

Mecklenburg Co.

8

6014T1996



**MECKLENBURG COUNTY**  
Department of Environmental Protection

October 11, 1996

Mr. Eric Porr, District Manager/GM  
USA Waste Services of NC  
4200 Joe Street  
Charlotte, North Carolina 28206

Re: Revised Solid Waste Permit to Operate  
Permit No. 60-14-T

Dear Mr. Porr:

In accordance with the provisions of The North Carolina Solid Waste Management Rules and based upon information supplied in application on file with the Mecklenburg County Department of Environmental Protection ("MCDEP"), we are forwarding herewith Permit to Operate ("Permit") No. 60-14-T for the operation of a solid waste transfer facility. The permit has been revised after consideration of USA Waste's comments expressed in the correspondence dated October 2, 1996 and after consultation with James Coffey of the North Carolina Department of Environment, Health and Natural Resources.

Permit condition No. 13(a) has been revised by deleting reference to the solid waste management plan. This revision of condition 13(a) is consistent with the pertinent language contained in the recently passed NC House Bill 859. Condition No. 13(d) has been revised to allow waste storage container flexibility.

If there are any questions regarding this matter, please do not hesitate to contact me at 704/336-5500.

Sincerely,

*H. M. Sutter for*

Dennis F. Tyndall  
Environmental Hygienist  
Solid Waste & Groundwater Section

DFT:sce

Enclosure

cc: Thomas Ramsey, USA Waste Services, Inc.  
Dexter Matthews, NCDEHNR ✓  
John M. Barry, MCDEP  
Wanda Towler, Assistant County Manager

**PEOPLE • PRIDE • PROGRESS**



# Solid Waste Permit

Permit Number 60-14-T

In accordance with Article 9, Chapter 130A of the General Statutes of North Carolina and all rules promulgated thereunder to include 15A NCAC 13B The North Carolina Solid Waste Management Rules et. seq., and in conformity with the plans, specifications, and other supporting data, all of which are considered a part of this permit,

PERMISSION IS HEREBY GRANTED TO

**USA Waste Services, Inc.**  
3130 North I-85 Service Road  
Charlotte, North Carolina

FOR THE OPERATION OF

a solid waste transfer facility having a transfer capacity of 1200 tons/10 hours and as described further:

- a pre-engineered metal building covering the tipping floor and two (2) truck loading bays;
- associated scale house and scales; and
- a wastewater collection system for collecting wash-down water and solid waste septage.

This facility is permitted for the temporary storage and transfer of nonhazardous solid waste only.

This permit to operate replaces permit No. 60-14-T issued on September 6, 1996 and shall be effective from its date of issuance unless modified or revoked, and shall be subject to the attached conditions and limitations.

Henry M. Sutton  
Program Manager  
Solid Waste & Groundwater

Oct. 11, 1996  
Date

SOLID WASTE OPERATING PERMIT CONDITIONS AND LIMITATIONS

General Conditions and Limitations

1. This permit is for the operation of the solid waste transfer facility in accordance with the approved plans and the approved Operational Plan prepared by GZA GeoEnvironmental, Inc. for USA Waste Services, Inc.. Any revisions or modifications to these plans shall be approved by the Mecklenburg County Department of Environmental Protection ("MCDEP").
2. The facility shall be operated in conformity with the North Carolina Solid Waste Management Rules 15A NCAC 13B, the conditions of this permit and any other Local, State or Federal regulations in such a manner as to prevent the creation of a nuisance, insanitary conditions or potential public health hazard.

The facility shall comply with the Mecklenburg County Air Pollution Control Ordinance Regulations 1.5108 - "Dust and Related Materials", 1.5109 - "Nuisance" and 1.5110 - "Control and Prohibition of Odorous Emissions".

This permit is non-transferable.

3. This permit will be subject to review every five (5) years as per 15A NCAC 13B Rule .0201(e) - "Permit Required" according to the issuance date of this permit. Modifications, where necessary, shall be required in accordance with Rules in effect at the time of review.
4. This Solid Waste Permit addresses the temporary storage and transfer of nonhazardous solid waste only. For the purposes of this permit, "solid waste" shall mean solid waste as defined in 15A NCAC 13B Rule .0101(36) - "Definitions" excluding hazardous waste and liquid waste. Solid waste is subject to all applicable rules of 15A NCAC 13B.
5. The facility shall allow the right of entry upon the premises where entry is necessary to carry out the provisions of this permit in accordance with GS 130A-17 - "Right of Entry".

6. Upon finding that a public health nuisance exists, the facility shall be subject to an order of abatement directing the owner, lessee, operator or other person in control of the property to take any action necessary to abate the public health nuisance in accordance with GS 130A-19 - "Abatement of Public Health Nuisance".
7. Upon finding that an imminent hazard exists, and after notice to or reasonable attempt to notify the owner, the facility shall be subject to entry and any action necessary to abate the imminent hazard in accordance with GS 130A-20 - "Abatement of An Imminent Hazard".
8. Upon a finding that a violation of the applicable provision of this Chapter, the rules of the Commission or a condition imposed upon the permit has occurred, the permittee shall be subject to injunctive relief, an administrative penalty not to exceed \$5,000 per day or permit revocation, in accordance with GS 130A-18 - "Injunction", GS 130A-22 - "Administrative Penalties" and GS 130A-23 - "Suspension and Revocation of Permits and Program Participation".

#### Specific Conditions and Limitations

9. The municipal solid waste transfer operation capacity shall not exceed 1200 tons per ten (10) hour day. Records indicating the daily throughput weight shall be maintained for at least two (2) years and shall be made accessible to MCDEP for review upon request.
10. The facility shall install an additional water hydrant in the trailer loading area to facilitate wash down of the area. This modification shall be completed and operational no later than 10/01/96. Failure to meet this requirement will be considered a violation of the permit and may be subject to remedies under GS 130A-23 - "Suspension and Revocation of Permits and Program Participation".
11. All operating personnel shall be trained in the proper procedures for facility operation, odor control, maintenance, troubleshooting and repair, and emergency response.
12. Any water which comes into contact with solid waste shall be maintained on site or disposed in accordance with all pertinent local, state, and/or federal rules and regulations.

13. Operation of the facility shall occur in accordance with 15A NCAC 13B .0402 - "Operational Requirements for Transfer Facilities", the Operations Plan prepared by GZA GeoEnvironmental, Inc. for USA Waste Services, Inc. and these additional requirements:
- a. The owner or operator shall not knowingly dispose of any type or form of municipal solid waste that is generated within the boundaries of a unit of local government that by ordinance:
    - (1) Prohibits generators or collectors of municipal solid waste from disposing of that type or form of municipal solid waste.
    - (2) Requires generators or collectors of municipal solid waste to recycle that type or form of municipal solid waste.
  - b. USA Waste Services, Inc. personnel shall inspect each load of waste deposited on the tipping floor for acceptability prior to being transferred. Unacceptable wastes shall be returned to the delivery vehicle or impounded for proper handling. Any hauler suspected of repetitive improper waste identification practices shall be reported to MCDEP within twenty-four (24) hours of the occurrence.
  - c. On or before 1 December (or at an earlier date as requested by the Division), the owner or operator shall report to the NCDEHNR Solid Waste Section, for the previous year beginning 1 July and ending 30 June, the amount by weight of the solid waste that was received at the facility and disposed of in a landfill, incinerated, or converted to fuel. To the maximum practicable extent, such reports shall indicate by weight the COUNTY of origin of all solid waste. The owner or operator shall transmit a copy of the report to MCDEP and the Mecklenburg County Department of Engineering and Building Standards and to each county in which waste originated.
  - d. Waste shall not be stored on the "tipping floor" after operating hours. Waste may be stored in transfer trailers or other approved containers at the facility with covers in place after operating hours, but no longer than forty-eight (48) hours. This requirement is not applicable to materials packaged for recycling.

- e. Waste exhibiting strong offensive odors shall be expeditiously processed to minimize the likelihood of odorous nuisance conditions.
- f. The "tipping floor" and "transfer trailer loading area" shall be maintained in a sanitary, clean condition after operating hours in accordance with the approved Operational Plan.
- g. Incoming and outgoing wastes shall be transported in covered or enclosed vehicles. The facility and surrounding areas shall be monitored for litter accumulation and litter shall be collected daily. Collected litter shall be contained and disposed properly.
- h. The facility shall establish and maintain an agreement with at least one (1) facility holding a valid permit for the treatment and/or disposal of municipal solid waste. The facility shall maintain a current listing of treatment and/or disposal sites to be utilized along with documentation of such agreements and provide updated copies to MCDEP as required.

*Henry M. Sutto*

*Oct. 11, 1996*

Program Manager      Date  
Solid Waste & Groundwater



MECKLENBURG COUNTY  
Department of Environmental Protection

September 6, 1996

Mr. Eric Porr, District Manager/GM  
USA Waste Services of NC  
4200 Joe Street  
Charlotte, North Carolina 28206

Re: Solid Waste Permit to Operate  
Permit No. 60-14-T

Dear Mr. Porr:

In accordance with the provisions of The North Carolina Solid Waste Management Rules and based upon information supplied in application on file with the Mecklenburg County Department of Environmental Protection ("MCDEP"), we are forwarding herewith Permit to Operate ("Permit") No. 60-14-T for the operation of a solid waste transfer facility.

If any parts, requirements, or limitations contained in this Permit are unacceptable to you, please notify MCDEP within thirty (30) days following receipt of this Permit, identifying the specific issues to be contended. Unless such demand is made, this Permit shall be final and binding. This Permit is non-transferable.

Additionally, a copy of the North Carolina Department of Environment, Health and Natural Resources Solid Waste Management Rules is enclosed.

If there are any questions regarding this matter, please do not hesitate to contact me at 704/336-5500.

Sincerely,

A handwritten signature in cursive script that reads "Henry M. Sutton".

Henry M. Sutton  
Environmental Program Manager  
Solid Waste & Groundwater Section

HMS:sce

Enclosures (2)

cc: Thomas Ramsey, USA Waste Services, Inc.  
Dexter Matthews, NCDEHNR ✓  
John M. Barry, MCDEP  
Wanda Towler, Assistant County Manager

**PEOPLE • PRIDE • PROGRESS**



# Solid Waste Permit

Permit Number 60-14-T

In accordance with Article 9, Chapter 130A of the General Statutes of North Carolina and all rules promulgated thereunder to include 15A NCAC 13B The North Carolina Solid Waste Management Rules et. seq., and in conformity with the plans, specifications, and other supporting data, all of which are considered a part of this permit,

PERMISSION IS HEREBY GRANTED TO

**USA Waste Services, Inc.**  
3130 North I-85 Service Road  
Charlotte, North Carolina

FOR THE OPERATION OF

a solid waste transfer facility having a transfer capacity of 1200 tons/10 hours and as described further:

- ▶ a pre-engineered metal building covering the tipping floor and two (2) truck loading bays;
- ▶ associated scale house and scales; and
- ▶ a wastewater collection system for collecting wash-down water and solid waste septage.

This facility is permitted for the temporary storage and transfer of nonhazardous solid waste only.

This permit to operate shall be effective from its date of issuance unless modified or revoked, and shall be subject to the attached conditions and limitations.

Henry M. Sutton / Sept. 6, 1996  
Program Manager / Date  
Solid Waste & Groundwater



**MECKLENBURG COUNTY**  
Department of Environmental Protection

July 12, 1996

Mr. Thomas Ramsey, P.E.  
USA Waste Services, Inc.  
2236 Bolton Road, NW  
Atlanta, Georgia 30318

Re: Revised Solid Waste Permit to Construct  
Permit No. 60-14-T

Dear Mr. Ramsey:

In accordance with the provisions of The North Carolina Solid Waste Management Rules and based upon information supplied in application on file with the Mecklenburg County Department of Environmental Protection ("MCDEP"), we are forwarding herewith Permit to Construct ("Permit") No. 60-14-T for the construction of a solid waste transfer facility. Permit condition No. 6(e) has been revised to allow the use of alternate wastewater disposal systems.

If there are any questions regarding this matter, please do not hesitate to contact me at 704/336-5500.

Sincerely,

Henry M. Sutton  
Environmental Program Manager  
Solid Waste & Groundwater Section

HMS:sce

Enclosure

cc: Dexter Matthews, NCDEHNR ✓  
John M. Barry, Ph.D., MCDEP  
Wanda Towler, Assistant County Manager

**PEOPLE • PRIDE • PROGRESS**



# Solid Waste Permit

Permit Number 60-14-T

In accordance with Article 9, Chapter 130A of the General Statutes of North Carolina and all rules promulgated thereunder to include 15A NCAC 13B The North Carolina Solid Waste Management Rules et. seq., and in conformity with the plans, specifications, and other supporting data, all of which are considered a part of this permit,

PERMISSION IS HEREBY GRANTED TO

**USA Waste Services, Inc.**  
**3130 North I-85 Service Road**  
**Charlotte, North Carolina**

FOR THE CONSTRUCTION OF

a solid waste transfer facility having a transfer capacity of 1200 tons/10 hours and as described further:

- ▶ a pre-engineered metal building covering the tipping floor and two (2) truck loading bays;
- ▶ associated scale house and scales; and
- ▶ a wastewater collection system for collecting wash-down water and solid waste septage.

This permit to construct replaces permit No. 60-14-T dated July 2, 1996 and shall be effective from the date of its issuance for a period of eighteen (18) months unless modified or revoked, and shall be subject to the attached conditions and limitations.

*Henry M. Sutton*  
\_\_\_\_\_  
Program Manager  
Solid Waste & Groundwater

*July 12, 1996*  
\_\_\_\_\_  
date



MECKLENBURG COUNTY  
Department of Environmental Protection

June 11, 1996

Mr. Dexter Matthews  
Chief, North Carolina Solid Waste Section  
North Carolina Department of Environment,  
Health and Natural Resources  
Post Office Box 27687  
Raleigh, North Carolina 27611-7687

RE: Proposed Transfer Station Permit  
Chambers, Inc.  
3130 North I-85 Service Road, Charlotte, NC

Dear Mr. Matthews:

As the agency delegated to administer the North Carolina Solid Waste Management Rules in Mecklenburg County, the Mecklenburg County Department of Environmental Protection (MCDEP) requests the opportunity and a reasonable period of time to review the application package and the proposed permit for the solid waste transfer station proposed by Chambers, Inc. for 3130 North I-85 Service Road, Charlotte, NC.

As you know, I spoke with Mr. Jim Coffey of your staff on April 29, 1996 regarding this matter. It was agreed that the application should have been sent to MCDEP pursuant to the delegation and past practice. It was further agreed that since the review was substantially complete, State staff would complete its work and that MCDEP would be given the opportunity to review the proposed permit, prior to it being issued.

This facility has generated much local interest. As the delegated agency responsible for representing the people of Mecklenburg County and the agency which will be responsible for compliance, we believe it is necessary that an opportunity for local input be provided.

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Mr. Dexter Matthews

Page 2

June 10, 1996

Please call me and let me know when we might expect to receive this information. Thank you.

Sincerely,



Henry Sutton  
Environmental Program Manager  
Solid Waste/Ground Water Section

HS/sce

cc: Don R. Willard, MCDEP  
John M. Barry, Ph.D., MCDEP  
Wanda Towler, Assistant County Manager



**MECKLENBURG COUNTY**  
Charlotte-Mecklenburg  
Building Standards Department

May 31, 1996

Mr. Steve Space  
OZA Environmental, Inc.  
3761 Venture Drive, Suite 200  
Duluth, Georgia 30136

Post-It™ brand fax transmittal memo 7671		# of pages ▶ 1
To Steve Space	From Robert Brandon	
Co.	Co.	
Dept.	Phone # 704-336-3567	
Fax # 770-497-8660	Fax #	

RE: Solid Waste Transfer/Recycling Station  
ADDRESS: 3130 North I-85 Service Road

Dear Mr. Space:

The property located at 3130 North I-85 Service Road and further identified by Tax Parcel Number 077-171-01, is zoned I-2 (Heavy Industrial).

On May 9, 1996, this office issued a foundation only permit for a solid waste transfer/recycling station. The plans submitted were reviewed and approved based on Code Section 9.1102(65), Recycling Center. This use was construed to be permitted in the I-2 zoning district based on no outside storage of solid waste, the separation of various materials and the transfer of materials away from the site within a limited time-frame.

\* However, this office is concerned that under Code Section 12.702 (Fumes and Odors), the operation of this site will not suit fumes, gases, or odors in concentrations or amounts that would cause or create a nuisance to any person of ordinary sensitivities on another property.

If I can be of further assistance in this matter, please contact me at (704) 336-3567.

Sincerely,

Robert L. Brandon  
Zoning Administrator

cc: Bobbie Shields, Director

Post-It™ brand fax transmittal memo 7671		# of pages ▶ 1
To Jim Barber	From S. SPACE	
Co.	Co.	
Dept.	Phone #	
Fax #	Fax #	

# FAX TRANSMISSION

GZA GEOENVIRONMENTAL, INC.  
3761 VENTURE DRIVE, SUITE 200  
DULUTH, GA 30136  
770-497-9868  
FAX: 770-497-8660

To: *JIM DARRER*

Date: *5/23/98*

Fax #: *910-496-1791*

Pages: *3*, including this cover sheet.

From: *S-SPACE*

Project #: *170051*

Subject: *Permit*

COMMENTS:

*COPY OF PERMIT, ZONING REVIEW COMMENTS.  
REVIEWER WAS RON JONES*

**CONFIDENTIALITY: THE INFORMATION CONTAINED IN THIS FACSIMILE MESSAGE IS INTENDED ONLY FOR THE USE OF THE INDIVIDUAL OR ENTITY NAMED ABOVE AND IS CONFIDENTIAL. ANY DISSEMINATION, DISTRIBUTION, OR COPY OF THIS COMMUNICATION OTHER THAN BY OR TO THE INDIVIDUAL OR ENTITY NAMED ABOVE IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS COMMUNICATION IN ERROR, PLEASE NOTIFY US IMMEDIATELY BY TELEPHONE AT THE NUMBER GIVEN ABOVE. PLEASE RETURN THE FACSIMILE MESSAGE AND ALL COPIES TO THE SENDER NAMED ABOVE AT THE INDICATED ADDRESS. THANK YOU IN ADVANCE FOR YOUR COOPERATION.**

07:47

704 882 1583

CROWDER CONST

005

VIEW

# FOOTING / FOUNDATION

CHARLOTTE-MECKLENBURG BUILDING STANDARDS

PROJECT TRACKING SYSTEM

ZONING PLAN REVIEW SHEET

**PRIORITY**

04/03/96

PAGE: 1

PROJECT NAME: 077-171-01 SOLID WASTE TRANSFER PHS: FAC SEC: IL PROJECT NUMBER: 113-9842:  
3130 N. I-85 SERVICE RD KATRINA WASHINGTON 882

REVIEWER	RECEIVED	COMPLETED	APPROVED	DISAPPROVED
R1: <u>RAW JONES - 336-2831</u>	4/18/96	4/18/96		<input checked="" type="checkbox"/>
R2: _____	///	///	_____	_____
R3: _____	///	///	_____	_____
R4: _____	///	///	_____	_____

ITEM	R1	R2	R3	R4	ITEM	R1	R2	R3	R4
1. PERMITTED USE					16. SCREENING				
2. SETBACK: <u>20</u>	<input checked="" type="checkbox"/>				17. BUFFERS				
3. TRANSITIONAL SETBACK: <u>175 + 20</u>	<input checked="" type="checkbox"/>				18. LETTER OF COMPLIANCE				
4. SIDERYARD: <u>L 0 on 4/1R 0 on 4.</u>					19. DUMPSTER/TRASH HANDLING WITH SCREENING				
5. REARYARD: <u>10</u>					20. BACKFLOW PREVENT. LOCATION ABOVE GR _____ BELOW GR _____				
6. HEIGHT: MAXIMUM: <u>40</u>					21. ZONING BOARD OF ADJUSTMENT CASE NO. _____				
7. BUILDING SEPARATION: <u>4</u>					22. HISTORIC DISTRICT 336-2302 HISTORIC LANDMARKS 376-9115				
8. LOT AREA: <u>8060</u> PROPOSED: <u>5.07 AC</u>					23. WATERSHED SUBAREAS _____				
9. LOT WIDTH: <u>50</u>	<input checked="" type="checkbox"/>				24. CONDITIONAL USE APPROVED PLAN SUBMITTED ( )				
10. LOT SIZE: <u>5.07 AC</u>					25. PARALLEL CONDITIONAL USE APPROVED PLAN SUBMITTED ( )				
11. FLOOR AREA RATIO: <u>1</u>					26. SUBDIVISION PLAN APPROVED PLANNING TO REVIEW				
12. STREET ABUTMENT					27. FLOODWAY 336-2713 COUNTY ENGINEERING				
13. PARKING: REQUIRED: <u>11</u> SHOWN: <u>15</u>	<input checked="" type="checkbox"/>				28. IMINENT ROAD PROJECT NC DOT - COUNTY ENG.				
14. LOADING SPACES REQUIRED _____ SHOWN _____					29. <b>SIGNS: PERMITS REQUIRED ZONING 336-3569 OR 3570</b>				
15. INTERIOR LANDSCAPING REQ _____ PROV _____					ZONING/MAP NUMBER: <u>1-2, 77</u>				

REMARKS R1: SHOW + LOCAL PROPOSED R/W AND TRANSITION SETBACK AS RED LINED. PROVIDE LOT FRONTAGE OR  
 REMARKS R2: WERT 12.101.5 CHAR OLD. PAVEMENT FOR DRIV AND PARKING MUST BE 5' OFF PROPERTY LINE. PARKIN  
 REMARKS R3: LOT DEPTH MUST BE 40' MIN. SCREEN PARKI AND SERVICE DRIPS PER 12.303 AS RED LINED. WERT  
 REMARKS R4: LETTER OF COMPLIANCE. SHOW LOCATION OF BACKFLOW PREVENTER - IF ABOVE GROUND, IT MU BE BEHIND SETBACK.

L AND NW 171 LENGTH + 23



CHARLOTTE-MECKLENBURG BUILDING STANDARDS  
COMMERCIAL PERMIT

**ADDR** ADDR: 3130 N I 85 SERVICE RD CHAR JOB: 6001 PERMIT: B0465187  
PARCEL: 07717101 DATE: 05/09/96 JOB: COMM FOUNDATION ONLY MASTER: B0465187  
**PROJECT:** PHASE: SEC: PROJECT:  
OWNER: GZA GEO ENVIRONMENTAL INC ADDR: 3761 VENTURE DR SU 2  
CITY/ST: DULUTH GA 30136 PHONE: 770-497-5868

**SITE** LOT/BLK: / ZONING: I-2 JURIS: CHAR MAP#: 79 HOUSING: NO  
ST R/W: PUBLIC: NO CENSUS: 5100 O&D ZONE: 211 FIRE DIST: NO  
SPECIAL: FLD PLN: NO FLD YLEV:  
#UNITS: WATER: IND. METER/CONN SEWER: IND. METER/CONN  
LAND AREA: LOT: PRT ST:  
MIN SETBACKS FRONT: 20 LEFT: RIGHT: REAR: 10 REQ PARKING: 11

**PROJ** USDC: 329 OCC TYPE: F FEE CODE: FT CONSTR TYPE: 4 #H/C UNITS:  
HTD AREA: UNHTD AREA: 9750 DECK: #STORIES: BASEMENT: NO  
#ROOMS: #BEDROOMS: #BATHS: SPKLR SYS: NO #UNITS:  
ATT CARPORT: NO ATT GARAGE: NO MASONRY PR: NO PROJ COST: 230000

**ELEC** MBL HOME YR/MAKE: SERIAL#: TOTAL AMPS: #CIRCUITS: UTILITY CO: DUKE CHARLOTTE  
#CONNECTIONS 120 V: > 120 V: TYPE OF WORK:

**MECH** #GAS CONNECTIONS: #APPLIANCES: UTILITY CO:  
TYPE OF WORK:  
HEATING/COOLING:

**PLBG** #FIXTURES: #APPLIANCES: WORK:

**CONT** BLDG: CROWDER CONST/ACCTS PAYABLE LIC: B 0000002104 U U PERMIT: B0465187  
ADDR: P O BOX 30007 CITY/ST: CHARLOTTE NC 28230

PHONE#: 704-372-3541  
ELEC: HORNE ELECTRIC CO INC LIC: E 0000003770 U PERMIT: B0465188  
ADDR: 6050 BROOKSHIRE BLVD CITY/ST: CHARLOTTE NC 28216  
PHONE#: 704-399-1372

MECH: PERMIT:

ADDR: CITY/ST:

LIC:

PHONE#:

PLBG: LIC: PERMIT:

ADDR: CITY/ST:

PHONE#:

ARCH/ENG: LIC: PHONE#:

ADDR: CITY/ST:

**COST** BLDG: 120000 ELEC: 16000 MECH: PLBG: TOTAL: 136000

PLANS: YES INSP READY: NO

REMARKS: FOUNDATION ONLY

PERMIT MAILED: NO CHECK NUMBER: 146997 HOMEOWNR RC FEE:  
VALIDATION DATE: 05/09/96 BY: MP CASH RECEIPT#: 103054 DOUBLE FEE: NO  
FIRE DMG FEE: PSTRK FEE: 500.00 ADJUSTMENT: TOTAL FEE: 1348.15

THIS PERMIT WILL EXPIRE IF WORK EITHER HAS NOT STARTED WITHIN 6 MONTHS OR IS  
DISCONTINUED FOR A PERIOD OF 12 MONTHS. NO REFUNDS WILL BE GIVEN AFTER EXPIRATION.

P O BOX 31097 700 N TRYON ST CHARLOTTE, NC 28231-1097 704-336-3831

**GZA GEOENVIRONMENTAL, INC.**  
**ENGINEERS AND SCIENTISTS**

3761 Venture Drive, Suite 200  
 Duluth, GA 30136  
 404-497-9868  
 FAX 404-497-8660

**LETTER OF TRANSMITTAL**

DATE	3/29/96	JOB NO.	170045
ATTENTION	Jim BARBER		
RE.	CHAMBERS CHARLOTTE TRANSFER STATION		

TO NORTH CAROLINA DEPT OF ENVIRONMENT  
HEALTH & NATURAL RESOURCES  
225 GREEN STREET, SUITE 601  
FAYETTEVILLE, NC 28301  
(910) 496-1191

GENTLEMEN:

- WE ARE SENDING YOU  Attached  Under separate cover via FED EX the following items.
- Shop drawings  Prints  Plans  Samples  Specifications
- Copy of letter  Change order  OPERATIONS PLAN

COPIES	DATE	NO.	DESCRIPTION
2			CONSTRUCTION PLANS
2			OPERATIONS PLANS

SOLID WASTE MANAGEMENT  
 FAYETTEVILLE REGIONAL OFFICE

APR 1 1996

RECEIVED

THESE ARE TRANSMITTED as checked below:

- For approval  Approved as submitted  Resubmit \_\_\_\_\_ copies for approval
- For your use  Approved as noted  Submit \_\_\_\_\_ copies for distribution
- As requested  Returned for corrections  Return \_\_\_\_\_ corrected prints
- For review and comment  \_\_\_\_\_
- FOR BIDS DUE \_\_\_\_\_ 19 \_\_\_\_\_  PRINTS RETURNED AFTER LOAN TO US

QUEEN CITY T.S.

REMARKS ANSWERS TO QUESTIONS:

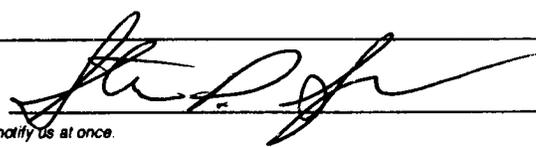
① PERMIT TO BE IN NAME OF CHAMBERS WASTE SYSTEMS OF NORTH CAROLINA, INC.

② WHITE SIOL PROPERTIES IS REAL ESTATE AGENT FOR SALE OF TRACT E TO CHAMBERS.

③ EROSION CONTROL PERMIT HAS BEEN APPROVED BY CITY OF CHARLOTTE ANY WILL BE ISSUED WHEN CONTRACTOR PAYS FEES. I WILL FORWARD A COPY TO YOU WHEN THIS OCCURS

ATTN: ERK PORR, GENERAL MGR.

COPY TO \_\_\_\_\_

SIGNED: 

If enclosures are not as noted, kindly notify us at once.

March 14, 1996

TSMEMO.JDB

**MEMORANDUM**

**TO: JIM COFFEY**

**FROM: JIM BARBER & JAN MCHARGUE**

**SUBJECT: TRANSFER FACILITIES AT LANDFILLS**

**These are our suggestions for the information we may want to require for transfer facilities associated with the closure of MSW landfills:**

- 1. Site plan or scale drawing showing the location of the facility, distances to waste, wells, buildings, property lines, streams, sediment basins and other erosion control devices, traffic patterns, etc >**
- 2. Description of operational practices, to include:  
-method of transfer(whether or not compaction will occur, etc)  
-compliance with .0402 and .0505 The portions of .0505 that apply specifically to transfer facilities are: (1)a,b; (4); (5)a,b; (7)b,c; (8)a,b,c; (9)a,b,c; (10)a,b,c; (11)a,b; (12)**
- 3.**
- 4.**
- 5.**
- 6. A discussion of the facility's proposed policy regarding the acceptance of special wastes, animal carcasses, sludges, etc. The acceptance of these waste types could create problems, and certain wastes may require special handling or many have to be prohibited altogether(e.g. asbestos). The effect on the community should be considered when certain waste types are banned from acceptance at these facilities, and alternatives should be made available if possible. For example, if hatchery waste or animal carcasses are not to be accepted at a transfer facility, there should be guidance offered to the public regarding proper disposal. Consideration should be given to industrial wastes and whether or not they should be delivered directly to the disposal facility instead of to a transfer facility. The local government applying for approval to transfer waste should show us that they have considered all these types of issues that are pertinent to their jurisdiction.**

- ✓(a) A site shall only accept those solid wastes which it is permitted to receive. The landfill operator shall notify the Division within 24 hours of attempted disposal of any waste the landfill is not permitted to receive, including waste from outside the area the landfill is permitted to serve.
- ✓(b) No hazardous or liquid waste shall be accepted or disposed of in a sanitary landfill.
- ✓(c) Spoiled foods, animal carcasses, abattoir waste, hatchery waste, and other animal waste delivered to the disposal site shall be covered immediately.
- ✓(d) Asbestos waste that is packaged in accordance with 40 CFR 61, which is adopted by reference in accordance with G.S. 150B-14(c), may be disposed of separate and apart from other solid wastes at the bottom of the working face or in an area not contiguous with other disposal areas, in either case, in virgin soil. Separate areas shall be clearly marked so that asbestos is not exposed by future land-disturbing activities. The waste shall be covered immediately with soil in a manner that will not cause airborne conditions. Copies of 40 CFR 61 may be obtained and inspected at the Division.
- ✓(e) Wastewater treatment sludges may only be used as a soil conditioner and incorporated into the final two feet of cover. Sludges shall be examined for acceptance by Waste Determination procedures in Rule .0103(e) of this Subchapter.
- ✓(12) **Miscellaneous Requirements**
  - ✓(a) Effective vector control measures shall be applied to control flies, rodents, and other insects or vermin when necessary.
  - ✓(b) Appropriate methods such as fencing and diking shall be provided within the area to confine solid waste subject to be blown by the wind. At the conclusion of each day of operation, all windblown material resulting from the operation shall be collected and returned to the area by the owner or operator.

*History Note: Filed as a Temporary Amendment Eff. November 1, 1987, For a Period of 180 Days to Expire on April 28, 1988;  
Statutory Authority G.S. 130A-294;  
Eff. April 1, 1982;  
Amended Eff. September 1, 1990; February 1, 1988; January 1, 1985.*

**.0506 APPLICATION REQUIREMENTS FOR DEMOLITION LANDFILLS**  
**.0507 OPERATIONAL REQUIREMENTS FOR DEMOLITION LANDFILLS**

*History Note: Statutory Authority G.S. 130A-294;  
Eff. April 1, 1982;  
Amended Eff. February 1, 1991; September 1, 1990;  
Repealed Eff. January 4, 1993.*

**.0508 APPLICATION REQUIREMENTS FOR INCINERATORS**

Five sets of plans shall be required for each application.

- (1) Site and operation plans of the proposed incinerator;
- (2) A copy of the air quality permit application to the Division of Environmental Management, Department of Environment, Health and Natural Resources;
- (3) An approval letter from the unit of local government having zoning authority over the area where the facility is to be located stating that the site meets all of the requirements of the local zoning ordinance, or that the site is not zoned; and
- (4) The type, quantity and source of waste for disposal.

*History Note: Statutory Authority G.S. 130A-294;  
Eff. April 1, 1982;  
Amended Eff. February 1, 1991; September 1, 1990.*

600-14T

-Booklet-

Operations Plan  
Charlotte Transfer Station  
March 14<sup>th</sup>, 1996

**RECEIVED**

**MAR 15 1996**

**SOLID WASTE MANAGEMENT  
FAYETTEVILLE REGIONAL OFFICE**

**OPERATIONS PLAN  
CHARLOTTE TRANSFER STATION  
CHARLOTTE, NORTH CAROLINA  
LOCATED OF THE I-85 SERVICE ROAD, 1500  
FEET WEST OF STARITA ROAD**

60-14 T

**PREPARED FOR:**

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**PREPARED BY:**

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March 14, 1996  
Project No. 170045

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## APPENDICES

- Appendix A - Drainage Calculations
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## A. INTRODUCTION

### 1. Purpose of Plan

This Operation Plan has been developed for the proposed Solid Waste Transfer Station located in Charlotte, North Carolina. This plan has been prepared in accordance with the requirements of the North Carolina Department of Environment, Health, and Natural Resources (DEHNR), Division of Solid Waste Management, Solid Waste Rules (15A NCAC 13B).

The purpose of this plan is to provide the owner and operator with a manual that includes necessary information and procedures for properly operating the transfer station as well as demonstrating compliance with the applicable rules concerning the operation of transfer stations. All personnel involved with the management or supervision of the facility operations will be required to review the Operation and Contingency Plan and to maintain the facility in conformance with applicable requirements. A copy of the Operation and Contingency Plan will be kept in the vicinity of the transfer station at all times.

### 2. Facility Location

The transfer station is located approximately 1500 feet west of Starita Road on the south I-85 Service Road in Charlotte, North Carolina (Figure 1). Access to the facility is from an access road located off of the I-85 Service Road.

### 3. Service Area

The transfer station will service the Charlotte/Mecklenburg County area including the surrounding counties. (CONTIGUOUS CNTYS - GASTON, LINCOLN, CATAWBA, IREDELL, CABARRUS, UNION)  
ACCORDING TO STEVE SPACE ON 6/4/96.

## B. OPERATIONS

### 1. Overview

The transfer station will consist of a pre-engineered metal building with two loading bays and associated scale house and scale. Incoming waste





collection vehicles dump municipal solid waste (MSW) directly unto the tipping floor of the facility. From the tipping floor, a dedicated front end loader pushes the waste into one of two hoppers that direct waste into open top trailers specifically designed for hauling MSW. These trailers are located in the loading bays. Waste from the Transfer Station will ultimately be disposed of at Chambers Screaming Eagle Road Landfill (South Carolina Permit # 402400-1101). In accordance with §.0104 of DEHNR Solid Waste Management Regulations, no putrescible wastes are allowed to remain at the transfer station at the end of the working day unless it is stored in containers designed for waste storage. Refuse too large or otherwise not suitable for storage in containers shall be stored in a nuisance free manner consistent with requirements with the local unit of government.

Normal working hours for the transfer station are 7:00 a.m. to 5:00 p.m., Monday through Friday and from 7:00 a.m. to 12:00 p.m. on Saturday. Note that should unexpectedly heavy volumes occur, facility personnel will continue to load trailers after the regularly scheduled hours. The facility is closed on Sunday and the following holidays: New Years' Day, Independence Day, Memorial Day, Labor Day, Thanksgiving, and Christmas.

The daily operating hours may be extended depending on the volume and consistency of the incoming waste stream. The transfer station will typically handle between 500 and 900 tons of MSW per day. The maximum waste transfer capacity of the facility is approximately 1,200 tons per 10 hour day.

## 2. Personnel

The facility is owned and operated by Chambers Waste Systems of North Carolina, Inc. Operations at the transfer station will be supervised by the Chambers General Manager. A minimum of two staff employees are required for the daily operation of the transfer station. These employees are properly trained in safety procedures and the inspection of incoming wastes (refer to "Inspection of Wastes" section). Typical Waste Inspection Training materials include screening at municipal solid waste "Waste Handling Facilities" by the Solid Waste Association of North America (SWANA). The transfer station employees also direct and coordinate the movement of collection vehicles into and out of the

transfer station. The Chambers dispatcher maintains contact with collection and transfer vehicles drivers and controls the gate at the facility entrance as required (refer to "Traffic Control" section).



### 3. Inspection of Wastes

Access to the transfer station is controlled by the scale operator and dispatcher, located at the entrance of the facility. As the contents of the collection vehicles are emptied onto the concrete tipping floor, an employee conducts periodic visual inspections of the waste materials. If unacceptable waste is found, the driver of the appropriate vehicle will be instructed to terminate dumping and the unacceptable waste will be reloaded onto the vehicle for removal from the site. Examples of unacceptable wastes include large containers of liquid waste, sludges, drums that have not been emptied and crushed prior to delivery, and containers either smoking or emitting noxious vapors. Waste collection agreements on file for each of the waste delivery accounts allows the transfer station operator to maintain accountability for the different haulers using the facility. If any hauler using the transfer station develops a pattern of deceptive waste identification in order to circumvent proper regulation, the local DEHNR will be notified within 24 hours of attempted disposal and informed as to the type of material and the hauler so that follow-up investigations can be conducted, if necessary.

If hazardous waste is identified during vehicle dumping, transfer station personnel will immediately notify the driver and if necessary, contact DEHNR and the Hazardous Materials Emergency Response Team. The appropriate information concerning the waste will be provided to those officials and the recommended steps will be taken until properly trained handlers of hazardous waste arrive on-site.

Infectious or medical waste haulers are advised that the transfer station does not accept such wastes and that the hauler will have to transport the infectious wastes to an approved facility such as Chambers Medical Technologies, Inc. Medical Waste Incinerator in Hampton, South Carolina.

Should a "hot load" occur in a vehicle using the facility, the attendant will not permit the load to be discharged onto the tipping floor. The vehicle



operator will be advised to move the vehicle to a gravel area located behind the transfer station where the load will be discharged. The City of Charlotte Fire Department will be notified prior to discharge to identify the cause of the problem and extinguish the load fire.

No asbestos will be accepted at the facility and no wastes from hatcheries or other large loads of animal wastes will be accepted at the facility.

The above limitations on the types of wastes that will be accepted do not circumvent the incidental wastes that may be found in the residential waste stream that is expected at the facility.

#### **4. Traffic Control**

Access to the transfer station is controlled by the scale operator. As vehicles arrive at the facility, the scale operator records the weight before proceeding to the unloading area. Site personnel then direct the driver to position the vehicle at the correct unloading location once there is sufficient room to maneuver on the concrete floor. When the contents of the vehicle are emptied, the driver is instructed to move the vehicle away from the tipping floor and exit the transfer station. Vehicles which have not had their tare weight recorded are weighed a second time to determine the net weight of waste brought to the transfer station. The flow of traffic at the transfer station is aided by directional signs. At no time will waiting trucks be allowed to queue onto public highways.

During times when several vehicles are at the transfer station, haulers are instructed to wait at the truck staging area adjacent to the transfer area until there is sufficient room at the tipping floor within the transfer building. The size of the tipping floor will allow up to four trucks to dump simultaneously.

#### **5. Housekeeping and Litter Control**

Incoming wastes will be transported to the transfer station in covered or enclosed vehicles. Outgoing transfer trailers are also covered or enclosed. Throughout the day and at the end of each working day, facility personnel police the building and surrounding site for litter. Collected litter is placed in containers for proper disposal.



A yard hydrant is used to wash down the concrete tipping floor and adjacent equipment areas. The wash water flows into a trench drain (refer to "Wastewater Collection" section). A metal screen at the trench drain traps and large debris which might get into the drain. The metal screen and trench drain is raked periodically and the collected trash is placed into containers for proper disposal. All drains for the tipping floor are connected to the City of Charlotte sewer system.

## 6. Noise, Odor, and Vector Control

Noise created at the facility is limited to vehicular traffic and operation of the transfer station equipment. Noise from internal combustion collection and transfer vehicles, as well as the rubber-tired loader servicing the transfer station, are all reduce by mufflers. Other noise generated within the building from waste handling is significantly abated by the metal framed structure which encloses the transfer station.

Odors are controlled by prompt unloading and transfer of all delivered wastes at the transfer station. Since access to the tipping floor is completely open, adequate fresh air exchange is ensured. The only time waste is stored temporarily at the transfer station is when a transfer trailer is loaded at the end of the day and must wait until the landfill disposal site reopens the following day, or at the end of a weekend or holiday. In such cases the waste will be stored in covered transfer trailers or roll-off boxes in accordance with §.0104 of DEHNR Solid Waste Management Regulations.

The daily removal of solid waste in conjunction with daily housekeeping procedures effectively controls the development of vector related problems. The tipping floor and waste compactors are made of impervious, readily cleanable materials. Floor and equipment wash-downs using the yard hydrant at the transfer station will also reduce both odor and vector problems. As described previously, tipping floor wash water will be diverted to the City sewer system. Finally, a licensed exterminator is available to visit the transfer station on an as-needed basis.



## 7. Dust and Fire Control

Access to the transfer station is off of the I-85 service road. Since collection and transfer vehicles travel at low speeds on paved roads, dust generation is not a problem. Furthermore, the regular washdown of the tipping floor and equipment will also prevent the excessive build-up of dirt and dust at the facility.

Fire control is provided by portable hand held fire extinguishers. Fire protection will be provided by the Charlotte Fire Department, which is aware of the fire control needs for the facility. In the event that a fire occurs, the local authorities will be notified immediately. To this end, the telephone numbers of local fire, police, ambulance and hospital facilities would be posted in and around the facility at all times. Should a fire occur at the facility the DEHNR will be notified within 24 hours and written notification will be submitted within 15 days.

## 8. Wastewater Collection

Wastewater generation is minimized by the metal roof building covering the concrete tipping floor and loading bays. Wastewater flow at the transfer station will consist of wash-down water and minor volumes of septage for the incoming MSW. These sources of wastewater are directed into a trench drain located at the entrance of the transfer station building or to a drain in the center of each loading bay. Collected wastewater travels via gravity to discharge into the City of Charlotte sewer system.

## 9. Storm Water Management

Areas adjacent to the transfer station are graded away from the facility and drain via sheet run-off. Standard erosion and sediment control practices, such as vegetating exposed slopes and directing storm water into ditches or sediment ponds where applicable, are implemented at the site. Through these measures the potential for mixing of storm water with wastewater generated at the transfer station is minimized.

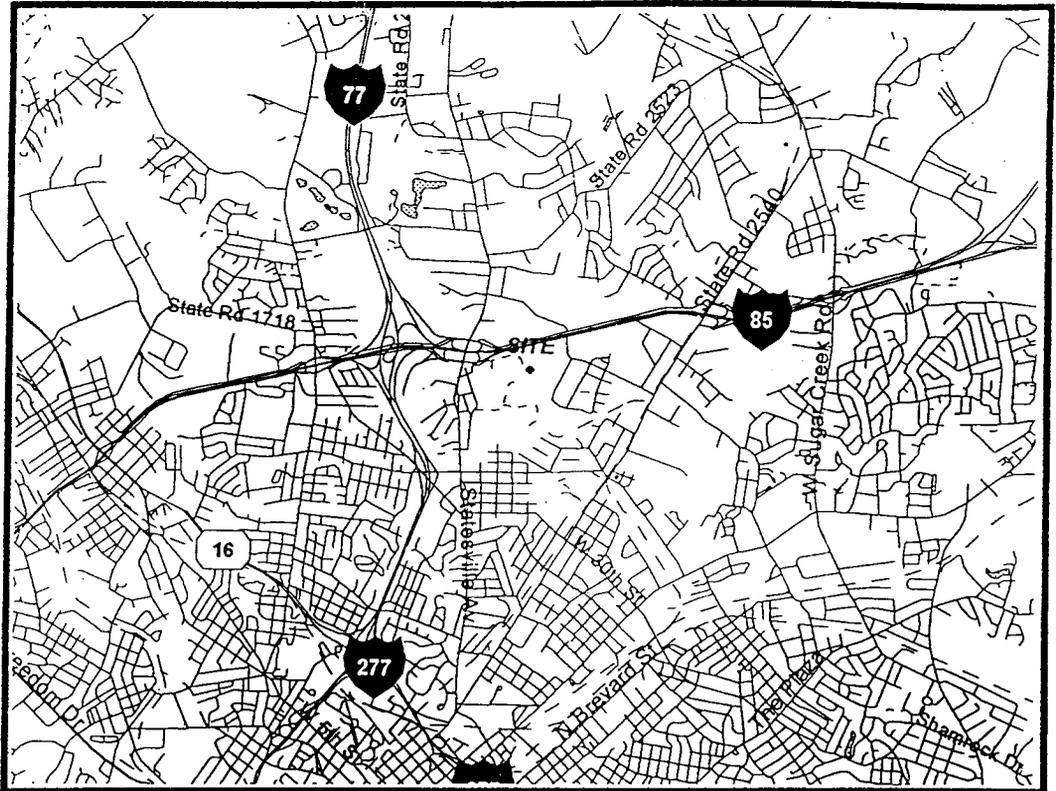
## 10. Facility Inspections



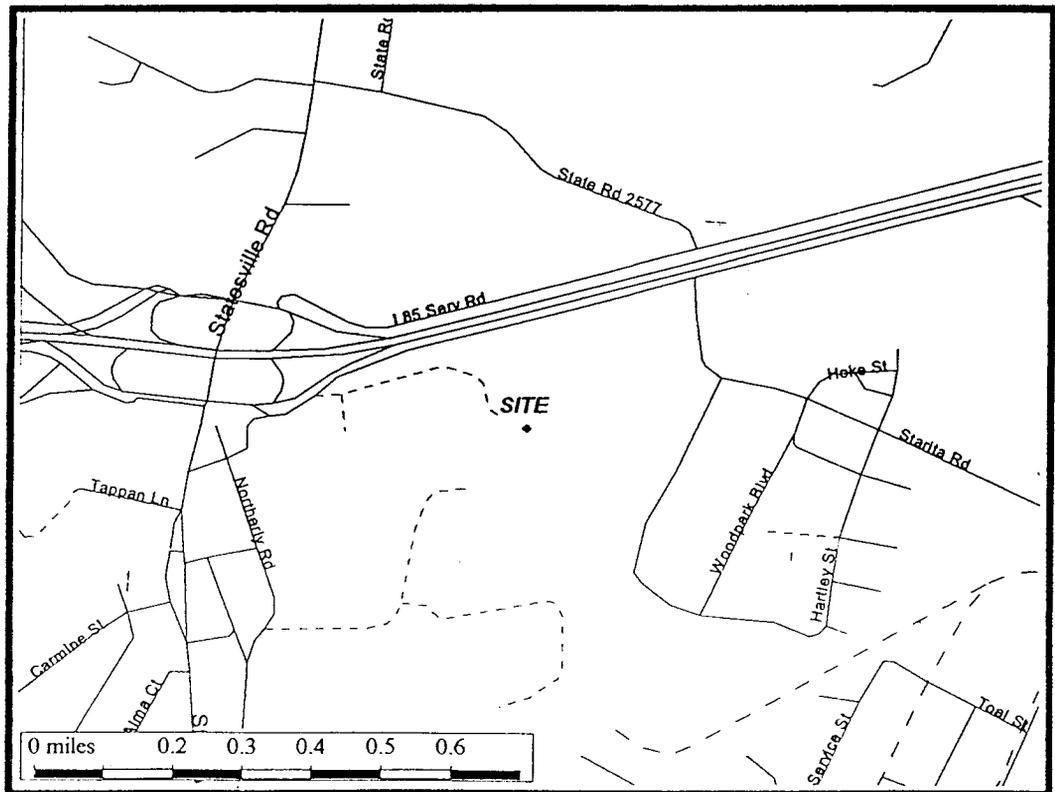
There will be regular maintenance inspections conducted at the transfer station. The inspections will be conducted by site personnel who are familiar with the operations of the facility. Items that will be inspected monthly include, at a minimum, the following:

1. Transfer trailers
2. Push walls
3. Fire Extinguishers
4. Electrical controls
5. Trench drain, floor drains and yard hydrant

If unsatisfactory conditions are noted during the inspection, or by transfer station personnel at any other time, the concerns will be reported to the General Manager. If a threat to safety or to the environment is identified, immediate action will be taken to correct the situation. If necessary, operations at the transfer station will be suspended temporarily until the proper corrective actions have been taken. In the unlikely event of a severe accident, the proper authorities will be notified and off-site support requested.



SITE VICINITY MAP



SITE LOCATION MAP

**Figure 1**



**APPENDIX A**  
**DRAINAGE CALCULATIONS**

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**Appendices**

Appendix A Design Criteria, Design Computations, and Figures.



## 1.0 Introduction

This report is intended to summarize the storm water management design for the proposed solid waste transfer facility in Charlotte, North Carolina. The approximately 11.3-acre site is located on the south side of the I-85 Service Road (refer to Figures 1 and 2 in appendix A). The site is mostly clear with light undergrowth and trees. Site drainage is divided into two areas each draining to a small channel which drain south into Irwin Creek. A point at the southern site boundary on each channel was picked as a study point. Area P-1's (approximately 8.7 acres) drainage follows irregularly sloping ground from the north east corner of the site (at up to elevation 758 feet) to a small channel on the western boundary of the site which drains from north to south (to as low as elevation 693 feet). Area P-2 (approximately 2.6 acres) drains the south east corner of the site from an elevation up to 750 feet to an elevation as low as 700 feet.

The proposed project will alter approximately 3 acres of the site to accommodate creek construction of a transfer station structure and associated access roadways and parking areas. Filling is proposed in the central portion of the site and excavation in the southern portion. Proposed site grading will not alter the existing site drainage patterns. Runoff from most of the graded areas and from unaltered areas to the north will be diverted to a proposed excavated detention basin in the south west portion of the site to mitigate the potential increase in peak runoff due to site development.

## 2.0 Proposed Storm Water Management System

Storm water drainage for the proposed development will consist predominantly of overland flow from north to south with the addition of the following conveyances and diversions:

- A 15-inch drain which will collect runoff from areas north of the proposed transfer station and convey it to a ditch located on the south east side of the development.
- A 15-inch drain which will collect runoff from areas east of the proposed transfer station and convey it to a ditch located on the south east side of the development.

- A ditch along the south east side of the proposed transfer station will collect runoff from the two 15-inch drains, the roof drains, and a portion of the paved area north of the transfer structure and divert it to the detention basin.



The detention basin will be an excavated dry-type basin (no permanent pool). The bottom of the basin will be at elevation 709 feet and the lowest portion of the rim at elevation 714.5 feet.

The basin outlet will consist of a 18-inch inside diameter corrugated metal pipe riser and a 15-inch outlet pipe. The top of the riser is to be set at elevation 712.5 feet. A 4-inch orifice is to be provided in the side of the riser centered at elevation 710 feet. The combination of the flow into the orifice and overflow into the riser provides for moderation of peak discharge for storms up to (and beyond) the 10-year recurrence interval while also providing capacity to safely pass larger storms up to the 50 year storm. The portion of the riser from elevation 709 to 710 feet will be perforated, wrapped in silt fence, and backfilled with crushed stone to allow dewatering of the basin between storm events.

The outlet from the basin is proposed to include rip-rap protection to render the discharge non-erosive.

### 3.0 Hydrologic Analysis

#### 3.1 Analysis Methodology

Hydrologic analysis was performed using the Soil Conservation Service TR-20 computer program to model pre- and post-development conditions and thereby evaluate effects on peak discharge, functioning of the detention basin, and to provide data for hydraulic design of proposed conveyances. Twenty-four hour, 2-, 10- and 50-year storms were modeled. Information concerning the derivation of input data and the TR-20 computer output are included in appendix A. In regard to the hydrologic analysis note that:

- For pre-developed analysis, the 11.3-acre drainage basin which includes the site and which ultimately discharges to Irwin Creek to the south of the site was separated into two basins P-1 and P-2. Limits of the drainage basin were determined based on available site topography and the City of Charlotte USGS topographical map.

Discharge to the study points from these drainage basins were used to compare pre-development and post-development peak discharges. The pre-development drainage areas are shown on Figure 1 in appendix A



- For the post-development analysis, the 11.3-acre drainage basin was separated into three basins PA-1, PA-2, and PA-3. PA-1 drains directly to study point 1, PA-2 drains directly to study point 2, and PA-3 drains into the storm water detention basin which drains to study point 1. Post-development drainage areas are shown on Figure 2 in appendix A.
- In routing the storms through the detention basin, potential storage from elevation 709 to 710 feet was not considered to allow for sediment accumulation.

### 3.2 Analysis Results

The results of the hydrologic analysis are summarized on the following table and indicate that the proposed development will not increase peak offsite discharge for the 2-, and 10-year storms.

Location of Discharge	Storm Event		
	2-yr	10-yr	50-yr
Discharge to study point 1, pre-development conditions (cfs)	2.32	10.27	20.69
Discharge to study point 2, pre-development conditions (cfs)	0.76	3.31	6.61
<b>Total pre-developed discharge (cfs)</b>	<b>3.08</b>	<b>13.58</b>	<b>27.30</b>
Discharge to study point 1, post-development conditions (cfs)	2.31	8.98	18.05
Discharge to study point 2, post-developed conditions (cfs)	0.72	2.10	3.74
<b>Total post-developed discharge (cfs)</b>	<b>3.03</b>	<b>11.08</b>	<b>21.79</b>
Peak water surface elevation in detention basin - post-development conditions (ft)	710.88	711.97	712.38

The results of the hydrologic analysis also indicate that the detention basin can safely pass a 50-year storm without overtopping. Hydraulic analysis of the proposed conveyances (see Pages 19-22 in appendix A) further indicates that all conveyances will safely pass the 10 year design storm as required by the Charlotte Mecklenburg Storm Water Design Manual.



#### 4.0 Maintenance Requirements

##### 4.1 Construction Management Techniques

To maintain the effectiveness of the proposed storm water management system, the following continuing maintenance activities are required:

Clearing and grubbing must be held to the minimum necessary for grading and equipment operation.

Construction must be sequenced to minimize the exposure time of cleared surface area.

The contractor is responsible for stabilization of all disturbed areas as soon as practicable during the construction activities. Stabilization shall be accomplished by temporarily or permanently protecting the disturbed soil surface from rainfall impacts and runoff.

Erosion and sediment control measures must be in place and functional before earth moving operations begin, and must be constructed and maintained throughout the construction period. Temporary measures may be removed at the beginning of the work day, but must be replaced at the end of the work day.

All control measures shall be checked, and repaired as necessary, weekly in dry periods and within 24 hours after any rainfall of 0.5 inches within a 24 hour period. During prolonged rainfall, daily checking and repairing is necessary. Clean trash, debris and sediment from the ditch, and inlets as required. Supplement rip-rap at outlets as needed to mitigate erosion.

Remove collected sediment from the bottom of the detention basin before it approaches elevation 826.



Clean and/or replace crushed stone around the perforated section of the basin riser outlet as needed to correct clogging. At minimum, clean or replace these materials each time sediment is removed from the basin. Hay bale and/or silt fence baffles encircling the outlet structure are suggested to reduce potential for clogging.

The contractor shall maintain records of checks and repairs at the project site along with this plan. Sanifill will be provided copies of these records.

The contractor's superintendent shall be designated to be responsible for erosion and sediment controls on the project site.

#### **4.2 Vegetative Controls**

Pre-construction vegetative ground cover shall not be destroyed, removed or disturbed more than 20 calendar days prior to grading or earth moving.

To the extent feasible, appropriate cover shall be applied within seven days on areas that will remain unfinished for more than 30 calendar days. Examples of cover are grass, sod, straw, mulch, fabric, mats, etc.

Permanent soil stabilization with perennial vegetation shall be applied as soon as practicable after final grading.

#### **4.3 Structural Controls**

All surface water flowing toward the construction area shall be diverted by using berms, channels, or sediment traps, as indicated on the proposed erosion and sedimentation control plan.

Erosion and sediment control measures shall be constructed per the attached erosion and sedimentation control plan to detain runoff and trap sediment.

Muddy water to be pumped from excavation and work areas must be held in settling basins or treated by filtration prior to its discharge into surface waters.

#### 4.4 Discharge Quality

The storm water discharge must not cause an objectionable color contrast in the receiving stream. The storm water discharge must result in no materials in concentrations sufficient to be hazardous or otherwise detrimental to humans, livestock, wildlife, plant life, or fish and aquatic life in the receiving stream.



To maintain the effectiveness of the proposed storm water management system, the following continuing maintenance activities are required:

Inspect storm water management facilities after each heavy rainfall. Clean trash, debris and sediment from the ditch, and inlets as required. Supplement rip-rap at outlets as needed to mitigate erosion.

Remove collected sediment from the bottom of the detention basin before it approaches elevation 710 feet.

Clean and/or replace crushed stone and silt fence wrapping around the perforated section of the basin riser outlet as needed to correct clogging. At minimum, clean or replace these materials each time sediment is removed from the basin. Hay bale and/or silt fence baffles encircling the outlet structure are suggested to reduce potential for clogging.

**Appendix A**  
**Index to Design Computations**



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**CONSTRUCTION SITE  
STORM WATER CONTROL PLAN  
FOR  
SOLID WASTE TRANSFER STATION  
CHARLOTTE, NORTH CAROLINA**

**PREPARED FOR:**  
Chambers/USA Waste, Inc.  
2236 Bolton Road, NW  
Atlanta, Georgia 30318

**PREPARED BY:**  
GZA GeoEnvironmental, Inc.  
Duluth, Georgia  
(770) 497-9868

March 12, 1996  
Project No. 170045

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1	Project		File No.
2	Location	Date	By
3	Subject	Checked	By
4	Based on	Revised	By

DESIGN CRITERIA:

1. THE POST DEVELOPMENT PEAK FLOW SHOULD NOT EXCEED THE PRE-DEVELOPMENT (EXISTING) CONDITIONS, PEAK FLOW FOR 2, AND 10-YEAR FREQUENCY STORMS.

2. DETENTION BASIN OUTLET SHOULD BE DESIGNED TO SAFELY PASS THE 50-YEAR PEAK FLOW

3. PER CHARLOTTE STORM WATER DESIGN MANUAL TYPE II RAINFALL DISTRIBUTION APPLIES

<u>FREQUENCY</u>	<u>24-HOUR RAINFALL</u>
2-YR	3.12 INCHES
10-YR	4.80 INCHES
50-YR	6.48 INCHES



1	Project	CHARLOTTE TRANSFER STATION	File No.
2	Location		Date
3	Subject		Checked
4	Based on		Revised

PRE DEVELOPED CONDITIONS. (EXISTING CONDITIONS)

AREA PRE-1  $9.471 \text{ in}^2 \times \left(\frac{200 \text{ FT}}{\text{in}}\right)^2 = 378,840 \text{ FT}^2$   
 $= 8.7 \text{ ACRES} = .0136 \text{ mi}^2$

AREA PRE-2  $2.883 \text{ in}^2 \times \left(\frac{200 \text{ FT}}{\text{in}}\right)^2 = 115,320 \text{ FT}^2$   
 $= 2.6 \text{ ACRES} = .00414 \text{ mi}^2$

SITE UNDEVELOPED WOODED, FAIR HYDROLOGIC CONDITION  
 $C_n = 60$

CEZIL - HYDROLOGIC SOIL GROUP B - TABLE 3-10 C.M.S.W.M.

TYPE II RAINFALL

AREA PRE-1

TRAVEL LENGTH = 100' SHEET FLOW (MAX) SLOPE = .06  $n = 0.4$   
 385' SHALLOW CONC. FLOW,  $S = .07$   $V = 4.3 \text{ Fps}$  FIG 3-5 C.M.  
 570' CHANNEL FLOW,  $S = .04$   $V = 4 \text{ Fps}$  TAB. 2.7 ATTACHED

$$T_c = \frac{0.007 (.4 \times 100)^{0.8}}{(3.12)^{0.5} (.06)^{0.4}} + \frac{385}{3600 (4.3)} + \frac{570}{3600 (4)}$$

$$= 0.234 + .0248 + .0395 = \underline{\underline{0.298 \text{ HRS}}}$$

AREA PRE-2

TRAVEL LENGTH = 100' SHEET FLOW (MAX),  $S = .06$   $n = 0.4$   
 180' SHALLOW CONC. FLOW,  $S = .19$   $V = 6.9 \text{ Fps}$   
 270' CHANNEL FLOW,  $S = .04$   $V = 4 \text{ Fps}$ .

$$T_c = \frac{0.007 (.4 \times 100)^{0.8}}{(3.12)^{0.5} (.06)^{0.4}} + \frac{180}{3600 (6.9)} + \frac{270}{3600 (4)}$$

$$= 0.234 + .0072 + .019 = \underline{\underline{0.260 \text{ HRS}}}$$





1 Project	File No.	
2 Location	Date	By
3 Subject	Checked	By
4 Based on	Revised	By

POST DEVELOPED CONDITIONS

AREA - POST 1

$$117.707 \text{ in}^2 \times \left(\frac{50 \text{ FT}}{12 \text{ in}}\right)^2 = 294,268 \text{ FT}^2 = 6.76 \text{ ACRES}$$

$$= .0106 \text{ mi}^2$$

AREA POST 2

$$19.56 \text{ in}^2 \times \left(\frac{50 \text{ FT}}{12 \text{ in}}\right)^2 = 48,900 \text{ FT}^2 = 1.12 \text{ ACRES}$$

$$= .0018 \text{ mi}^2$$

AREA POST 3

$$42.29 \times \left(\frac{50 \text{ FT}}{12 \text{ in}}\right)^2 = 105,730 \text{ FT}^2 = 2.43 \text{ ACRES}$$

$$.0036 \text{ mi}^2$$

CURVE # CALCULATIONS FOR POST AREAS

AREA POST 1  $2.945 \text{ in}^2 \times \left(\frac{50 \text{ FT}}{12 \text{ in}}\right)^2 = 7362.5 \text{ FT}^2$  IMPERVIOUS  $C_u = 98$

$286905.5 \text{ FT}^2$  UNDISTURBED  $C_u = 60$

$$(2.5\% \times 98) + (97.5\% \times 60) = \underline{\underline{60.95}}$$

AREA POST 2  $2.658 \text{ in}^2 \times \left(\frac{50 \text{ FT}}{12 \text{ in}}\right)^2 = 6645 \text{ FT}^2$  IMPERVIOUS  $C_u = 98$

$2.821 \text{ in}^2 \times \left(\frac{50 \text{ FT}}{12 \text{ in}}\right)^2 = 7052.5 \text{ FT}^2$  GRASSED FAIR COND.  $C_u = 69$

$35202.5$  UNDISTURBED  $C_u = 60$

$$(13.6\% \times 98) + (14.4\% \times 69) + (72\% \times 60) = \underline{\underline{66.46}}$$



1 Project	File No.	
2 Location	Date	By
3 Subject	Checked	By
4 Based on	Revised	By

5				
6	AREA - POST 3	$14.6785 \times (50)^2 = 36,696 \text{ FT}^2$	IMPERVIOUS	CN=98
7				
8		$3.968 \times (50)^2 = 9,920 \text{ FT}^2$	GRAVEL	CN=85
9				
10		$3.100 \times (50)^2 = 7,750 \text{ FT}^2$	UNDISTURBED	CN=60
11				
12		$51,364 \text{ FT}^2$	GRASSED FAIR COND	CN=69

$$(34.7\% \times 98) + (9.4\% \times 85) + (7.3\% \times 60) + (48.6\% \times 69) = \underline{79.91}$$

TIME OF CONCENTRATION

AREA POST 1 SAME AS AREA PRE 1  $T_c = 0.298$

AREA POST 2 SAME AS AREA PRE 2  $T_c = 0.260$

AREA POST 3

100'	SHEET FLOW (MAX)	$S = .06$	
90'	SHALLOW CONC. FLOW	$S = .02$	$V = 2.25 \text{ FPS}$
490'	CHANNEL FLOW	$S = .06$	$V = 4 \text{ FPS}$

$$\frac{0.007 (0.4 \times 100)^{0.8}}{(3.12)^{0.5} (.06)^{0.4}} + \frac{90}{3600 (2.25)} + \frac{490}{3600 (4)}$$

$$0.234 + .0111 + .034 = 0.279$$



**Charlotte Transfer Station  
Storage & Discharge for Basin and Outlets**

Orifice Diameter = 4 inch.  
Orifice Elevation = 710 feet

Riser Diameter = 1.5 feet  
Riser Elevation = 712 feet

Elevation (ft)	Surface Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )	Total Storage (ft <sup>3</sup> )	Total Storage (acre-ft)	Orifice Discharge (cfs)	Riser Discharge (cfs)	Total Discharge (cfs)
709	0	0	0	0	0	0	0
710	5078	0	0	0	0	0	0
711	5862	5470	5470	0.125573921	0.419865963	0	0.41986596
712	6645	6253.5	11723.5	0.269134527	0.593780139	0	0.59378014
712.5	7091	3434	15157.5	0.34796832	0.663866377	5.16488471	5.82875108
713	7536	3656.75	18814.25	0.431915748	0.72722918	14.6085	15.3357292
713.5	7982	3879.5	22693.75	0.520976814	0.78549729	26.8375282	27.6230255
714	8428	4102.5	26796.25	0.615157254	0.839731925	41.3190777	42.1588096
714.5	8966	4348.5	31144.75	0.714985078	0.890670208	57.7451665	58.6358367

Orifice Discharge = coeff. of discharge \* area of flow \* (2g\*Head)<sup>1/2</sup>  
 Coeff. of discharge = 0.6 Ref. North Carolina Erosion and Sediment Control Planning and Design Manual  
 Riser Discharge = 9.739 \* Dia. \* (Head)<sup>3/2</sup>





22.00	DISCHG	.08	.08	.08	.08	.09	.09	.09	.09	.09	.09	.09
23.00	DISCHG	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09
24.00	DISCHG	.07	.05	.03	.01	.00						

RUNOFF VOLUME ABOVE BASEFLOW = 1.19 WATERSHED INCHES, 3.14 CFS-HRS, .26 ACRE-FEET; BASEFLOW= .00

EXECUTIVE CONTROL OPERATION ENDCMP RECORD

COMPUTATIONS COMPLETED FOR PASS 4

EXECUTIVE CONTROL OPERATION COMPUT RECORD

STARTING TIME = .00 RAIN DEPTH = 6.48 RAIN DURATION= 1.00 RAIN TABLE NO.= 2 ANT. MOIST. COND= 2  
 ALTERNATE NO.= 1 STORM NO.= 3 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 1  
 OUTPUT HYDROGRAPH= 1  
 AREA= .01 SQ MI INPUT RUNOFF CURVE= 60. TIME OF CONCENTRATION= .30 HOURS  
 INTERNAL HYDROGRAPH TIME INCREMENT= .0397 HOURS

PEAK TIME(HRS) 12.10 PEAK DISCHARGE(CFS) 20.69 PEAK ELEVATION(FEET) (RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .01

10.00	DISCHG	.00	.00	.00	.00	.00	.00	.00	.01	.02	.06
11.00	DISCHG	.11	.16	.23	.31	.41	.54	.97	2.26	4.20	9.08
12.00	DISCHG	16.76	20.69	16.05	10.22	7.03	5.18	4.20	3.60	3.23	2.92
13.00	DISCHG	2.64	2.45	2.26	2.12	1.99	1.88	1.78	1.67	1.58	1.51
14.00	DISCHG	1.44	1.39	1.33	1.29	1.23	1.18	1.13	1.07	1.02	1.00
15.00	DISCHG	1.00	.99	.99	.99	.96	.91	.88	.87	.86	.86
16.00	DISCHG	.86	.86	.87	.87	.87	.87	.85	.81	.76	.75
17.00	DISCHG	.74	.73	.73	.73	.73	.74	.74	.74	.73	.70
18.00	DISCHG	.65	.62	.60	.60	.60	.60	.60	.60	.60	.60
19.00	DISCHG	.60	.60	.60	.60	.60	.60	.60	.60	.60	.56
20.00	DISCHG	.51	.48	.46	.46	.46	.45	.45	.45	.45	.46
21.00	DISCHG	.46	.46	.46	.46	.46	.46	.46	.46	.46	.46
22.00	DISCHG	.46	.46	.46	.46	.46	.46	.46	.46	.46	.46
23.00	DISCHG	.46	.46	.46	.46	.46	.46	.46	.46	.46	.46
24.00	DISCHG	.37	.30	.18	.08	.04	.02	.01	.00		

RUNOFF VOLUME ABOVE BASEFLOW = 2.24 WATERSHED INCHES, 19.68 CFS-HRS, 1.63 ACRE-FEET; BASEFLOW = .00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP RECORD

COMPUTATIONS COMPLETED FOR PASS 5

EXECUTIVE CONTROL OPERATION COMPUT RECORD

STARTING TIME = .00 RAIN DEPTH = 6.48 RAIN DURATION= 1.00 RAIN TABLE NO.= 2 ANT. MOIST. COND= 2  
 ALTERNATE NO.= 1 STORM NO.= 3 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 2  
 OUTPUT HYDROGRAPH= 1  
 AREA= .00 SQ MI INPUT RUNOFF CURVE= 60. TIME OF CONCENTRATION= .26 HOURS  
 INTERNAL HYDROGRAPH TIME INCREMENT= .0347 HOURS

PEAK TIME(HRS) 12.08 PEAK DISCHARGE(CFS) 6.61 PEAK ELEVATION(FEET) (RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .00

10.00	DISCHG	.00	.00	.00	.00	.00	.00	.00	.00	.01	.02
11.00	DISCHG	.04	.05	.08	.10	.13	.17	.34	.80	1.44	3.20
12.00	DISCHG	5.73	6.54	4.40	2.69	1.85	1.39	1.17	1.02	.93	.85
13.00	DISCHG	.77	.72	.66	.63	.59	.56	.53	.49	.47	.45
14.00	DISCHG	.43	.42	.40	.38	.37	.35	.34	.32	.31	.30
15.00	DISCHG	.30	.30	.30	.30	.29	.27	.26	.26	.26	.26
16.00	DISCHG	.26	.26	.26	.26	.26	.26	.26	.24	.23	.22
17.00	DISCHG	.22	.22	.22	.22	.22	.22	.22	.22	.22	.21
18.00	DISCHG	.19	.18	.18	.18	.18	.18	.18	.18	.18	.18
19.00	DISCHG	.18	.18	.18	.18	.18	.18	.18	.18	.18	.17
20.00	DISCHG	.15	.14	.14	.14	.14	.14	.14	.14	.14	.14
21.00	DISCHG	.14	.14	.14	.14	.14	.14	.14	.14	.14	.14
22.00	DISCHG	.14	.14	.14	.14	.14	.14	.14	.14	.14	.14
23.00	DISCHG	.14	.14	.14	.14	.14	.14	.14	.14	.14	.14
24.00	DISCHG	.11	.08	.04	.02	.01	.00				

RUNOFF VOLUME ABOVE BASEFLOW = 2.25 WATERSHED INCHES, 5.94 CFS-HRS, .49 ACRE-FEET; BASEFLOW = .00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP RECORD

EXECUTIVE CONTROL OPERATION ENDJOB

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE AREA	RAIN TABLE	ANTEC MOIST	MAIN TIME	PRECIPITATION			RUNOFF	PEAK DISCHARGE			
						BEGIN	AMOUNT	DURATION		AMOUNT	ELEVATION	TIME	RATE
ID	OPERATION	AREA	#	COND	INCREM	(HR)	(IN)	(HR)	(IN)	(FT)	(HR)	(CFS)	
RATE		(SQ MI)											
(CSM)													
ALTERNATE	1	STORM	1										
XSECTION	1	RUNOFF	.01	2	2	.10	.0	3.12	24.00	.38	---	12.14	2.32
170.5													
XSECTION	2	RUNOFF	.00	2	2	.10	.0	3.12	24.00	.38	---	12.10	.76
186.1													
ALTERNATE	1	STORM	2										
XSECTION	1	RUNOFF	.01	2	2	.10	.0	4.80	24.00	1.19	---	12.11	10.27
755.4													
XSECTION	2	RUNOFF	.00	2	2	.10	.0	4.80	24.00	1.19	---	12.09	3.31
807.9													
ALTERNATE	1	STORM	3										
XSECTION	1	RUNOFF	.01	2	2	.10	.0	6.48	24.00	2.24	---	12.10	20.69
1521.6													
XSECTION	2	RUNOFF	.00	2	2	.10	.0	6.48	24.00	2.25	---	12.08	6.61
1612.6													

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE	DRAINAGE AREA	STORM NUMBERS.....			DISCHARGE TO STUDY POINT
		1	2	3	
ID	(SQ MI)				
XSECTION	1	.01			
ALTERNATE	1		2.32	10.27	20.69
XSECTION	2	.00			
ALTERNATE	1		.76	3.31	6.61

END OF 1 JOBS IN THIS RUN

FILE J:\TR20\PREOUTPT

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY\*\*\*\*\*

JOB TR-20 SUMMARY  
 TITLE 001 CHARLOTTE SOLID WASTE TRANSFER STATION POST DEVELOPMENT CONDITIONS DISCHARGE TO STUDY POINT 1  
 TITLE 2/5/96 STORMS 2 10 50 YR WITH PROPOSED BASIN  
 3 STRUCT 01  
 8 710.0 0.0 0.00  
 8 711.0 0.419 0.13  
 8 712.0 0.594 0.27  
 8 712.5 5.829 0.35  
 8 713.0 15.34 0.43  
 8 713.5 27.62 0.52  
 8 714.0 42.16 0.61  
 8 714.5 58.64 0.71  
 9 ENDTBL  
 6 RUNOFF 1 001 1 0.0036 79. 0.28 1 1 1 1  
 6 RESVOR 2 01 1 2 710.0 1 1 1 1  
 6 RUNOFF 1 002 3 0.0106 61. 0.30 1 1 1 1  
 6 ADDHYD 4 003 2 3 4 1 1 1 1  
 ENDATA  
 7 INCREM 6 .05  
 7 COMPUT 7 001 003 0.0 3.12 1.0 2 2 01 01  
 ENDCMP 1  
 7 COMPUT 7 001 003 0.0 4.8 1.0 2 2 01 02  
 ENDCMP 1  
 7 COMPUT 7 001 003 0.0 6.48 1.0 2 2 01 03  
 ENDCMP 1  
 ENDJOB 2  
 \*\*\*\*\*END OF 80-80 LIST\*\*\*\*\*

EXECUTIVE CONTROL OPERATION INCREM RECORD

MAIN TIME INCREMENT = .05 HOURS

EXECUTIVE CONTROL OPERATION COMPUT RECORD

ID +  
 FROM XSECTION 1 TO XSECTION 3  
 STARTING TIME = .00 RAIN DEPTH = 3.12 RAIN DURATION = 1.00 RAIN TABLE NO. = 2 ANT. MOIST. COND = 2  
 ALTERNATE NO. = 1 STORM NO. = 1 MAIN TIME INCREMENT = .05 HOURS

OPERATION RUNOFF CROSS SECTION 1

PEAK TIME (HRS) 12.08 PEAK DISCHARGE (CFS) 3.26 PEAK ELEVATION (FEET) (RUNOFF)

TIME (HRS)	FIRST HYDROGRAPH POINT = .00 HOURS	TIME INCREMENT = .05 HOURS	DRAINAGE AREA = .00 SQ. MI.							
10.00	DISCHG .00 .00 .00 .01 .01 .01 .01 .01 .01 .01									
10.50	DISCHG .02 .02 .02 .02 .03 .03 .03 .04 .04 .05									
11.00	DISCHG .05 .06 .06 .07 .08 .08 .09 .10 .11 .12									
11.50	DISCHG .13 .16 .22 .33 .47 .62 .80 1.13 1.62 2.21									
12.00	DISCHG 2.79 3.19 3.23 2.86 2.33 1.81 1.44 1.18 .98 .83									
12.50	DISCHG .72 .64 .59 .54 .50 .48 .46 .43 .41 .39									
13.00	DISCHG .37 .36 .35 .33 .32 .31 .30 .29 .28 .27									
13.50	DISCHG .27 .26 .25 .24 .24 .23 .22 .22 .21 .21									
14.00	DISCHG .20 .20 .20 .19 .19 .18 .18 .18 .17 .17									
14.50	DISCHG .17 .16 .16 .15 .15 .15 .14 .14 .14 .14									

RUNOFF VOLUME ABOVE BASEFLOW = .94 WATERSHED INCHES, 2.18 CFS-HRS, .18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 1

PEAK TIME (HRS) 13.00 PEAK DISCHARGE (CFS) .37 PEAK ELEVATION (FEET) 710.88

TIME (HRS)	FIRST HYDROGRAPH POINT = .00 HOURS	TIME INCREMENT = .05 HOURS	DRAINAGE AREA = .00 SQ. MI.							
11.00	DISCHG .00 .01 .01 .01 .01 .01 .01 .01 .01 .01									
11.00	ELEV 710.00 710.01 710.02 710.02 710.02 710.02 710.02 710.03 710.03 710.03									
11.50	DISCHG .02 .02 .02 .02 .03 .03 .04 .06 .07 .10									
11.50	ELEV 710.04 710.04 710.05 710.05 710.07 710.08 710.10 710.13 710.17 710.23									
12.00	DISCHG .13 .17 .21 .24 .28 .30 .32 .33 .34 .35									
12.00	ELEV 710.31 710.40 710.49 710.58 710.66 710.71 710.76 710.79 710.81 710.83									
12.50	DISCHG .35 .36 .36 .36 .37 .37 .37 .37 .37 .37									
12.50	ELEV 710.84 710.85 710.86 710.87 710.87 710.88 710.88 710.88 710.88 710.88									
13.00	DISCHG .37 .37 .37 .37 .37 .37 .37 .37 .37 .37									
13.00	ELEV 710.88 710.88 710.88 710.88 710.88 710.88 710.88 710.88 710.87 710.87									
13.50	DISCHG .36 .36 .36 .36 .36 .36 .35 .35 .35 .35									
13.50	ELEV 710.87 710.86 710.86 710.86 710.85 710.85 710.85 710.84 710.84 710.83									
14.00	DISCHG .35 .35 .34 .34 .34 .34 .34 .33 .33 .33									
14.00	ELEV 710.83 710.82 710.82 710.81 710.81 710.80 710.80 710.79 710.79 710.78									
14.50	DISCHG .33 .32 .32 .32 .32 .32 .31 .31 .31 .31									
14.50	ELEV 710.78 710.77 710.77 710.76 710.76 710.75 710.75 710.74 710.74 710.73									

RUNOFF VOLUME ABOVE BASEFLOW = .44 WATERSHED INCHES, 1.02 CFS-HRS, .08 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 2

PEAK TIME(HRS) 12.14 PEAK DISCHARGE(CFS) 2.07 PEAK ELEVATION(FEET) (RUNOFF)

Table with 12 columns: TIME(HRS), Q.MI., DISCHG, and 10 numerical columns. Rows include hydrograph data from 11.50 to 14.50 hours.

RUNOFF VOLUME ABOVE BASEFLOW = .24 WATERSHED INCHES, 1.64 CFS-HRS, .14 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 3

PEAK TIME(HRS) 12.14 PEAK DISCHARGE(CFS) 2.31 PEAK ELEVATION(FEET) (NULL)

Table with 12 columns: TIME(HRS), Q.MI., DISCHG, and 10 numerical columns. Rows include hydrograph data from 11.00 to 14.50 hours.

RUNOFF VOLUME ABOVE BASEFLOW = .29 WATERSHED INCHES, 2.67 CFS-HRS, .22 ACRE-FEET; BASEFLOW = .00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP RECORD

COMPUTATIONS COMPLETED FOR PASS 1

TR20 XEQ 02-23-96 10:26 CHARLOTTE SOLID WASTE TRANSFER STATION POST DEVELOPMENT CONDITIONS JOB
PASS 2
REV PC 09/83(.2) 2/5/96 STORMS 2 10 50 YR WITH PROPOSED BASIN AREA 3

EXECUTIVE CONTROL OPERATION COMPUT RECORD

ID FROM XSECTION 1 TO XSECTION 3
STARTING TIME = .00 RAIN DEPTH = 4.80 RAIN DURATION= 1.00 RAIN TABLE NO.= 2 ANT. MOIST. COND= 2
ALTERNATE NO.= 1 STORM NO.= 2 MAIN TIME INCREMENT = .05 HOURS

OPERATION RUNOFF CROSS SECTION 1

PEAK TIME(HRS) 12.07 PEAK DISCHARGE(CFS) 6.75 PEAK ELEVATION(FEET) (RUNOFF)

Table with 12 columns: TIME(HRS), Q.MI., DISCHG, and 10 numerical columns. Rows include hydrograph data from 8.00 to 14.50 hours.

RUNOFF VOLUME ABOVE BASEFLOW = 2.02 WATERSHED INCHES, 4.69 CFS-HRS, .39 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS) 13.20 PEAK DISCHARGE(CFS) .59 PEAK ELEVATION(FEET) 711.97

Table with 12 columns: TIME(HRS), Q.MI., DISCHG, and 10 numerical columns. Rows include hydrograph data from 9.00 to 10.00 hours.

10.50	DISCHG	.03	.03	.03	.03	.03	.03	.04	.04	.04	.04
10.50	ELEV	710.06	710.06	710.07	710.07	710.08	710.08	710.08	710.09	710.09	710.10
11.00	DISCHG	.04	.05	.05	.05	.05	.06	.06	.06	.07	.07
11.00	ELEV	710.10	710.11	710.12	710.12	710.13	710.14	710.15	710.15	710.16	710.17
11.50	DISCHG	.08	.08	.09	.10	.11	.13	.15	.18	.22	.28
11.50	ELEV	710.18	710.20	710.21	710.23	710.27	710.31	710.36	710.43	710.53	710.66
12.00	DISCHG	.34	.42	.45	.48	.51	.53	.54	.55	.56	.56
12.00	ELEV	710.82	711.01	711.19	711.36	711.50	711.61	711.69	711.75	711.80	711.83
12.50	DISCHG	.57	.57	.58	.58	.58	.58	.58	.59	.59	.59
12.50	ELEV	711.86	711.88	711.90	711.91	711.92	711.93	711.94	711.95	711.96	711.96
13.00	DISCHG	.59	.59	.59	.59	.59	.59	.59	.59	.59	.59
13.00	ELEV	711.97	711.97	711.97	711.97	711.97	711.97	711.97	711.97	711.97	711.97
13.50	DISCHG	.59	.59	.59	.59	.59	.58	.58	.58	.58	.58
13.50	ELEV	711.96	711.96	711.96	711.95	711.95	711.94	711.94	711.93	711.93	711.92
14.00	DISCHG	.58	.58	.58	.58	.57	.57	.57	.57	.57	.57
14.00	ELEV	711.92	711.91	711.90	711.90	711.89	711.88	711.88	711.87	711.86	711.86
14.50	DISCHG	.57	.57	.56	.56	.56	.56	.56	.56	.56	.55
14.50	ELEV	711.85	711.84	711.83	711.82	711.82	711.81	711.80	711.79	711.78	711.77

RUNOFF VOLUME ABOVE BASEFLOW = .78 WATERSHED INCHES, 1.81 CFS-HRS, .15 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 2

PEAK TIME(HRS) 12.10 PEAK DISCHARGE(CFS) 8.53 PEAK ELEVATION(FEET) (RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .05 HOURS DRAINAGE AREA = .01

11.50	DISCHG	.01	.03	.09	.22	.41	.68	1.08	1.83	3.04	4.62
12.00	DISCHG	6.41	7.90	8.52	8.04	6.87	5.56	4.47	3.71	3.13	2.69
12.50	DISCHG	2.35	2.10	1.92	1.78	1.66	1.57	1.50	1.43	1.36	1.29
13.00	DISCHG	1.24	1.19	1.15	1.11	1.06	1.03	1.00	.97	.94	.91
13.50	DISCHG	.89	.87	.84	.82	.79	.77	.75	.73	.71	.70
14.00	DISCHG	.69	.67	.66	.65	.64	.62	.61	.60	.59	.57
14.50	DISCHG	.56	.55	.54	.53	.51	.50	.49	.48	.48	.48

RUNOFF VOLUME ABOVE BASEFLOW = .85 WATERSHED INCHES, 5.80 CFS-HRS, .48 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 3

PEAK TIME(HRS) 12.10 PEAK DISCHARGE(CFS) 8.98 PEAK ELEVATION(FEET) (NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .05 HOURS DRAINAGE AREA = .01

9.00	DISCHG	.00	.00	.00	.01	.01	.01	.01	.01	.01	.01
9.50	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
10.00	DISCHG	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
10.50	DISCHG	.03	.03	.03	.03	.03	.03	.04	.04	.04	.04
11.00	DISCHG	.04	.05	.05	.05	.05	.06	.06	.06	.07	.07
11.50	DISCHG	.09	.11	.18	.31	.53	.81	1.23	2.01	3.26	4.89
12.00	DISCHG	6.76	8.32	8.98	8.52	7.38	6.09	5.01	4.26	3.69	3.25
12.50	DISCHG	2.92	2.67	2.50	2.36	2.24	2.16	2.08	2.02	1.95	1.88
13.00	DISCHG	1.82	1.78	1.74	1.69	1.65	1.61	1.58	1.56	1.53	1.50
13.50	DISCHG	1.47	1.45	1.43	1.40	1.38	1.35	1.33	1.31	1.30	1.28
14.00	DISCHG	1.27	1.25	1.24	1.23	1.21	1.20	1.19	1.17	1.16	1.14
14.50	DISCHG	1.13	1.12	1.11	1.09	1.07	1.06	1.05	1.04	1.04	1.03

RUNOFF VOLUME ABOVE BASEFLOW = .83 WATERSHED INCHES, 7.61 CFS-HRS, .63 ACRE-FEET; BASEFLOW = .00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP RECORD

COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL OPERATION COMPUT RECORD

FROM XSECTION 1 TO XSECTION 3

STARTING TIME = .00 RAIN DEPTH = 6.48 RAIN DURATION = 1.00 RAIN TABLE NO. = 2 ANT. MOIST. COND = 2  
 ALTERNATE NO. = 1 STORM NO. = 3 MAIN TIME INCREMENT = .05 HOURS

OPERATION RUNOFF CROSS SECTION 1

PEAK TIME(HRS) 12.07 PEAK DISCHARGE(CFS) 10.46 PEAK ELEVATION(FEET) (RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .05 HOURS DRAINAGE AREA = .00

6.50	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.02	.02
7.00	DISCHG	.02	.02	.02	.02	.02	.03	.03	.03	.03	.03
7.50	DISCHG	.03	.03	.03	.04	.04	.04	.04	.04	.04	.04
8.00	DISCHG	.04	.05	.05	.05	.05	.06	.06	.06	.07	.07
8.50	DISCHG	.08	.08	.08	.08	.09	.09	.09	.09	.09	.10
9.00	DISCHG	.10	.10	.10	.11	.11	.12	.12	.13	.13	.13
9.50	DISCHG	.14	.14	.14	.15	.15	.16	.16	.17	.17	.18
10.00	DISCHG	.18	.18	.19	.19	.20	.21	.21	.22	.23	.25

10.50	DISCHG	.26	.27	.29	.30	.32	.34	.36	.38	.40	.43
11.00	DISCHG	.45	.47	.49	.52	.55	.57	.60	.63	.67	.71
11.50	DISCHG	.75	.87	1.16	1.66	2.25	2.81	3.45	4.52	6.08	7.86
12.00	DISCHG	9.44	10.39	10.22	8.88	7.12	5.48	4.30	3.47	2.85	2.39
12.50	DISCHG	2.05	1.82	1.66	1.52	1.41	1.32	1.26	1.20	1.14	1.07
13.00	DISCHG	1.03	.99	.95	.91	.87	.84	.81	.79	.76	.74
13.50	DISCHG	.72	.70	.68	.66	.63	.61	.60	.58	.57	.56
14.00	DISCHG	.55	.54	.53	.51	.50	.49	.48	.47	.46	.45
14.50	DISCHG	.44	.43	.42	.41	.40	.39	.38	.38	.37	.37

RUNOFF VOLUME ABOVE BASEFLOW = 3.23 WATERSHED INCHES, 7.51 CFS-HRS, .62 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS) 12.30 PEAK DISCHARGE(CFS) 4.53 PEAK ELEVATION(FEET) 712.38

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .05 HOURS DRAINAGE AREA = .00

7.50	DISCHG	.00	.00	.01	.01	.01	.01	.01	.01	.01	.01
7.50	ELEV	710.00	710.00	710.01	710.01	710.01	710.02	710.02	710.02	710.02	710.02
8.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
8.00	ELEV	710.02	710.02	710.02	710.02	710.03	710.03	710.03	710.03	710.03	710.03
8.50	DISCHG	.01	.02	.02	.02	.02	.02	.02	.02	.02	.02
8.50	ELEV	710.04	710.04	710.04	710.04	710.04	710.05	710.05	710.05	710.05	710.05
9.00	DISCHG	.02	.02	.03	.03	.03	.03	.03	.03	.03	.03
9.00	ELEV	710.06	710.06	710.06	710.06	710.07	710.07	710.07	710.08	710.08	710.08
9.50	DISCHG	.04	.04	.04	.04	.04	.04	.04	.05	.05	.05
9.50	ELEV	710.09	710.09	710.09	710.10	710.10	710.10	710.11	710.11	710.11	710.12
10.00	DISCHG	.05	.05	.05	.06	.06	.06	.06	.06	.07	.07
10.00	ELEV	710.12	710.13	710.13	710.13	710.14	710.14	710.15	710.15	710.16	710.16
10.50	DISCHG	.07	.07	.08	.08	.08	.09	.09	.09	.10	.10
10.50	ELEV	710.17	710.18	710.18	710.19	710.20	710.20	710.21	710.22	710.23	710.24
11.00	DISCHG	.11	.11	.12	.12	.13	.13	.14	.14	.15	.16
11.00	ELEV	710.25	710.26	710.27	710.29	710.30	710.31	710.33	710.34	710.36	710.38
11.50	DISCHG	.17	.17	.18	.20	.22	.25	.29	.34	.41	.45
11.50	ELEV	710.39	710.41	710.44	710.48	710.53	710.61	710.70	710.82	710.97	711.17
12.00	DISCHG	.49	.54	.59	2.51	3.82	4.41	4.52	4.37	4.08	3.73
12.00	ELEV	711.41	711.69	711.97	712.18	712.31	712.36	712.38	712.36	712.33	712.30
12.50	DISCHG	3.37	3.03	2.72	2.45	2.22	2.01	1.84	1.70	1.57	1.46
12.50	ELEV	712.27	712.23	712.20	712.18	712.16	712.14	712.12	712.11	712.09	712.08
13.00	DISCHG	1.36	1.28	1.20	1.14	1.08	1.03	.98	.94	.90	.86
13.00	ELEV	712.07	712.07	712.06	712.05	712.05	712.04	712.04	712.03	712.03	712.03
13.50	DISCHG	.83	.80	.78	.75	.73	.70	.68	.66	.64	.62
13.50	ELEV	712.02	712.02	712.02	712.01	712.01	712.01	712.01	712.01	712.00	712.00
14.00	DISCHG	.60	.59	.59	.59	.59	.59	.59	.59	.59	.59
14.00	ELEV	712.00	712.00	712.00	712.00	711.99	711.99	711.99	711.98	711.98	711.98
14.50	DISCHG	.59	.59	.59	.59	.59	.58	.58	.58	.58	.58
14.50	ELEV	711.97	711.97	711.96	711.96	711.95	711.95	711.94	711.93	711.93	711.92

RUNOFF VOLUME ABOVE BASEFLOW = 1.88 WATERSHED INCHES, 4.38 CFS-HRS, .36 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 2

PEAK TIME(HRS) 12.09 PEAK DISCHARGE(CFS) 16.83 PEAK ELEVATION(FEET) (RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .05 HOURS DRAINAGE AREA = .01

10.50	DISCHG	.00	.00	.01	.02	.03	.04	.05	.07	.09	.11
11.00	DISCHG	.13	.16	.18	.21	.24	.27	.31	.35	.39	.44
11.50	DISCHG	.50	.61	.86	1.34	1.95	2.65	3.55	5.11	7.50	10.49
12.00	DISCHG	13.68	16.09	16.81	15.52	13.07	10.46	8.33	6.83	5.71	4.85
12.50	DISCHG	4.21	3.73	3.39	3.13	2.91	2.74	2.60	2.48	2.35	2.22
13.00	DISCHG	2.12	2.04	1.97	1.89	1.81	1.75	1.70	1.65	1.60	1.55
13.50	DISCHG	1.51	1.47	1.43	1.38	1.34	1.30	1.26	1.23	1.21	1.18
14.00	DISCHG	1.16	1.14	1.12	1.09	1.07	1.05	1.03	1.01	.99	.96
14.50	DISCHG	.94	.92	.90	.88	.86	.84	.82	.81	.80	.80

RUNOFF VOLUME ABOVE BASEFLOW = 1.67 WATERSHED INCHES, 11.45 CFS-HRS, .95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 3

PEAK TIME(HRS) 12.14 PEAK DISCHARGE(CFS) 18.05 PEAK ELEVATION(FEET) (NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .05 HOURS DRAINAGE AREA = .01

7.50	DISCHG	.00	.00	.01	.01	.01	.01	.01	.01	.01	.01
8.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
8.50	DISCHG	.01	.02	.02	.02	.02	.02	.02	.02	.02	.02
9.00	DISCHG	.02	.02	.03	.03	.03	.03	.03	.03	.03	.03
9.50	DISCHG	.04	.04	.04	.04	.04	.04	.04	.05	.05	.05
10.00	DISCHG	.05	.05	.05	.06	.06	.06	.06	.06	.07	.07
10.50	DISCHG	.07	.07	.09	.10	.11	.13	.14	.16	.19	.21
11.00	DISCHG	.24	.27	.30	.33	.37	.40	.44	.49	.54	.60

11.50	DISCHG	.67	.79	1.05	1.54	2.18	2.90	3.84	5.45	7.91	10.94
12.00	DISCHG	14.17	16.63	17.40	18.04	16.89	14.87	12.85	11.20	9.79	8.58
12.50	DISCHG	7.58	6.76	6.11	5.58	5.13	4.75	4.44	4.18	3.92	3.68
13.00	DISCHG	3.48	3.32	3.17	3.03	2.89	2.78	2.68	2.59	2.50	2.41
13.50	DISCHG	2.34	2.27	2.21	2.13	2.06	2.00	1.94	1.89	1.84	1.80
14.00	DISCHG	1.76	1.73	1.71	1.69	1.66	1.64	1.62	1.60	1.58	1.55
14.50	DISCHG	1.53	1.51	1.49	1.47	1.44	1.42	1.40	1.39	1.38	1.38

RUNOFF VOLUME ABOVE BASEFLOW = 1.73 WATERSHED INCHES, 15.82 CFS-HRS, 1.31 ACRE-FEET; BASEFLOW = .00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID

COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL OPERATION ENDJOB RECORD ID

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
 (A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
 A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE AREA	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)			TIME (HR)	RATE (CFS)	
ALTERNATE 1 STORM 1													
XSECTION 905.7	1	RUNOFF	.00	2	2	.05	.0	3.12	24.00	.94	---	12.08	3.26
STRUCTURE 103.0	1	RESVOR	.00	2	2	.05	.0	3.12	24.00	.44	710.88	13.00	.37
XSECTION 195.7	2	RUNOFF	.01	2	2	.05	.0	3.12	24.00	.24	---	12.14	2.07
XSECTION 162.7	3	ADDHYD	.01	2	2	.05	.0	3.12	24.00	.29	---	12.14	2.31
ALTERNATE 1 STORM 2													
XSECTION 1875.5	1	RUNOFF	.00	2	2	.05	.0	4.80	24.00	2.02	---	12.07	6.75
STRUCTURE 163.6	1	RESVOR	.00	2	2	.05	.0	4.80	24.00	.78	711.97	13.20	.59
XSECTION 804.3	2	RUNOFF	.01	2	2	.05	.0	4.80	24.00	.85	---	12.10	8.53
XSECTION 632.5	3	ADDHYD	.01	2	2	.05	.0	4.80	24.00	.83	---	12.10	8.98
ALTERNATE 1 STORM 3													
XSECTION 2905.5	1	RUNOFF	.00	2	2	.05	.0	6.48	24.00	3.23	---	12.07	10.46
STRUCTURE 1257.0	1	RESVOR	.00	2	2	.05	.0	6.48	24.00	1.88	712.38	12.30	4.53
XSECTION 1588.1	2	RUNOFF	.01	2	2	.05	.0	6.48	24.00	1.67	---	12.09	16.83
XSECTION 1271.4	3	ADDHYD	.01	2	2	.05	.0	6.48	24.00	1.73	---	12.14	18.05

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		1	2	3	
STRUCTURE 1	.00				
ALTERNATE 1		.37	.59	4.53	DISCHARGE FROM BASIN TO STUDY POINT 1
XSECTION 1	.00				
ALTERNATE 1		3.26	6.75	10.46	DISCHARGE FROM PA-3 TO BASIN
XSECTION 2	.01				
ALTERNATE 1		2.07	8.53	16.83	DISCHARGE FROM PA-1 TO STUDY POINT 1
XSECTION 3	.01				
ALTERNATE 1		2.31	8.98	18.05	TOTAL DISCHARGE TO STUDY POINT 1 POST-DEVELOPED

END OF 1 JOBS IN THIS RUN

FILE J:\TR20\RES20

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JOB TR-20 FULLPRINT SUMMARY  
 TITLE 001 CHARLOTTE SOLID WASTE TRANSFER STATION POST DEVELOPMENT CONDITIONS DISCHARGE TO STUDY POINT 2  
 TITLE 2/5/96 STORMS 2 10 50 YR  
 6 RUNOFF 1 002 2 .0018 66.46 .26 1 1 1 1  
 ENDATA  
 7 INCREM 6 .1  
 7 COMPUT 7 002 002 0. 3.12 1. 2 2 01 01  
 ENDCMP 1  
 7 COMPUT 7 002 002 0. 4.8 1. 2 2 01 02  
 ENDCMP 1  
 7 COMPUT 7 002 002 0. 6.48 1. 2 2 01 03  
 ENDCMP 1  
 ENDJOB 2

\*\*\*\*\*END OF 80-80 LIST\*\*\*\*\*

EXECUTIVE CONTROL OPERATION COMPUT ID RECORD

FROM XSECTION 2 TO XSECTION 2  
 STARTING TIME = .00 RAIN DEPTH = 3.12 RAIN DURATION= 1.00 RAIN TABLE NO.= 2 ANT. MOIST. COND= 2  
 ALTERNATE NO.= 1 STORM NO.= 1 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 2  
 OUTPUT HYDROGRAPH= 2  
 AREA= .00 SQ MI INPUT RUNOFF CURVE= 66. TIME OF CONCENTRATION= .26 HOURS  
 INTERNAL HYDROGRAPH TIME INCREMENT= .0347 HOURS

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)  
 12.10 .72 (RUNOFF)

TIME(HRS)	FIRST HYDROGRAPH POINT = .00 HOURS	TIME INCREMENT = .10 HOURS	DRAINAGE AREA = .00
11.00	DISCHG .00 .00 .00 .00 .00 .00 .00 .00 .00 .04 .21		
12.00	DISCHG .54 .72 .52 .33 .24 .18 .16 .14 .13 .12		
13.00	DISCHG .11 .10 .09 .09 .08 .08 .08 .07 .07 .06		
14.00	DISCHG .06 .06 .06 .06 .05 .05 .05 .05 .05 .04		
15.00	DISCHG .04 .04 .04 .04 .04 .04 .04 .04 .04 .04		
16.00	DISCHG .04 .04 .04 .04 .04 .04 .04 .04 .04 .03		
17.00	DISCHG .03 .03 .03 .03 .03 .03 .03 .03 .03 .03		
18.00	DISCHG .03 .03 .03 .03 .03 .03 .03 .03 .03 .03		
19.00	DISCHG .03 .03 .03 .03 .03 .03 .03 .03 .03 .03		
20.00	DISCHG .02 .02 .02 .02 .02 .02 .02 .02 .02 .02		
21.00	DISCHG .02 .02 .02 .02 .02 .02 .02 .02 .02 .02		
22.00	DISCHG .02 .02 .02 .02 .02 .02 .02 .02 .02 .02		
23.00	DISCHG .02 .02 .02 .02 .02 .02 .02 .02 .02 .02		
24.00	DISCHG .02 .01 .01 .00 .00 .00 .00 .00 .00 .02		

RUNOFF VOLUME ABOVE BASEFLOW = .62 WATERSHED INCHES, .72 CFS-HRS, .06 ACRE-FEET; BASEFLOW = .00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP ID RECORD

COMPUTATIONS COMPLETED FOR PASS 2

TR20 XEQ 02-05-96 16:01 CHARLOTTE SOLID WASTE TRANSFER STATION POST DEVELOPMENT CONDITIONS JOB

1 PASS 4 REV PC 09/83(.2) 2/5/96 STORMS 2 10 50 YR WITH PROPOSED BASIN AREAS 1 AND 2 RECORD

EXECUTIVE CONTROL OPERATION COMPUT ID RECORD

FROM XSECTION 2 TO XSECTION 2  
 STARTING TIME = .00 RAIN DEPTH = 4.80 RAIN DURATION= 1.00 RAIN TABLE NO.= 2 ANT. MOIST. COND= 2  
 ALTERNATE NO.= 1 STORM NO.= 2 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 2  
 OUTPUT HYDROGRAPH= 2  
 AREA= .00 SQ MI INPUT RUNOFF CURVE= 66. TIME OF CONCENTRATION= .26 HOURS  
 INTERNAL HYDROGRAPH TIME INCREMENT= .0347 HOURS

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)  
 12.08 2.10 (RUNOFF)

TIME(HRS)	FIRST HYDROGRAPH POINT = .00 HOURS	TIME INCREMENT = .10 HOURS	DRAINAGE AREA = .00
11.00	DISCHG .01 .01 .02 .03 .04 .05 .10 .25 .45 1.01		
12.00	DISCHG 1.81 2.08 1.40 .86 .59 .44 .37 .33 .30 .27		
13.00	DISCHG .25 .23 .21 .20 .19 .18 .17 .16 .15 .14		
14.00	DISCHG .14 .13 .13 .12 .12 .11 .11 .10 .10 .10		
15.00	DISCHG .10 .10 .10 .10 .10 .09 .09 .08 .08 .08		
16.00	DISCHG .08 .08 .08 .08 .08 .08 .08 .08 .08 .07		
17.00	DISCHG .07 .07 .07 .07 .07 .07 .07 .07 .07 .07		
18.00	DISCHG .06 .06 .06 .06 .06 .06 .06 .06 .06 .06		
19.00	DISCHG .06 .06 .06 .06 .06 .06 .06 .06 .06 .06		
20.00	DISCHG .05 .05 .04 .04 .04 .04 .04 .04 .04 .04		
21.00	DISCHG .04 .04 .04 .04 .04 .04 .04 .04 .04 .04		
22.00	DISCHG .04 .04 .04 .04 .04 .04 .04 .04 .04 .04		
23.00	DISCHG .04 .04 .04 .04 .04 .04 .04 .04 .04 .04		
24.00	DISCHG .03 .03 .01 .01 .00 .00 .00 .00 .00 .00		

RUNOFF VOLUME ABOVE BASEFLOW = 1.63 WATERSHED INCHES, 1.89 CFS-HRS, .16 ACRE-FEET; BASEFLOW = .00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP RECORD

ID COMPUTATIONS COMPLETED FOR PASS 4

EXECUTIVE CONTROL OPERATION COMPUT RECORD

FROM XSECTION 2 TO XSECTION 2
STARTING TIME = .00 RAIN DEPTH = 6.48 RAIN DURATION= 1.00 RAIN TABLE NO.= 2 ANT. MOIST. COND= 2
ALTERNATE NO.= 1 STORM NO.= 3 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 2
OUTPUT HYDROGRAPH= 2
AREA= .00 SQ MI INPUT RUNOFF CURVE= 66. TIME OF CONCENTRATION= .26 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0347 HOURS

PEAK TIME (HRS) 12.07 PEAK DISCHARGE (CFS) 3.74 PEAK ELEVATION (FEET) (RUNOFF)

TIME (HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .00 SQ.MI.

Table with 12 columns: Time (HRS), DISCHG, and various numerical values representing hydrograph data points from 9.00 to 24.00 hours.

RUNOFF VOLUME ABOVE BASEFLOW = 2.85 WATERSHED INCHES, 3.31 CFS-HRS, .27 ACRE-FEET; BASEFLOW = .00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP RECORD

ID COMPUTATIONS COMPLETED FOR PASS 6

EXECUTIVE CONTROL OPERATION ENDJOB RECORD

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR (\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK (?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

Table with 13 columns: SECTION/STRUCTURE, STANDARD CONTROL, DRAINAGE AREA, RAIN TABLE, ANTEC MOIST, MAIN TIME, PRECIPITATION (BEGIN, AMOUNT, DURATION), RUNOFF (AMOUNT, ELEVATION), PEAK DISCHARGE (TIME, RATE). Includes data for three different storm/alternate scenarios.

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

Table with 5 columns: XSECTION/STRUCTURE ID, DRAINAGE AREA (SQ MI), STORM NUMBERS (1, 2, 3), and DISCHARGE TO STUDY POINT 2.

END OF 1 JOBS IN THIS RUN
FILE: J:\TR20\APOST1



1 Project	File No.	
2 Location	Date	By
3 Subject	Checked	By
4 Based on	Revised	By

DRAINAGE AREA TRANSFERED THROUGH PIPE 1.

TOTAL AREA  $7.52 \text{ in}^2 \times \left(\frac{50 \text{ FT}}{\text{in}}\right)^2 = \underline{18,800 \text{ FT}^2}$

RUNOFF COEFF

GRASSED AREA  $3.41 \text{ in}^2 \times \left(\frac{50 \text{ FT}}{\text{in}}\right)^2 = 8,525 \text{ FT}^2$   $C = .30$

IMPERVIOUS AREA  $4.11 \text{ in}^2 \times \left(\frac{50 \text{ FT}}{\text{in}}\right)^2 = 10,275 \text{ FT}^2$   $C = .95$

AREA RUNOFF COEFF

$.546 (.30) + .454 (.95) = \underline{0.60}$

DRAINAGE AREA TRANSFERED THROUGH PIPE 2

TOTAL AREA  $5.08 \text{ in}^2 \times \left(\frac{50 \text{ FT}}{\text{in}}\right)^2 = \underline{12,700 \text{ FT}^2}$

GRASSED AREA  $2.03 \text{ in}^2 \times \left(\frac{50 \text{ FT}}{\text{in}}\right)^2 = 5,075 \text{ FT}^2$   $C = .30$

IMPERVIOUS AREA  $3.05 \text{ in}^2 \times \left(\frac{50 \text{ FT}}{\text{in}}\right)^2 = 7,625 \text{ FT}^2$   $C = .95$

AREA RUNOFF COEFF

$.40 (.30) + .60 (.95) = \underline{0.69}$

STORM SYSTEM PIPES DESIGNED FOR A 10YR STORM REF C.M. SW.D.M. PAGE 3-10

USING  $L = 215$   $S = 5\%$  &  $n = 0.025$  & FIG. 3-1 C.M. SW.D.M.

$T_L = 8 \text{ min}$  FOR PIPE 1

USING  $L = 162$   $S = 2.5\%$  &  $n = 0.025$  & FIG. 3-1 C.M. SW.D.M.

$T_L = 6 \text{ min}$



1	Project	File No.	
2	Location	Date	By
3	Subject	Checked	By
4	Based on	Revised	By

$$\begin{aligned} Q_1 (\text{PIPE 1}) &= C_1 I_1 A_1 \\ &= 0.60 \left( \frac{6.26 \text{ in}}{\text{hr}} \right) (18,800 \text{ FT}^2) \left( \frac{1 \text{ FT}}{12 \text{ in}} \right) \times \frac{1 \text{ hr}}{3600 \text{ s}} \\ &= \underline{1.635 \text{ cfs}} \end{aligned}$$

$$\begin{aligned} Q_2 (\text{PIPE 2}) &= C_2 I_2 A_2 \\ &= 0.69 \left( \frac{6.75 \text{ in}}{\text{hr}} \right) (12,700 \text{ FT}^2) \left( \frac{1 \text{ FT}}{12 \text{ in}} \right) \left( \frac{1 \text{ hr}}{3600 \text{ s}} \right) \\ &= \underline{1.369 \text{ cfs}} \end{aligned}$$

Circular Channel Analysis & Design  
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: CHARLOTTE PIPE 1

Comment: STORM DRAIN PIPE 1

Solve For Actual Depth

Given Input Data:

Diameter.....	1.25 ft
Slope.....	0.0070 ft/ft
Manning's n.....	0.021
Discharge.....	1.64 cfs

Computed Results:

Depth.....	0.62 ft
Velocity.....	2.71 fps
Flow Area.....	0.60 sf
Critical Depth....	0.51 ft
Critical Slope....	0.0140 ft/ft
Percent Full.....	49.42 %
Full Capacity.....	3.35 cfs
QMAX @.94D.....	3.60 cfs
Froude Number.....	0.69 (flow is Subcritical)

Circular Channel Analysis & Design  
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: CHARLOTTE PIPE 1

Comment: STORM DRAIN PIPE 2

Solve For Actual Depth

Given Input Data:

Diameter.....	1.25 ft
Slope.....	0.0070 ft/ft
Manning's n.....	0.021
Discharge.....	1.37 cfs

Computed Results:

Depth.....	0.56 ft
Velocity.....	2.59 fps
Flow Area.....	0.53 sf
Critical Depth....	0.46 ft
Critical Slope....	0.0138 ft/ft
Percent Full.....	44.57 %
Full Capacity.....	3.35 cfs
QMAX @.94D.....	3.60 cfs
Froude Number.....	0.70 (flow is Subcritical)

TABLE 2.7. TYPICAL VELOCITIES IN NATURAL WATERWAYS

Average Slope of waterway (%)	Natural Channel (not well defined)	Shallow Channel	Main Drainage Channel
1-2	1.5 fps	2-3 fps	3-6 fps
2-4	3.0 fps	3-5 fps	5-9 fps
4-6	4.0 fps	4-7 fps	7-10 fps
6-10	5.0 fps	6-8 fps	--

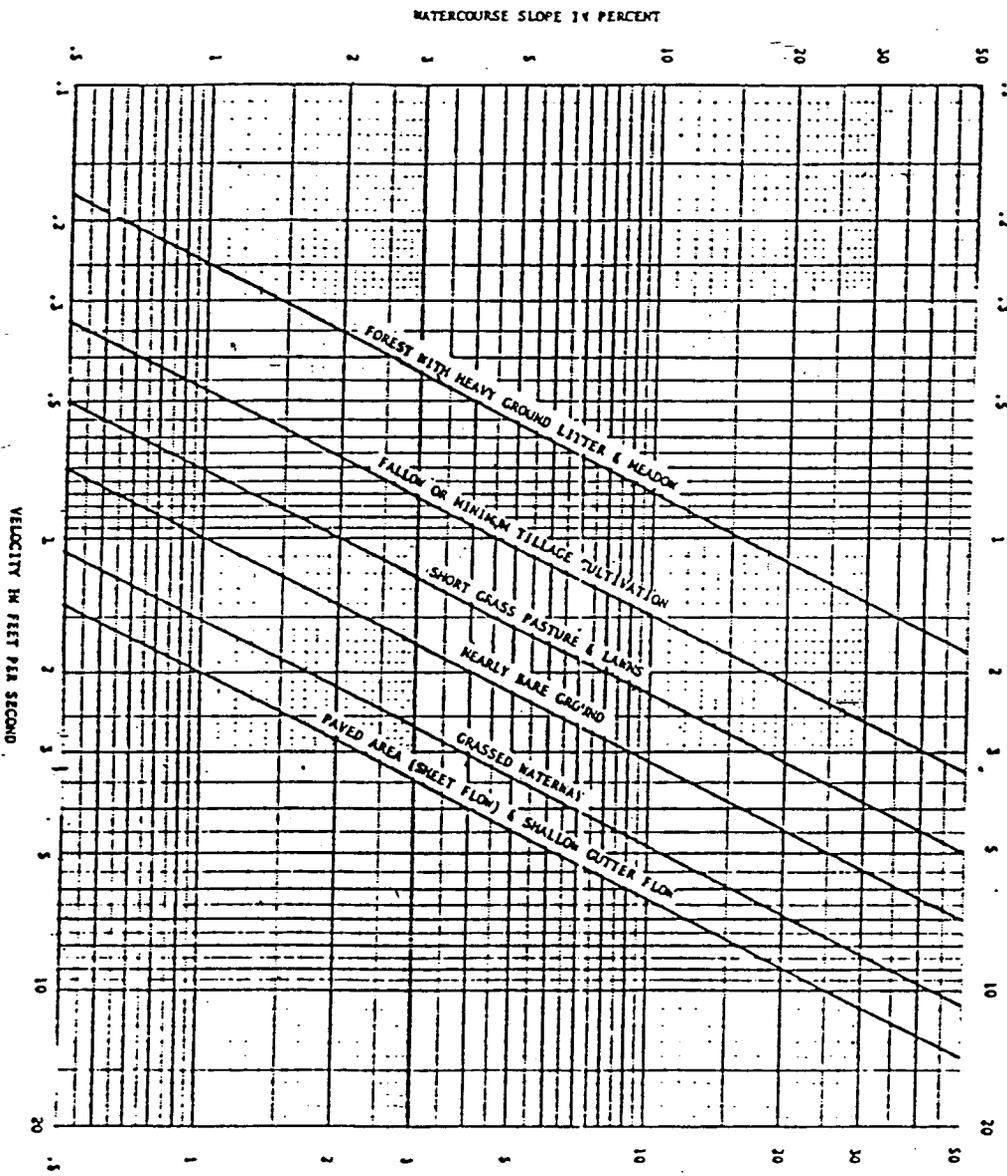


CHART 2.2  
Average Velocity of Overland Flow



MECKLENBURG COUNTY  
Charlotte-Mecklenburg  
Building Standards Department

Whiteside Properties, Inc.

SUBJECT:

\* ZONING VERIFICATION \*

Dec 20, 1995

Dear Sir:

The <sup>10.79 ACRE</sup> parcel of land located at on N. I-85

and further identified by tax parcel number 077-171-01

is zoned I-2, (General Industrial).

Permitted uses include Recycling centers, including drop-off centers\*, as referenced in Section 9.1102(65) of the City of Charlotte Zoning Ordinance.

If this office can assist you again, please contact us.

Sincerely,

Zoning Inspector

Form B-150 NS  
3/95

\* This designation includes trash-garbage transfer center, within an enclosed building. Trash-garbage will not be stored on site, subject to Section 12.702 of the City of Charlotte Zoning Ordinance, and all applicable state, federal and local laws and codes.

