Clayey sand
14 - 24		2.5 y 4/1			Sandy clay

Hydric Soil Indicators:

	Histosol	Concretions
	Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
	Sulfidic Odor	Organic Streaking in Sandy Soils
	Aquic Moisture Regime	Listed on Local Hydric Soils List
	Reducing Conditions	Listed on National Hydric Soils List
✓	Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of prolonged saturation below 12”

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	✓	No			
Wetland Hydrology Present?	Yes	✓	No	Is this Sampling Point Within a Wetland?	Yes	✓ No
Hydric Soils Present?	Yes	✓	No			

Remarks: North – south transect between Paper Mill Road and railroad line. A1 is the northernmost point of the transect. Gently sloping, south facing hillside in a managed pine forest. Pine trees are 15 – 25 years old.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: A – A'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: A2

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Pinus taeda	Tree	FAC	9	Gordonia lasianthus	Tree	FACW
2	Acer rubrum	Tree	FACW+	10	Boehmeria cylindrical	Herb	FACW
3	Quercus laurifolia	Tree	FACW	11	Lobelia puberula	Herb	FACW
4	Liquidambar styraciflua	Tree	FAC	12			
5	Quercus nigra	Tree	FAC	13			
6	Chasmanthium sessiflorum	Herb	FAC+	14			
7	Smilax glauca	Vine	FAC	15			
8	Vitis rotundifolia	Vine	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: Managed pine forest. Some recent clearing activity. Recent understory growth.

HYDROLOGY

Recorded Data:
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other
- ✓ No Recorded Data Available

Field Observations:
- Depth of Surface Water _____(in.)
- Depth to Free Water in Pit ___>16___(in.)
- Depth to Saturated Soil ___12____(in.)

Wetland Hydrology Indicators:
Primary Indicators:
- inundated
- ✓ Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ✓ Oxidized Root Channels in Upper 12"
- ✓ Water Stained Leaves
- Local Soil Survey Data
- ✓ FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: Nearly level area north of south entrance road. Some evidence of standing water in low-lying areas. Dark stained leaves.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 - 3					Degraded vegetation
4 - 9		2.5 Y 3/2			Sandy clay
9 - 24		2.5 y 3/1			Sandy clay

Hydric Soil Indicators:

	Histosol	Concretions
	Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
	Sulfidic Odor	Organic Streaking in Sandy Soils
	Aquic Moisture Regime	Listed on Local Hydric Soils List
	Reducing Conditions	Listed on National Hydric Soils List
✓	Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of prolonged saturation below 9”

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes	No			
Wetland Hydrology Present?	✓	Yes	No	Is this Sampling Point Within a Wetland?	✓	Yes No
Hydric Soils Present?	✓	Yes	No			

Remarks: North – south transect between Paper Mill Road and railroad line. A2 is in a nearly level area. Standing water was observed in depressions and stump holes. Very dark soils at the surface and to depth. Evidence of standing water on tree trunks. This area appears to drain to the south, southeast. Loblolly bay demarcate the upland:wetland line.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: A – A'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: A3

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Pinus taeda	Tree	FAC	9	Gordonia lasianthus	Tree	FACW
2	Acer rubrum	Tree	FACW+	10	Boehmeria cylindrica	Herb	FACW
3	Quercus laurifolia	Tree	FACW	11	Lobelia puberula	Herb	FACW
4	Liquidambar styraciflua	Tree	FAC	12			
5	Quercus nigra	Tree	FAC	13			
6	Chasmanthium sessiflorum	Herb	FAC+	14			
7	Smilax glauca	Vine	FAC	15			
8	Vitis rotundifolia	Vine	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: Managed pine forest. Some recent clearing activity. Recent understory growth.

HYDROLOGY

Recorded Data:
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other
- ✓ No Recorded Data Available

Field Observations:
- Depth of Surface Water _____(in.)
- Depth to Free Water in Pit ___>16___(in.)
- Depth to Saturated Soil ___12____(in.)

Wetland Hydrology Indicators:
Primary Indicators:
- inundated
- ✓ Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ✓ Oxidized Root Channels in Upper 12"
- ✓ Water Stained Leaves
- Local Soil Survey Data
- ✓ FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: Nearly level area north of south entrance road. Some evidence of standing water in low-lying areas. Dark stained leaves.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 - 3					Degraded vegetation
4 - 9		2.5 Y 3/2			Sandy clay
9 - 24		2.5 y 3/1			Sandy clay

Hydric Soil Indicators:

	Histosol	Concretions
	Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
	Sulfidic Odor	Organic Streaking in Sandy Soils
	Aquic Moisture Regime	Listed on Local Hydric Soils List
	Reducing Conditions	Listed on National Hydric Soils List
✓	Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of prolonged saturation below 9”

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes	No			
Wetland Hydrology Present?	✓	Yes	No	Is this Sampling Point Within a Wetland?	✓	Yes No
Hydric Soils Present?	✓	Yes	No			

Remarks: North – south transect between Paper Mill Road and railroad line. A3 is in a nearly level area. Standing water was observed in depressions and stump holes. Very dark soils at the surface and to depth. Evidence of standing water on tree trunks. This area appears to drain to the south, southeast.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: A – A'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: A4

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Pinus taeda	Tree	FAC	9	Gordonia lasianthus	Tree	FACW
2	Acer rubrum	Tree	FACW+	10	Collinsonia serotina	Herb	NI
3	Quercus laurifolia	Tree	FACW	11	Euphorbia pubentissima	Herb	NI
4	Liquidambar styraciflua	Tree	FAC	12			
5	Quercus nigra	Tree	FAC	13			
6	Chasmanthium sessiflorum	Herb	FAC+	14			
7	Smilax glauca	Vine	FAC	15			
8	Vitis rotundifolia	Vine	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 80

Remarks: Managed pine forest. Some recent clearing activity. Recent understory growth.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>24___(in.)
Depth to Saturated Soil ___>24___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
Water Marks
Drift Lines
Sediment Deposits
Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
Oxidized Root Channels in Upper 12"
Water Stained Leaves
Local Soil Survey Data
FAC-Neutral Test
Other (Explain in Remarks)

Remarks: Gentle north facing slope north of south entrance road.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 - 4					Degraded vegetation
4 - 14		10 YR 4/3			Clayey sand
14 - 24		2.5 y 4/1			Sandy clay

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
✓	Gleyed or Low Chroma Colors		Other (Explain in Remarks)

Remarks: Evidence of prolonged saturation below 12”

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes		No	
Wetland Hydrology Present?		Yes	✓	No	Is this Sampling Point Within a Wetland? Yes ✓ No
Hydric Soils Present?		Yes	✓	No	

Remarks: North – south transect between Paper Mill Road and railroad line. A4 is the southernmost point of this transect. Gently sloping area north of the southernmost entrance road. Pine trees are 15 – 25 years old.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	Yes ✓ No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: B – B'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: B1

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Arundo donax	Herb	FACW	9			
2	Morella cerifera	Shrub	FAC+	10			
3	Scleria triglomerata	Herb	FACU	11			
4	Festuca rubra	Herb	FACU	12			
5	Solidago puberula	Herb	FACU	13			
6	Geranium carolinianum	Herb	NI	14			
7	Polygonum pensylvanicum	Herb	FACW+	15			
8	Juncus effusus	Herb	FACW+	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50

Remarks: Utility corridor east of railroad spur. This sampling location is the northernmost of this transect and is on a gentle south-facing slope under an overhead power transmission line.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>24___(in.)
Depth to Saturated Soil ___>18___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
Water Marks
Drift Lines
Sediment Deposits
Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
Oxidized Root Channels in Upper 12"
Water Stained Leaves
Local Soil Survey Data
FAC-Neutral Test
Other (Explain in Remarks)

Remarks: Utility corridor. Sampling location is in an area that receives surface flow from the west and north.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 12		10 YR 5/4			Clay
12 – 24		10 YR 5/2	2.5 Y 5/2		Sandy clay

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
Sulfidic Odor	Organic Streaking in Sandy Soils
Aquic Moisture Regime	Listed on Local Hydric Soils List
Reducing Conditions	Listed on National Hydric Soils List
Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of periodic saturation below 12”

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes		No		
Wetland Hydrology Present?		Yes	✓	No	Is this Sampling Point Within a Wetland?	Yes ✓ No
Hydric Soils Present?		Yes	✓	No		

Remarks: North - south transect in a utility corridor. Vegetation is managed and thinned. Utilities include an overhead power transmission line and a natural gas pipeline. A railroad parallels this transect. This sampling location is on a gentle south-facing slope that appears to receive surface runoff from the north and west.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	Yes ✓ No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: B – B'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: B2

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Arundo donax	Herb	FACW	9	Andropogon virginicus	Herb	FAC-
2	Dichanthelium strigosum	Herb	FAC	10	Morella cerifera	Shrub	FAC+
3	Scleria verticillata	Herb	OBL	11			
4	Rhexia virginica	Herb	FACW+	12			
5	Solidago gigantean	Herb	FACW	13			
6	Solidago rugosa	Herb	FAC	14			
7	Polygonum pensylvanicum	Herb	FACW+	15			
8	Juncus effusus	Herb	FACW+	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: Utility corridor east of railroad spur. This sampling location is in an area that receives surface runoff and subsurface flow from the west and north. Evidence of prolonged surface saturation. Rough rosette grass is the dominant plant in the flow. Wax myrtle is the dominant plant between the utility corridor and adjoining railroad right-of-way.

HYDROLOGY

Recorded Data:
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other
- ✓ No Recorded Data Available

Field Observations:
- Depth of Surface Water _____(in.)
- Depth to Free Water in Pit ___>24___(in.)
- Depth to Saturated Soil ___11___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
- inundated
- ✓ Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- ✓ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ✓ Oxidized Root Channels in Upper 12"
- Water Stained Leaves
- Local Soil Survey Data
- ✓ FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: Utility corridor. Wetland hydrology is satisfied by both primary and secondary indicators. This area was saturated at the surface during a prior site visit, but was dry at the surface at the time of the field investigation.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 8		2.5 Y 5/4			Clayey sand
8 – 24		2.5 Y 5/2	5Y 6/2		Sandy clay

Hydric Soil Indicators:

	Histosol	Concretions
	Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
	Sulfidic Odor	Organic Streaking in Sandy Soils
	Aquic Moisture Regime	Listed on Local Hydric Soils List
	Reducing Conditions	Listed on National Hydric Soils List
✓	Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of prolonged saturation below 8”

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes	No			
Wetland Hydrology Present?	✓	Yes	No	Is this Sampling Point Within a Wetland?	✓	Yes No
Hydric Soils Present?	✓	Yes	No			

Remarks: North - south transect in a utility corridor. Vegetation is managed and thinned. Utilities include an overhead power transmission line and a natural gas pipeline. A railroad parallels this transect. This sampling location is on a gently sloping area (2 – 4%) that appears to receive surface runoff from the north and west. This area was saturated at the surface during a prior site visit, but was dry at the surface at the time of the field investigation. Roughhair rosette grass is the dominant species in the wetland. Wax myrtle is the dominant species between the utility corridor and the railroad. Giant cane and goldenrod are the dominant species to the east.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	Yes ✓ No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: B – B'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: B3

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Arundo donax	Herb	FACW	9	Andropogon virginicus	Herb	FAC-
2	Juncus megacephalus	Herb	OBL	10	Polygonum hydropiper	Herb	OBL
3	Scleria verticillata	Herb	OBL	11			
4	Rhexia virginica	Herb	FACW+	12			
5	Solidago gigantean	Herb	FACW	13			
6	Solidago rugosa	Herb	FAC	14			
7	Polygonum pensylvanicum	Herb	FACW+	15			
8	Juncus effusus	Herb	FACW+	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: Utility corridor east of railroad spur. This sampling location is north of the southernmost entrance road to the site. Evidence of prolonged surface saturation.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>24___(in.)
Depth to Saturated Soil ___15___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
Water Marks
Drift Lines
Sediment Deposits
✓ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
✓ Oxidized Root Channels in Upper 12"
Water Stained Leaves
Local Soil Survey Data
✓ FAC-Neutral Test
Other (Explain in Remarks)

Remarks: Utility corridor. Wetland hydrology is satisfied by both primary and secondary indicators. This area was saturated at the surface during a prior site visit, but was dry at the surface at the time of the field investigation.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 8		2.5 Y 5/4			Clayey sand
8 – 24		2.5 Y 5/2	5Y 6/2		Sandy clay

Hydric Soil Indicators:

	Histosol	Concretions
	Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
	Sulfidic Odor	Organic Streaking in Sandy Soils
	Aquic Moisture Regime	Listed on Local Hydric Soils List
	Reducing Conditions	Listed on National Hydric Soils List
✓	Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of prolonged saturation below 8”

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes	No			
Wetland Hydrology Present?	✓	Yes	No	Is this Sampling Point Within a Wetland?	✓	Yes No
Hydric Soils Present?	✓	Yes	No			

Remarks: North - south transect in a utility corridor. Vegetation is managed and thinned. Utilities include an overhead power transmission line and a natural gas pipeline. A railroad parallels this transect. This sampling location is north of the southernmost entrance road to the site. This area was saturated at the surface during a prior site visit, but was dry at the surface at the time of the field investigation.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	Yes ✓ No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: B – B'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: B4

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Arundo donax	Herb	FACW	9	Andropogon virginicus	Herb	FAC-
2	Morella cerifera	Shrub	FAC+	10			
3	Scleria triglomerata	Herb	FACU	11			
4	Festuca rubra	Herb	FACU	12			
5	Solidago puberula	Herb	FACU	13			
6	Geranium carolinianum	Herb	NI	14			
7	Polygonum pensylvanicum	Herb	FACW+	15			
8	Juncus effusus	Herb	FACW+	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 46

Remarks: Utility corridor east of railroad spur. This sampling location is the southernmost of this transect and is on nearly level land south of the southernmost entrance road to the site. A ditch crosses the utility corridor south of the sampling location.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>24___(in.)
Depth to Saturated Soil ___>24___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
Water Marks
Drift Lines
Sediment Deposits
Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
Oxidized Root Channels in Upper 12"
Water Stained Leaves
Local Soil Survey Data
FAC-Neutral Test
Other (Explain in Remarks)

Remarks: Utility corridor. Sampling location is south of the southernmost entrance road to the site.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 14		10 YR 5/4			Clay
14 – 24		10 YR 5/2	2.5 Y 5/2		Sandy clay

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
Sulfidic Odor	Organic Streaking in Sandy Soils
Aquic Moisture Regime	Listed on Local Hydric Soils List
Reducing Conditions	Listed on National Hydric Soils List
Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of periodic saturation below 14”

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	✓	No			
Wetland Hydrology Present?	Yes	✓	No	Is this Sampling Point Within a Wetland?	Yes	✓ No
Hydric Soils Present?	Yes	✓	No			

Remarks: North - south transect in a utility corridor. Vegetation is managed and thinned. Utilities include an overhead power transmission line and a natural gas pipeline. A railroad parallels this transect. This sampling location is south of the southernmost entrance road to the site. A ditch crosses the utility corridor south of the sampling location.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: C – C'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: C1

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Pinus taeda	Tree	FAC	9	Cornus florida	Shrub	FACU
2	Acer rubrum	Tree	FACW+	10	Boehmeria cylindrica	Herb	FACW
3	Quercus laurifolia	Tree	FACW	11	Lobelia puberula	Herb	FACW
4	Liquidambar styraciflua	Tree	FAC	12			
5	Quercus nigra	Tree	FAC	13			
6	Chasmanthium sessiflorum	Herb	FAC+	14			
7	Smilax glauca	Vine	FAC	15			
8	Carex cephalophora	Herb	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 90

Remarks: Managed pine forest. Recently cleared.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>24___(in.)
Depth to Saturated Soil ___>18___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
Water Marks
Drift Lines
Sediment Deposits
Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
Oxidized Root Channels in Upper 12"
Water Stained Leaves
Local Soil Survey Data
✓ FAC-Neutral Test
Other (Explain in Remarks)

Remarks: Managed pine plantation that has recently been cleared. Some evidence of standing water, but the area had received recent heavy rains. No evidence of prolonged surface saturation was seen.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 10		10 YR 3/3			Sandy clay
10 – 14		10 YR 3/2			Sandy clay
14 – 24		2.5 Y 5/2	2.5 Y 5/4	50:50, low contrast	Sandy clay

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
Sulfidic Odor	Organic Streaking in Sandy Soils
Aquic Moisture Regime	Listed on Local Hydric Soils List
Reducing Conditions	Listed on National Hydric Soils List
Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of prolonged saturation below 14". No evidence of prolonged saturation in upper 12"

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes		No	
Wetland Hydrology Present?		Yes	✓	No	Is this Sampling Point Within a Wetland? Yes ✓ No
Hydric Soils Present?		Yes	✓	No	

Remarks: East - west transect in a managed pine forest that had recently been cleared of undergrowth. This sampling location is the easternmost point of the transect. Location slopes gently to the west. Some evidence of surface saturation in ruts created by timber harvesting equipment. Scant evidence of wetland hydrology or wetland soils. This sampling location is on the wetland boundary.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: C – C'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: C2

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Pinus taeda	Tree	FAC	9	Vitis rotundifolia	Vine	FAC
2	Acer rubrum	Tree	FACW+	10	Boehmeria cylindrica	Herb	FACW
3	Quercus laurifolia	Tree	FACW	11	Lobelia puberula	Herb	FACW
4	Liquidambar styraciflua	Tree	FAC	12	Commelina communis	Herb	FAC
5	Quercus nigra	Tree	FAC	13			
6	Chasmanthium sessiflorum	Herb	FAC+	14			
7	Smilax glauca	Vine	FAC	15			
8	Carex cephalophora	Herb	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: Managed pine forest. Recently cleared. East – west transect west of a recently cleared area.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>18___(in.)
Depth to Saturated Soil ___14___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
Water Marks
Drift Lines
Sediment Deposits
Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
✓ Oxidized Root Channels in Upper 12"
✓ Water Stained Leaves
Local Soil Survey Data
✓ FAC-Neutral Test
Other (Explain in Remarks)

Remarks: Managed pine plantation that has recently been cleared. Some evidence of standing water, but the area had received recent heavy rains. Evidence of prolonged surface saturation or high water table. Soils are sandy and may drain quickly. No primary hydrology indicators, but three secondary indicators were observed.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 10		Gley 2 4/5B			Sandy clay
10 – 24		7.5 YR 5/1	7.5 YR 3/2	40:60 poor contrast	Sandy clay

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
✓	Reducing Conditions		Listed on National Hydric Soils List
✓	Gleyed or Low Chroma Colors		Other (Explain in Remarks)

Remarks: Evidence of prolonged saturation from surface to 24".

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes	No			
Wetland Hydrology Present?	✓	Yes	No	Is this Sampling Point Within a Wetland?	✓	Yes No
Hydric Soils Present?	✓	Yes	No			

Remarks: East - west transect in a managed pine forest that had recently been cleared of undergrowth. This sampling location is adjacent to a recently cleared area. The wetland has been partially ditched. The sampling location is adjacent to the ditch. The ditch is a low point, and the immediate area drains to the ditch.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: C – C'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: C3

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Viburnum nudum	Shrub	FACW+	9	Vitis rotundifolia	Vine	FAC
2	Acer rubrum	Tree	FACW+	10	Polystichum aristocoides	Herb	FAC
3	Quercus laurifolia	Tree	FACW	11	Lobelia puberula	Herb	FACW
4	Liquidambar styraciflua	Tree	FAC	12	Commelina communis	Herb	FAC
5	Quercus nigra	Tree	FAC	13	Quercus pumila	Shrub	NI
6	Chasmanthium sessiflorum	Herb	FAC+	14			
7	Smilax glauca	Vine	FAC	15			
8	Carex cephalophora	Herb	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 93

Remarks: Shrubby area west of a managed pine forest. Area is partially drained by two ditches.

HYDROLOGY

Recorded Data:
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other
- ✓ No Recorded Data Available

Field Observations:
- Depth of Surface Water _____(in.)
- Depth to Free Water in Pit ___>18___(in.)
- Depth to Saturated Soil ___16___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
- inundated
- Saturated in Upper 12 Inches
- ✓ Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ✓ Oxidized Root Channels in Upper 12"
- ✓ Water Stained Leaves
- Local Soil Survey Data
- ✓ FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: Managed pine plantation that has recently been cleared. Some evidence of standing water, but the area had received recent heavy rains. Evidence of prolonged surface saturation or high water table. Soils are sandy and may drain quickly. Water marks on tree trunks and some vegetation were observed. Three secondary indicators were observed.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 3					Organic litter
3 – 12		10 YR 5/1			Sandy clay
12 - 24		10 YR 5/2	10 YR 4/1	50:50 poor contrast	Sandy clay

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
✓	Reducing Conditions		Listed on National Hydric Soils List
✓	Gleyed or Low Chroma Colors		Other (Explain in Remarks)

Remarks: Evidence of prolonged saturation from surface to 24".

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes	No				
Wetland Hydrology Present?	✓	Yes	No	Is this Sampling Point Within a Wetland?	✓	Yes	No
Hydric Soils Present?	✓	Yes	No				

Remarks: East - west transect in a managed pine forest that had recently been cleared of undergrowth. This sampling location is a shrubby area west of a recently cleared area. The wetland has been partially ditched, and the sampling location is between two ditches. Evidence of surface saturation was observed. Dense undergrowth was present at the time of the field observations.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: D – D'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: D1

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Pinus taeda	Tree	FAC	9	Vitis rotundifolia	Vine	FAC
2	Acer rubrum	Tree	FACW+	10	Monarda punctata	Herb	FAC
3	Euonymus americanus	Shrub	FAC-	11	Lobelia puberula	Herb	FACW
4	Liquidambar styraciflua	Tree	FAC	12	Commelina communis	Herb	FAC
5	Quercus pumila	Shrub	NI	13	Euphorbia pubentissima	Herb	NI
6	Vaccinium arboretum	Shrub	FACU	14			
7	Smilax glauca	Vine	FAC	15			
8	Carex cephalophora	Herb	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 72

Remarks: Pine forest surrounding wooded wetland. Pine trees appear to be 10 to 15 years old.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>24___(in.)
Depth to Saturated Soil ___24___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
Water Marks
Drift Lines
Sediment Deposits
Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
✓ Oxidized Root Channels in Upper 12"
Water Stained Leaves
Local Soil Survey Data
FAC-Neutral Test
Other (Explain in Remarks)

Remarks: Managed pine plantation that has not been thinned in several years. Dense undergrowth. Soils are sandy and may drain quickly.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 - 3					Organic litter
3 - 14		7.5 YR 4/3			Clayey sand
14 - 24		7.5 YR 5/2			Clayey sand

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
Sulfidic Odor	Organic Streaking in Sandy Soils
Aquic Moisture Regime	Listed on Local Hydric Soils List
Reducing Conditions	Listed on National Hydric Soils List
Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of periodic saturation below 14".

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes		No	
Wetland Hydrology Present?		Yes	✓	No	Is this Sampling Point Within a Wetland? Yes ✓ No
Hydric Soils Present?		Yes	✓	No	

Remarks: North – south transect across wooded wetland. Northernmost sampling location is in a pine forest that has not been recently thinned. Pine forest surrounds a wooded wetland. No obvious drainage from the wetland. Isolated depression that has a mixture of dominant plant communities, including titi dominated, wax myrtle dominated, and red maple/loblolly bay dominated. Evidence of standing water, which was observed during a prior site visit. No standing water at the time of the field investigation, in spite of recent heavy rains.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina

Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: D – D'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: D2

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Cyrilla racemiflora	Shrub	FACW	9	Vitis rotundifolia	Vine	FAC
2	Acer rubrum	Tree	FACW+	10	Athyrium filix-femina	Herb	FAC
3	Morella cerifera	Shrub	FAC+	11	Lobelia puberula	Herb	FACW
4	Liquidambar styraciflua	Tree	FAC	12	Commelina communis	Herb	FAC
5	Gordonia lasianthus	Tree	FACW	13			
6	Vaccinium corymbosum	Herb	FACW	14			
7	Smilax glauca	Vine	FAC	15			
8	Carex cephalophora	Herb	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: Wooded depression in a pine forest. Depression has areas that are titi dominated, wax-myrtle dominated, and red maple/loblolly bay dominated.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>24___(in.)
Depth to Saturated Soil ___13___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
✓ Water Marks
Drift Lines
✓ Sediment Deposits
Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
✓ Oxidized Root Channels in Upper 12"
✓ Water Stained Leaves
Local Soil Survey Data
FAC-Neutral Test
Other (Explain in Remarks)

Remarks: Wooded depression surrounded by a managed pine plantation. This is a low spot that collects and retains water. Standing water was observed in the late spring. The depression was dry at the time of the field work.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 8		7.5 YR 4/2			Sandy clay
8 – 18		7.5 YR 5/2			Sandy clay
18 – 24		7.5 YR 5/2	10 YR 4/2		Sandy clay

Hydric Soil Indicators:

	Histosol	Concretions
	Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
	Sulfidic Odor	Organic Streaking in Sandy Soils
	Aquic Moisture Regime	Listed on Local Hydric Soils List
	Reducing Conditions	Listed on National Hydric Soils List
✓	Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Upper 8" has low chroma. Evidence of prolonged saturation below 8.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes	No			
Wetland Hydrology Present?	✓	Yes	No	Is this Sampling Point Within a Wetland?	✓	Yes No
Hydric Soils Present?	✓	Yes	No			

Remarks: North – south transect across a wooded depression that is surrounded by a managed pine plantation. The depression has several different vegetation types, including titi dominated, wax myrtle dominated, and red maple/loblolly bay dominated areas. Evidence of prolonged standing water was observed. The depression has no obvious surface connection to other wetlands or waters.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: D – D'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: D3

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Pinus taeda	Tree	FAC	9	Vitis rotundifolia	Vine	FAC
2	Acer rubrum	Tree	FACW+	10	Monarda punctata	Herb	FAC
3	Euonymus americanus	Shrub	FAC-	11	Lobelia puberula	Herb	FACW
4	Liquidambar styraciflua	Tree	FAC	12	Commelina communis	Herb	FAC
5	Quercus pumila	Shrub	NI	13	Euphorbia pubentissima	Herb	NI
6	Vaccinium arboretum	Shrub	FACU	14			
7	Smilax glauca	Vine	FAC	15			
8	Carex cephalophora	Herb	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 72

Remarks: Pine forest that surrounds a wooded depression. Pine trees appear to be 10 to 15 years old.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>24___(in.)
Depth to Saturated Soil ___24___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
Water Marks
Drift Lines
Sediment Deposits
Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
✓ Oxidized Root Channels in Upper 12"
Water Stained Leaves
Local Soil Survey Data
FAC-Neutral Test
Other (Explain in Remarks)

Remarks: Managed pine plantation that has not been thinned in several years. Dense undergrowth. Soils are sandy and may drain quickly.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 2					Organic litter
2 – 13		10 YR 4/3			Sandy clay
13 - 24		10 YR 5/2			Sandy clay

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
Sulfidic Odor	Organic Streaking in Sandy Soils
Aquic Moisture Regime	Listed on Local Hydric Soils List
Reducing Conditions	Listed on National Hydric Soils List
Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of periodic saturation below 13".

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes		No	
Wetland Hydrology Present?		Yes	✓	No	Is this Sampling Point Within a Wetland? Yes ✓ No
Hydric Soils Present?		Yes	✓	No	

Remarks: North – south transect across wooded wetland. Southernmost sampling location is in a pine forest that has not been recently thinned. Pine forest surrounds a wooded depression. The depression has evidence of prolonged surface saturation/flooding, but was dry at the time of the field investigation. Standing water was observed in the depression during a prior site visit. The depression has no obvious surface discharge to other wetlands or waters.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site		Date: 3 Oct. 2009
Applicant/Owner:	JCBGI		County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.		State: South Carolina
Do Normal Circumstances Exist on the Site?	✓ Yes	No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes	✓ No	Transect ID: E – E'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes	✓ No	Plot ID: E1

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Pinus taeda	Tree	FAC	9	Cornus florida	Shrub	FACU
2	Acer rubrum	Tree	FACW+	10	Vaccinium arboreum	Shrub	FACU
3	Quercus laurifolia	Tree	FACW	11	Vitis rotundfolia	Vine	FAC
4	Liquidambar styraciflua	Tree	FAC	12	Euphorbia pubentissima	Herb	NI
5	Quercus nigra	Tree	FAC	13			
6	Chasmanthium sessiflorum	Herb	FAC+	14			
7	Smilax glauca	Vine	FAC	15			
8	Carex cephalophora	Herb	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 75

Remarks: Managed pine forest. Sampling location is north of a wooded depression.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>24___(in.)
Depth to Saturated Soil ___>18___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
Water Marks
Drift Lines
Sediment Deposits
Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
Oxidized Root Channels in Upper 12"
Water Stained Leaves
Local Soil Survey Data
FAC-Neutral Test
Other (Explain in Remarks)

Remarks: Managed pine plantation. Sampling location is north of a wooded depression. Pine trees appear to be 15 – 20 years old. Hardwoods are understory vegetation that has not been cleared. FAC neutral test is 50:50 and does not satisfy the secondary hydrology indicator.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 10		10 YR 3/3			Sandy clay
10 – 14		10 YR 3/2			Sandy clay
14 – 24		2.5 Y 5/2	2.5 Y 5/4	50:50, low contrast	Sandy clay

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
Sulfidic Odor	Organic Streaking in Sandy Soils
Aquic Moisture Regime	Listed on Local Hydric Soils List
Reducing Conditions	Listed on National Hydric Soils List
Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of periodic saturation below 14". No evidence of prolonged saturation in upper 12"

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes		No	
Wetland Hydrology Present?		Yes	✓	No	Is this Sampling Point Within a Wetland? Yes ✓ No
Hydric Soils Present?		Yes	✓	No	

Remarks: North – south transect in a managed pine forest. This sampling location is north of a wooded depression. Some evidence of ditching to drain the pine plantation into the depression. Land is nearly level.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: E – E'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: E2

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Cyrilla racemiflora	Shrub	FACW	9	Vitis rotundifolia	Vine	FAC
2	Acer rubrum	Tree	FACW+	10	Athyrium filix-femina	Herb	FAC
3	Carex glaucescens	Herb	OBL	11	Lobelia puberula	Herb	FACW
4	Liquidambar styraciflua	Tree	FAC	12	Commelina communis	Herb	FAC
5	Gordonia lasianthus	Tree	FACW	13	Scleria triglomerata	Herb	FAC
6	Vaccinium corymbosum	Herb	FACW	14	Morella cerifera	Shrub	FAC+
7	Smilax glauca	Vine	FAC	15			
8	Cyrilla racemiflora	Shrub	FACW	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: Wooded depression in a pine forest. Sampling location is a titi dominated area surrounded by red maple and loblolly bay dominated canopy.

HYDROLOGY

Recorded Data:
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other
- ✓ No Recorded Data Available

Field Observations:
- Depth of Surface Water _____(in.)
- Depth to Free Water in Pit ___>24___(in.)
- Depth to Saturated Soil ___10___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
- inundated
- Saturated in Upper 12 Inches
- ✓ Water Marks
- Drift Lines
- ✓ Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ✓ Oxidized Root Channels in Upper 12"
- ✓ Water Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: Wooded depression surrounded by a managed pine plantation. This is a low spot that collects and retains water. Standing water was observed in the late spring. The depression was dry at the time of the field work.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 8		7.5 YR 4/2			Sandy clay
8 – 18		7.5 YR 5/2			Sandy clay
18 – 24		7.5 YR 5/2	10 YR 4/2		Sandy clay

Hydric Soil Indicators:

	Histosol	Concretions
	Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
	Sulfidic Odor	Organic Streaking in Sandy Soils
	Aquic Moisture Regime	Listed on Local Hydric Soils List
	Reducing Conditions	Listed on National Hydric Soils List
✓	Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Upper 8" has low chroma. Evidence of prolonged saturation below 8.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes	No			
Wetland Hydrology Present?	✓	Yes	No	Is this Sampling Point Within a Wetland?	✓	Yes No
Hydric Soils Present?	✓	Yes	No			

Remarks: North – south transect across a wooded depression that is surrounded by a managed pine plantation. The depression has several different vegetation types, including titi dominated, wax myrtle dominated, and red maple/loblolly bay dominated areas. This sampling location was in a titi dominated area that was surrounded by a red maple/loblolly bay dominated area. Evidence of prolonged standing water was observed. Several ditches appear to drain adjoining uplands. No obvious surface connection to other wetlands or waters was observed. The depression was dry at the time of the field investigation, but standing water was observed during a prior site visit.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: E – E'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: E3

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Cyrilla racemiflora	Shrub	FACW	9	Vitis rotundifolia	Vine	FAC
2	Acer rubrum	Tree	FACW+	10	Athyrium filix-femina	Herb	FAC
3	Carex glaucescens	Herb	OBL	11	Lobelia puberula	Herb	FACW
4	Liquidambar styraciflua	Tree	FAC	12	Commelina communis	Herb	FAC
5	Gordonia lasianthus	Tree	FACW	13	Scleria triglomerata	Herb	FAC
6	Vaccinium corymbosum	Herb	FACW	14	Morella cerifera	Shrub	FAC+
7	Smilax glauca	Vine	FAC	15			
8	Carex cephalophora	Herb	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: Wooded depression in a pine forest. Sampling location has a wax myrtle understory.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>24___(in.)
Depth to Saturated Soil ___13___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
✓ Water Marks
Drift Lines
✓ Sediment Deposits
Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
✓ Oxidized Root Channels in Upper 12"
✓ Water Stained Leaves
Local Soil Survey Data
FAC-Neutral Test
Other (Explain in Remarks)

Remarks: Wooded depression surrounded by a managed pine plantation. This is a low spot that collects and retains water. Standing water was observed in the late spring. The depression was dry at the time of the field work.

SOILS:

Map Unit Name (Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 8		7.5 YR 4/2			Sandy clay
8 – 18		7.5 YR 5/2			Sandy clay
18 – 24		7.5 YR 5/2	10 YR 4/2		Sandy clay

Hydric Soil Indicators:

	Histosol	Concretions
	Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
	Sulfidic Odor	Organic Streaking in Sandy Soils
	Aquic Moisture Regime	Listed on Local Hydric Soils List
	Reducing Conditions	Listed on National Hydric Soils List
✓	Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Upper 8" has low chroma. Evidence of prolonged saturation below 8.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes	No			
Wetland Hydrology Present?	✓	Yes	No	Is this Sampling Point Within a Wetland?	✓	Yes No
Hydric Soils Present?	✓	Yes	No			

Remarks: North – south transect across a wooded depression that is surrounded by a managed pine plantation. The depression has several different vegetation types, including titi dominated, wax myrtle dominated, and red maple/loblolly bay dominated areas. Evidence of prolonged standing water was observed. Several ditches appear to drain adjoining uplands. No obvious surface connection to other wetlands or waters was observed. The depression was dry at the time of the field investigation, but standing water was observed during a prior site visit.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: E – E'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: E4

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Pinus taeda	Tree	FAC	9	Cornus florida	Shrub	FACU
2	Acer rubrum	Tree	FACW+	10	Vaccinium arboreum	Shrub	FACU
3	Quercus pumila	Shurb	NI	11	Vitis rotundfolia	Vine	FAC
4	Liquidambar styraciflua	Tree	FAC	12	Euphorbia pubentissima	Herb	NI
5	Quercus nigra	Tree	FAC	13	Euonymus Americana	Shrub	FAC-
6	Chasmanthium sessiflorum	Herb	FAC+	14			
7	Smilax glauca	Vine	FAC	15			
8	Carex cephalophora	Herb	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 62

Remarks: Managed pine forest. South of wooded depression. Land slopes gently to the north.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>24___(in.)
Depth to Saturated Soil ___>24___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
Water Marks
Drift Lines
Sediment Deposits
Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
Oxidized Root Channels in Upper 12"
Water Stained Leaves
Local Soil Survey Data
FAC-Neutral Test
Other (Explain in Remarks)

Remarks: Managed pine plantation. Sampling location is south of a wooded depression. Pine trees appear to be 15 – 20 years old. Hardwoods are understory vegetation that has not been cleared.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 3					Organic litter
3 – 16		7.5YR 5/4			Sandy clay
16 - 24		7.5 YR 4/3	7.5 YR 5/2	60:40 poor contrast	Sandy clay

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
Sulfidic Odor	Organic Streaking in Sandy Soils
Aquic Moisture Regime	Listed on Local Hydric Soils List
Reducing Conditions	Listed on National Hydric Soils List
Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: No evidence of prolonged saturation in upper 24”

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes		No	
Wetland Hydrology Present?		Yes	✓	No	Is this Sampling Point Within a Wetland? Yes ✓ No
Hydric Soils Present?		Yes	✓	No	

Remarks: North – south t transect in a managed pine forest. This sampling location is south of a wooded depression. Some evidence of ditching to drain the pine plantation into the depression. The land at this sampling location slopes to the north. Slope is gentle (3 – 5%).

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: F – F'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: F1

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Pinus taeda	Tree	FAC	9	Vaccinium arboreum	Shrub	FACU
2	Acer rubrum	Tree	FACW+	10	Monarda punctata	Herb	FAC
3	Euphorbia pubentissima	Herb	NI	11	Chamaesyce nutans	Herb	FACU
4	Liquidambar styraciflua	Tree	FAC	12	Quercus pumila	Shrub	NI
5	Euonymus americanus	Shrub	FAC-	13	Vitis rotundifolia	Vine	FAC
6	Chasmanthium sessiflorum	Herb	FAC+	14			
7	Smilax glauca	Vine	FAC	15			
8	Carex cephalophora	Herb	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 63

Remarks: Managed pine forest. Pine trees appear to be 5 to 10 years old. Dense undergrowth.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>24___(in.)
Depth to Saturated Soil ___>24___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
Water Marks
Drift Lines
Sediment Deposits
Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
Oxidized Root Channels in Upper 12"
Water Stained Leaves
Local Soil Survey Data
FAC-Neutral Test
Other (Explain in Remarks)

Remarks: Managed pine plantation. Several windrows from former timber harvesting were seen and crossed. No evidence of standing water or prolonged saturation.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 4					Organic litter
4 – 16		7.5 YR 5/4			Clayey sand
18 – 24		10 YR 4/3			Clayey sand

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
Sulfidic Odor	Organic Streaking in Sandy Soils
Aquic Moisture Regime	Listed on Local Hydric Soils List
Reducing Conditions	Listed on National Hydric Soils List
Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: No evidence of prolonged saturation to 24”

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes		No	
Wetland Hydrology Present?		Yes	✓	No	Is this Sampling Point Within a Wetland? Yes ✓ No
Hydric Soils Present?		Yes	✓	No	

Remarks: North - south transect in a managed pine forest that is identified on the National Wetland Inventory as a wooded wetland. This sampling location is the northernmost point of this transect, and is south of an east – west road. Location slopes gently to the west. No evidence of saturation. Soils are sandy and well drained.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: F – F'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: F2

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Prunus serotina	Tree	FACU	9	Vaccinium arboreum	Shrub	FACU
2	Acer rubrum	Tree	FACW+	10	Monarda punctata	Herb	FAC
3	Euphorbia pubentissima	Herb	NI	11	Chamaesyce nutans	Herb	FACU
4	Liquidambar styraciflua	Tree	FAC	12	Quercus pumila	Shrub	NI
5	Euonymus americanus	Shrub	FAC-	13	Vitis rotundifolia	Vine	FAC
6	Chasmanthium sessiflorum	Herb	FAC+	14			
7	Smilax glauca	Vine	FAC	15			
8	Carex cephalophora	Herb	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 54

Remarks: Hardwood dominated area surrounded by a managed pine forest. Dense undergrowth.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>24___(in.)
Depth to Saturated Soil ___>24___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
Water Marks
Drift Lines
Sediment Deposits
Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
✓ Oxidized Root Channels in Upper 12"
Water Stained Leaves
Local Soil Survey Data
FAC-Neutral Test
Other (Explain in Remarks)

Remarks: Hardwood dominated area surrounded by a managed pine plantation. Evidence of periodic saturation.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 3					Organic litter
4 – 14		7.5 YR 5/4			Clayey sand
14 – 24		5 YR 5/3	5 YR 4/2	50:50, poor contrast	Sandy clay

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
Sulfidic Odor	Organic Streaking in Sandy Soils
Aquic Moisture Regime	Listed on Local Hydric Soils List
Reducing Conditions	Listed on National Hydric Soils List
Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of periodic saturation below 14".

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes		No		
Wetland Hydrology Present?		Yes	✓	No	Is this Sampling Point Within a Wetland?	Yes ✓ No
Hydric Soils Present?		Yes	✓	No		

Remarks: North - south transect in a managed pine forest that is identified on the National Wetland Inventory as a wooded wetland. This sampling location is in an area dominated by hardwood trees and that is surrounded by planted pines. There is some evidence of periodic saturation deeper than 14" BGS, but not sufficient to develop wetland hydrology or wetland soils. This is a nearly level area that may receive surface runoff from and that may drain more slowly than adjoining areas.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	✓ Yes No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: F – F'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: F3

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Pinus taeda	Tree	FAC	9	Vaccinium arboreum	Shrub	FACU
2	Acer rubrum	Tree	FACW+	10	Monarda punctata	Herb	FAC
3	Quercus laurifolia	Tree	FACW	11	Lobelia puberula	Herb	FACW
4	Liquidambar styraciflua	Tree	FAC	12	Quercus pumila	Shrub	NI
5	Euonymus americanus	Shrub	FAC-	13	Vitis rotundifolia	Vine	FAC
6	Chasmanthium sessiflorum	Herb	FAC+	14			
7	Smilax glaluca	Vine	FAC	15			
8	Carex cephalophora	Herb	FAC	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 81

Remarks: Managed pine forest. Pine trees appear to be 10 to 15 years old. Dense undergrowth.

HYDROLOGY

Recorded Data:
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other
- ✓ No Recorded Data Available

Field Observations:
- Depth of Surface Water _____(in.)
- Depth to Free Water in Pit ___>24___(in.)
- Depth to Saturated Soil ___>18___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
- inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12"
- Water Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: Managed pine plantation. Several windrows from former timber harvesting were seen and crossed. No evidence of standing water or prolonged saturation.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 4		10 YR 3/3			Organic litter
4 – 16		7.5 YR 5/4			Clayey sand
18 – 24		10 YR 4/3			Clayey sand

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
Sulfidic Odor	Organic Streaking in Sandy Soils
Aquic Moisture Regime	Listed on Local Hydric Soils List
Reducing Conditions	Listed on National Hydric Soils List
Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: No evidence of prolonged saturation to 24”

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes		No	
Wetland Hydrology Present?		Yes	✓	No	Is this Sampling Point Within a Wetland? Yes ✓ No
Hydric Soils Present?		Yes	✓	No	

Remarks: North - south transect in a managed pine forest that is identified on the National Wetland Inventory as a wooded wetland. This sampling location is the southernmost point of this transect. Location slopes gently to the west. No evidence of saturation. Soils are sandy and well drained. Several windrows from prior timber harvesting were observed.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	Yes ✓ No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: G – G'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: G1

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Arundo donax	Herb	FACW	9	Dichanthelium strigosum	Herb	FAC
2	Morella cerifera	Shrub	FAC+	10			
3	Scleria triglomerata	Herb	FACU	11			
4	Festuca rubra	Herb	FACU	12			
5	Solidago puberula	Herb	FACU	13			
6	Geranium carolinianum	Herb	NI	14			
7	Polygonum pensylvanicum	Herb	FACW+	15			
8	Juncus effusus	Herb	FACW+	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 55

Remarks: Utility corridor that crosses the southern portion of the site. This sampling location is the easternmost of this transect and is on a gentle west-facing slope under an overhead power transmission line.

HYDROLOGY

Recorded Data:
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other
- ✓ No Recorded Data Available

Field Observations:
- Depth of Surface Water _____(in.)
- Depth to Free Water in Pit ___>24___(in.)
- Depth to Saturated Soil ___>18___(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12"
- Water Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: Utility corridor. Sampling location is in an area that receives surface flow from the east and south.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 12		10 YR 5/4			Clay
12 – 24		10 YR 5/2	2.5 Y 5/2		Sandy clay

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
Sulfidic Odor	Organic Streaking in Sandy Soils
Aquic Moisture Regime	Listed on Local Hydric Soils List
Reducing Conditions	Listed on National Hydric Soils List
Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of periodic saturation below 12”

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes		No	
Wetland Hydrology Present?		Yes	✓	No	Is this Sampling Point Within a Wetland? Yes ✓ No
Hydric Soils Present?		Yes	✓	No	

Remarks: East - west transect in an overhead power transmission line corridor. Vegetation is managed and thinned. This sampling location is on a gentle, west-facing slope that appears to receive surface runoff from the south and east.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	Yes ✓ No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: G – G'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: G2

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Rhexia virginica	Herb	FACW+	9	Andropogon virginicus	Herb	FAC-
2	Dichanthelium strigosum	Herb	FAC	10	Morella cerifera	Shrub	FAC+
3	Scleria verticillata	Herb	OBL	11			
4	Ludwigia repens	Herb	OBL	12			
5	Solidago gigantean	Herb	FACW	13			
6	Solidago rugosa	Herb	FAC	14			
7	Polygonum pensylvanicum	Herb	FACW+	15			
8	Juncus effusus	Herb	FACW+	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: Utility corridor that crosses the southern edge of the site. This sampling location is in an area that receives surface runoff and subsurface flow from the east and south. Evidence of prolonged surface saturation. Rough rosette grass is the dominant plant in the flow. Wax myrtle is the dominant plant at the northern edge of the utility corridor.

HYDROLOGY

Recorded Data:
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other
- ✓ No Recorded Data Available

Field Observations:
- Depth of Surface Water _____(in.)
- Depth to Free Water in Pit ___>24___(in.)
- Depth to Saturated Soil ___11___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
- inundated
- ✓ Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- ✓ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ✓ Oxidized Root Channels in Upper 12"
- Water Stained Leaves
- Local Soil Survey Data
- ✓ FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: Utility corridor. Wetland hydrology is satisfied by both primary and secondary indicators. This area was saturated at the surface during a prior site visit, but was dry at the surface at the time of the field investigation.

SOILS:

Map Unit Name (Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 8		2.5 Y 5/4			Clayey sand
8 – 24		2.5 Y 5/2	5Y 6/2		Sandy clay

Hydric Soil Indicators:

	Histosol	Concretions
	Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
	Sulfidic Odor	Organic Streaking in Sandy Soils
	Aquic Moisture Regime	Listed on Local Hydric Soils List
	Reducing Conditions	Listed on National Hydric Soils List
✓	Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of prolonged saturation below 8”

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes	No			
Wetland Hydrology Present?	✓	Yes	No	Is this Sampling Point Within a Wetland?	✓	Yes No
Hydric Soils Present?	✓	Yes	No			

Remarks: East - west transect in a utility corridor. Vegetation is managed and thinned. This sampling location is on a nearly level area that appears to receive surface flow from the east and south. This area was saturated at the surface during a prior site visit, but was dry at the surface at the time of the field investigation. Rough-hair rosette grass is the dominant species in the wetland. Wax myrtle is the dominant species on the edge of the utility corridor. Giant cane and goldenrod are the dominant species to the south.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	Yes ✓ No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: G – G'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: G3

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Ludwigia repens	Herb	OBL	9	Andropogon virginicus	Herb	FAC-
2	Juncus megacephalus	Herb	OBL	10	Polygonum hydropiper	Herb	OBL
3	Scleria verticillata	Herb	OBL	11	Ludwigia alternifolia	Herb	OBL
4	Rhexia virginica	Herb	FACW+	12			
5	Solidago gigantean	Herb	FACW	13			
6	Solidago rugosa	Herb	FAC	14			
7	Polygonum pensylvanicum	Herb	FACW+	15			
8	Juncus effusus	Herb	FACW+	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: Utility corridor on southern edge of site. This sampling location is in a low depression adjacent to a shrubby wooded area. Evidence of prolonged surface saturation.

HYDROLOGY

Recorded Data:
Stream, Lake or Tide Gauge
Aerial Photographs
Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water _____(in.)
Depth to Free Water in Pit ___>24___(in.)
Depth to Saturated Soil ___13___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
inundated
Saturated in Upper 12 Inches
Water Marks
✓ Drift Lines
Sediment Deposits
✓ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
✓ Oxidized Root Channels in Upper 12"
Water Stained Leaves
Local Soil Survey Data
✓ FAC-Neutral Test
Other (Explain in Remarks)

Remarks: Utility corridor. Wetland hydrology is satisfied by both primary and secondary indicators. This area was saturated at the surface during a prior site visit, but was dry at the surface at the time of the field investigation. This location is in a power transmission corridor that crosses the southern edge of the site.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 8		10 YR 4/1			Sandy clay
8 – 24		2.5 Y 5/2	5Y 6/2		Sandy clay

Hydric Soil Indicators:

	Histosol	Concretions
	Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
	Sulfidic Odor	Organic Streaking in Sandy Soils
	Aquic Moisture Regime	Listed on Local Hydric Soils List
	Reducing Conditions	Listed on National Hydric Soils List
✓	Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of prolonged saturation from surface to 24" below ground surface.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓	Yes	No			
Wetland Hydrology Present?	✓	Yes	No	Is this Sampling Point Within a Wetland?	✓	Yes No
Hydric Soils Present?	✓	Yes	No			

Remarks: East - west transect in a power transmission line corridor that crosses the southern edge of the site. Vegetation is managed and thinned. This sampling location is south of a shrubby wooded area and is in a depression. This area was saturated at the surface during a prior site visit, but was dry at the surface at the time of the field investigation.

ROUTINE WETLAND DETERMINATION
DATA FORM
(1987 COE Wetlands Delineation Manual

Project/Site:	Ingram/Pee Dee Site	Date: 3 Oct. 2009
Applicant/Owner:	JCBGI	County: Florence
Investigator:	Robert W. Hanley, Ph.D., RMT, Inc.	State: South Carolina
Do Normal Circumstances Exist on the Site?	Yes ✓ No	Community ID: PFO
Is the site significantly disturbed (Atypical situation)	Yes ✓ No	Transect ID: B – B'
Is the area a Potential Problem Area (If needed, explain on reverse)	Yes ✓ No	Plot ID: G4

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Arundo donax	Herb	FACW	9	Andropogon virginicus	Herb	FAC-
2	Morella cerifera	Shrub	FAC+	10			
3	Scleria triglomerata	Herb	FACU	11			
4	Festuca rubra	Herb	FACU	12			
5	Solidago puberula	Herb	FACU	13			
6	Geranium carolinianum	Herb	NI	14			
7	Rosa carolina	Herb	FACU	15			
8	Juncus effusus	Herb	FACW+	16			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 33

Remarks: Utility corridor that crosses the southern edge of the site. This sampling location is the westernmost of this transect and is on nearly level land where the east –west and north – south utility corridors meet. A ditch draining to the north and west originates west of this sampling location.

HYDROLOGY

Recorded Data:
- Stream, Lake or Tide Gauge
- Aerial Photographs
- Other
- ✓ No Recorded Data Available

Field Observations:
- Depth of Surface Water _____(in.)
- Depth to Free Water in Pit ___>24___(in.)
- Depth to Saturated Soil ___>24___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
- inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12"
- Water Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: Utility corridor. Sampling location is near the intersection of two utility corridors and near a shrubby wooded area.

SOILS:

Map Unit Name (Series and Phase): _____

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions Structure, etc.
0 – 14		10 YR 6/4			Sandy clay
14 – 24		10 YR 3/2	2.5 Y 5/2		Sandy clay

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer Sandy Soils
Sulfidic Odor	Organic Streaking in Sandy Soils
Aquic Moisture Regime	Listed on Local Hydric Soils List
Reducing Conditions	Listed on National Hydric Soils List
Gleyed or Low Chroma Colors	Other (Explain in Remarks)

Remarks: Evidence of periodic saturation below 14"

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	✓	No			
Wetland Hydrology Present?	Yes	✓	No	Is this Sampling Point Within a Wetland?	Yes	✓ No
Hydric Soils Present?	Yes	✓	No			

Remarks: East - west transect in a utility corridor. Vegetation is managed and thinned. Sampling location is near the intersection of an east-west overhead power transmission and a north-south overhead power transmission line. A drainage ditch that drains to the north and west arises near this location. The sampling location is also near a shrubby wooded area.

Appendix B
Photographic Log

Photographic Log

Photo No.	Date
1	10/09

Description
Wetland J looking west from the southwest corner

Photo No.	Date
2	10/09

Description
Wetland C in the southwest corner looking east.

Photographic Log

Photo No.	Date
3	10/09

Description
Wetland C looking south along the north-south power line row.

Photo No.	Date
4	10/09

Description
View of the wooded portion of Wetland C near the southwest corner.

Photographic Log

Photo No.	Date
5	10/09

Description
View of the unimproved road that crosses Wetland C.

Photo No.	Date
6	10/09

Description
View of the ditch that drains Wetland C.

Photographic Log

Photo No.	Date
7	10/09

Description
View of the flood plain adjacent to the Great Pee Dee River.

Photo No.	Date
8	10/09

Description
View of the CWA 404 ditch that drains to the west.

Appendix C
Site Soil Information

The following information is from the United States Department of Agriculture - Natural Resources Conservation Service regarding soil types at the facility footprint on the site and their status as farmland.

Farmland Status

MAP UNIT SYMBOL	MAP UNIT NAME	RATING
LaB	Lakeland sand, 0 to 6 percent slopes	Not prime farmland
Pa	Pantego loam	Farmland of statewide importance
WgB	Wagram sand, 0 to 6 percent slopes	Farmland of statewide importance

Appendix D
Cultural Resources Information

The following information was obtained from the United States National Park Service NRIS database.

United States National Park Service National Register Information System (NRIS) database

State: SC

County: Florence

Row	Resource Name	Address	City	Listed	Multiple
1	**Askins, W. T., House**	178 S. Acline Ave.	Lake City	1995-05-26	
2	**Blooming Grove**	E. end of Rogers Court	Florence	2005-06-01	
3	**Bonnie Shade**	1439 Cherokee Rd.	Florence	1978-11-14	
4	**Browntown**	SC 341	Johnsonville	1982-06-28	
5	**Christ Episcopal Church**	NE of Florence on SC 327	Florence	1978-11-14	
6	**Claussen House**	5109 Old River Rd.	Florence	2001-04-11	
7	**Florence National Cemetery**	803 E. National Cemetery Rd.	Florence	1998-01-05	Civil War Era National Cemeteries MPS
8	**Florence Public Library**	319 S. Irby St.	Florence	2006-11-15	
9	**Gregg--Wallace Farm Tenant House**	310 Price Rd.	Mars Bluff	2002-01-28	
10	**Hopewell Presbyterian Church and Hopewell Cemetery**	5314 Old River Rd.	Florence	2000-06-02	
10	**Lake City Downtown Historic District**	Main St and Acline Ave.	Lake City	2003-01-24	
12	**Mt. Zion Rosenwald School**	5040 Liberty Chapel Rd.	Florence	2001-10-12	
13	**Poynor Junior High School**	301 S. Dargan St.	Florence	1983-05-19	

United States National Park Service National Register Information System (NRIS) database

State: SC

County: Florence

Row	Resource Name	Address	City	Listed	Multiple
14	**Rankin-Harwell House**	6 mi. NE of Florence off SC 305	Florence	1974-10-09	
15	**Red Doe**	E of Florence on SC 327	Florence	1982-10-29	
16	**Roseville Plantation**	3636 Williston Rd.	Florence	1997-09-25	
17	**Slave Houses, Gregg Plantation**	Francis Marion College campus	Mars Bluff	1974-07-22	
18	**Smith-Cannon House**	106 W. Market St.	Timmonsville	1983-07-28	
19	**Snow's Island**	Address Restricted	Johnsonville	1973-03-14	
20	**Stockade, The**	Address Restricted	Florence	1980-11-28	
21	**U.S. Post Office**	Irby and W. Evan Sts.	Florence	1977-12-21	
22	**Young Farm**	W of Florence on US 76	Florence	1983-11-10	

Appendix E
Containment Specifications

The following preliminary specifications are provided for containment for the proposed Battery Warehouse:

- Acid-resistant coating
- High density polyethylene liner

Protective & Marine Coatings

COR-COTE® HCR
NOVOLAC EPOXY

PART A	B62-420	SERIES
PART B	B62V420	HARDENER

Revised 12/09

PRODUCT INFORMATION

TRM.18

PRODUCT DESCRIPTION

COR-COTE HCR NOVOLAC EPOXY is a 100% solids, high chemical resistant, self leveling hybrid novolac epoxy technology that resists aggressive acids, alkalies, and solvents. Its easy to use, rapid setting formulation may reduce costly downtime.

- Moisture tolerant
- Low viscosity easily wets out aggregate and reinforcing

PRODUCT CHARACTERISTICS

Finish:	Semi-gloss
Color:	Haze Gray, Tile Red, and Clear
Volume Solids:	100%, calculated, mixed
VOC (calculated):	<150 g/L; 1.25 lb/gal, mixed
Mix Ratio:	4:1

Recommended Spreading Rate per coat*:

*Varies with system and application. See recommended systems. Not to be used as a stand alone coating.

Drying Schedule @ 20.0 mils wet (500 microns):

@ 73°F/23°C
50% RH

To touch:	6 hours
To recoat:	
minimum:	8 hours
maximum:	24 hours*
To cure:	7 days

*Can be topcoated up to 30 days after application with either Phenicon HS or Steel-Seam FT910.

If maximum recoat time is exceeded, abrade surface before recoating.

Drying time is temperature, humidity, and film thickness dependent.

Pot Life:	15 minutes
Sweat-in-Time:	None required

Shelf Life:	36 months Store indoors at 40°F (4.5°C) to 100°F (38°C)
Viscosity (mixed):	750 cps
Reducer:	Not recommended
Clean Up:	Xylene, R2K4

RECOMMENDED USES

Cor-Cote HCR Novolac Epoxy is used as a binder resin with select aggregate in self-leveling, mortar, and mortar laminate applications.

Protects concrete and steel surfaces in immersion and atmospheric exposure. Ideally suited for lining, containment and flooring applications in various facilities including:

- Automotive
- Chemical processing
- Electronics
- Food & beverage
- Metal & mining
- Pharmaceutical
- Power
- Pulp & paper
- Water & wastewater
- Petrochemical
- Acceptable for use in USDA inspected facilities

PERFORMANCE CHARACTERISTICS

Test Name	Test Method	Results
Abrasion Resistance (coating)	ASTM D4060	1000 g 1000 cycles CS-17: 70 mg loss
Adhesion	ASTM D4541	Concrete - 350 psi; Steel - 1200 psi
Coefficient of Linear Thermal Expansion	ASTM C531 (in/in/°F)	Self-leveling - 14 x 10^{-6}; Mortar - 13 x 10^{-6}; Mortar Laminate - 14 x 10^{-6}
Compressive Strength	ASTM C579	Self-leveling - 12,000 psi; Mortar - 10,000 psi; Mortar Laminate - 10,800 psi
Durometer Hardness (coating)	ASTM D2240	Shore D - 80
Flexural Strength	ASTM C580	Self-leveling - 4,000 psi; Mortar - 4,200 psi; Mortar Laminate - 8,300 psi
Tensile Strength	ASTM C307	Self-leveling - 6,000 psi; Mortar - 2,000 psi; Mortar Laminate - 5,000 psi

continued on back

Protective & Marine Coatings

COR-COTE® HCR
NOVOLAC EPOXY

PART A	B62-420	SERIES
PART B	B62V420	HARDENER

PRODUCT INFORMATION

TRM.18

RECOMMENDED SYSTEMS

		Dry Film Thickness / ct. Mils	(Microns)
Concrete or Steel (lining, containment, flooring):			
Mortar Laminate			
1 ct.	*For Steel:* Dura-Plate UHS Primer	4.0-8.0	(100-200)
	For Concrete: Corobond 100 Epoxy Primer/Sealer	4.0-6.0	(100-150)
1 ct.	Cor-Cote HCR Epoxy (Clear) with 25 lbs Type M Aggregate per 1.25 gallons (4.7L) yields 60-65 sq. ft. (1.5-1.6 m^2/L)	60.0-65.0	(1500-1625)
1 ct.	1.0 oz. glass mat with Cor-Cote HCR Epoxy (Clear) saturant (with glass mat)	20.0-30.0	(500-750)
1 ct.	Cor-Cote HCR FF Flake Filled Epoxy	15.0-20.0	(375-500)
Heavy Duty Mortar Laminate			
1 ct.	*For Steel:* Dura-Plate UHS Primer	4.0-8.0	(100-200)
	For Concrete: Corobond 100 Epoxy Primer/Sealer	4.0-6.0	(100-150)
1 ct.	Cor-Cote HCR Epoxy (Clear) with 25 lbs Type M Aggregate per 1.25 gallons (4.7L) yields 60-65 sq. ft. (1.5-1.6 m^2/L)	65.0	(1625)
1 ct.	10.0 oz. woven roving fiberglass mat with Cor-Cote HCR Epoxy (Clear) saturant (with woven roving)	30.0-45.0	(750-1125)
1 ct.	Cor-Cote HCR Epoxy (Clear) with 25 lbs Type M Aggregate per 1.25 gallon (4.7L) yields 60-65 sq. ft. (1.5-1.6 m^2/L)	65.0	(1625)
Self-leveling Mortar (horizontal only)			
1 ct.	Corobond 100 Epoxy Primer/Sealer	4.0-6.0	(100-150)
1 ct.	Cor-Cote HCR Epoxy with 19 lbs. Type S Aggregate per 1.25 gallons (4.7L) yields 50-56 sq. ft. (1.2-1.4 m^2/L)	60.0-70.0	(1500-1750)
1 ct.	Cor-Cote HCR FF Flake Filled Epoxy	15.0-20.0	(375-500)
Mortar			
1 ct.	Corobond 100 Epoxy Primer/Sealer	4.0-6.0	(100-150)
1 ct.	Cor-Cote HCR Epoxy with 70 lbs Type T Aggregate per 1.25 gallons (4.7L) @ 3/16" dft yields 40-44 sq. ft. (0.9-1.0 m^2/L)		
1 ct.	Cor-Cote HCR Epoxy	15.0-20.0	(375-500)
1 ct.	Cor-Cote HCR FF Flake Filled Epoxy	15.0-20.0	(375-500)

The systems listed above are representative of the product's use, other systems may be appropriate.

DISCLAIMER

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.

SURFACE PREPARATION

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Refer to product Application Bulletin for detailed surface preparation information.

Minimum recommended surface preparation:

Iron & Steel:	
Atmospheric:	SSPC-SP6/NACE3, 2 mil (50 micron) profile
Immersion:	SSPC-SP10/NACE 2, 2-3 mil (50-75 micron) profile
Concrete & Masonry:	
Atmospheric:	SSPC-SP13/NACE 6, or ICRI 03732 CSP 3-5
Immersion:	SSPC-SP13/NACE 6-4.3.1 or 4.3.2, or ICRI 03732 CSP 3-5

Surface Preparation Standards

	Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal		Sa 3	Sa 3	SP 5	1
Near White Metal		Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast		Sa 2	Sa 2	SP 6	3
Brush-Off Blast		Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	Rusted	C St 2	C St 2	SP 2	-
	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	Rusted	C St 3	C St 3	SP 3	-
	Pitted & Rusted	D St 3	D St 3	SP 3	-

TINTING

Do not tint.

APPLICATION CONDITIONS

Temperature:	50°F (10°C) minimum, 90°F (32°C) maximum (air, surface, material) At least 5°F (2.8°C) above dew point
Relative humidity:	85% maximum

Refer to product Application Bulletin for detailed application information.

ORDERING INFORMATION

Packaging:

Part A:	1 gallon (3.78L) and 4 gallons (15.1L)
Part B:	1 quart (0.94L) and 1 gallon (3.78L)

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Protective & Marine Coatings

COR-COTE® HCR
NOVOLAC EPOXY

PART A	B62-420	SERIES
PART B	B62V420	HARDENER

Revised 12/09

APPLICATION BULLETIN

TRM.18

SURFACE PREPARATIONS

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Iron & Steel (immersion service)
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2-3 mils / 50-75 microns). Remove all weld spatter and round all sharp edges. Prime any bare steel the same day as it is cleaned or before flash rusting occurs.

Iron & Steel (atmospheric service)
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Commercial Blast Cleaning per SSPC-SP6/NACE 3. For better performance, use Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils / 50 microns).Prime any bare steel the same day as it is cleaned or before flash rusting occurs.

Concrete and Masonry
For surface preparation, refer to SSPC-SP13/NACE 6, or ICRI 03732, CSP 3-5. Surfaces should be thoroughly clean and dry. Concrete and mortar must be cured at least 28 days @ 75°F (24°C). Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement and hardeners. Fill bug holes, air pockets and other voids with Steel-Seam FT910. Primer required.

Always follow the standard methods listed below:
ASTM D4258 Standard Practice for Cleaning Concrete.
ASTM D4259 Standard Practice for Abrading Concrete.
ASTM D4260 Standard Practice for Etching Concrete.
ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete.
SSPC-SP 13/Nace 6 Surface Preparation of Concrete.
ICRI 03732 Concrete Surface Preparation.

Concrete, Immersion Service:
For surface preparation, refer to SSPC-SP13/NACE 6, Section 4.3.1 or 1.3.2 or ICRI 03732, CSP 3-5.

Surface Preparation Standards

	Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal		Sa 3	Sa 3	SP 5	1
Near White Metal		Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast		Sa 2	Sa 2	SP 6	3
Brush-Off Blast		Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	Rusted	C St 2	C St 2	SP 2	-
	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	Rusted	C St 3	C St 3	SP 3	-
	Pitted & Rusted	D St 3	D St 3	SP 3	-

APPLICATION CONDITIONS

Temperature:	50°F (10°C) minimum, 90°F (32°C) maximum (air, surface, material) At least 5°F (2.8°C) above dew point
Relative humidity:	85% maximum

APPLICATION EQUIPMENT

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compliant with existing VOC regulations and compatible with the existing environmental and application conditions.

Reducer .....Not recommended

Cleanup .....Xylene, R2K4

Airless Spray:
Pump.....Graco Extreme, 68:1
Gun .....Graco XTR
Fluid Hose.....3/8" I.D.
Tip Orifice.....017" - .021"
Fan Width at 12" .....10.0" - 12.0"
Fluid Pressure.....2100 - 3100 psi
Filter Screen.....80 mesh
Transfer Pump .....5:1 ratio each side
Static Mixing Tube.....1/2" ID with 32 turns

Brush:
Brush.....Natural bristle for applications in small areas

Roller:
Cover .....3/8" nap for coatings
Ribbed roller.....For mortar laminate applications

Trowel:
Notched trowel.....For self-leveling applications
Flat trowel .....For mortar applications

Squeegee:
Notched squeegee.....For self-leveling applications
Flat squeegee .....For coating applications

If specific application equipment is not listed above, equivalent equipment may be substituted.

continued on back

Protective & Marine Coatings

COR-COTE® HCR
NOVOLAC EPOXY

PART A	B62-420	SERIES
PART B	B62V420	HARDENER

APPLICATION BULLETIN

TRM.18

APPLICATION PROCEDURES

For detailed installation instructions, refer to the Installation Procedures for the respective system type in the ControlTech Technical Resource Manual.

Surface preparation must be completed as indicated.

Mixing Instructions:
Premix individual components separately, using a low-speed drill and Jiffy Blade model ES mixer. Make certain no pigment remains on the bottom or sides of the can. Combine one part by volume of Part B to two parts by volume of Part A. Mix with low speed drill and Jiffy Blade model ES mixer for three minutes and until uniform.

For coatings applications:
Combine parts A and B as instructed above. To insure that no unmixed materials remain on the sides and bottom of the cans after mixing, visually observe the container by pouring the material into a separate container. Marbeled or streaky appearance is an indication of improper mixing. Apply via brush, roller or spray to the film thickness and spreading rate indicated below. Vertical surfaces may require 3-4 coats to achieve the desired dry film thickness.

Recommended Spreading Rate per coat as a coating:*
*Varies with system and application. See recommended systems. Not to be used as a stand alone coating.

For self-leveling applications:
Combine Parts A and B as instructed above. Slowly add Type S aggregate at 19 to 22 pounds per 1.5 gallons (5.7L) of mixed resin in a mortar mixer. Blend materials until no lumps remain and the aggregate is uniformly mixed with the resin. Apply via notched trowel and/or squeegee to desired thickness. Apply topcoats as indicated, following application procedures of the products listed in recommended systems

For mortar applications:
Combine Parts A and B as instructed above. Slowly add Type T aggregate at 50 to 60 pounds per gallon to the mixed resin in a mortar mixer. Blend materials until no lumps remain and the aggregate is uniformly mixed with the resin. Apply via screed and/or hand trowel to desired thickness. Apply topcoats as indicated, following application procedures of the products listed in recommended systems

For mortar laminate applications:
Combine Parts A and B as instructed above. Slowly add Type M aggregate at 30 pounds per 1.5 gallons (5.7L) to the mixed resin in a mortar mixer. Blend materials until no lumps remain and the aggregate is uniformly mixed with the resin. Apply via hand trowel to desired thickness. Apply topcoats as indicated, following application procedures of the products listed in recommended systems.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with Xylene, R2K4. Clean tools immediately after use with Xylene, R2K4. Follow manufacturer's safety recommendations when using any solvent.

DISCLAIMER

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

APPLICATION GUIDELINES

Apply paint at the recommended film thickness and spreading rate as indicated below:

Recommended Spreading Rate per coat*:

*Varies with system and application. See recommended systems. Not to be used as a stand alone coating.

Drying Schedule @ 20.0 mils wet (500 microns):

@ 73°F/23°C
50% RH

To touch:	6 hours
To recoat:	
minimum:	8 hours
maximum:	24 hours*
To cure:	7 days

*Can be topcoated up to 30 days after application with either Phenicon HS or Steel-Seam FT910.

If maximum recoat time is exceeded, abrade surface before recoating.

Drying time is temperature, humidity, and film thickness dependent.

Pot Life:	15 minutes
Sweat-in-Time:	None required

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

PERFORMANCE TIPS

For concrete, always perform Calcium Chloride test as per ASTM F1869. Do not proceed with MVE >3 lbs.

For steel, stripe coat all chine, welds, bolted connections, and sharp angles to prevent early failure in these areas.

Pot life of this material is moderately short. Working time can be extended by mixing small batches and by getting material out of mixing containers and on to the working surface in desired film thickness as quickly as possible.

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

For Immersion Service: (if required) Holiday test in accordance with ASTM D5162 for steel, or ASTM D4787 for concrete.

Use of Corobond Conductive Epoxy Primer on concrete is recommended in order to provide a uniform conductive underlayment. Repair holidays found prior to application of final coat.

Do not apply material beyond recommended pot life.

Do not mix previously catalyzed material with new.

Consult your Sherwin-Williams representative for specific application and performance recommendations.

Refer to Product Information sheet for additional performance characteristics and properties.

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

email: info@foxind.com

FOX INDUSTRIES
ENGINEERED PRODUCTS

www.foxind.com

Fox Industries, Inc. • 3100 Falls Cliff Road • Baltimore, Maryland 21211

FX-572/573
Polymeric Joint Sealant

DESCRIPTION:

FX-572/573 Polymeric Joint Sealant is a two-component chemically cured polysulphide sealant that provides excellent resistance to bioactivity and the harsh conditions encountered in wastewater treatment plants. **FX-572/573 Polymeric Joint Sealant** cures to a flexible rubber that provides a watertight seal between concrete, masonry, metals, glass, wood, and other construction materials. **FX-572/573** is available in self-leveling or non-sag consistency.

ADVANTAGES:

FX-572/573 bonds tightly to most clean, dry surfaces. **FX-572/573** provides +/- 25% joint movement in temperatures as low as -10°F. **FX-572/573** displays excellent resistance to heat, ozone, oxidation, sunlight and weathering. **FX-572/573** is specially formulated to give resistance to bioactivity and chemical attack.

PROPERTIES:

FX-572/573 has excellent electrical resistance properties. Typical physical properties of cured material at 77°F (25°C) and 50% relative humidity are as follows:

Tensile Strength ASTM D-638	170 psi 1.17 MPa
Tensile Elongation ASTM D-638	250%
Shore Hardness A Scale ASTM D-2240	30–35
Service Range	-40°F (-40°C) to 250°F (121.1°C)
Color	Gray

Pot life after mixing is approximately 40 minutes at 70°F (21.1°C).

Initial cure is 24 hours; final cure is 7 days.

SPECIFICATION:

FX-572/573 meet the following specifications:

National Bureau of Standards and GSA TT-S-0227E (1970)

American Society for Testing & Materials (ASTM) C-920

MIXING:

Mix entire contents of "B" Component into "A" with a slow speed mechanical mixer for 3 minutes. Mix well until color is uniform. Apply immediately after mixing.

APPLICATION:

Inspect joint slots to assure that they are clean and dry. To maximize bond to concrete, masonry, and steel, apply **FX-572/573 Joint Primer** and allow to dry. Primer must be used in constant immersion joints. **FX-572** may be poured into joint. Apply **FX-573** with either a caulking gun or a follower plate pressurized system.

COVERAGE:

Each 1.5 gallon (5.68 L) of mixed material will fill 346 cubic inches (5.7L) of joint slot, 115 ft. (35 meters) of 1/2" x 1/2" (12 mm x 12 mm) or 57 ft. (17 meters) of 1/2" x 1" (12 mm x 25 mm) joint slot.

PACKAGING:

FX-572/573 is available in 1.5 gallon (5.68 L) units.

LIMITATIONS:

Do not install in damp or wet joints. Ambient temperature should be above 40°F (4.4°C) at time of application to assure proper curing.

SHELF LIFE:

One (1) year

CAUTION:

Repeated or prolonged contact with skin should be avoided; protective gloves should be worn as a precaution. Avoid contact with eyes; in case of eye contact, flush with water for 15 minutes and consult a physician.

FOR INDUSTRIAL USE ONLY. KEEP AWAY FROM CHILDREN. 5/2008

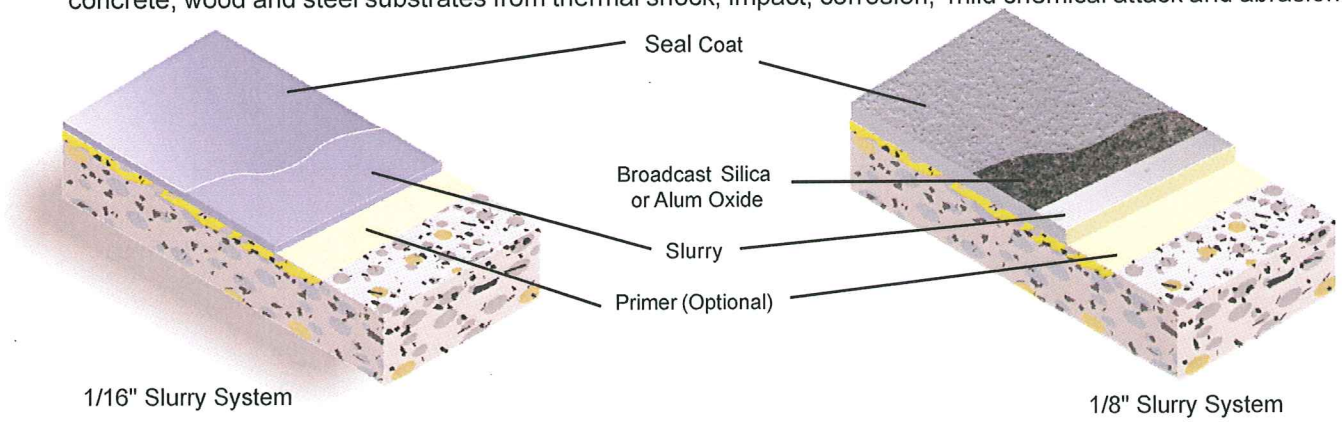
PHONE 410-243-8856 TOLL FREE 888-760-0369 FAX 410-243-2701

THE SHERWIN - WILLIAMS COMPANY

General Polymers®
High performance floor systems

FasTop™ 12SL Self-Leveling Urethane Slurry System

General Polymers ***FasTop* 12SL SELF-LEVELING URETHANE SLURRY SYSTEM** is a low odor, self-leveling slurry to be applied at 1/16" thickness and broadcast to yield a 1/8" finished system. ***FasTop* 12SL** can be applied with a 3/16" x 3/16" notched squeegee or notched trowel, or screed rake. It is designed to protect concrete, wood and steel substrates from thermal shock, impact, corrosion, mild chemical attack and abrasion.



1/16" Slurry System

1/8" Slurry System

Advantages

- Can be applied to "green" concrete
- Rapid cure and hardness development
- Low odor, water based
- Hot cooking oil and steam resistance
- Low temperature cure
- Will not lose bond due to thermal shock
- Impact resistant
- Moisture insensitive
- Maintains bond with vapor emissions up to 15 lbs.
- Acceptable for use in USDA inspected facilities
- Resistant to:

28 Day Exposure @ 72°F	Result
	NE= No Effect
Alcohol	NE
Ethylene Glycol	NE
Fats, Oils & Sugars	NE
Gasoline, Diesel & Kerosine	NE
Hydrochloric Acid (<35%)	NE
Lactic Acid (Milk)	NE
Mineral Oils	NE
Most Organic Solvents	NE
Muriatic Acid	NE
Nitric Acid (<10%)	NE
Nitric Acid (<30%)	Slight Softening
PM Acetate	NE
Phosphoric Acid (<50%)	NE
Potassium Hydroxide (<50%)	NE
Sodium Hydroxide (<50%)	NE
Sulfuric Acid (<50%)	Slight Gloss Loss
Water	NE
Xylene	NE

Uses

- Food processing kitchens
- Commercial kitchens
- Food and Beverage plants
- Sugar processing plants
- Meat and Poultry plants
- Restrooms and concession stands

Typical Physical Properties

Color		Red, Light Gray or Dark Gray
Decorative Upgrade:		Selected Ceramic Carpet Blends
Cure Time	Recoat	4-5 hours
	Foot Traffic	6-8 hours
	Full Service	10-12 hours
Abrasion Resistance ASTM D 4060, CS-17 Wheel, 1,000 cycles		20-30 mgs lost
Hardness, Shore D ASTM D 2240		75
Tensile Strength ASTM C 307		550-600 psi
Compressive Strength ASTM C 579		5,000 psi
Flexural Strength ASTM C 580		3,700 psi
Adhesion ACI 503R		350 psi 100% concrete failure
Impact Resistance MIL-D-3134, Sec.4.7.3		Withstands 16 ft lbs without cracking, delamination or chipping
Flammability		Self-Extinguishing over concrete
Coefficient of Friction ASTM D 2047		>0.80
Service Temperature at 3/16"		-50°F - 300°F
Shrinkage		Nil
Water Absorption		Nil

ASTM C = Mortar System
ASTM D = Resin only

Installation

The following information is to be used as a guideline for the installation of the ***FasTop* 12SL SELF-LEVELING URETHANE SLURRY SYSTEM**. Contact the Technical Service Department for assistance prior to application.

Surface Preparation - General

General Polymers systems can be applied to a variety of substrates, if the substrate is properly prepared. Preparation of surfaces other than concrete will depend on the type of substrate, such as wood, concrete block, quarry tile, etc. Should there be any questions regarding a specific substrate or condition, please contact the Technical Service Department prior to starting the project. Refer to Surface Preparation (Form G-1).

Surface Preparation - Concrete

Concrete surfaces shall be abrasive blasted to remove all surface contaminants and laitance. The prepared concrete shall have a surface profile equal to CSP 4-6. Refer to Form G-1. Consult the Technical Service Department if oil or grease is present.

After initial preparation has occurred, inspect the concrete for bug holes, voids, fins and other imperfections. Protrusions shall be ground smooth while voids shall be filled with a General Polymers system filler. For recommendations, consult the Technical Service Department.

Limitations

The substrate must be structurally sound, cleaned of any foreign matter that will inhibit adhesion.

Do not apply in temperatures below 40° F or above 85° F or when relative humidity is greater than 85%. If substrate is not concrete, wood or metal as described in Surface Preparation (Form G-1) then do not apply. Call Technical Service Department for recommendation.

When installing *FasTop* 12SL, if encountering concrete outgassing, please discontinue installation and apply 3477 Epoxy Water Emulsion Primer / Sealer. Allow to dry until tack free and proceed with the *FasTop* 12SL installation.

- **Do not featheredge.**
- **Do not mix partial units.**
- **Do not hand mix. Do not let mixed material sit in a bucket, even a 2-3 minute delay in pouring will reduce working time.**
- **Do not apply to cracked or unsound substrates.**
- **Do not install outside, call Technical Service Department.**

Full chemical resistance is achieved after a seven (7) day cure. Consult the Technical Service Department for specific chemical resistance.

Application Information @ 1/4"

Material	Mix Ratio	Theoretical Coverage Per Coat	Packaging
Optional Primer for outgassing			
3477	2:1	250 sq. ft. / gal	3 or 15 gals
Slurry 1/16"			
4080	1 unit		1.8 gals
	(1 gal Part A "short filled" gal Part B)	70-75 sq. ft. / unit @ 1/16"	
5030		35 lbs	35 lbs / bag
Slurry 1/8"			
4080	1 unit	70-75 sq. ft. / unit @ 1/8"	1.8 gals
	(1 gal Part A "short filled" gal Part B)		
5030		35 lbs	35 lbs / bag
Broadcast (Standard)			
5310 Dry Silica Sand (30 Mesh or larger)	For Seeding	400 lbs / 1,000 sq. ft.	100 lbs
Optional Seal Coat(s):			
3744	2:1	100 sq. ft. / gal	3 or 15 gals

Different optional seal coats - Consult individual Technical Data Sheet for mixing and application instructions.
4844 PAce-Cote
3462 AquArmor Gloss Topcoat

Primer Optional for outgassing
Mixing and Application

1. Premix 3477A (resin) and 3477B (hardener) separately, using a low speed drill and Jiffy blade. Mix for one minute and until uniform, exercising caution not to whip air into the materials.

2. Add 2 parts 3477A (resin) to 1 part 3477B (hardener) by volume. Mix with low speed drill and Jiffy blade for three minutes and until uniform. DO NOT mix more material than can be used within 4 hours. Apply material with a short nap roller at a spread rate of 250 sq. ft. per gallon.

DO NOT ALLOW TO PUDDLE. Any uneven or textured surfaces will require more material than an even surface.

Slurry Coat Smooth @ 1/16"
Mixing and Application
DO NOT PREMIX 4080 PART B HARDENER. OVER EXPOSURE TO AIR EFFECTS PHYSICAL PROPERTIES

1. Add 4080A (resin) to 4080B (hardener) and mix with low speed drill and Jiffy mixer until uniform.

2. Pour 35 lbs. 5030 aggregate and 1 pre-measured unit (1 gal Part A : short-filled gal Part B) until no lumps remain. Immediately pour mixed material onto the substrate and pull out using a 3/16" x 3/16" notched squeegee or notched trowel, or screed rake. Place all material within 15 minutes. Back roll with a loop roller to assist leveling. Allow material to self-level (2-5 minutes).

3. Allow to cure (Cure times vary depending on environmental conditions).

Slurry Coat Skip-Inhibiting @ 1/8"
Mixing and Application
DO NOT PREMIX 4080 PART B HARDENER. OVER EXPOSURE TO AIR EFFECTS PHYSICAL PROPERTIES

1. Add 4080A (resin) to 4080B (hardener) and mix with low speed drill and Jiffy mixer until uniform.

2. Pour 35 lbs. 5030 aggregate and 1 pre-measured unit (1 gal Part A : short-filled gal Part B) until no lumps remain. Immediately pour mixed material onto the substrate and pull out using applied with a 3/16" x 3/16" notched squeegee or notched trowel, or screed rake. Place all material within 15 minutes. Back roll with a loop roller to assist leveling. Allow material to self-level (2-5 minutes).

3. Broadcast Silica Sand (30 Mesh or larger) to saturation (about 400# per 1000 square feet).

4. Allow to cure for a minimum of 6-8 hours, sweep off excess sand with a clean, stiff bristled broom. Clean sand can be saved for future use. All imperfections such as high spots should be smoothed before the application of the seal coat.

NOTE: Dry Silica Sand distribution is critical to the success of the application. The floor's finished appearance depends on the manner in which the sand has been applied. In grass seed like fashion, allow the sand to fall after being thrown upward and out. **DO NOT THROW DOWNWARD AT A SHARP ANGLE USING FORCE.**

NOTE: At substrate temperature less than 50°F, the application will be adversely affected.

Seal Coat
Mixing and Application

1. Premix 3744A (resin) using a low speed drill and Jiffy mixer. Mix for one minutes and until uniform, exercising caution not to whip air into the material.

2. Add 2 parts 3744A (resin) to 1 part 3744B (hardener) by volume. Mix with low speed drill and Jiffy mixer until uniform.

3. Apply 3744 to floor in thin bands and pull out using a red rubber squeegee at a spread rate of 100 sq. ft. per gallon to yield 16 mils WFT. Allow material to cure overnight.

Different optional seal coats - Consult individual Technical Data Sheet for mixing and application instructions.

4844 PAce-Cote
3462 AquArmor Gloss Topcoat

Cleanup

Clean up mixing and application equipment immediately after use. Use toluene or xylene. Observe all fire and health precautions when handling or storing solvents.

Safety

Refer to the MSDS sheet before use. All applicable federal, state, local and particular plant safety guidelines must be followed during the handling and installation and cure of these materials.

Safe and proper disposal of excess materials shall be done in accordance with applicable federal, state, and local codes.

Material Storage

Store materials in a temperature controlled environment (50°F - 90°F) and out of direct sunlight.

Keep resins, hardeners, and solvents separated from each other and away from sources of ignition. One year shelf life is expected for products stored between 50°F - 90°F.

Maintenance

Occasional inspection of the installed material and spot repair can prolong system life. For specific information, contact the Technical Service Department.

Shipping

- Destinations East of the Rocky Mountains are shipped F.O.B. Cincinnati, Ohio.

- Destinations West of the Rocky Mountains are shipped F.O.B. Victorville, California.

For specific information relating to international shipments, contact your local sales representative.

Disclaimer

The information and recommendations set forth in this document are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product(s) offered at the time of publication. Published technical data and instructions are subject to change without notice.

Consult www.generalpolymers.com to obtain the most recent Product Data information and Application instructions.

Warranty

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams, NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

HDPE - Geomembranes

High Density Polyethylene (HDPE) is the most common field fabricated geomembrane material.

The popularity of High Density Polyethylene (HDPE) is primarily due to its low initial material cost and excellent chemical resistance. This allows thicker sections to be used compared to other geomembrane materials. A thick, durable, HDPE liner can be placed in exposed applications where the cost of other materials would be prohibitive. HDPE has excellent chemical resistance, which is often the driving force behind the selection of HDPE. HDPE is a field assembled lining material that cannot be practically fabricated in the shop. All HDPE projects, regardless of size, must be professionally installed.

HDPE is a versatile material, which is used widely across all applications. One of the main uses of HDPE is for landfill base liners where its chemical resistance is used to good effect. HDPE can also be used in a multitude of secondary containments, pond linings, and water containment projects. HDPE is best used as an exposed lining material, and has the UV resistance required for many years of outstanding service.

	HDPE Minimum Material Properties					
Style	**ASTM**	**HDPE 40 Smooth**	**HDPE 60 Smooth**	**HDPE 80 Smooth**	**HDPE 60 Textured**	**HDPE 80 Textured**
Nominal Thickness	D5199	40 mil 1.0 mm	60 mil 1.5 mm	80 mil 2.0 mm	57 mil 1.42 mm	76 mil 1.90 mm
Density (Untextured)	D792	0.94	0.94	0.94	0.94	0.94
Tensile Strength Modified Type IV Die	D638 Stress at Yield	84 ppi 14.7 kN/m	126 ppi 22.0 kN/m	168 ppi 29.0 kN/m	126 ppi 22.0 kN/m	168 ppi 29.0 kN/m
	Stress @ Break	152 ppi 26.6 kN/m	225 ppi 40.0 kN/m	304 ppi 53.0 kN/m	90 ppi 15.8 kN/m	120 ppi 21.0 kN/m
	Strain @ Yield 33 mm Guage	12%	12%	12%	12%	12%
	Strain @ Break 50 mm Guage	700%	700%	700%	100%	100%
Tear Resistance	D1004	28 lbs 125 N	42 lbs 187 N	56 lbs 249 N	42 lbs 187 N	56 lbs 249 N
Dimensional Stability	D1204 Max Cng.	± 2%	± 2%	± 2%	± 2%	± 2%
Notched Constant Load ESCR	D5397	200 Hours	200 Hours	200 Hours	200 Hours	200 Hours
Puncture Resistance	D4833	72 lbs 320 N	108 lbs 480 N	144 lbs 640 N	90 lbs 400 N	120 lbs 534 N
Carbon Black Content	D1603	2.0 - 3.0%	2.0 - 3.0%	2.0 - 3.0%	2.0 - 3.0%	2.0 - 3.0%
Carbon Black Dispersion	D5596	CAT 1 or 2	CAT 1 or 2	CAT 1 or 2	CAT 1 or 2	CAT 1 or 2

	HDPE Minimum Field Seam Strengths					
Style	**ASTM**	**HDPE 40 Smooth**	**HDPE 60 Smooth**	**HDPE 80 Smooth**	**HDPE 60 Textured**	**HDPE 80 Textured**
Bonded Seam Strength Test Temp 23°C, 73°F	D6392	80 ppi 14 N/mm	120 ppi 21 N/mm	160 ppi 28 N/mm	120 ppi 21 N/mm	160 ppi 28 N/mm
Peel Adhesion Test Test Temp 23°C, 73°F	D6392	FTB 52 ppi 9 N/mm	FTB 78 ppi 14 N/mm	FTB 104 ppi 18 N/mm	FTB 78 ppi 14 N/mm	FTB 104 ppi 18 N/mm

Style	HDPE Minimum Field Seam Strengths					
	ASTM	HDPE 40 Smooth	HDPE 60 Smooth	HDPE 80 Smooth	HDPE 60 Textured	HDPE 80 Textured
Bonded Seam Strength Test Temp 23°C, 73°F	D6392	80 ppi 14 N/mm	120 ppi 21 N/mm	160 ppi 28 N/mm	120 ppi 21 N/mm	160 ppi 28 N/mm
Peel Adhesion Test Test Temp 23°C, 73°F	D6392	FTB 52 ppi 9 N/mm	FTB 78 ppi 14 N/mm	FTB 104 ppi 18 N/mm	FTB 78 ppi 14 N/mm	FTB 104 ppi 18 N/mm

Since HDPE is a field fabricated material welding and testing need to be completed with great care.

The extrusion welder was the first welding technique developed for HDPE. It is a thickness dependant technique that requires a minimum material thickness to create an effective weld without distortion. Extrusion welds in sheet less than 1.0 mm (40 mil) thick are not recommended. Extrusion welds in 1.0 mm (40 mil) HDPE show some distortion and can sometimes be very difficult to prepare around intricate pipe penetrations and mechanical attachments. 1.5 mm (60 mil) HDPE can be reliably extrusion welded in most situations and is recommended in most applications. Welds in 2.0 and 2.5 mm (80 mil and 100 mil) are excellent and are recommended in applications that require exceptional durability. Extrusion welds are very slow and are typically used only for repairs and details. Extrusion welds are very difficult to prepare on vertical or overhead walls, and require a minimum clearance of 1 m (3 ft). This is especially important in sump details where a minimum clearance must be maintained underneath the lowest pipe penetration.

Hot wedge welders have become the technique of choice for HDPE installers over the past 10 years. Wedge welders are fast, produce excellent welds in sheet from 1.0 mm to 2.5 mm (40 to 100 mil), and can be easily tested. Hot wedge welders today produce two weld tracks separated by a small unbonded channel. By sealing off both ends of this channel, and then pumping it full of air, entire seams can be checked quickly and effectively.

Weather is a major factor in all HDPE lining installations. Precipitation in any form, whether rain, snow, dew, or fog can bring HDPE installation to a halt. Cold weather can slow down an installation, however HDPE has been installed in temperatures as low as -30°C (-20°F). The presence of moisture in the form of frost, snow, and ice are bigger problems than outside air temperatures.

Testing of HDPE seams is done by two methods, depending on the welding technique. On hot wedge welds the Dual Seam Air Pressure test is used. This test utilizes the unbonded space between the two welds as an air channel. The technician seals both ends and inflates the channel. The air pressure in the channel is observed for ten to fifteen minutes and any changes noted. Pass/fail criteria would be written into the job specifications.

Extrusion welds are tested with the Vacuum Box test method. This test is part of ASTM D4437 (method 7.3). A soap solution is flooded onto the area to be tested, a clear box is placed on top, and a vacuum applied to the box. Any bubbles appearing in the seam indicate an unbonded area. Vacuum box testing is suitable for extrusion welds, and for testing other seams and details where an air pressure test is not practical.

Attachment 3
Work Instructions

The following Work Instructions for management of incoming spent batteries are provided in this attachment.

- Spent Batteries Packaging and Shipping
- Recyclable Lead Scrap Packaging and Shipping
- Spent Batteries Receiving and Weighing
- Recyclable Lead Scrap Receiving and Weighing
- Battery Staging and Delivery
- Warehouse Operations
- Spill Procedure

GENERAL PROCEDURE

Packaging requirements for SPENT LEAD-ACID BATTERIES	DOCUMENT ID:	PAGE. 1 OF 3
	REVISION No. 0	REVISION DATE
		ISSUE DATE 01/01/10

1. OBJECTIVE

To establish instructions for the packaging and shipment of spent lead-acid batteries by suppliers to the Florence Recycling Center.

2. REFERENCES

- US Department of Transportation Regulations: 49 CFR 171 through 178 (Subpart C – Hazardous Materials Regulations)
- US Environmental Protection Agency Regulations 40 CFR 273 Subpart D; Transporters of Universal Waste

3. TERMINOLOGY

Suppliers: Companies or business units from which Florence Recycling Center receives spent lead-acid batteries.

Pallet: A set of batteries that is stacked on a pallet made of wood or plastic and wrapped with stretch plastic film.

Lot: A trailer-load of pallets of spent lead-acid batteries not to exceed 20 pallets.

4. INSTRUCTIONS

Listed below are the packaging and loading requirements for suppliers of spent lead-acid batteries to the Florence Recycling Center.

Packaging requirements

Applicable requirements for suppliers with respect to packaging are:

4.1 All shipments of spent lead-acid batteries must be placed on pallets and wrapped with stretch plastic film.

- All spent lead-acid batteries must be intact when packed.
- All spent lead-acid batteries must be sealed with fill caps in place.

4.2 The spent lead-acid batteries must be arranged on pallets that comply with the following:

- Only use pallets that are intact and in good condition.
- After the first layer of spent lead-acid batteries, a cardboard divider must be placed and so on to the penultimate battery layer.

- The number of layers and/or spent lead-acid batteries per pallet must be a maximum height of three layers or about 60 batteries (average) per pallet.
- Each pallet of spent lead-acid batteries must be wound with stretch plastic film, minimum of four laps.
- Each pallet of batteries must be identified with the number of batteries on it and the name of the supplier.

Requirements for Loading

4.3 The batteries should be loaded taking into account the following criteria:

- Do not stack pallets inside the trailer.
- The pallets should fit inside the trailer such that no portion of one pallet sits or rests on another pallet.

4.4 All shipments of batteries must include shipping papers in accordance with 49 CFR 172:

- Documentation of the amount of material that is sent and the supplier name and address.
- Spent lead-acid batteries become hazardous waste when they arrive at a facility that will both store and recycle them. A Bill of Lading or US EPA Manifest may be used to track the shipment. Shipping papers must include the shipper, the receiving facility, the total amount of material that is sent, and the date of the shipment. Packaging, labeling, marking, and placarding must meet applicable US Department of Transportation requirements for shipment of hazardous materials.

4.5 Do not send other materials in shipments of spent lead-acid batteries. If unacceptable material is included in a shipment, the cost for sorting and disposal of the unacceptable material will be charged to the supplier.

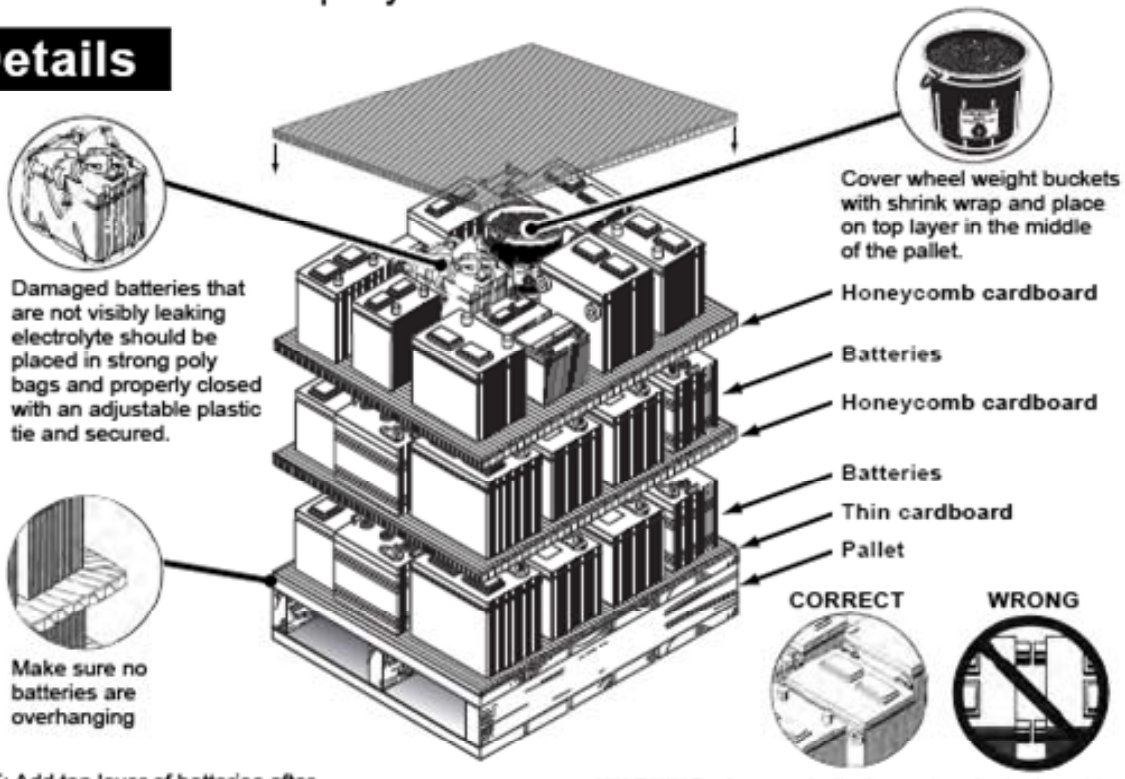
5. RECORD OF CHANGES

No.	DESCRIPTION OF CHANGE	CHANGE DATE
0	Documents written for the first time.	01/01/10

BATTERY PREPARATION

How to Properly Stack Used Batteries on Pallets

Details

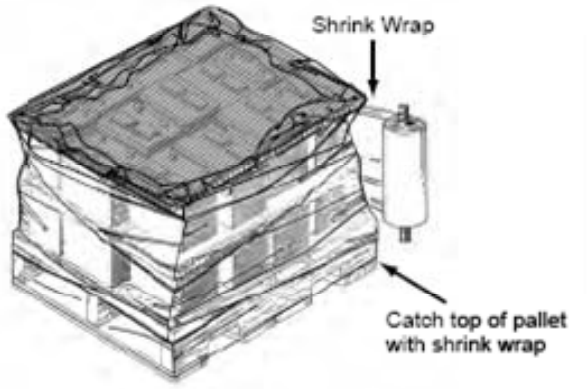


NOTE: Add top layer of batteries after shrink wrapping bottom 2 layers

WARNING: Arrange batteries so terminals do not touch. Terminals touching may cause a short and/or fire!

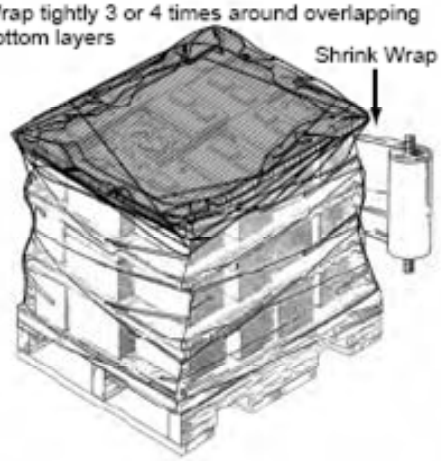
STEP 1

- Load batteries 2 layers high, then shrink wrap
- Wrap tightly 3 or 4 times around, making sure to catch top of pallet to help anchor load



STEP 2

- Load third layer, place cardboard on top, then shrink wrap entire load
- Wrap tightly 3 or 4 times around overlapping bottom layers



GENERAL PROCEDURE

Packaging requirements for RECYCLABLE LEAD MATERIAL	DOCUMENT ID:	PAGE. 1 OF 3
	REVISION No. 0	REVISION DATE
		ISSUE DATE 01/01/10

1. OBJECTIVE

To establish instructions for the packaging and shipment of recyclable lead material by suppliers to the Florence Recycling Center.

2. REFERENCES

- US Department of Transportation Regulations: 49 CFR 171 through 178 (Subpart C – Hazardous Materials Regulations)

3. TERMINOLOGY

Suppliers: Companies or business units from which Florence Recycling Center receives recyclable lead material.

Pallet: A set of drums (maximum of 4) placed on a pallet made of wood or plastic and wrapped with stretch plastic film.

Lot: A trailer-load of pallets of recyclable lead not to exceed 20 pallets.

4. INSTRUCTIONS

Listed below are the packaging and loading requirements for suppliers of recyclable lead material to the Florence Recycling Center.

Packaging requirements

Applicable requirements for suppliers with respect to packaging are:

4.1 All shipments of recyclable lead material must be placed on pallets and wrapped with stretch plastic film.

- All dry (not exposed to sulfuric acid) recyclable lead material must be place in steel or plastic drums or similar containers.
- All wet (exposed to sulfuric acid) recyclable lead material must be placed in plastic or plastic-lined steel drums or similar containers.
- Do not send liquid lead material.
- Recyclable lead material must conform to one of the profiles acceptable at the facility.
- All containers of recyclable lead material must be closed and sealed.

4.2 The recyclable lead material must be arranged on pallets that comply with the following:

- Only use pallets that are intact and in good condition.
- Do not stack drums or containers on a pallet.
- The number of drums per pallet must be a maximum of four.
- Each pallet of drums of recyclable lead material must be wound with stretch plastic film, minimum of four laps.
- Each drum and each pallet of drums must be identified with a description of the material, the material profile it conforms with, the amount of material, and the name of the supplier.

Requirements for Loading

4.3 The recyclable lead material should be loaded taking into account the following criteria:

- Do not stack pallets inside the trailer.
- The pallets should fit inside the trailer such that no portion of one pallet sits or rests on another pallet.
- If one trailer is shipping a combined load of both spent battery pallets and recyclable lead material pallets, the recyclable lead material pallets must be loaded first.

4.4 All shipments of recyclable lead material must include shipping papers in accordance with 49 CFR 172:

- Documentation of the amount of material that is sent and the supplier name and address.
- Only recyclable lead material that is not classified as a RCRA hazardous waste may be shipped to the Florence Recycling Center. A Bill of Lading or US EPA Manifest may be used to track the shipment. Shipping papers must include the shipper, the receiving facility, the total amount of material that is sent, and the date of the shipment. Packaging, labeling, marking, and placarding must meet applicable US Department of Transportation requirements for shipment of hazardous materials.

4.5 Do not send other materials in shipments of recyclable lead material. If unacceptable material is included in a shipment, the cost for sorting and disposal of the unacceptable material will be charged to the supplier.

5. RECORD OF CHANGES

No.	DESCRIPTION OF CHANGE	CHANGE DATE
0	Documents written for the first time.	01/01/10

WORK INSTRUCTION

Receiving and Weighing Requirements for SPENT LEAD-ACID BATTERIES	DOCUMENT ID:	PAGE. 1 OF 3
	REVISION No. 0	REVISION DATE
		ISSUE DATE 01/01/10

1. OBJECTIVE

To establish procedures ensuring that the spent lead-acid batteries received at the Florence Recycling Center conform to their accompanying shipping documents and to applicable environmental regulations.

2. REFERENCES

- US Department of Transportation Regulations: 49 CFR 171 through 178 (Subpart C – Hazardous Materials Regulations)
- US Environmental Protection Agency Regulations: 40 CFR 273 Subpart D; Transporters of Universal Waste

3. TERMINOLOGY

Suppliers: Companies or business units from which Florence Recycling Center receives spent lead-acid batteries.

Pallet: A set of batteries that is stacked on a pallet made of wood or plastic and wrapped with stretch plastic film.

Lot: A trailer-load of pallets of spent lead-acid batteries not to exceed 20 pallets.

Description codes: These codes categorize the purpose or potential consequence of each instruction as follows.

Q	Quality
S	Safety
E	Environmental

4. INSTRUCTIONS

Listed below are the receiving and weighing instructions for spent lead-acid batteries received at the Florence Recycling Center.

At the Beginning of a Shift

Shift start (Scale Operator)	Q	Review open issues from previous shifts in the Battery Storage Operating Log.
	Q	Validate that the pending paperwork for weighing is in its proper place.
	S	Ensure that the truck weighing station is clean and tidy.

Weigh Batteries

Weigh Spent Batteries (Scale Operator)	Q	Verify that the trailer is centered on the scale.
	Q	Receive and verify documentation of cargo (bill of lading or manifest).
	E	Review that the proper shipping name of the cargo is "Batteries, wet, filled with acid, *electric storage*" on the bill of lading or manifest - load should be only spent batteries.
	Q	Record in the Operating Log.
	Q	Generate a gross weight ticket and record the number of pallets from the bill of lading or manifest.
	Q	Print the ticket and attach to the file.
	Q	Place the paperwork on the pending trailer to weigh after unloading.
Inspect and identify lead-acid batteries (Scale Operator)	S	Check that the clamps are capable of operation. Always use appropriate personal protection equipment (PPE) for work (gloves, hardhat, respirator, safety glasses, uniform, and safety shoes as required).
	S	Remove the seal on the door of the trailer.
	Q	Give the trailer driver the material identification documentation.
	Q	Tell the driver which off-loading dock to use according to the designated storage location for the load.

Respond to paperwork discrepancies (Scale Operator?)	E	Do not accept spent lead-acid batteries if not described on the manifest or bill of lading, or if the description of the shipment is other than automotive lead-acid batteries.
	Q	Contact the supplier to correct any deficient paperwork before accepting the shipment.
	E	Do not accept non-automotive batteries.
Tare trailers (Scale Operator)	Q	Re-weigh the empty trailer, ensuring that the unit is centered on the scale.
	Q	Print the weight ticket.
	Q	Attach the net weight ticket to the documentation.
	Q	Put the paperwork on the checkout.

At the End of a Shift

Shift end (Scale Operator)	Q	Register in the Operating Log open issues for next shift.
	Q	Deliver paperwork for next trailers to weigh.
	E	Ensure that the delivery area is clean and tidy.

5. RECORD OF CHANGES

No.	DESCRIPTION OF CHANGE	CHANGE DATE
0	Documents written for the first time.	01/01/10

WORK INSTRUCTION

Receiving and Weighing Requirements for RECYCLABLE LEAD MATERIAL	DOCUMENT ID:	PAGE. 1 OF 3
	REVISION No. 0	REVISION DATE
		ISSUE DATE 01/01/10

1. OBJECTIVE

To establish procedures ensuring that the recyclable lead material received at the Florence Recycling Center conforms to its accompanying shipping documents and to applicable environmental regulations.

2. REFERENCES

- US Department of Transportation Regulations: 49 CFR 171 through 178 (Subpart C – Hazardous Materials Regulations)

3. TERMINOLOGY

Suppliers: Companies or business units from which Florence Recycling Center receive recyclable lead material.

Pallet: A set of drums (maximum of 4) placed on a pallet made of wood or plastic and wrapped with stretch plastic film.

Lot: A trailer-load of pallets of spent lead-acid batteries not to exceed 20 pallets.

Description codes: These codes categorize the purpose or potential consequence of each instruction as follows.

Q	Quality
S	Safety
E	Environmental

4. INSTRUCTIONS

Listed below are the receiving and weighing instructions for recyclable lead material received at the Florence Recycling Center.

At the Beginning of a Shift

Shift start (Scale Operator)	Q	Review open issues from previous shifts in the Charge Preparation Area Operating Log.
	Q	Validate that the pending paperwork for weighing is in its proper place.
	S	Ensure that the truck weighing station is clean and tidy.

Weigh Materials

Weigh Recyclable Lead Material (Scale Operator)	Q	Verify that the trailer is centered on the scale.
	Q	Receive and verify documentation of cargo (bill of lading or manifest).
	E	Review the proper shipping name of the cargo on the bill of lading or manifest and the material profile.
	Q	Record in the Operating Log.
	Q	Generate a gross weight ticket and record the number of pallets from the bill of lading or manifest.
	Q	Print the ticket and attach to the file.
	Q	Place the paperwork on the pending trailer to weigh after unloading.
Inspect and identify recyclable lead material (Scale Operator)	S	Check that the clamps are capable of operation. Always use appropriate personal protection equipment (PPE) for work (gloves, hardhat, respirator, safety glasses, uniform, and safety shoes as required).
	S	Remove the seal on the door of the trailer.
	Q	Give the trailer driver the material identification documentation.
	Q	Tell the driver where to off load the material according to the designated storage location for the load (Battery Warehouse or Load Preparation Area).

Respond to paperwork discrepancies (Scale Operator?)	E	Do not accept recyclable lead material if not described on the manifest or bill of lading, or if the description of the shipment is other than an approved profile for the facility.
	Q	Contact the supplier to correct any deficient paperwork before accepting the shipment.
	E	Do not accept material that does not have an approved profile.
Tare trailers (Scale Operator)	Q	Re-weigh the empty trailer, ensuring that the unit is centered on the scale.
	Q	Print the weight ticket.
	Q	Attach the net weight ticket to the documentation.
	Q	Put the paperwork on the checkout.

At the End of a Shift

Shift end (Scale Operator)	Q	Register in the Operating Log open issues for next shift.
	Q	Deliver paperwork for next trailers to weigh.
	E	Ensure that the delivery area is clean and tidy.

5. RECORD OF CHANGES

No.	DESCRIPTION OF CHANGE	CHANGE DATE
0	Documents written for the first time.	01/01/10

WORK INSTRUCTION

Operating Procedures for BATTERY WAREHOUSING, STAGING, AND DELIVERY	DOCUMENT ID:	PAGE. 1 OF 5
	REVISION No. 1	REVISION DATE
		ISSUE DATE 06/04/10

1. OBJECTIVE

To properly track the processing of lots (truck loads) of pallets of spent lead-acid batteries and to establish procedures ensuring proper operation of the Battery Warehouse and Breaker Staging Areas at the Florence Recycling Center so that hazardous waste is not released to the environment and applicable environmental regulations are followed.

2. REFERENCES

US Environmental Protection Agency Regulations: 40 CFR 262 and 264

3. TERMINOLOGY

Suppliers: Companies or business units from which the Florence Recycling Center receives spent lead-acid batteries.

Pallet: A set of batteries that is stacked on a pallet made of wood or plastic and wrapped with stretch plastic film.

Lot: A trailer-load of pallets of spent lead-acid batteries not to exceed ten pallets.

Description codes: These codes categorize the purpose or potential consequence of each instruction as follows.

Q	Quality
S	Safety
E	Environmental

4. INSTRUCTIONS

Listed below are the receiving, staging, and delivery instructions for spent lead-acid batteries received at the Florence Recycling Center.

At the Beginning of Each Shift

Start of Shift (Battery Forklift Operator)	E/S	Complete the checklist activities for mobile equipment (forklifts) and ramps. If deficiencies are observed, correct or service.
	E/S	Always use appropriate personal protection equipment (PPE) for work in the Battery Warehouse (gloves, hardhat, respirator, safety glasses, uniform, and safety shoes as required).
Shift start (Battery Assistant)	E/S	Confirm that equipment and spill material in the Warehouse and CX staging areas are present and in good working condition.

Receipt and Storage in Battery Warehouse

Receiving trailer off-load (Warehouse Battery Forklift Operator)	Q/S	Direct the trailer driver to the correct ramp for off-loading.
	Q	Ensure that the spent lead-acid batteries have their proper identification showing the lot number and total number of pallets.
	E	Inspect that pallets with batteries meet the packaging requirements and are in good condition with no leaks.
	Q	Move each lot to its assigned location in the Battery Warehouse. Off-loaded lots must be moved to their storage locations in the Battery Warehouse within the same shift.
	E/S	Place pallets of spent lead-acid batteries within the marked storage locations to ensure sufficient aisle space. Stack pallets of spent lead-acid batteries no more than four pallets high in the Battery Warehouse. Ensure that the stacks are vertical and stable, and do not overhang into the aisle or outside the containment area. Ensure that the hazardous waste labels are visible.
	E/S	Transfer up to two pallets of spent lead-acid batteries (maximum) in each movement to avoid spillage of material. Do not exceed the speed limit of 5 mph.

WORK INSTRUCTION

Operating Procedures for BATTERY WAREHOUSING, STAGING, AND DELIVERY	DOCUMENT ID:	PAGE. 3 OF 5
	REVISION No. 1	REVISION DATE
		ISSUE DATE 06/04/10

Transfer of Batteries from Warehouse to Breaker Area Staging

Transfer spent lead-acid batteries to the Warehouse Staging Area (Warehouse Battery Forklift Operator)	Q	Support personnel will identify the locations of lots (at the Battery Warehouse) to be processed within each shift.
	Q	Batteries do not have an expiration date, but ensure the processing of lots by location based on the criterion of first-in first-out and feasibility of maneuvering the forklift.
	E/S	Transfer pallets of spent lead-acid batteries in the Battery Warehouse to the Warehouse staging area. Transfer up to two pallets of spent lead-acid batteries (maximum) in each movement. Do not exceed the speed limit of 5 mph.
	E/S	Ensure that only three lots are staged at a time.
	E/Q	Ensure that the lots have their proper identification (lot number, number of pallets), and are in good condition.
Transfer spent lead-acid batteries to the CX Staging Area (CX Battery Forklift Operator)	Q	Move spent lead-acid batteries staged at the Warehouse Staging Area into the CX Breaker staging area during the same shift.
	E/Q	Ensure that the lots have their proper identification (lot number, number of pallets), and are in good condition.
	E/S	Transfer maximum of two pallets in each movement to avoid spillage. Do not exceed the speed limit of 5 mph.
	E/Q	Ensure that pallets of spent lead-acid batteries and lots maintain their identification (lot number, number of pallets). Do not unwrap pallets of spent lead-acid batteries in the Battery Warehouse before transferring them to the CX Breaker Area unless they need to be repackaged.
	Q/S	At the CX Breaker, unwrap and inspect the contents of each pallet of spent lead-acid batteries. Separate lots with more than half reject batteries for separate handling.
	E/S	Ensure that only three lots are placed at the CX Breaker Staging Area and resupply only when the CX Breaker personnel have finished the previous lot. Place pallets of spent lead-acid batteries within the designated area only. Return batteries to the warehouse if the CX Breaker is down for more than a shift.

Response Plans

Avoiding accidental spills (Battery Forklift Operator)	E	Ensure that pallets of spent lead-acid batteries are vertical and stable with cardboard separators between each layer of batteries. Ensure that each pallet of spent lead-acid batteries is wrapped with at least four turns of stretch plastic film.
Response plan (Forklift Operators) [Support: Battery Assistant]	E	If a wood pallet is not in good condition or a pallet of spent lead-acid batteries is not properly packaged, transfer the pallet of spent lead-acid batteries for immediate processing at the CX Breaker if it can be moved safely. Otherwise, repackage the pallet of spent lead-acid batteries.

Addressing Spills, Loss of Lot Identification (ID)

Managing accidental spills (Battery Forklift Operator) [Support: Battery Assistant]	E	If acid is spilled during transfer or staging of spent lead-acid batteries, place sodium carbonate or calcium carbonate on the spilled acid until no free liquid is observed. Place leaking battery in a designated plastic or plastic-lined drum or bin. Refer to Spill Response Work Instruction for detailed response procedures.
	E/S	If the release could impact soil, surface water, or groundwater, or if the spill caused an injury, notify the Emergency Coordinator on call in accordance with the Contingency Plan.
	E	Collect the material generated by the spill cleanup and place it in the designated hazardous waste satellite accumulation drum (blue).
Replacement ID (Batteries Forklift Operator) [support: Battery Assistant]	Q	Do not deliver pallets of spent lead-acid batteries to the CX Breaker if they do not have a lot identification (lot number, number of pallets) .
	E/S	Report any missing batch documentation to support personnel, who will generate new identification documentation.
	Q	Place the new identification documentation, corresponding to the lot of spent lead-acid batteries on the pallet.

Waste disposal (Assistant Batteries)	E	Place waste generated by the handling and storage of batteries in the designated hazardous waste drums (blue) or if nonhazardous, in recycling bins. These wastes may include cardboard, stretch plastic, strap, empty paint cans, used brushes, etc.
	E	Do not overfill the drum. Ensure that the container lid is closed except when material is being added or removed.
	E/S	Once the container is full, write the date on the container's hazardous waste label and move the drum to the assigned area for waste storage.

At the End of Each Shift

Return equipment used (Battery Assistant)	S	Inspect equipment and spill response material, and return them to their appropriate locations. Report problems with any spill response equipment to the Shift Supervisor.

5. RECORD OF CHANGES

No.	DESCRIPTION OF CHANGE	CHANGE DATE
0	Documents written for the first time.	01/01/10
1	Technical review update	06/04/10

WORK INSTRUCTION

Operating Procedures for BATTERY WAREHOUSE	DOCUMENT ID:	PAGE. 1 OF 4
	REVISION No. 1	REVISION DATE
		ISSUE DATE 06/04/10

1. OBJECTIVE

To establish procedures ensuring proper operation of the Battery Warehouse at the Florence Recycling Center such that hazardous waste is not released and applicable environmental regulations are followed.

2. REFERENCES

- Battery Warehouse Inspection Checklist and Schedule
- US Environmental Protection Agency Regulations: 40 CFR 262 and 264

3. TERMINOLOGY

Pallet: A set of batteries that is stacked on a pallet made of wood or plastic and wrapped with stretch plastic film.

Lot: A trailer-load of pallets of spent lead-acid batteries not to exceed 20 pallets.

Description codes: These codes categorize the purpose or potential consequence of each instruction as follows.

Q	Quality
S	Safety
E	Environmental

4. INSTRUCTIONS

Listed below are the Battery Warehouse operation instructions for spent lead-acid batteries received at the Florence Recycling Center.

At the Beginning of Each Shift

Review Equipment (Battery Assistant)	S	Inspect the equipment to be used to ensure they are in good operating condition.
	E/S	Always use appropriate personal protection equipment (PPE) for work in the Battery Warehouse (gloves, hardhat, respirator, safety glasses, uniform, and safety shoes as required).

Warehouse Housekeeping

Floor Cleaning (Battery Assistant)	E	Sweep walkways and storage areas at least once daily. Place sweepings in the designated hazardous waste satellite accumulation drum (blue).
	E	Clean the warehouse floors with brooms and shovels, and occasionally with water, if necessary.
	E	If cleaning with water, ensure that the water supply is turned off when not in use.
Preventive Inspection of Battery Pallets (Battery Assistant)	E	Look for pallets that are not in good condition. If they can be moved safely as-is, move them to CX staging. If they cannot be moved safely, repackage the spent lead-acid batteries on a pallet to ensure safe movement.
	E	If a pallet must be repackaged, replace cardboard and other packaging material that was in bad condition and discard the waste packaging material in the designated hazardous waste containers (blue). Make sure the hazardous waste label is present and visible.
Water pipes (Battery Assistant) [Support: Shipping Coordinator]	E	Ensure that the water pipes are properly identified according to the facility's color code.
	E	Report any pipe damage to maintenance for correction.
Response Plan (Acid spill) (Battery Assistant)	E/S	Place sodium carbonate or calcium carbonate on the spilled acid until no free liquids are observed. If a spill has the potential to impact soil, surface water, or groundwater, or if the spill caused an injury, notify the Emergency Coordinator on call in accordance with the Contingency Plan.
	E	Sweep or shovel up all the sodium carbonate/calcium carbonate and place it in the designated hazardous waste drum (blue).

Waste disposal (Battery Assistant)	E	Place waste generated by the handling and storage of spent lead-acid batteries in the designated hazardous waste drums (blue) or if nonhazardous, in recycling bins. This waste may include cardboard, stretch plastic film, strap, empty paint cans, used brushes, etc.
	E	Keep the waste below the maximum specified level. The container lid must be in place except when material is being added or removed.
	E/S	Once the container reaches its maximum specified level, write the date on the container's hazardous waste label and move it to the assigned hazardous waste storage area.

Secondary Containment Cleaning

Inspect containment area (Battery Assistant) [Shipping Coordinator]	E	Visually inspect the secondary containment area and condition of the epoxy coated flooring system. Report any damage to the Environmental Coordinator.
	E	Record the date of cleaning, coating and concrete conditions in the Operating Record.
Response Plan (Damage to the epoxy) (Shipping Coordinator)	E	Record in the Operating Record any damage found.
	E	Coordinate repair of the affected area. Record date of repair and inspection of its completeness in the Operating Record.
	E	Do not use water in this area during the time of repair to avoid a possible impact to soil, surface water, or groundwater.

At the End of Each Shift

Return equipment used (Battery Assistant)	S	Place equipment and / or cleaning material used in the area to their proper location. Report any problems with the condition of the equipment to the Shift Supervisor.

5. RECORD OF CHANGES

No.	DESCRIPTION OF CHANGE	CHANGE DATE
0	Documents written for the first time.	01/01/10
1	Technical review update	06/04/10

WORK INSTRUCTION

Reaction Plan for SPILLED LEAD-ACID BATTERIES	DOCUMENT ID:	PAGE. 1 OF 3
	REVISION No. 0	REVISION DATE
		ISSUE DATE 01/01/10

1. OBJECTIVE

To establish procedures to ensure that the spills of acid from spent lead-acid batteries received at the Florence Recycling Center are quickly, completely, and effectively cleaned up in accordance with applicable environmental regulations.

2. REFERENCES

- Florence Recycling Center Contingency Plan

3. TERMINOLOGY

Pallet: A set of batteries that is stacked on a pallet made of wood or plastic and wrapped with stretch plastic film.

Description codes: These codes categorize the purpose or potential consequence of each instruction as follows.

Q	Quality
S	Safety
E	Environmental

4. INSTRUCTIONS

Listed below are the spill response instructions for spent lead-acid batteries received at the Florence Recycling Center.

When Spill is Observed

Inspect release and surrounding area (Battery Assistant)	S	Always use appropriate personal protection equipment (PPE) for work in the Battery Warehouse (gloves, hardhat, respirator, safety glasses, uniform, and safety shoes as required).
	E/S	If the release has the potential to impact soil, surface water, or groundwater, or if the spill caused an injury, notify the Emergency Coordinator on call in accordance with the Contingency Plan.

Inspect release and surrounding area (Continued) (Battery Assistant)	E/S	Inspect pallet with the spill and adjacent pallets to determine the extent of spillage. Secure all batteries to prevent additional spillage. This may require removing the packaging of the affected pallet of spent lead-acid batteries.
		Place any leaking spent lead-acid batteries into the designated plastic or plastic-lined drums or bins.
	E/S	Move pallets to obtain clear access to the spilled acid.

Clean Up Spill

Neutralize spilled acid (Battery Assistant)	E/S	Place sodium carbonate or calcium carbonate on the spilled acid until no free liquid is observed.
	E/S	Sweep up all spent sodium carbonate or calcium carbonate and place it into the designated hazardous waste satellite accumulation container (blue).

Manage Affected Pallets of Batteries

Move/repackage/ process batteries on affected pallets (Battery Assistant)	E/S	Move the leaking batteries that have been placed in the designated drums or bins to the CX Staging Area for immediate processing. If the batteries on the affected pallet are stable, move the pallet as-is to the CX Staging Area for immediate processing. Provide sufficient containment under the pallet of spent lead-acid batteries to contain any spillage during movement to the CX. The Shift Supervisor will make this determination.
	E/S	If the batteries cannot safely be moved on the pallet, repackage the pallet and then move it to the CX staging area for processing. Provide sufficient containment under the pallet of spent lead-acid batteries to contain any spillage during movement to the CX.
	E/S	Evaluate nearby pallets of spent lead-acid batteries for potential need to repackage.
	E	Place all removed packaging material into the designated hazardous waste container (blue).

Spill Follow-up

Reporting (Battery Assistant, Shift Supervisor)	E	Record in the Operating Log the time, location, and amount of the spill. Record response actions and identification number of the pallet of spent lead-acid batteries involved.
	E	If spilled acid impacts soil, surface water, or groundwater, follow the reporting procedures described in the Contingency Plan.
Replace Materials (Battery Assistant)	E/S	Inspect equipment and spill response material, and return them to their appropriate locations. Report problems with any spill response equipment to the Shift Supervisor.

5. RECORD OF CHANGES

No.	DESCRIPTION OF CHANGE	CHANGE DATE
0	Documents written for the first time.	01/01/10

Attachment 4
Incoming Material Profiles

This attachment provides a copy of the Supplier Agreement for sending recyclable material to the Florence Recycling Center and profiles for materials that are accepted at the site. Except for spent lead-acid batteries, the recyclable materials are not considered waste when reclaimed.

Profiles

- Spent batteries
- Reject batteries
- Scrap strip lead, edge trimmings, lug punching
- Plates
- Grids
- Grids and posts
- Dross
- Paste and paste sludge
- Cases, vents, and covers
- Charging jumper clips
- Materials from laboratory assay

Date

JCBGI Battery Manufacturer
Address
City, State

Re: Supplier Certification

Dear ___:

Johnson Controls Battery Group, Inc. (JCBGI), Florence Recycling Center is subject to regulation as a storage facility for hazardous waste under the Resource Conservation and Recovery Act (RCRA), administered by the South Carolina Department of Health and Environmental Control (SC DHEC). As part of the RCRA Part B permit, the Florence Recycling Center is asking suppliers of recyclable material to certify that only material approved to be received at the facility will be sent to the Florence Recycling Center for recovery. Only the following material may be sent to the Florence Recycling Center:

- Intact spent lead-acid batteries
- Non-spent lead-acid batteries
- Wet and dry lead-bearing scrap that may include the following:
  - Spent grids, posts, and separators
  - Lead plates and groups
  - Lead drosses
- Off-specification lead oxide
- Spent or defective battery cases, covers, and vents

Spent lead-acid batteries are generally managed as universal waste, but must be managed as hazardous waste if stored at the same facility at which they are recycled. Thus, spent lead-acid batteries may be shipped to the Florence Recycling Center under a RCRA hazardous waste manifest or under a bill of lading. Other recyclable lead-bearing materials listed above are not waste when reclaimed; therefore, should be shipped to the Florence Recycling Center under a bill of lading.

Additional restrictions on material that can be accepted must also be imposed to protect facility employees and the environment. The Florence Recycling Center will not accept any authorized material that is contaminated with waste oil, asbestos, polychlorinated biphenyls (PCBs), aluminum, mercury, solvents, sodium, or any waste contaminants other than indigenous lead-acid battery material or lead alloying metals (arsenic, antimony, *etc.*). It is the

responsibility of the supplier to ensure that only authorized material is shipped to the Florence Recycling Center.

A copy of the approved Recyclable Material Profiles is included with this letter. Please feel free to contact us at 843.XXX.XXX if you have any questions concerning what constitutes acceptable material at the Florence Recycling Center.

To be an approved supplier to the Florence Recycling Center, please complete and return the attached Generator Certification form to the following address:

JCBGI Florence Recycling Center
1739 Paper Mill Road
Florence, South Carolina 29506

Sincerely,

Name
Title

GENERATOR CERTIFICATION

The undersigned has read and understands the requirements set forth in the attached letter and agrees to send to JCBGI's Florence Recycling Center in Florence, South Carolina, only the material that conforms to these restrictions. I, the undersigned, understand that the Florence Recycling Center may reject any shipment containing unacceptable material or, if necessary, dispose of the unacceptable material at an appropriate hazardous waste disposal facility I, the undersigned, agree to bear any costs associated with such off-site disposal including analysis, transport, treatment, disposal fees, penalties, and/or fines.

Facility	Signature
	Name and Title
Address	Date
USEPA ID Number	

JCBGI RECYCLABLE MATERIAL PROFILE

GENERAL INFORMATION

Lead-bearing recyclable material will be accepted from JCI's Battery Manufacturing facilities for the recovery of lead. The following lead-bearing material may be accepted for recycling at the Florence Recycling Center. This material may be accepted only after prior approval by the Florence Recycling Center and subject to the restrictions set forth at 40 CFR 266.100(c)(3).

PROPERTIES AND COMPOSITION

1. Process Generating Waste: *Strip lead grid production, lead-acid battery manufacturing*
2. Waste Name: *Scrap strip lead, edge trimmings, lug punching, scrap lead metal*
3. a. Is this a USEPA Hazardous Waste (40 CFR 261)? ☐ Yes ☒ No
   b. Identify all USEPA listed and characteristic waste code numbers (D, F, K, P, U): *Exempt as scrap metal and/or characteristic by-product when recycled*

4. Physical state: ☐ Liquid ☒ Solid ☐ Both ☐ Slurry ☐ Sludge
   ☐ Singlelayer ☐ Multilayer
   ☐ Free Liquid Range _____ to _____ %

5. pH range _____ or not applicable ☒
6. Strong odor? Describe *N/A*
7. Liquid Flash point: _____ or not applicable ☒
8. Physical appearance (color and texture): *Grayish bits and pieces of metallic lead*
9. Chemical composition. List all known constituents present in any concentration. Attach analytical reports where available**.**

Lead	*to 99*	*%*
Other metals (Antimony, arsenic,	*to 1*	*%*
tin and copper) and inert solids	*to*	*%*
	to	*%*
	to	*%*
	to	*%*

Total composition (must equal or exceed 100%) 100

10. Is this material listed on Appendix XI of 40 CFR 266? ☐ Yes ☐ No ☒ N/A*
    If not, provide: Total toxic organic constituents: _____ ppm
    Heating Value _____ Btu/lb

*N/A indicates material is exempt from federal regulation as a hazardous waste.

JCBGI RECYCLABLE MATERIAL PROFILE

GENERAL INFORMATION

Lead-bearing recyclable material will be accepted from JCI's Battery Manufacturing facilities for the recovery of lead. The following lead-bearing material may be accepted for recycling at the Florence Recycling Center. This material may be accepted only after prior approval by the Florence Recycling Center and subject to the restrictions set forth at 40 CFR 266.100(c)(3).

PROPERTIES AND COMPOSITION

1. Process Generating Waste: *Battery manufacturing, malformed or reject or damaged batteries*
2. Waste Name: *Reject batteries*
3. a. Is this a USEPA Hazardous Waste (40 CFR 261)? ☐ Yes ☒ No
   b. Identify all USEPA listed and characteristic waste code numbers (D, F, K, P, U):

4. Physical state: ☐ Liquid ☐ Solid ☒ Both ☐ Slurry ☐ Sludge
   ☐ Singlelayer ☐ Multilayer
   ☐ Free Liquid Range _____ to _____ %
5. pH range <2 or not applicable ☐ *of liquid phase*
6. Strong odor? Describe *N/A*
7. Liquid Flash point: _____ or not applicable ☒
8. Physical appearance (color and texture): *Whole batteries in plastic cases. Some dry, some with electrolyte*
9. Chemical composition. List all known constituents present in any concentration. Attach analytical reports where available.

Lead	*to 55*	*%*
Sulfuric acid	*to 37*	*%*
Polypropylene case	*to 6*	*%*
Inert solids N.O.S.	*to 2*	*%*
(Includes polyethylene separators)	*to*	*%*
	to	*%*

Total composition (must equal or exceed 100%) 100

10. Is this material listed on Appendix XI of 40 CFR 266? ☒ Yes ☐ No ☐ N/A*
    If not, provide: Total toxic organic constituents: _____ ppm
    Heating Value _____ Btu/lb

*N/A indicates material is exempt from federal regulation as a hazardous waste.

JCBGI RECYCLABLE MATERIAL PROFILE

GENERAL INFORMATION

Lead-bearing recyclable material will be accepted from JCI's Battery Manufacturing facilities for the recovery of lead. The following lead-bearing material may be accepted for recycling at the Florence Recycling Center. This material may be accepted only after prior approval by the Florence Recycling Center and subject to the restrictions set forth at 40 CFR 266.100(c)(3).

PROPERTIES AND COMPOSITION

1. Process Generating Waste: *Spent batteries returned by consumers*
2. Waste Name: *Spent (or junk) batteries*
3. a. Is this a USEPA Hazardous Waste (40 CFR 261)? ☐ Yes ☒ No
   b. Identify all USEPA listed and characteristic waste code numbers (D, F, K, P, U): _____
4. Physical state: ☐ Liquid ☐ Solid ☒ Both ☐ Slurry ☐ Sludge
   ☐ Singlelayer ☐ Multilayer
   ☐ Free Liquid Range _____ to _____ %
5. pH range <2 or not applicable ☐
6. Strong odor? Describe *N/A*
7. Liquid Flash point: _____ or not applicable ☒
8. Physical appearance (color and texture): *Whole lead-acid batteries*
9. Chemical composition. List all known constituents present in any concentration. Attach analytical reports where available**.**

Lead	*to 55*	*%*
Sulfuric acid	*to 37*	*%*
Polypropylene	*to 6*	*%*
(Antimony, arsenic, copper,	*to 2*	*%*
tin, barium, inert solids)	*to*	*%*
	to	*%*

Total composition (must equal or exceed 100%) 100

10. Is this material listed on Appendix XI of 40 CFR 266? ☒ Yes ☐ No ☐ N/A*
    If not, provide: Total toxic organic constituents: _____ ppm
    Heating Value _____ Btu/lb

*N/A indicates material is exempt from federal regulation as a hazardous waste.

JCBGI RECYCLABLE MATERIAL PROFILE

GENERAL INFORMATION

Lead-bearing recyclable material will be accepted from JCI's Battery Manufacturing facilities for the recovery of lead. The following lead-bearing material may be accepted for recycling at the Florence Recycling Center. This material may be accepted only after prior approval by the Florence Recycling Center and subject to the restrictions set forth at 40 CFR 266.100(c)(3).

PROPERTIES AND COMPOSITION

1. Process Generating Waste: *Paste mixing in lead-acid battery manufacturing*
2. Waste Name: *Scrap slurry, slurry screenings, sump mud*
3. a. Is this a USEPA Hazardous Waste (40 CFR 261)? ☐ Yes ☒ No
   b. Identify all USEPA listed and characteristic waste code numbers (D, F, K, P, U): *Exempt as characteristic by-product or sludge when recycled*

4. Physical state: ☐ Liquid ☐ Solid ☐ Both ☒ Slurry ☒ Sludge
   ☐ Singlelayer ☐ Multilayer
   ☐ Free Liquid Range _____ to 50%
5. pH range 2 or not applicable ☐
6. Strong odor? Describe *N/A*
7. Liquid Flash point: _____ or not applicable ☒
8. Physical appearance (color and texture): *Grayish wet mud of fine (e.g. not course) material*
9. Chemical composition. List all known constituents present in any concentration. Attach analytical reports where available**.**

Lead	*to 67*	*%*
Water	*to 15*	*%*
Expander (<18% barium)	*to 3*	*%*
Sulfuric acid	*to 10*	*%*
Inert solids, N.O.S.	*to 5*	*%*
	to	*%*

Total composition (must equal or exceed 100%) 100

10. Is this material listed on Appendix XI of 40 CFR 266? ☒ Yes ☐ No ☐ N/A*
    If not, provide: Total toxic organic constituents: _____ ppm
    Heating Value _____ Btu/lb

*N/A indicates material is exempt from federal regulation as a hazardous waste.

JCBGI RECYCLABLE MATERIAL PROFILE

GENERAL NFORMATION

Lead-bearing recyclable material will be accepted from JCI's Battery Manufacturing facilities for the recovery of lead. The following lead-bearing material may be accepted for recycling at the Florence Recycling Center. This material may be accepted only after prior approval by the Florence Recycling Center and subject to the restrictions set forth at 40 CFR 266.100(c)(3).

PROPERTIES AND COMPOSITION

1. Process Generating Waste: *Malformed or damaged battery cases, covers, vents, (from formation) - lead-acid battery manufacturing*
2. Waste Name: *Case, vents, covers, separators*
3. a. Is this a USEPA Hazardous Waste (40 CFR 261)? ☐ Yes ☒ No
   b. Identify all USEPA listed and characteristic waste code numbers (D, F, K, P, U): *Exempt as characteristic by-product or sludge when recycled*

4. Physical state: ☐ Liquid ☒ Solid ☐ Both ☐ Slurry ☐ Sludge
   ☐ Singlelayer ☐ Multilayer
   ☐ Free Liquid Range _____ to _____ %
5. pH range _____ or not applicable ☒
6. Strong odor? Describe *N/A*
7. Liquid Flash point: _____ or not applicable ☒
8. Physical appearance (color and texture): *Plastic battery case components*
9. Chemical composition. List all known constituents present in any concentration. Attach analytical reports where available**.**

Polypropylene plastic	*to 98*	*%*
Lead	*to 1*	*%*
Inert solids, N.O.S.	*to 1*	*%*
(Polyethylene)	*to*	*%*
	to	*%*
	to	*%*

Total composition (must equal or exceed 100%) 100

10. Is this material listed on Appendix XI of 40 CFR 266? ☒ Yes ☐ No ☐ N/A*
    If not, provide: Total toxic organic constituents: _____ ppm
    Heating Value _____ Btu/lb

*N/A indicates material is exempt from federal regulation as a hazardous waste.

JCBGI RECYCLABLE MATERIAL PROFILE

GENERAL INFORMATION

Lead-bearing recyclable material will be accepted from JCI's Battery Manufacturing facilities for the recovery of lead. The following lead-bearing material may be accepted for recycling at the Florence Recycling Center. This material may be accepted only after prior approval by the Florence Recycling Center and subject to the restrictions set forth at 40 CFR 266.100(c)(3).

PROPERTIES AND COMPOSITION

1. Process Generating Waste: *Damaged or malformed plates from lead-acid battery manufacturing - pasting*
2. Waste Name: *Plates*
3. a. Is this a USEPA Hazardous Waste (40 CFR 261)? ☐ Yes ☒ No
   b. Identify all USEPA listed and characteristic waste code numbers (D, F, K, P, U): *Exempt as characteristic by-product when recycled*

4. Physical state: ☐ Liquid ☒ Solid ☐ Both ☐ Slurry ☐ Sludge
   ☐ Singlelayer ☐ Multilayer
   ☐ Free Liquid Range _____ to _____ %
5. pH range _____ or not applicable ☒
6. Strong odor? Describe *N/A*
7. Liquid Flash point: _____ or not applicable ☒
8. Physical appearance (color and texture): *Dull grey metallic grid with dry lead paste*
9. Chemical composition. List all known constituents present in any concentration. Attach analytical reports where available**.**

Lead (Metallic, oxides, sulfates)	*to 98*	*%*
Antimony	*to 1.3*	*%*
Barium	*to 0.06*	*%*
Tin	*to 0.3*	*%*
Inert solids, N.O.S.	*to 0.34*	*%*
	to	

Total composition (must equal or exceed 100%) 100

10. Is this material listed on Appendix XI of 40 CFR 266? ☒ Yes ☐ No ☐ N/A*
    If not, provide: Total toxic organic constituents: _____ ppm
    Heating Value _____ Btu/lb

*N/A indicates material is exempt from federal regulation as a hazardous waste.

JCBGI RECYCLABLE MATERIAL PROFILE

GENERAL INFORMATION

Lead-bearing recyclable material will be accepted from JCI's Battery Manufacturing facilities for the recovery of lead. The following lead-bearing material may be accepted for recycling at the Florence Recycling Center. This material may be accepted only after prior approval by the Florence Recycling Center and subject to the restrictions set forth at 40 CFR 266.100(c)(3).

PROPERTIES AND COMPOSITION

1. Process Generating Waste: *Damaged or malformed grids from lead-acid battery manufacturing - grid casting*
2. Waste Name: *Grids*
3. a. Is this a USEPA Hazardous Waste (40 CFR 261)? ☐ Yes ☒ No
   b. Identify all USEPA listed and characteristic waste code numbers (D, F, K, P, U): *Exempt as scrap metal and/or characteristic by-product when recycled*

4. Physical state: ☐ Liquid ☒ Solid ☐ Both ☐ Slurry ☐ Sludge
   ☐ Singlelayer ☐ Multilayer
   ☐ Free Liquid Range _____ to _____ %
5. pH range _____ or not applicable ☒
6. Strong odor? Describe *N/A*
7. Liquid Flash point: _____ or not applicable ☒
8. Physical appearance (color and texture): *Dull grey metallic grid*
9. Chemical composition. List all known constituents present in any concentration. Attach analytical reports where available**.**

Lead	*to 98*	*%*
Antimony	*to 1.5*	*%*
Tin	*to 0.4*	*%*
Aluminum	*to 0.01*	*%*
Calcium	*to 1.0*	*%*
Arsenic	*to 0.03*	*%*

Total composition (must equal or exceed 100%) 100

10. Is this material listed on Appendix XI of 40 CFR 266? ☒ Yes ☐ No ☐ N/A*
    If not, provide: Total toxic organic constituents: _____ ppm
    Heating Value _____ Btu/lb

*N/A indicates material is exempt from federal regulation as a hazardous waste.

JCBGI RECYCLABLE MATERIAL PROFILE

GENERAL INFORMATION

Lead-bearing recyclable material will be accepted from JCI's Battery Manufacturing facilities for the recovery of lead. The following lead-bearing material may be accepted for recycling at the Florence Recycling Center. This material may be accepted only after prior approval by the Florence Recycling Center and subject to the restrictions set forth at 40 CFR 266.100(c)(3).

PROPERTIES AND COMPOSITION

1. Process Generating Waste: *From molten lead in melt kettles*
2. Waste Name: *Dross*
3. a. Is this a USEPA Hazardous Waste (40 CFR 261)? ☐ Yes ☒ No
   b. Identify all USEPA listed and characteristic waste code numbers (D, F, K, P, U): *Exempt as characteristic by-product when recycled*

4. Physical state: ☐ Liquid ☒ Solid ☐ Both ☐ Slurry ☐ Sludge
   ☐ Singlelayer ☐ Multilayer
   ☐ Free Liquid Range _____ to _____ %
5. pH range _____ or not applicable ☒
6. Strong odor? Describe *N/A*
7. Liquid Flash point: _____ or not applicable ☒
8. Physical appearance (color and texture): *Dull grey metallic*
9. Chemical composition. List all known constituents present in any concentration. Attach analytical reports where available**.**

Lead	*to 95*	*%*
Antimony	*to 2*	*%*
Arsenic	*to 0.2*	*%*
Copper	*to 0.02*	*%*
Tin	*to 0.3*	*%*
Inert solids, N.O.S.	*to 3*	*%*

Total composition (must equal or exceed 100%) 100

10. Is this material listed on Appendix XI of 40 CFR 266? ☐ Yes ☐ No ☒ N/A*
    If not, provide: Total toxic organic constituents: _____ ppm
    Heating Value _____ Btu/lb

*N/A indicates material is exempt from federal regulation as a hazardous waste.

JCBGI RECYCLABLE MATERIAL PROFILE

GENERAL INFORMATION

Lead-bearing recyclable material will be accepted from JCI's Battery Manufacturing facilities for the recovery of lead. The following lead-bearing material may be accepted for recycling at the Florence Recycling Center. This material may be accepted only after prior approval by the Florence Recycling Center and subject to the restrictions set forth at 40 CFR 266.100(c)(3).

PROPERTIES AND COMPOSITION

1. Process Generating Waste: *From formation/charging of lead-acid battery manufacturing*
2. Waste Name: *Charging jumper clips*
3. a. Is this a USEPA Hazardous Waste (40 CFR 261)? ☐ Yes ☒ No
   b. Identify all USEPA listed and characteristic waste code numbers (D, F, K, P, U): *Exempt as scrap metal*

4. Physical state: ☐ Liquid ☒ Solid ☐ Both ☐ Slurry ☐ Sludge
   ☐ Singlelayer ☐ Multilayer
   ☐ Free Liquid Range _____ to _____ %
5. pH range _____ or not applicable ☒
6. Strong odor? Describe *N/A*
7. Liquid Flash point: _____ or not applicable ☒
8. Physical appearance (color and texture): *Lead lugs/clips and some cable from jumper cables*
9. Chemical composition. List all known constituents present in any concentration. Attach analytical reports where available**.**

Lead	*87 to 94*	*%*
Copper	*to 1*	*%*
Plastic insulator	*5 to 10*	*%*
Inert solids, N.O.S.	*1 to 2*	*%*
	to	*%*
	to	*%*

Total composition (must equal or exceed 100%) 100

10. Is this material listed on Appendix XI of 40 CFR 266? ☒ Yes ☐ No ☐ N/A*
    If not, provide: Total toxic organic constituents: _____ ppm
    Heating Value _____ Btu/lb

*N/A indicates material is exempt from federal regulation as a hazardous waste.

JCBGI RECYCLABLE MATERIAL PROFILE

GENERAL INFORMATION

Lead-bearing recyclable material will be accepted from JCI's Battery Manufacturing facilities for the recovery of lead. The following lead-bearing material may be accepted for recycling at the Florence Recycling Center. This material may be accepted only after prior approval by the Florence Recycling Center and subject to the restrictions set forth at 40 CFR 266.100(c)(3).

PROPERTIES AND COMPOSITION

1. Process Generating Waste: *Lead oxide and lead slugs, battery manufacturing laboratory test material*
2. Waste Name: *Materials from laboratory analysis*
3. a. Is this a USEPA Hazardous Waste (40 CFR 261)? ☐ Yes ☒ No
   b. Identify all USEPA listed and characteristic waste code numbers (D, F, K, P, U): *Exempt as characteristic by-product when recycled*

4. Physical state: ☐ Liquid ☒ Solid ☐ Both ☐ Slurry ☐ Sludge
   ☐ Singlelayer ☐ Multilayer
   ☐ Free Liquid Range _____ to _____ %
5. pH range *2 -3%* or not applicable ☐
6. Strong odor? Describe *N/A*
7. Liquid Flash point: _____ or not applicable ☒
8. Physical appearance (color and texture): *Grayish-brown or red muds and metallic lead*
9. Chemical composition. List all known constituents present in any concentration. Attach analytical reports where available**.**

Lead	*90 to 95*	*%*
Sulfuric acid	*to 3*	*%*
Inert solids, N.O.S>	*to 2*	*%*
	to	*%*
	to	*%*
	to	*%*

Total composition (must equal or exceed 100%) 100

10. Is this material listed on Appendix XI of 40 CFR 266? ☒ Yes ☐ No ☐ N/A*
    If not, provide: Total toxic organic constituents: _____ ppm
    Heating Value _____ Btu/lb

*N/A indicates material is exempt from federal regulation as a hazardous waste.

JCBGI RECYCLABLE MATERIAL PROFILE

GENERAL INFORMATION

Lead-bearing recyclable material will be accepted from JCI's Battery Manufacturing facilities for the recovery of lead. The following lead-bearing material may be accepted for recycling at the Florence Recycling Center. This material may be accepted only after prior approval by the Florence Recycling Center and subject to the restrictions set forth at 40 CFR 266.100(c)(3).

PROPERTIES AND COMPOSITION

1. Process Generating Waste: *From grid casting, plate pasting, and battery assembly processes, lead-acid battery manufacturing*
2. Waste Name: *Grids and posts*
3. a. Is this a USEPA Hazardous Waste (40 CFR 261)? ☐ Yes ☒ No
   b. Identify all USEPA listed and characteristic waste code numbers (D, F, K, P, U): *Exempt as scrap metal and/or characteristic by-product when recycled*
4. Physical state: ☐ Liquid ☒ Solid ☐ Both ☐ Slurry ☐ Sludge
   ☐ Singlelayer ☐ Multilayer
   ☐ Free Liquid Range _____ to _____ %
5. pH range _____ or not applicable ☒
6. Strong odor? Describe *N/A*
7. Liquid Flash point: _____ or not applicable ☒
8. Physical appearance (color and texture): *Grayish formed metallic lead pieces (grids and posts)*
9. Chemical composition. List all known constituents present in any concentration. Attach analytical reports where available**.**

Lead	*to 99*	*%*
Other metals (Antimony, arsenic,	*0 to 5*	*%*
copper, and tin)	*to*	*%*
Inert solids, N.O.S.	*to 1*	*%*
	to	*%*
	to	*%*

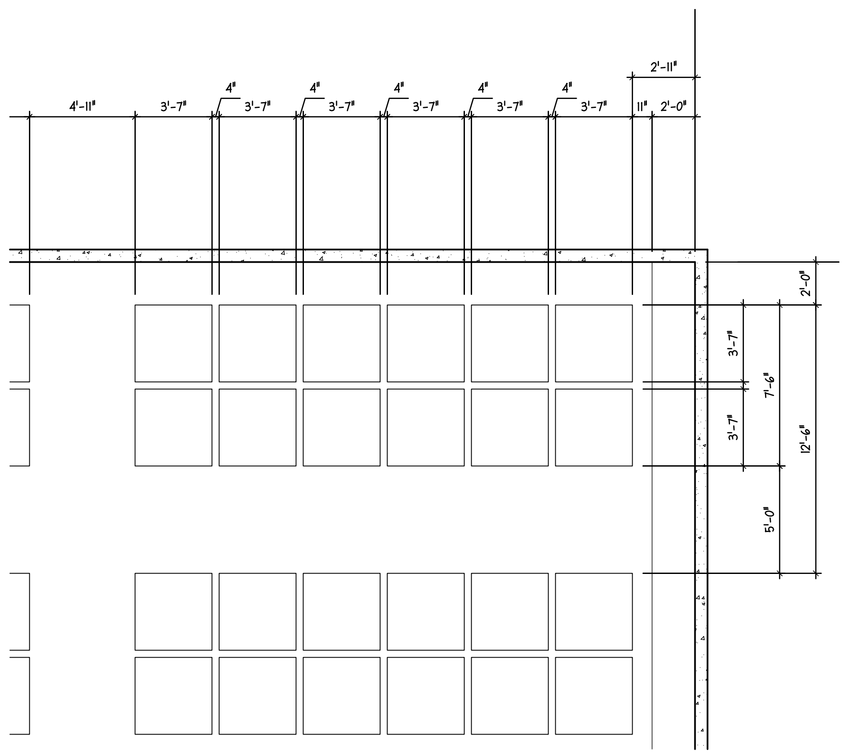
Total composition (must equal or exceed 100%) 100

10. Is this material listed on Appendix XI of 40 CFR 266? ☒ Yes ☐ No ☐ N/A*
    If not, provide: Total toxic organic constituents: _____ ppm
    Heating Value _____ Btu/lb

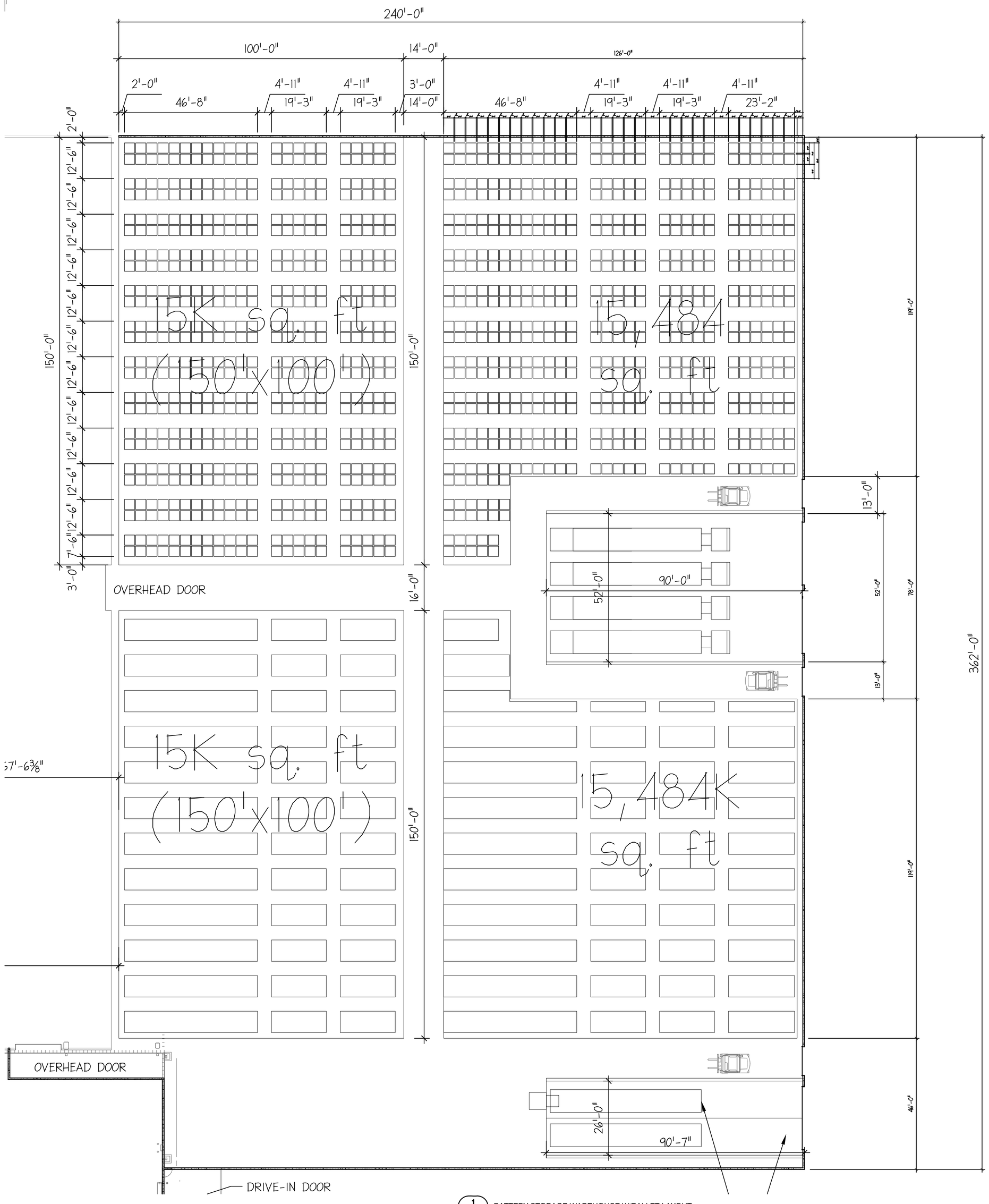
*N/A indicates material is exempt from federal regulation as a hazardous waste.

Attachment 5
Conceptual Design Details

This attachment provides conceptual design details for the permitted Battery Warehouse. Final facility designs will be provided to SC DHEC upon completion and prior to the start of construction.



2 SK3 SK3 TYPICAL PALLET LAYOUT
SCALE: 1/16" = 1'-0"



1 SK3 SK3 BATTERY STORAGE WAREHOUSE W/PALLET LAYOUT
SCALE: 1/16" = 1'-0"

LOCATION	DATE	BY	APP.

REVISIONS

APPROVALS

PRINCIPAL-IN-CHARGE
ZANDERS

PROJECT ARCHITECT/ENGINEER
NEISER

ARCHITECT OF RECORD
ZANDERS

SITE ENGINEERING
RESCH

STRUCTURAL ENGINEERING
WHITE

MECHANICAL ENGINEERING
HODGES/MDI

ELECTRICAL ENGINEERING
SPIERS/ETI

DRAWN: EJN

DESIGNED: TRZ

CHECKED:TRZ

KAHN

CARLISLE ASSOCIATES
ARCHITECTS ENGINEERS
1015 GERVAIS STREET
COLUMBIA, SOUTH CAROLINA
29201 803-252-3232

J21-JCI BATTERY RECYCLING CENTER
FLORENCE CO, SC.

PROJECT TITLE

SHEET TITLE

BATTERY STORAGE WAREHOUSE WITH PALLET LAYOUT

FILE NAME: J21 SKETCH 1

DATE: 06.01.2010

NOT FOR CONSTRUCTION

SHEET NUMBER

SK3

-

Attachment 6
Certified Containment Area Calculation

This attachment will provide a calculation of the containment capacity of the permitted Battery Warehouse when the detailed design of the proposed Battery Warehouse is completed.

Attachment 7
Example Inspection Logs

This attachment provides examples of inspection logs that will be used to record the findings of site inspections. The following logs are provided:

- Daily Inspection Logs
  - Battery Warehouse Loading Docks
  - Trailer Staging Area
- Weekly Inspection Logs
  - Battery Warehouse
- Monthly Inspection Logs
  - Fire Extinguishers
  - Fire Hose Reels
  - Medical Kits
  - Spill Kits
  - Emergency Showers and Eyewash Stations
  - Dry End Structures and Equipment
  - Wet End Structures and Equipment
  - WWTP Structures and Equipment
  - Pollution Control Equipment
  - Water Tanks
- Quarterly Inspection Logs
  - Hand Held Two-way Radios
  - Landline Telephones
  - Security Devices

Battery Warehouse Unloading Docks – Check for integrity and wear of pavement, integrity of ramps, and spillage on the pavement

DAY OF MONTH	INSPECTOR NAME AND INITIALS	TIME – OBSERVATIONS – ACTIONS TAKEN
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		

Trailer Storage Area – Check for integrity and wear of pavement, integrity of trailers, and spillage on the pavement

DAY OF MONTH	INSPECTOR NAME AND INITIALS	TIME – OBSERVATIONS - ACTIONS TAKEN
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		

Weekly Inspection Logs

Battery Warehouse

ITEM	TIME - OBSERVATIONS - ACTION TAKEN
Flooring Systems – Check for integrity, cracks, wear, spillage, run-on	
Structural Supports – Check for integrity, corrosion	
Curbing System – Check for integrity, cracks, wear	
Roof System – Check for integrity, leakage	
Spill Response Equipment – Check for condition, quantity, operation	
Telephone – Check for integrity, operations, emergency response instructions posting	
Floor Marking – Check for integrity, wear, condition	
Pallet Stacking – Check for location, stacking height, leakers, aisle spacing	
Condition of Containers – Check for evidence of leaking or deteriorating batteries	
Condition of Rack System (if present) – Check for integrity, corrosion	

Inspector Name: _____

Inspector Signature: _____

Inspection Date: _____

Monthly Inspection Logs

Fire Extinguishers

LOCATION	OPERATIONS	ACCESS	CHEMICAL LEVEL	OBSERVATIONS
Inspection and Storage Area				
Refinery Area				
Foundry Area				
Charge Preparation Area				
Maintenance Shop				
CX Area				
Battery Warehouse				
Wastewater Treatment Plant				
Polyplant Area				
General Offices				
Production Offices				
Slag Building				
Truck Scale Building				
Guard Station				
Forklifts				

Inspector Name: _____

Inspector Signature: _____

Inspection Date: _____

Monthly Inspection Logs

Fire Hose Reels

LOCATION	OPERATIONS	WEAR	LEAKAGE	OBSERVATIONS
Inspection and Storage Area				
Refinery Area				
Foundry Area				
Charge Preparation Area				

Inspector Name: _____

Inspector Signature: _____

Inspection Date: _____

Monthly Inspection Logs

Medical Kits

LOCATION	OPERATIONS	ACCESS	INVENTORY	OBSERVATIONS
Inspection and Storage Area				
Refinery Area				
Foundry Area				
Charge Preparation Area				
Maintenance Shop				
CX Area				
Battery Warehouse				
Wastewater Treatment Plant				
Polyplant Area				
General Offices				
Production Offices				
Slag Building				
Truck Scale Building				
Guard Station				
Forklifts				

Inspector Name: _____

Inspector Signature: _____

Inspection Date: _____

Monthly Inspection Logs

Spill Kits

LOCATION	LOCATION	ACCESS	INVENTORY	OBSERVATIONS
Slag Warehouse				
CX Area				
Battery Warehouse				
Wastewater Treatment Plant				
Laboratory				

Inspector Name: _____

Inspector Signature: _____

Inspection Date: _____

Emergency Showers and Eyewash Stations

LOCATION	OPERATIONS	ACCESS	LEAKAGE	OBSERVATIONS
CX Area				
Battery Warehouse				
Laboratory				
Wastewater Treatment Plant				

Inspector Name: _____

Inspector Signature: _____

Inspection Date: _____

Monthly Inspection Logs

Dry End Structures and Equipment

ITEM	OBSERVATIONS/ACTIONS TAKEN
Floor Systems – Check for integrity, fractures, collection of dust	
Walls – Check for integrity, corrosion, collection of dust	
Roofing– Check for integrity, corrosion, collection of dust	
Drains – Check for integrity, clogging, operations	
Structural Supports – Check for integrity, corrosion, collection of dust	
Equipment – Check for operations, leakage	
Wheel Wash Stations – Check for integrity, tracking of material, operation	

Inspector Name: _____

Inspector Signature: _____

Inspection Date: _____

Monthly Inspection Logs

Wet End Structures and Equipment

ITEM	OBSERVATIONS/ACTIONS TAKEN
Floor Systems – Check for integrity, fractures, collection of liquids	
Walls – Check for integrity, corrosion, collection of dust	
Roofing– Check for integrity, corrosion, collection of dust	
Drains – Check for integrity, clogging, operations	
Structural Supports – Check for integrity, corrosion, collection of dust	
Equipment – Check for operations, leakage	
Collection Sumps – Check for integrity, clogging, operation	

Inspector Name: _____

Inspector Signature: _____

Inspection Date: _____

Wastewater Treatment Plant Structures and Equipment

ITEM	OBSERVATIONS/ACTIONS TAKEN
Floor Systems – Check for integrity, fractures, collection of liquids	
Walls – Check for integrity, corrosion, collection of dust	
Roofing– Check for integrity, corrosion, collection of dust	
Drains – Check for integrity, clogging, operations	
Structural Supports – Check for integrity, corrosion, collection of dust	
Equipment – Check for operations, leakage	
Collection Sumps – Check for integrity, clogging, operation	
Piping Systems – Check for integrity, leakage, supports; operations	

Inspector Name: _____

Inspector Signature: _____

Inspection Date: _____

Pollution Control Equipment

ITEM	OBSERVATIONS/ACTIONS TAKEN
Floor Systems – Check for integrity, fractures, collection of dust	
Structural Supports – Check for integrity, corrosion, collection of dust	
Auger Systems – Check for integrity, leakage, supports; operations	
Equipment – Check for operations, leakage	

Inspector Name: _____

Inspector Signature: _____

Inspection Date: _____

Monthly Inspection Logs

Water Tanks

ITEM	OBSERVATIONS/ACTIONS TAKEN
Potable Water – Check for integrity, foundation, leakage, piping, pumps	
Storm Water – Check for integrity, foundation, leakage, piping, pumps	
Industrial Water – Check for integrity, foundation, leakage, piping, pumps	

Inspector Name: _____

Inspector Signature: _____

Inspection Date: _____

Quarterly Inspection Logs

Hand Held Two-Way Radios

LOCATION	ACCESS	OPERATIONS	OBSERVATIONS
Security			
Shipping			
Receiving			
Operators			
Environmental Engineer			
Wastewater Treatment Plant			
Laboratory			
Maintenance Supervisor			
Maintenance Mechanical			
Maintenance Electrical			

Inspector Name: _____

Inspector Signature: _____

Inspection Date: _____

Quarterly Inspection Logs

Landline Telephones

LOCATION	ACCESS	OPERATIONS	OBSERVATIONS
Office Building			
Inspection and Storage Area			
Refinery Area			
Foundry Area			
Charge Preparation Area			
CX Area			
Battery Warehouse			
Slag Building			
Laboratory			
Maintenance Shop			
Scale House			
Guard Station			

Inspector Name: _____

Inspector Signature: _____

Inspection Date: _____

Quarterly Inspection Logs

Security Devices/Systems

ITEM	OBSERVATIONS/ACTION TAKEN
Facility Alarm - Check for access, operation	
Signs - Check for location, visibility, structural support	
Lighting (Fixed and Portable) - Check for operation, controls, maintenance, inventory, power source	
Fence/Barriers - Check for deterioration, damage, test locks	
Security Cameras - Check for location, integrity, operation, malfunction	
Contingency Plan	
Has the permit been revised?	
Did the plan fail in an emergency?	
Have there been substantial changes in design, construction, or operations?	
Have the emergency response coordinators changed?	
Has the emergency equipment changed?	
Have applicable regulations changed?	
Operation Plan (Part B)	
Review for content.	
Have there been substantial changes in design, construction, or operations?	
Are there any changes planned?	

Inspector Name: _____

Inspector Signature: _____

Inspection Date: _____

Attachment 8
Arrangements with Local Authorities

This attachment provides copies of correspondence with local authorities to provide assistance in the case of an emergency at the facility. Agreements include the following agencies:

- Florence County Sheriff's Department
- Windy Hill Fire Department
- McLeod Hospital
- Carolinas Hospital System
- Florence County Emergency Preparedness Department

Attachment 9
Contingency Plan

This attachment will provide a copy of the final Contingency Plan for the Florence Battery Recycling Center once it is completed and finalized.

Attachment 10
Site Training Information

This attachment provides information about personnel training at the Florence Recycling Center. The following information is included:

- Summary of the job content, activities, responsibilities, and general qualification requirements for the employees involved in hazardous waste operations
- Copies of course outlines and training materials used at the Florence Recycling Center
- Examples of training records

Attachment 11
Financial Assurance Documents

This attachment includes the closure cost estimate and documentation of financial assurance for closure and liability insurance for sudden accidental occurrences.

Closure Cost Estimate

As required by R.61-79.264.142, the closure cost estimate is based on final closure at a point when the closure would be most expensive. The following are assumptions underlying the closure cost estimate:

- Maximum volume of material at closure is 522,240 lead-acid batteries or 9,662 tons. R.61-79.264.142 does not allow the closure cost estimate to incorporate salvage value or to incorporate zero cost for hazardous waste that has an economic value. Spent lead-acid batteries are a commodity with positive value (about $7.00 per battery). The closure cost estimate includes zero salvage value for the batteries and includes labor and transportation costs for delivering the batteries to another facility for reclamation.
- Decontamination water (rinsate) is collected and transported to a permitted off-site industrial wastewater treatment plant for treatment. The estimated volume of rinsate is 12,006 gallons. The one-way distance to a permitted off-site industrial wastewater treatment plant estimated to be 175 miles.
- No soil contamination is present beneath the floor of the permitted container storage area.
- The permitted container storage area will be clean-closed; therefore, post-closure is not required.
- Inventory removal of the permitted container storage area will be conducted by a third party using a forklift.
- Inventory of spent lead-acid batteries will be transported via a bill of lading to a secondary lead recycling facility for reclamation. The one-way distance to a secondary lead recycling facility is estimated to be 490 miles.
- The final rinsate from the permitted container storage area closure activities will be analyzed for lead, cadmium, arsenic, and pH to make a hazardous waste determination for disposal.
- Engineering fees and contractor's O&P are estimated at five percent of the closure cost.

Itemized Description of Closure Procedures and Cost Breakdown

Based on the above assumptions, the following closure cost calculations were performed:

1. **Container Storage Area Inventory Management Cost: $441,093**

   Conduct loading of palletized batteries at the time of closure and transport to an off-site secondary lead recycling facility for management.

   Maximum inventory of batteries: 522,240 lead-acid batteries or 8,704 pallets

   Container loading of 8,704 pallets, forklift rental at $250.10 per day (equipment and labor), one forklift per storage bay (two total forklifts), 109 mandays to complete loading at 40 pallets per hour per forklift = $54,522

   Transportation cost for 20-ton capacity trucks, 484 loads, one-way distance of 490 miles at $1.63/loaded mile, disposal cost at $0/ton = $386,571

2. **Container Storage Area Decontamination: $209,990**

   Protective clothing and safety equipment for four workers at $24/person/day for 6 days = $576

   Decontamination crew cost $1,760/day for four field technicians for 6 days = $42,240

   Pad/foundation decontamination of 88,935 square feet using triple rinse with a high pressure washer at $1.76/square foot = $156,526

   Collection and transportation of decontamination rinse water in a 5,000 gallon capacity vacuum truck at $1,000/day (truck and driver) for 5 days, three loads (total of 12,006 gallons of water) transported, one-way distance of 175 miles at $4.63 per loaded mile, and treatment cost at $0.20 per gallon = $9,832

   Testing for success of decontamination by collecting 6 (three samples per storage bay) samples for lead, cadmium, arsenic, and pH analysis ($81/sample) using a technician at $55/hour for 6 hours = $816

3. **Container Storage Area Certification of Closure: $ 11,760**

   Independent, registered Professional Engineer initial review of closure plan, inspection time, and preparation of closure certification totaling 120 hours at $95/hour = $11,400

   Clerical time of 8 hours at $45/hour = $360

   A summary of the total closure cost estimate, which includes engineering fees and Contractor O&P, is present in **Table I-1**.

Attachment 12
Nearby Threatened and Endangered Species

RMT reviewed information maintained by the South Carolina Department of Natural Resources (SC DNR) and the United States Fish and Wildlife Service (USF&WS). SC DNR maintains records of known populations of threatened and endangered species by United States Geological Survey (USGS) 7.5-minute topographic quadrangle map. The review included species location information for the Pee Dee 7.5-minute quadrangle map, which encompasses the proposed facility, and the 8 adjoining quadrangle maps. The SC DNR records are summarized on the following table. The USF&WS maintains records on a county by county basis. Threatened and endangered species listed by the USF&WS as occurring in Florence County and adjoining Marion County are also included on the table. Due to the absence of reported instances of listed species from the general vicinity of the facility, it is unlikely that viable populations of listed species will be adversely affected.

SC DNR Threatened and Endangered Species Reported from the Vicinity of the Proposed Facility – Florence and Marion Counties, South Carolina

SPECIES	FEDERAL STATUS	STATE STATUS/ COUNTY	PREFERRED HABITAT	THREATS	COMMENTS RELEVANT TO PROPOSED ACTIVITY
Mammals					
Star-nosed mole *Condylura cristatas*	SC	SC	Areas with poor drainage, such as wet meadows, marshes and peatlands and the banks of streams, rivers and lakes.	Loss of habitat	Moist areas on the site may provide suitable habitat for this species. This species is not listed and does not, therefore, have legal protection.
Rafinesques's long-eared bat *Corynorhinus rafinesquii*	SC	SE	Mines, caves, and hollow trees. This species has been reported from Marion County.	Loss of habitat, clear-cutting, removal of mature trees.	This species might roost in mature trees bordering the Great Pee Dee River. The location of the proposed site, a planted pine forest, does not provide suitable nesting or roosting habitat for this species.
Birds					
Bald eagle *Haliaeetus leucocephalis*	T (1)	SE	Edges of lakes and large rivers and seacoasts.	Historic over-hunting. Egg mortality due to pesticide use. Loss of nesting habitat.	The bald eagle has been removed from the federal list of threatened and endangered species. In South Carolina, this species prefers to nest along large rivers and lakes. The bald eagle could nest in mature trees adjacent to the Great Pee Dee River. Bald eagle has been reported from the Latta 7.5-minute USGS quadrangle to the north and the Friendship 7.5-minute USGS quadrangle to the south. No nesting bald eagles have been reported from the Pee Dee 7.5-minute USGS quadrangle. Site development is sufficiently distant from the Great Pee Dee River so as to pose no substantial threat to foraging bald eagles.

SC DNR Threatened and Endangered Species Reported from the Vicinity of the Proposed Facility – Florence and Marion Counties, South Carolina

SPECIES	FEDERAL STATUS	STATE STATUS/ COUNTY	PREFERRED HABITAT	THREATS	COMMENTS RELEVANT TO PROPOSED ACTIVITY
Wood stork *Mycteria americana*	E	E	Freshwater and estuarine wetlands, primarily nesting in cypress or mangrove swamps. Feed in freshwater marshes, narrow tidal creeks, or flooded tidal pools. Particularly attractive feeding sites are depressions in marshes or swamps where fish become concentrated during periods of falling water levels.	Habitat destruction and alteration.	Wood stork may roost along the Great Pee Dee River. No breeding populations are known from Florence or Marion Counties. The wetlands in the vicinity of the proposed site development are too closed to provide optimal wood stork habitat.
Red-cockaded woodpecker *Picoides borealis*	E	E	Mature pine forest, preferably long-leaf pine.	Habitat alteration.	Red cockaded woodpeckers require mature pine forests for reproduction. The site on which the facility is located has been managed for pine production for over twenty years, and prior to that was cleared for agricultural production. This site does not provide suitable habitat for red-cockaded woodpecker.
Reptiles					
Spotted turtle *Clemmys guttata*	None	T	Most frequently encountered in shallow, well-vegetated wetlands with soft substrates. Such areas include marshes, wet pastures, bogs, fens, swamps, Carolina bays, woodland streams and drainage ditches.	Habitat alteration, draining of marshes and swamps.	The wetland areas adjacent to the site are seasonally flooded and do not provide suitable habitat for this species.
Striped mud turtle *Kinosternon baurii*	None	SC	Calm freshwater habitats, such as swamps and canals with soft substrates and are most common in cypress swamps and Blackwater Creeks.	Habitat alteration, draining of marshes and swamps.	The wetland areas adjacent to the site are seasonally flooded and do not provide suitable habitat for this species.

SC DNR Threatened and Endangered Species Reported from the Vicinity of the Proposed Facility – Florence and Marion Counties, South Carolina

SPECIES	FEDERAL STATUS	STATE STATUS/ COUNTY	PREFERRED HABITAT	THREATS	COMMENTS RELEVANT TO PROPOSED ACTIVITY
Amphibians					
Pickerel frog *Rana palustris*	None	SC	Found most commonly in rivers or clear water trout streams. May be found in small ponds or wetlands, but usually these are near rivers or streams. Breed in ponds and pools adjacent or connected to streams and rivers.	Habitat destruction, draining swamps and marshes.	This species would most likely inhabit wet areas in the floodplain forest adjacent to the Great Pee Dee River. The wetland areas adjacent to the site are seasonally flooded and do not provide suitable habitat for this species.
Fish					
Short-nosed sturgeon *Acipenser brevirostrum*	E	E	Rivers and estuaries on the east Coast of North America. Spawns in freshwater and migrates to estuaries and near-shore ocean habitat during the non-breeding season.	Habitat alteration, damming of large rivers.	This species has been reported from the Great Pee Dee River in Florence and Marion County. Storm water management collects and treats storm water that comes in contact with the RCRA hazardous waste management unit. Storm water from other developed parts of the facility is treated and does not discharge directly into the Great Pee Dee River.
Plants					
Adder's tongue *Ophioglossum vulgatum*	None	SC	Shaded secondary woods, rich wooded slopes, forested bottomlands, and floodplain woods, south of Wisconsin glaciation	Habitat alteration resulting from commercial and residential development, silvicultural practices, and inundation from dam construction.	The site provides suitable habitat for this species on wooded hillsides overlooking the Great Pee Dee River and in the bottoms of gullies adjacent to the river. The facility does not encroach on the preferred habitat of this species.
Canada moonseed *Menispermum canadense*	None	SC	Deciduous woods and thickets, along streams, bluffs and rocky hillsides, fencerows	Habitat loss due to land development or agricultural production.	The bluff overlooking the Great Pee Dee River and gullies on-site provide suitable habitat for this species. The facility does not encroach on the preferred habitat of this species.

SC DNR Threatened and Endangered Species Reported from the Vicinity of the Proposed Facility – Florence and Marion Counties, South Carolina

SPECIES	FEDERAL STATUS	STATE STATUS/ COUNTY	PREFERRED HABITAT	THREATS	COMMENTS RELEVANT TO PROPOSED ACTIVITY
Canby's dropwort *Oxypolis canbyi*	E	E	Coastal plain habitats including wet meadows, wet pineland savannas, ditches, sloughs, and around the edges of Cypress-pine ponds.	Habitat loss, land clearing.	This species could inhabit wet depressions and open, seasonally inundated areas adjacent to the Great Pee Dee River. The nearest reported population is in Marion County, approximately 8 miles distant from the site.
Carolina whitlowgrass *Draba reptans*	None	SC	Dry, open areas, usually in sandy soil	Habitat loss, conversion of open land for agriculture and silviculture.	Suitable habitat for this species is present along the utility corridors and railroad right-of-way. This species does not have legal protection.
Chaffseed *Schwalbaea Americana*	E	E	Open, usually moist pine flat-woods, savannahs,	Habitat alteration, particularly for timber production.	This species is not likely to occur on the property due to long-term management for timber production. Open pine savannah habitat is not present on the site.
Climbing fern *Lycopodium palmatum*	None	SC	Moist, open woods or thickets usually with acidic soil.	Habitat alteration, draining of marshes and swamps.	This species might be present in open wooded wetlands. This species does not have legal protection.
Enchanters nightshade *Circaea lutentiana ssp. Canadensis*	None	SC	Moist woods	Habitat alteration, draining of marshes and swamps.	Moist woods and wooded wetlands provide suitable habitat for this species. This species does not have legal protection. The facility does not encroach on the preferred habitat of this species.
Georgia leadplant *Amorpha georgiana*	None	SC	Wiregrass habitat	Habitat alteration.	Dry areas on the site may provide suitable habitat for this species. This species does not have legal protection.
May white *Rhododendron eastmanii*	None	SC	North-facing slopes of rich, mature forests above streams dominated by oaks, hickories, and other deciduous trees. (Horn, 2005)	Land clearing and development.	This species could inhabit slopes of the bluff and gullies adjacent to the Great Pee Dee River. This species does not have legal protection. The facility does not encroach on the preferred habitat of this species.

SC DNR Threatened and Endangered Species Reported from the Vicinity of the Proposed Facility – Florence and Marion Counties, South Carolina

SPECIES	FEDERAL STATUS	STATE STATUS/ COUNTY	PREFERRED HABITAT	THREATS	COMMENTS RELEVANT TO PROPOSED ACTIVITY
Missouri rock-cress *Arabis missouriensis*	None	SC	Ledges and rocky woods.	Land clearing and development.	The site does not have suitable habitat for this species.
Small skullcap *Scutellaria parvula*	None	SC	Mesic woods and fields on basic soils	Loss of habitat, land clearing	Prefers basic soils. May be present in the gullies and along the Great Pee Dee River floodplain. This species does not have legal protection. The facility does not encroach on the preferred habitat of this species.

(1) On July 9, 2007, a final rulemaking was published in the *Federal Register*, effective on August 8, 2007, that removed the Bald Eagle from the USF&WS list of threatened and endangered species. This species is still protected under other federal and state laws.

Attachment 13
Site-Specific Inspection Checklist

This attachment provides the site-specific inspection checklist as required by R.61-79.270.10(m) (July 24, 2009 State Register). The checklist includes the entire facility and addresses both permitted and generator-status RCRA requirements.

The purpose of this inspection is to determine compliance with the South Carolina Hazardous Waste Management Regulations promulgated pursuant to Section 44-56-10 et seq. of the 1976 South Carolina Code of Laws, as amended. This inspection is submitted in accordance with the requirements of R.61-70.264.15

Site Name: Florence Recycling Center Date: _____

Site USEPA ID Number SCD 000 771 451 Time: _____

Site Owner: Johnson Controls Battery Group, Inc. Telephone: TBD

Location Address: 1800 Paper Mill Road

Mailing Address: Paper Mill Road

City: Florence State: SC Zip: 29506 County: Florence

Nature of Business: Secondary Lead Recycling

Principal Inspector (Name): _____

Telephone: _____

Address: _____

Inspection Participants	**Affiliation**

SECTION	GENERAL	YES/NO

General Inspection Checklist Information

The Florence Recycling Center generates hazardous waste in excess of 2,200 pounds as defined in Section 261, Subpart B (*i.e.*, Large Quantity Generator of Hazardous Waste). This checklist is provided to assist in the inspection process for the facility.

The Florence Recycling Center is permitted for the storage of spent lead-acid batteries in the permitted Battery Warehouse (container storage area).

The Florence Recycling Center will manage hazardous waste at the point of generation (satellite accumulation area) and at less-than 90-day storage areas (containers greater than 55-gallons in capacity), and manage full satellite accumulation area drums in a less-than 90-day storage area.

The Florence Recycling Center generates Universal Waste; in the form of spent batteries, fluorescent bulbs, and mercury-containing equipment; and used oil.

The Florence Recycling Center manages used oil in Maintenance, Wastewater Treatment Building, and Oil Building.

The Florence Recycling Center manages Universal Waste in the following locations:

1. CX Area (Rejected non-lead-acid batteries)
2. Production Office (waste lamps and batteries)
3. General Office (waste lamps)
4. Maintenance (waste lamps, batteries, and mercury-containing equipment)

The Florence Recycling Center manages facility-generated waste in the following satellite accumulation areas:

1. Permitted Battery Warehouse (spill cleanup material) – eight locations
2. CX Area (packaging waste)
3. Charge Preparation Area (packaging waste)
4. Foundry Area (packaging waste)
5. Refinery Area (packaging waste)
6. Refinery Area (spent aerosol can waste)
7. Inspection and Storage Area (spent aerosol can waste)
8. Maintenance (spent solvent/degreasers)
9. Maintenance (spent aerosol can waste)
10. Maintenance (spent paint)
11. Laboratory (lab waste)
12. Wastewater Treatment Plant (maintenance waste)

SECTION	GENERAL	YES/NO
The Florence Recycling Center manages facility-generated waste in the following less-than 90-day storage areas: 1. Permitted Battery Warehouse (packaging waste) – two locations 2. CX Area (packaging waste) 3. Wastewater Treatment Plant (containers and packaging waste) 4. Container Storage Building (hazardous waste storage area)		
Attached to this inspection checklist are facility drawings that indicated the following: 1. Permitted Battery Warehouse (Figure IC-1) 2. Satellite Accumulation Area Locations (Figure IC-2) 3. Less-than 90-day Storage Areas (Figure IC-3) 4. Universal Waste Management Area (Figure IC-4) 5. Used Oil Storage Locations (Figure IC-5)		
Section 262 – Subpart A – General Information		
262.11	Has the Florence Recycling Center determined if the facility-generated waste is a hazardous waste by means of testing or process knowledge, or excluded from the definition of a waste?	
262.12	Does the Florence Recycling Center maintain a valid EPA ID numbers?	
Section 262 – Subpart B - Manifest		
262.20(a)	Does the Florence Recycling Center manifest facility-generated waste off-site using approved Manifest?	
262.21(a)	Does the Florence Recycling Facility manifest(s) include all pertinent information?	
262.23(a)(3)	Does the Florence Recycling Center retain one completed copy of manifest signed by generator, transporter, and facility for three (3) years?	
Section 262 – Subpart C – Pre-Transportation Requirements		
262.30	Does the Florence Recycling Center properly package facility-generated hazardous waste offered for off-site transport in accordance with applicable DOT & PSC regulations?	
262.31	Does the Florence Recycling Center properly label facility-generated hazardous waste offered for off-site transport in accordance with applicable DOT & PSC regulations?	

SECTION	GENERAL	YES/NO
262.32(a)	Does the Florence Recycling Center properly mark facility-generated hazardous waste offered for off-site transport in accordance with applicable DOT & PSC regulations?	
262.32(b)	Does the Florence Recycling Center mark each container of 110 gallons or less used in transportation with the following or equivalent wording and info: • Hazardous Waste — Federal Law prohibits improper disposal. If found, contact the nearest Police or Public Safety Authority or the U.S. Environmental protection Agency. • Name and address of generator, EPA ID Number, manifest document number accumulation start date, EPA waste code number, proper shipping description, including the DOT Proper Shipping Name Hazard Class UN/NA number, and packing group.	
262.34(a)	Does the Florence Recycling Center manage facility-generated hazardous waste in containers that are shipped off-site within 90 days of the accumulation start date?	
262.34(a)(1)	Does the Florence Recycling Center, who manages facility-generated hazardous waste in a less-than 90-day storage area, manage the waste in containers that is marked with the words “Hazardous Waste” and is marked with the accumulation start date?	
262.34(c)(1)	Does the Florence Recycling Center manage facility-generated hazardous waste, in satellite accumulation areas, in containers of 55 gallons or less at or near the point of generation, under the control of the operator of the process generating the waste, in containers that are closed except when filling or removing the waste, and are marked with the words “Hazardous Waste”?	
262.34(c)(2)	Does the Florence Recycling Center remove filled 55-gallon drums in the satellite accumulation area within three days after they are full and mark the container with the accumulation start date?	
Section 262 – Subpart D – Recordkeeping and Reporting		
262.40(b)	Are the Quarterly Reports maintained by the Florence Recycling Center for at least three (3) years?	
262.40(c)	Does Florence Recycling Center maintain test results, waste analysis, or other waste determinations made on facility-generated waste in accordance with Section 262.11 for at least three (3) years?	

SECTION	GENERAL	YES/NO
262.41	Does the Florence Recycling Center submit complete and accurate Quarterly Reports to the BSHWM within thirty (30) days of the end of each calendar quarter?	
262.41(a)(9)	Does the Florence Recycling Center submit a Waste Minimization Report in accordance with all appropriate provisions within 30 days alter the end of the calendar year?	
262.42(b)	Has the Florence Recycling Center received a completely signed manifest within 45 days of the date that the facility-generated hazardous waste was accepted by the initial transporter? 1. If no, has the Florence Recycling Center filed an Exception Report with the SC DHEC? 2. If applicable, does the Florence Recycling Center maintain a copy of the Exception Report for at least three (3) years?	
Section 262 – Subpart E/F – Special Conditions		
	Has the Florence Recycling Center ever shipped facility-generated hazardous waste to a foreign country?	
	Has Florence Recycling Center ever received hazardous waste from a foreign source?	
Section 264 – Subpart B – General Facility Standards		
264.13	Does the Florence Recycling Center maintain recyclable material profiles for the spent lead-acid batteries and non-waste scrap received from off-site for lead recovery, and does the facility maintain supplier certifications for shippers of this material to the facility?	
264 14(b)(1)	Does the Florence Recycling Center provide adequate security through a 24-hour surveillance system by means of a trained Security Guard or Plant personnel?	
264.14(b)(2)	Does the Florence Recycling Center provide a barrier, chain-link fence, surrounding the active portion of the facility?	
264.14(b)(2)(ii)	Does the Florence Recycling Center provide the means to control entry through entrance gates, such as locks?	
264.14(c)	Does the Florence Recycling Center post signage that reads “Danger – Unauthorized Personnel Keep Out” at each entrance gate and along the fence?	

SECTION	GENERAL	YES/NO
264.15(b)(1)	Does the Florence Recycling Center maintain a written schedule for inspecting monitoring equipment, safety equipment, security devices, and operating and structural equipment?	
264.15(b)(2)	Does the Florence Recycling Center maintain the written inspection schedule at the facility?	
264.15(b)(3)	Do the Florence Recycling Center's written inspections identify the types of problems to look for during the inspection?	
264.15(b)(4)	Are the Florence Recycling Center's frequencies of inspections sufficient to detect a problem before it can impact the environmental and human health?	
264.15(c)	Does the Florence Recycling Center perform corrective action on inspection deficiencies on an appropriate schedule?	
264.15(d)	Does the Florence Recycling Center maintain inspection logs for three (3) years after the inspection date, and does the inspection logs contain the date and time of the inspection, name of the inspector, a notation of any observations made, and the date and nature of any repairs made?	
264 16(a)(1)	Do Florence Recycling Center personnel complete a program of classroom or on-the-job training?	
264 16(a)(2)	Does the Florence Recycling Center's training program directed by a person trained in hazardous waste management procedures?	
264 16(a)(2)	Does the Florence Recycling Center training program include instruction which teaches facility personnel hazardous waste management procedures relevant to the position in which they are employed?	
264 16(a)(3)	Are Florence Recycling Center personnel trained to respond effectively to emergencies?	
264 16(a)(3)(i)	Does the Florence Recycling Center training include procedures for using, inspecting, and repairing emergency and monitoring equipment?	
264 16(a)(3)(iii)	Does the Florence Recycling Center training include the use of communication/alarm systems?	
264 16(a)(3)(iv)	Does the Florence Recycling Center training include response to fires/explosions?	
264 16(a)(3)(vi)	Does the Florence Recycling Center training include shutdown of operations?	

SECTION	GENERAL	YES/NO
264.16(b)	Is the Florence Recycling Center training administered to employees in new positions within six (6) months?	
264.16(c)	Is an annual review of the Florence Recycling Center initial training program conducted?	
264.16(d)(1)	Does the Florence Recycling Center maintain documents and records of the job title for each position at the facility related to hazardous waste management, and the name of the employee filling the job?	
264.16(d)(2)	Does the Florence Recycling Center maintain written job descriptions for each position at the facility related to hazardous waste management, which includes skills, education, and duties assigned?	
264.16(d)(3)	Does the Florence Recycling Center maintain records that describe the type and amount of introductory and continuing training that will be given to each position at the facility related to hazardous waste management?	
264.16(d)(4)	Does the Florence Recycling Center maintain training records that document the training or job experience provided to and received by facility personnel?	
264.16(e)	Does the Florence Recycling Center keep training records for current personnel until closure?	
264.16(e)	Does the Florence Recycling Center keep training records for former employees for three (3) years after leaving the company?	
264.17	Does the Florence Recycling Center manage any ignitable, reactive or incompatible wastes?	
264.18(a)	Is the Florence Recycling Center located more than 200 feet from a fault that has had a displacement in Holocene time?	
264.18(b)	Is the Florence Recycling Center located outside a designated 100-year floodplain?	
Section 264 – Subpart C – Preparedness and Prevention		
264.32(a)(1)	Does the Florence Recycling Center provide internal communications or alarm system capable of providing immediate emergency instructions?	
264.32(b)	Does the Florence Recycling Center provide telephones or hand-held two-way radios to summon outside emergency assistance?	

SECTION	GENERAL	YES/NO
264.37(c)	Does the Florence Recycling Center provide emergency response equipment including fire response equipment, spill control equipment, and decontamination equipment?	
264.32(d)	Does the Florence Recycling Center provide sufficient water volume and pressure to supply the facility's sprinkler system and fire hoses?	
264.33	Does the Florence Recycling Center test and maintain the emergency response equipment to ensure proper operations?	
254.34	Does the Florence Recycling Center provide immediately accessible communication system to employees when managing hazardous waste?	
264.35	Is adequate aisle space present in all areas of the Florence Recycling Center?	
264.37(a)(1)	Has the Florence Recycling Center made arrangements to familiarize police, fire, and emergency response teams with the layout of the facility entrances and evacuation routes?	
264.37(a)(2)	If applicable, has the Florence Recycling Center assigned a primary police, fire, emergency response team?	
264.37(a)(4)	Has the Florence Recycling Center made arrangements to familiarize local hospitals with the hazardous waste handled?	
Section 264 – Subpart D – Contingency Plan and Emergency Procedures		
264.51(a)	Does the Florence Recycling Center maintain a contingency plan?	
264.52(a)	Does the Florence Recycling Center's contingency plan include a description of the emergency responses personnel must follow?	
264.52(c)	Does the Florence Recycling Center's contingency plan Include arrangements with police, fire department, hospitals, contractors, state and local emergency response teams?	
264.52(d)	Does the Florence Recycling Center's contingency plan include an updated list of names, addresses, and phone numbers (office and home) of emergency coordinator(s)?	
264.52(d)	Does the Florence Recycling Center's contingency plan include the designation of a primary emergency coordinator?	
264.52(e)	Does the Florence Recycling Center's contingency plan include an updated list of all emergency equipment?	

SECTION	GENERAL	YES/NO
264.52(e)	Does the Florence Recycling Center's contingency plan include the description and location of each piece of emergency equipment and brief description of its capabilities?	
264.52(f)	Does the Florence Recycling Center's contingency plan include an evacuation plan, if evacuation could be necessary, that includes a signal to begin evacuation?	
264.52(f)	Does the Florence Recycling Center's contingency plan include an evacuation plan, if evacuation could be necessary, that includes evacuation routes and alternate routes?	
264.53(a)	Does the Florence Recycling Center maintain an updated copy of the Contingency plan at facility?	
264.53(b)	Does the Florence Recycling Center submit an updated copy of the contingency plan to the local police, fire department, hospitals, and state and local emergency response teams?	
264.54	Does the Florence Recycling Center amend and update the contingency plan as changes occur at the facility?	
264.55	Has the Florence Recycling Center designated an emergency coordinator and are they on call or on site at all times?	
264.56	Does the Florence Recycling Center's contingency plan include the steps to be taken in possible emergency situations?	
264.56(j)	If the Florence Recycling Center implemented the contingency plan, was a written report of the incident submitted to the SC DHEC within 15 days?	
Section 264 – Subpart E – Manifest System, Recordkeeping, and Reporting		
264.71(a)(1)	For the spent lead-acid batteries received under a hazardous waste manifest at the Florence Recycling Center, are copies of the manifest signed and dated?	
264 71(a)(2)	For the spent lead-acid batteries received under a hazardous waste manifest at the Florence Recycling Center, are copies of the manifest checked for discrepancies?	
264.71 (a)(3)	For the spent lead-acid batteries received under a hazardous waste manifest at the Florence Recycling Center, are copies of the signed manifest given to transporter?	
264.71 (a)(4)	For the spent lead-acid batteries received under a hazardous waste manifest at the Florence Recycling Center, are copies of the manifest sent to the generator(s) within 30 days?	

SECTION	GENERAL	YES/NO
264.71 (a)(5)	For the spent lead-acid batteries received under a hazardous waste manifest at the Florence Recycling Center, are copies of the manifest retained for three (3) years?	
264.72(b)	For the spent lead-acid batteries received under a hazardous waste manifest at the Florence Recycling Center, Have the shipments received been consistent with the manifest? 1. If no, was discrepancy resolved with the generator within 15 days? 2. If not resolved within 15 days, was written notice submitted to SC DHEC?	
264.73(a)	Does the Florence Recycling Center maintain written operating record on site?	
264.73(b)(1)	Do the Florence Recycling Center's written operating records include a description and quantity of each shipment (either via manifest or bill of lading) received?	
264.73(b)(2)	Do the Florence Recycling Center's written operating records include location and quantity of spent lead-acid batteries on site?	
264.73(b)(3)	Do the Florence Recycling Center's written operating records include records of waste profiles?	
264.73(b)(4)	Do the Florence Recycling Center's written operating records include reports of incidents where contingency plan is used?	
264.73(b)(5)	Do the Florence Recycling Center's written operating records include records/results of required inspection?	
264.73(b)(6)	Do the Florence Recycling Center's written operating records include monitoring/testing and analytical data?	
264.73(b)(8)	Do the Florence Recycling Center's written operating records include closure cost estimate?	
264.73(b)(9)	Do the Florence Recycling Center's written operating records include certification regarding waste minimization?	
264.73(b)	Do the Florence Recycling Center's written operating records maintained until closure?	
264 75(a)	Has the Florence Recycling Center submitted quarterly reports no later than 30 days after the end of the quarter in accordance with all provisions of 264.75(a)?	

SECTION	GENERAL	YES/NO
264 75(c)	Does the Florence Recycling Center retain copies of the quarterly reports for a period of three (3) years or more?	
Section 264 – Subpart F – Releases From Solid Waste Management Units		
	Does the Florence Recycling Center continue to have had no release to the environment from a solid waste management unit?	
Section 264 – Subpart G – Closure and Post-Closure		
264.112(a)	Does the Florence Recycling Center maintain a written closure plan for the permitted Battery Warehouse?	
264.112(b)	Does the Florence Recycling Center's closure plan include the necessary steps to perform closure of the permitted Battery Warehouse at any point during its active life?	
264.112(c)	If the Florence Recycling Center's permitted Battery Warehouse been modified, has the Florence Recycling Center amended the closure plan?	
264.112(d)	If the Florence Recycling Center conducted closure of the permitted Battery Warehouse, has the facility submitted a notification of closure?	
264.112(e)	If the Florence Recycling Center conducted closure of the permitted Battery Warehouse, has the facility properly removed all waste and decontaminated or dismantle equipment in accordance with the closure plan?	
264.113	If the Florence Recycling Center conducted closure of the permitted Battery Warehouse, was the closure activities conducted in accordance with the closure schedule?	
264.114	If the Florence Recycling Center conducted closure of the permitted Battery Warehouse, was the contaminated equipment, structures, and soil disposed of properly?	
264.115	If the Florence Recycling Center conducted closure of the permitted Battery Warehouse, was a certification of closure submitted to SC DHEC within 60 days after completion of closure activities?	
Section 264 – Subpart H – Financial Requirements		
264.142(a)	Does the Florence Recycling Center maintain a written estimate, based on hiring a third-party to conduct the closure activities, which equals the estimated cost for performing closure at the end of the active life of the permitted Battery Warehouse?	

SECTION	GENERAL	YES/NO
264.142(b)	Has the Florence Recycling Center updated the closure cost estimate, which was revised 60 days prior to the anniversary date of the estimate, based on the most recent Implicit Price Deflator for Gross National Product?	
264.142(d)	Does the Florence Recycling Center maintain on site the latest closure cost estimate that has been adjusted for inflation?	
264.143	Does the Florence Recycling Center maintain a copy of the financial assurance documentation for the most current closure cost estimate for the permitted Battery Warehouse?	
264.147	Does the Florence Recycling Center maintain on site liability coverage for sudden accidental occurrences for the permitted Battery Warehouse?	
Section 264 – Subpart I – Use and Management of Containers		
264.171	Does the Florence Recycling Center ensure that the palletized batteries and 55-gallon plastic drums of damaged batteries, managed in the permitted Battery Warehouse, appear in good condition (free of leaks, deterioration, or structural defects)?	
264.172	Does the Florence Recycling Center ensure that battery cases and 55-gallon drums managing damaged batteries, within the permitted Battery Warehouse, are made of or lined with material that is compatible with the contents of the containers?	
264.173(a)	Does the Florence Recycling Center ensure that 55-gallon drums of damaged batteries, within the permitted Battery Warehouse, are closed except when adding or removing material?	
264.173(b)	Does the Florence Recycling Center ensure that the palletized batteries, within the permitted Battery Warehouse, are orderly stacked and shrink wrapped to prevent leakage or rupture?	
264.174	Does the Florence Recycling Center conduct weekly inspections of the permitted Battery Warehouse, looking for leaking containers and deterioration of containers and secondary containment system?	
264.175(b)(1)	Does the Florence Recycling Center ensure that the floor system for the permitted Battery Warehouse maintained free of cracks, gaps, or other damage, which includes damage to the epoxy coating and concrete curb system?	
264.175(b)(3)	Does the Florence Recycling Center ensure that the floor system for the permitted Battery Warehouse has sufficient capacity to contain ten percent of the volume of containers managed in each bay?	

SECTION	GENERAL	YES/NO
264. 175(b)(4)	Does the Florence Recycling Center ensure that run-on into the permitted Battery Warehouse containment system is prevented?	
264.175(b)(5)	Does the Florence Recycling Center ensure that spills, leaks, or accumulated precipitation are removed from the permitted Battery Warehouse containment system in as timely a manner necessary to prevent overflow?	
Section 265 – Subpart B – General Facility Standards		
265.16	See Section 265 – Subpart B – General Facility Standards, under 264.17, for inspection questions.	
Section 265 – Subpart C – Preparedness and Prevention		
	See Section 264 – Subpart C – Preparedness and Prevention for inspection questions.	
Section 265 – Subpart D – Contingency Plan and Emergency Procedures		
	See Section 265 – Subpart D – Contingency Plan and Emergency Procedures for inspection questions.	
Section 265 – Subpart I – Use and Management of Containers		
265.171	Does the Florence Recycling Center manage facility-generated hazardous waste in containers that appear in good condition (free of leaks, deterioration, or structural defects)?	
265.172	Does the Florence Recycling Center manage facility-generated hazardous waste in containers made of or lined with material that is compatible with the contents of the containers?	
265.173(a)	Does the Florence Recycling Center manage facility-generated hazardous waste containers in the closed position except when adding or removing material?	
265.173(b)	Does the Florence Recycling Center manage facility-generated hazardous waste containers handled in a manner that prevents rupture or leaking?	
265.174	Does the Florence Recycling Center conduct weekly inspections of the facility-generated hazardous waste less-than 90-day storage areas, looking for leaking and deterioration of containers?	
265.176	Does the facility manage ignitable or reactive waste in the permitted Battery Warehouse?	

SECTION	GENERAL	YES/NO
265.177	Does the Florence Recycling Center manage facility-generated, incompatible hazardous waste in the less-than 90-day storage areas?	
265.178	Does the Florence Recycling Center manage any facility-generated, organic hazardous waste in the less-than 90-day storage areas?	
Section 268 – Land Disposal Restrictions		
268.7(a)(1)	Does the Florence Recycling Center supply written notification to the treatment, storage, or disposal facility of each restricted waste's treatment standards with each shipment?	
268.7(a)(1)	Does the Florence Recycling Center supplied written notification that includes the waste number, appropriate treatment standard, manifest number, and waste analytical data, if available?	
268.7(a)(7)	Does the Florence Recycling Center maintain copies of written notifications for a minimum of five (5) years from the date that the waste was last sent to an off-site treatment, storage or disposal facility?	
268.50(a)(2)	Does the Florence Recycling Center ensure that containers storing restricted waste are marked with identification of contents and with the date that accumulation began?	
Section 270 - Subpart G - Permit Requirements		
270.13	Does the information on the current Part A Permit Application for the Florence Recycling Center reflect the activities being conduct at the facility?	
270.13(h)	Does the facility drawing in the Part A Permit Application for the Florence Recycling Center reflect the current conditions of the existing facility, including the location of the permitted Battery Warehouse?	
270.13(i)	Does the description of processes used to store spent lead-acid batteries and design capacity of the permitted Battery Warehouse in the Part A Permit Application for the Florence Recycling Center reflect current conditions at the facility?	
270.40	If a change in ownership or operational control occurred at the Florence Recycling Center, was the prior notification submitted to SC DHEC within 90 days?	
270.41(a)(1)	Is approved Part B Permit Application for the Florence Recycling Center representative of hazardous waste (spent lead-acid batteries) streams (codes) managed in the permitted Battery Warehouse?	

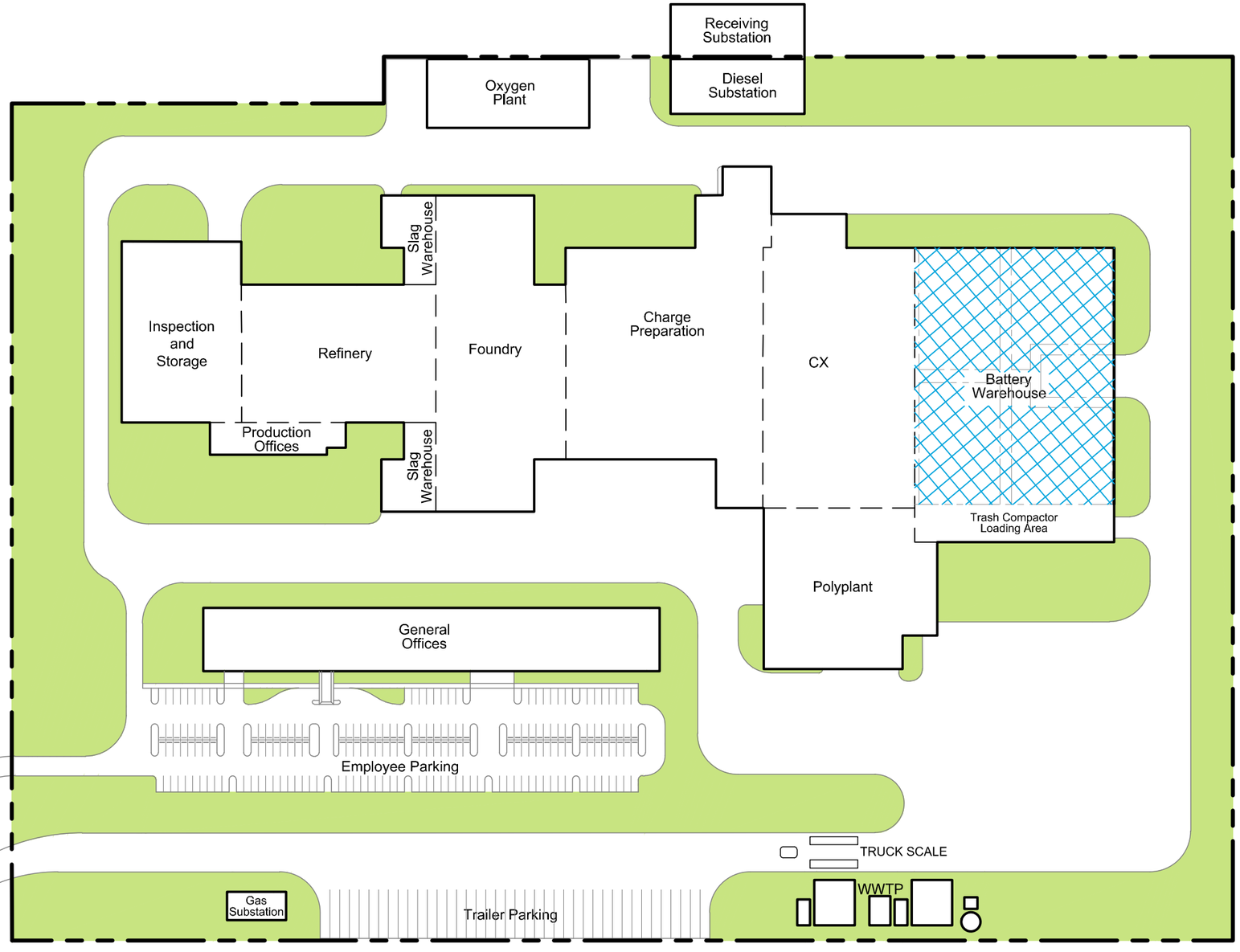
SECTION	GENERAL	YES/NO
270.41(a)(1)	Is approved Part B Permit Application for the Florence Recycling Center representative of hazardous waste (spent lead-acid batteries) design storage capacity of the permitted Battery Warehouse?	
270.41(a)(1)	Is approved Part B Permit Application for the Florence Recycling Center representative of the hazardous waste storage (spent lead-acid batteries) procedures for the permitted Battery Warehouse?	
270.42	For Part B Permit Application modifications for the Florence Recycling Center, was the notification for modification (Class I, II, or III) submitted to SC DHEC within the appropriate regulatory schedule?	
Section 273 – Universal Waste - Batteries		
273.13(a)	Does the Florence Recycling Center handle Universal Waste batteries?	
273.13(a)(1)	Does the Florence Recycling Center ensure that storage containers of universal waste batteries are free from leaks?	
273.13(a)(1)	Does the Florence Recycling Center ensure that storage containers of universal waste batteries are free from deterioration?	
273.13(a)(1)	Does the Florence Recycling Center ensure that storage containers of universal waste batteries are free from structural defects?	
273.13(a)(1)	Does the Florence Recycling Center ensure containers of universal waste batteries are constructed or lined with materials which are compatible with the wastes contained?	
273.13(a)(2)	Does the Florence Recycling Center ensure that containers of universal waste batteries are closed during storage? (except to add or remove Universal Waste)?	
273.13(a)(2)	Does the Florence Recycling Center ensure that containers of universal waste batteries are stored in a way which may not cause leakage and/or rupture?	
273.14(a)	Does the Florence Recycling Center ensure that containers of universal waste batteries are labeled: “Universal Waste – Batteries”, “Waste Batteries”, or “Used Batteries”?	
273.15(a)	Does the Florence Recycling Center ensure that containers of universal waste batteries are labeled with the accumulation start date?	
273.15(a)	Does the Florence Recycling Center manage containers of Universal Waste batteries are stored for less than one (1) year?	

SECTION	GENERAL	YES/NO
273.16	Does the Florence Recycling Center ensure that personnel complete a training program that includes procedures for management of Universal Waste batteries and are trained to respond effectively to emergencies?	
273.18	Does the Florence Recycling Center ensure that Universal Waste batteries are shipped to an approved Universal Waste Handler or destination facility?	
Section 273 – Universal Waste – Mercury-Containing Equipment		
213.13(c)	Does Florence Recycling Center handle Universal Waste - Mercury-Containing Equipment?	
273.13(c)(1)	Does the Florence Recycling Center ensure that storage containers of universal waste mercury-containing equipment free from leaks?	
273.13(c)(1)	Does the Florence Recycling Center ensure that storage containers of universal waste mercury-containing equipment are maintained free from deterioration?	
273.13(c)(1)	Does the Florence Recycling Center ensure that storage containers of universal waste mercury-containing equipment are maintained free from structural defects?	
273.13(c)(1)	Does the Florence Recycling Center ensure that containers of universal waste mercury-containing equipment are constructed or lined with materials which are compatible with the wastes contained?	
273.13(c)(2)	Does the Florence Recycling Center ensure that containers of universal waste mercury-containing equipment are closed during storage? (except to add or remove Universal Waste)?	
273.13(c)(2)	Does the Florence Recycling Center ensure that containers of universal waste mercury-containing equipment are stored in a way which may not cause leakage and/or rupture?	
273.14(d)(1)	Does the Florence Recycling Center ensure that containers of universal waste mercury-containing equipment are labeled “Universal Waste – Mercury containing Equipment”, “Waste Mercury-containing Equipment” or “Used Mercury-containing Equipment”?	
273.15(a)	Does the Florence Recycling Center ensure that containers of universal waste mercury-containing equipment are labeled with the accumulation start date?	
273.15(a)	Does the Florence Recycling Center ensure that containers of universal waste mercury-containing equipment are stored for less than one (1) year?	

SECTION	GENERAL	YES/NO
273.16	Does the Florence Recycling Center ensure that personnel complete a training program that includes procedures for management of Universal Waste mercury-containing equipment and are trained to respond effectively to emergencies?	
273.18	Does the Florence Recycling Center ensure that Universal Waste mercury-containing equipment is shipped to an approved Universal Waste Handler or destination facility?	
Section 273 – Universal Waste – Lamps (whole)		
273.13(d)	Does Florence Recycling Center handle Universal Waste – Lamps?	
273.13(d)(1)	Does the Florence Recycling Center ensure that storage containers of universal waste lamps are free from leaks?	
273.13(d)(1)	Does the Florence Recycling Center ensure that storage containers of universal waste lamps are free from deterioration?	
273.13(d)(1)	Does the Florence Recycling Center ensure that storage containers of universal waste lamps are free from structural defects?	
273.13(d)(1)	Does the Florence Recycling Center ensure that containers of universal waste lamps are constructed or lined with materials which are compatible with the wastes contained?	
273.13(d)(2)	Does the Florence Recycling Center ensure that containers of universal waste lamps are closed during storage? (except to add or remove Universal Waste)?	
273.13(d)(2)	Does the Florence Recycling Center ensure that containers of universal waste lamps are stored in a way which may not cause leakage and/or rupture?	
273.14(e)	Does the Florence Recycling Center ensure that containers of universal waste lamps are labeled “Universal Waste – Lamps”, “Waste Lamps”, or “Used Lamps”?	
273.15(a)	Does the Florence Recycling Center ensure that containers of universal waste lamps are labeled with the accumulation start date?	
273.15(a)	Does the Florence Recycling Center ensure that containers of universal waste lamps are stored for less than one (1) year?	
273.16	Does the Florence Recycling Center ensure that personnel complete a training program that includes procedures for management of Universal Waste lamps and are trained to respond effectively to emergencies?	

SECTION	GENERAL	YES/NO
273.18	Does the Florence Recycling Center ensure that Universal Waste lamps are shipped to an approved Universal Waste Handler or destination facility?	
Section 273 – Universal Waste – Lamps (broken)		
273.13(d)(2)	If the Florence Recycling Center generates broken lamps, does the facility manage the broken lamps, if not determined to be non-hazardous, as a hazardous waste in either a satellite accumulation area or less-than 90-day storage area until shipped for recycling, and labeled according to procedures?	
Section 279 – Subpart C – Standards for Used Oil Florence Recycling Centers		
279.21	Does the Florence Recycling Center ensure that used oil and hazardous waste **are not mixed** at the facility?	
279.22(a)	Does the Florence Recycling Facility manage used oil in containers or tanks?	
279.22(b)	Does the Florence Recycling Center manage used oil in containers or tanks that are in good condition and not leaking?	
279.22(c)	Does the Florence Recycling Facility ensure that containers or tanks that manage used oil are labeled or marked with the words “Used Oil”?	
279.22(d)	Does the Florence Recycling Center respond to releases of used oil by stopping the release, containing the release, cleaning up the release and manage the resulting material properly, and implement measures to prevent a future release?	
279.24	Does the Florence Recycling Center use a transported for used oil with an EPA identification number?	
Special Situation - Management of Aerosol Can Puncture Drums		
262.34(c)(1)	For the Aerosol Can Puncture Drum, does the Florence Recycling Center accumulate no more than 55 gallons of hazardous waste at or near the point of generation?	
265.171	For the Aerosol Can Puncture Drum, does the Florence Recycling Center ensure that the satellite storage container is in good condition (e g. no structural defects or severe rusting)?	
265.172	For the Aerosol Can Puncture Drum, does the Florence Recycling Center ensure that the satellite storage container is compatible with the Hazardous Waste to be stored?	

SECTION	GENERAL	YES/NO
265.173(a)	For the Aerosol Can Puncture Drum, does the Florence Recycling Center ensure that the satellite storage container is always kept closed except when adding or removing waste?	
262.34(c)(1)(ii)	For the Aerosol Can Puncture Drum, does the Florence Recycling Center ensure that the satellite storage container is marked with the words "Hazardous Waste – Federal Law prohibits improper disposal. If found, contact the nearest Police or Public Safety Authority or the U.S. Environmental Protection Agency."	
262.34(c)(2)	For the Aerosol Can Puncture Drum, does the Florence Recycling Center, within three days after accumulation comply with all regular generator standards for any amount of hazardous waste in excess of 55 gallons collected and stored in a satellite accumulation area?	
	For the Aerosol Can Puncture Drum, does the Florence Recycling Center, whose hazardous waste is designated for off-site treatment, storage or disposal within the state, obtain prior written authorization from the properly permitted or interim status facility involved?	
Part A Permit Application		
Permit Condition	Does the Florence Recycling Center's Part A Permit Application's Hazardous Waste (LQG) and Universal Waste (SQGUW) status match the current conditions at the facility?	
Permit Condition	Does the Florence Recycling Center adhere to the following Part A Permit Application's waste codes for the facility? D002 – Characteristic of Corrosivity D004 – Characteristic for Arsenic D006 – Characteristic for Cadmium D008 – Characteristic for Lead	
Permit Condition	Does the Florence Recycling Center adhere to the Part A Permit Application's maximum allowable number of containers (individual spent lead-acid batteries) for the permitted Battery Warehouse? (Maximum inventory of individual batteries in storage is 1,044,480 batteries)	



LEGEND

- FACILITY FOOTPRINT
- BUILDING
- BUILDING INTERNAL DIVISION
- CURB
- GRASS
- PERMITTED UNIT

0 150 300

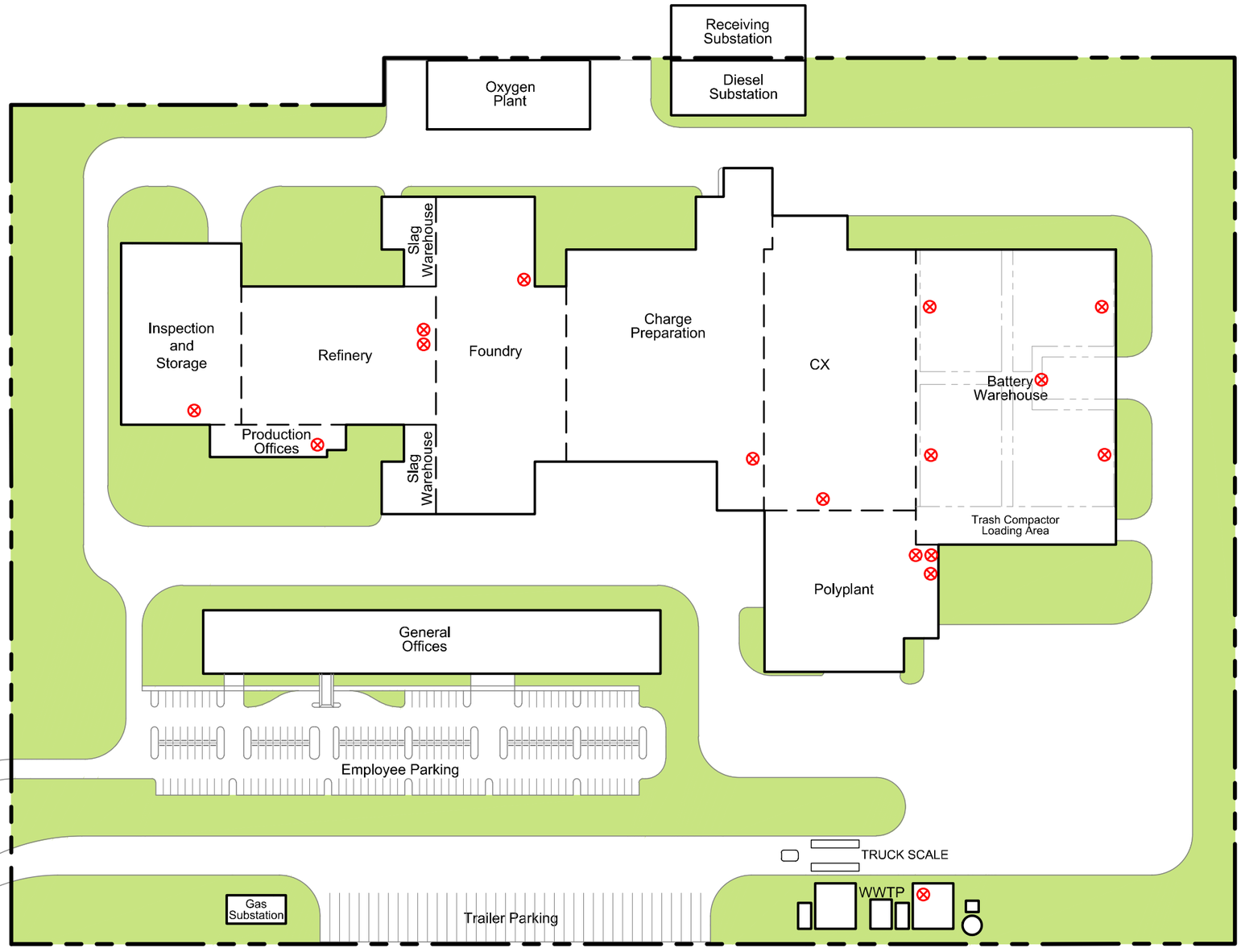
PROJECT: **JOHNSON CONTROLS BATTERY GROUP BATTERY RECYCLING FACILITY**

SHEET TITLE: **RCRA PERMITTED UNIT LOCATION**

DRAWN BY: W BERRY	SCALE: See bar scale	PROJ. NO. 02452.09.001
CHECKED BY: JEP		FILE NO. 0245209-IC-1.dwg
APPROVED BY: JEP	DATE PRINTED:	**Figure IC-1**
DATE: June 2010		

RMT
30 Patewood Drive, Suite 100
Patewood Plaza One
Greenville, S.C. 29615
Phone: 864-281-0030
Fax: 864-281-0288

Drawing Name: J:\02452\09.001\0245209-IC-1.DWG
Operator Name: W Berry
Site Pln_SC-StPln-83ft_Rev-6-4-2010



LEGEND

- FACILITY FOOTPRINT
- BUILDING
- BUILDING INTERNAL DIVISION
- CURB
- GRASS
- SATELLITE ACCUMULATION AREA

0 150 300

PROJECT: **JOHNSON CONTROLS BATTERY GROUP BATTERY RECYCLING FACILITY**

SHEET TITLE: **SATELLITE ACCUMULATION AREA LOCATIONS**

DRAWN BY: W BERRY	SCALE: See bar scale	PROJ. NO. 02452.09.001
CHECKED BY: JEP		FILE NO. 0245209-IC-2.dwg
APPROVED BY: JEP	DATE PRINTED:	**Figure IC-2**
DATE: June 2010		

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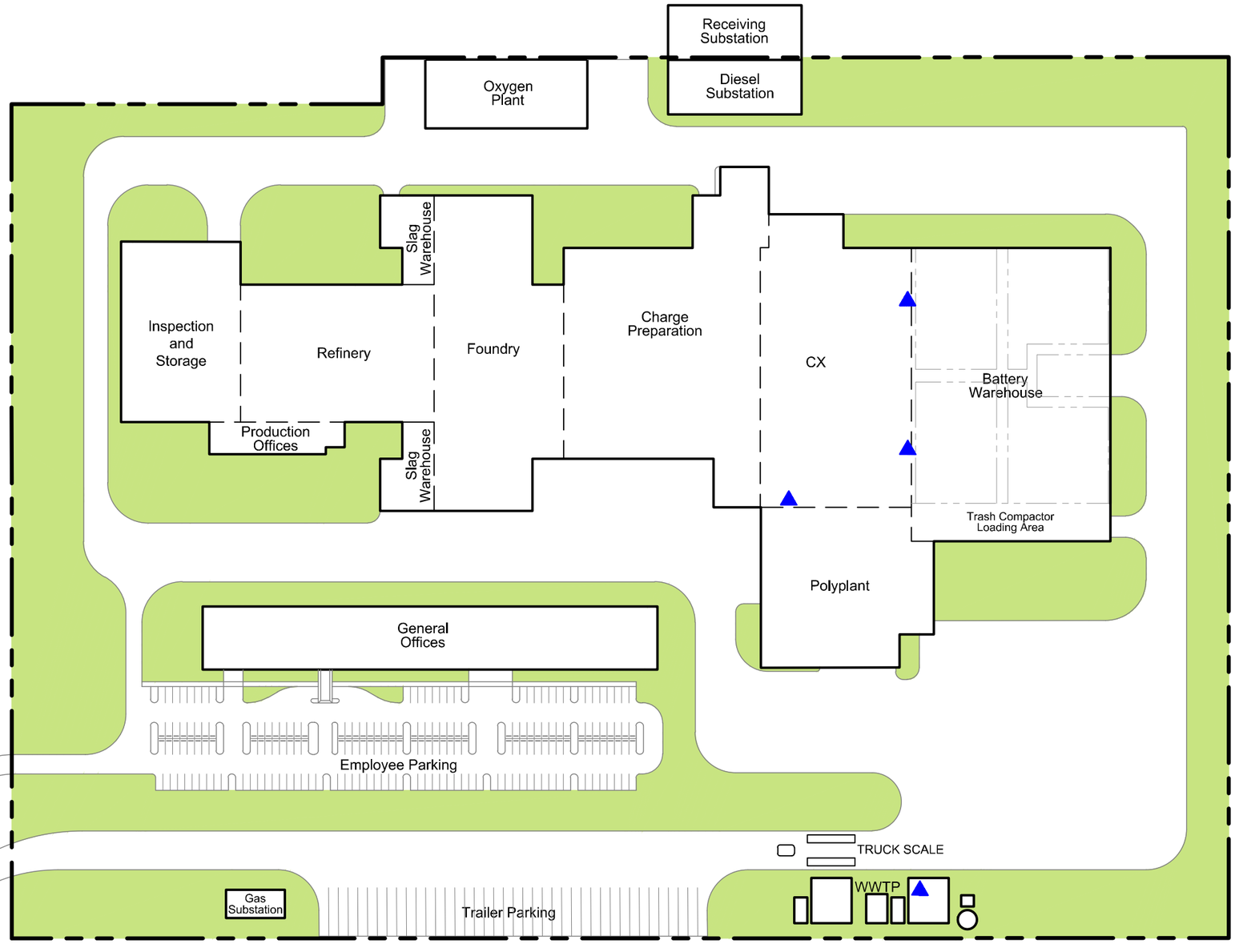
Drawing Name: J:\02452\09.001\0245209-IC-2.DWG
Operator Name: W Berry
Site Pln_SC-SitPln-83ft_Rev-6-4-2010



LEGEND

- FACILITY FOOTPRINT
- BUILDING
- BUILDING INTERNAL DIVISION
- CURB
- GRASS
- LESS-THAN 90-DAY STORAGE AREA

N

0 150 300

PROJECT:
JOHNSON CONTROLS BATTERY GROUP
BATTERY RECYCLING FACILITY

SHEET TITLE:
LESS-THAN 90-DAY STORAGE LOCATIONS

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APPROVED BY: JEP	DATE PRINTED:	**Figure IC-3**	
DATE: June 2010			

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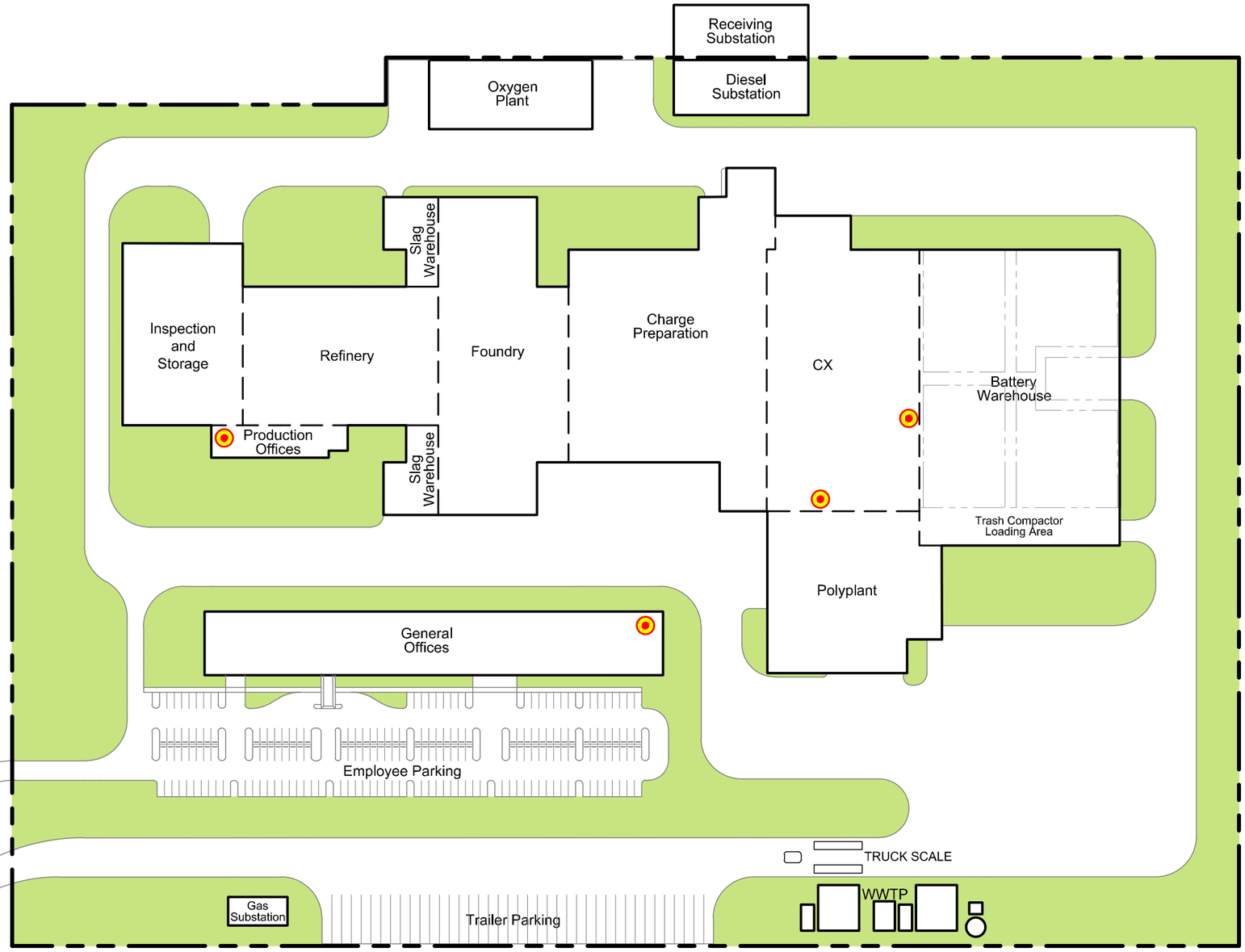
Drawing Name: J:\02452\09.001\0245209-IC-3.DWG
Operator Name: W Berry
Site Pln_SC-StPln-83ft_Rev-6-4-2010



LEGEND

- FACILITY FOOTPRINT
- BUILDING
- BUILDING INTERNAL DIVISION
- CURB
- GRASS
- UNIVERSAL WASTE MANAGEMENT AREA

N

0 150 300

PROJECT:
JOHNSON CONTROLS BATTERY GROUP
BATTERY RECYCLING FACILITY

SHEET TITLE:
UNIVERSAL WASTE MANAGEMENT AREA LOCATIONS

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CHECKED BY: JEP		FILE NO. 0245209-IC-4.dwg	
APPROVED BY: JEP	DATE PRINTED:	**Figure IC-4**	
DATE: June 2010			

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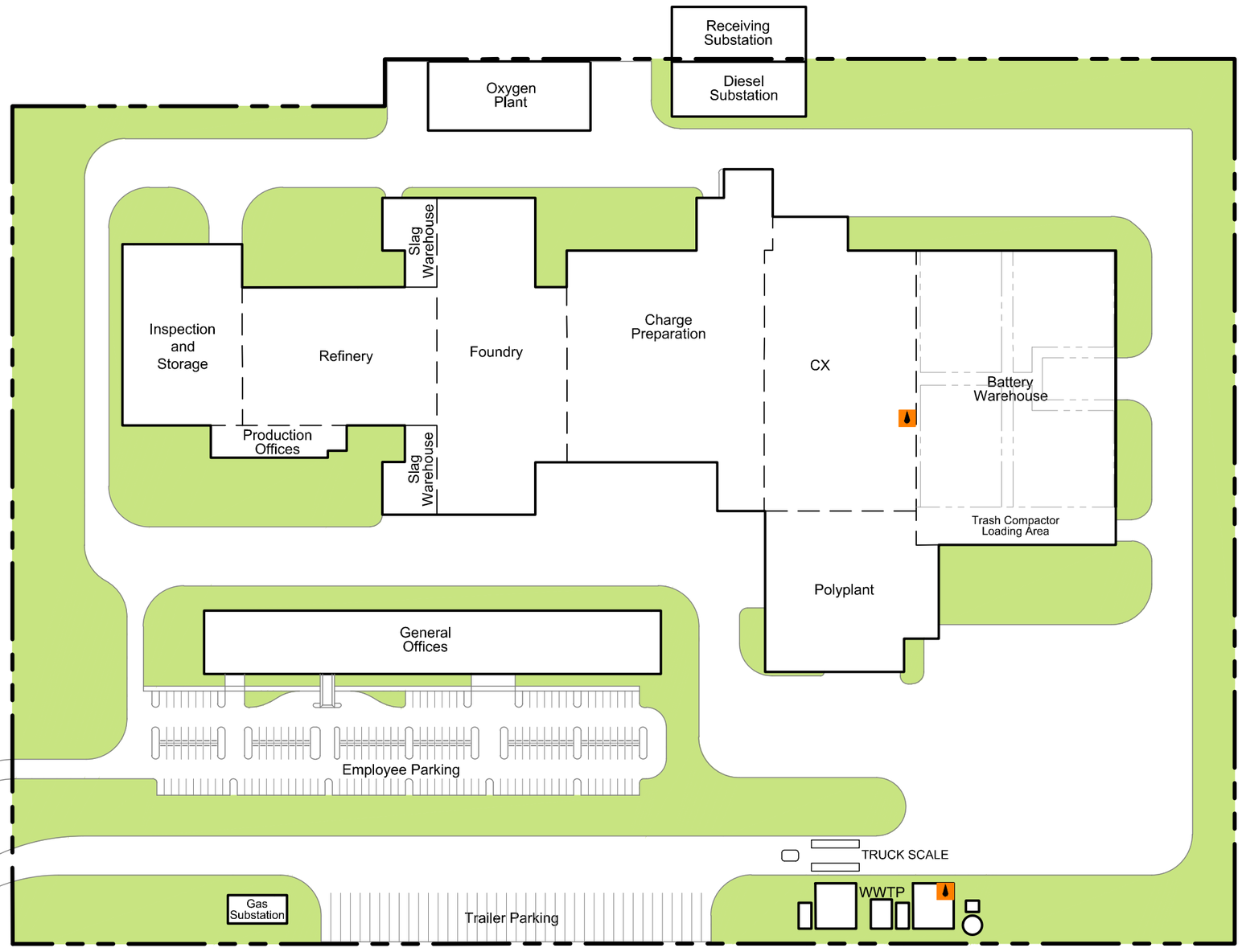
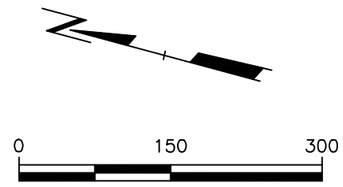
Drawing Name: J:\02452\09.001\0245209-IC-4.DWG
Operator Name: W Berry
Site Pln_SC_StPln-83ft_Rev-6-4-2010



LEGEND

- FACILITY FOOTPRINT
- BUILDING
- BUILDING INTERNAL DIVISION
- CURB
- GRASS
- USED OIL STORAGE AREA



PROJECT:
JOHNSON CONTROLS BATTERY GROUP
BATTERY RECYCLING FACILITY

SHEET TITLE:
USED OIL STORAGE LOCATIONS

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