

DURHAM



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CITY OF MEDICINE

CITY OF DURHAM  
NORTH CAROLINA

November 23, 1994

DEPARTMENT OF SANITATION  
101 City Hall Plaza  
Durham, NC 27701  
(919) 560-4185  
(919) 560-4647 FAX

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

Fac/Perm/Co ID #	Date	Doc ID#
32-01	11/15/2000	DIN 14379

Re: City of Durham Landfill  
Transition Plan

Dear Mr. Matthews:

As you know, the City of Durham is currently amending the Transition Plan previously submitted to the Solid Waste section. These revisions are under internal review and we anticipate submittal by early January. This is a minor change from our previous schedule due to some changes in our monitoring plan which have become necessary. We will continue to keep the State informed of our progress. Please do not hesitate to contact me if you have any questions or comments.

Sincerely,

CITY OF DURHAM, NORTH CAROLINA

A handwritten signature in cursive script that reads "Nancy Lee Newell".

Nancy Lee Newell, P.E.  
Solid Waste Process Engineer

cc: Gregory A. Bethea, Assistant City Manager  
Richard Stahr, Malcolm Pirnie, Inc.

DURHAM



1 8 6 9  
CITY OF MEDICINE

CITY OF DURHAM  
NORTH CAROLINA

September 20, 1994

DEPARTMENT OF SANITATION

101 City Hall Plaza  
Durham, NC 27701  
(919) 560-4185  
(919) 560-4647 FAX

Mr. Dexter Matthews, Chief  
Solid Waste Section  
NCDEHNR  
P.O. Box 27687  
Raleigh, North Carolina 27611-7687

Re: Transition Plan - Durham Sanitary Landfill 32-01

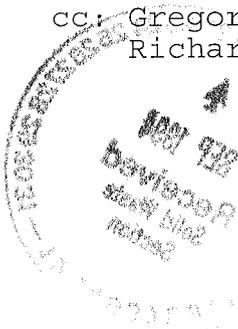
Dear Mr. Matthews:

The City of Durham would like to notify your department of our intent to submit an amendment to the Transition Plan for the City of Durham Sanitary Landfill that was submitted in April of this year. This amendment will include a plan to increase the fill life for our current facility to gain additional time to transition to a facility in compliance with current regulations. The additional fill life would still meet the deadline for ceasing acceptance of waste in an unlined landfill. The City is continuing efforts to negotiate an agreement with an acceptable facility to receive local solid waste for disposal. The City is also continuing the process of permitting and construction of a new solid waste management transfer facility. Malcolm Pirnie, Inc. has been contracted by the City to prepare the amended Transition Plan. The amendment will be submitted for your department's approval by December 1, 1994. Please let me know if you have any questions. Thank you.

Sincerely,

Nancy Lee Newell, PE  
Solid Waste Process Engineer

cc: Gregory Bethea, Assistant City Manager  
Richard Stahr, Malcolm Pirnie, Inc.





State of North Carolina  
Department of Environment, Health, and Natural Resources  
Division of Solid Waste Management  
P.O. Box 27687 · Raleigh, North Carolina 27611-7687

James G. Martin, Governor  
William W. Cobey, Jr., Secretary

March 5, 1990

William L. Meyer  
Director

Mr. Thomas Bastable, Assistant Director  
Sanitation Dept.  
City of Durham  
101 City Hall Plaza  
Durham, NC 27701

RE: Amendment to Permit No. 32-01, City of Durham Sanitary Landfill

Dear Mr. Bastable:

Enclosed is an amended Solid Waste Permit and revised Conditions of the Permit for the vertical expansion of the referenced landfill.

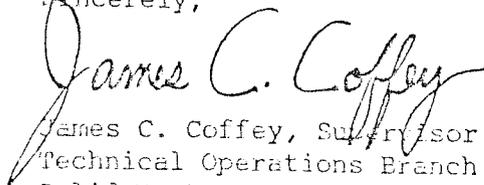
Please note General Condition No. 1 which states that modifications of this permit may be required in accordance with upcoming revisions to the Solid Waste Management Rules and revised EPA Subtitle D criteria. Modifications to the construction and operational plans or even closure of this landfill may be required before the five-year permit period expires.

Also note Construction and Operation Condition No. 1 (a) which requires the stockpiling of the least permeable soil, as indicated in the engineering report, for use as final cover.

The County should be commended for its progressive approach to solid waste management and should continue its pursuit of a new, high-tech landfill and the development of a comprehensive solid waste management plan.

If there are any questions, please contact me at (919) 733-0692.

Sincerely,

  
James C. Coffey, Supervisor  
Technical Operations Branch  
Solid Waste Section

JCC/mj

cc: Terry Dover  
Mark Fry  
Duane Stewart

A M E N D M E N T T O  
S O L I D W A S T E P E R M I T  
SANITARY LANDFILL

CONDITIONS OF PERMIT:

GENERAL

1. This permit is issued for a period not to exceed five years from the date of issuance. Upcoming amendments to the Solid Waste Management Rules, in accordance with EPA Subtitle D revisions, may necessitate the modification of the construction and operation plans or even closure of this facility prior to that date.

CONSTRUCTION AND OPERATION

1. This permit is for construction according to the attached plans with the following conditions:
  - a. The least permeable soil, as identified in the engineering report, will be stockpiled and utilized for final cover.

Additional conditions and revisions of the approved plans shall be approved by the North Carolina Solid Waste Management Division.

2. All sedimentation/erosion control activities will be conducted in accordance with the Sedimentation Control Act (15 NCAC 4).
3. A closure and post-closure plan must be submitted for approval at least 90 days prior to closure or partial closure. The plan must include all steps and measures necessary to close and maintain the facility in accordance with all rules in effect at that time. The final cover will be evaluated based upon performance and upgraded if necessary.

MONITORING REQUIREMENTS

1. The City of Durham shall sample monitoring wells and surface waters semi-annually for the first year, and annually thereafter as per the N.C. Water Quality Monitoring Guidance Document.

Conditions of Permit

Page 2

2. A readily accessible, unobstructed path shall be initially cleared and maintained so that four-wheel drive vehicles may access the monitoring wells at all times.
3. Ground water quality at this facility is subject to the classification and remedial action provisions referenced in Rule .0503(2)(d) of 10 NCAC 10G.

- Plan to close LF by May 1995 → send waste to new regional LF; plan to complete transfer station by 5/95

### \* Airport Safety Demonstration

- City map was submitted w 10,000 ft. radius marked + airport locations identified.

- Request copy of letter City submitted to FAA.

### \* Floodplain Demonstration

- Fig. 4 - 2 acres of LF are w/in 100-yr. floodplain of Clibee Creek

- Request demonstration req'd. by EPA guidance.

### CH<sub>4</sub> Monitoring

✓ monitoring frequency, procedure, + remediation plan

location, construction, + depth of probes or wells

Sheet 4

App. B

### Remaining Capacity

Assumptions: waste to cover ratio = 3:1 (No alt. cover - Soil cover only)

density of compacted waste = 1150 lb/yd<sup>3</sup>

MSW for FY 1994 = 200,000 tons; MSW for FY 1995 = 200,000 tons

For FY '94 i.e., 10/9/93 - 6/30/94 (150,000 tons)  $(2000 \text{ lb/ton}) \times \text{yd}^3 / 1150 \text{ lb} = 260,870 \text{ yd}^3$

soil cover =  $(260,870 \text{ yd}^3 \text{ waste}) \times \left(\frac{1 \text{ part soil}}{3 \text{ parts waste}}\right) = 86,957 \text{ yd}^3 \text{ soil}$

total waste + soil cover =  $260,870 \text{ yd}^3 + 86,957 \text{ yd}^3 = 347,827 \text{ yd}^3$

FY '95 i.e., 7/1/94 - 6/30/95 (183,333 tons)  $(2000 \text{ lb/ton}) \times \text{yd}^3 / 1150 \text{ lb} = 318,840 \text{ yd}^3$

soil cover =  $(318,840 \text{ yd}^3 \text{ waste}) \times \left(\frac{1}{3}\right) = 106,280 \text{ yd}^3 \text{ soil}$

total waste + soil cover =  $318,840 + 106,280 \text{ yd}^3 = 425,120 \text{ yd}^3$

## Erosion + Sedimentation Control

based on 25-yr, 24-hr storm event

### \* Cost Estimate

p. 2-7, Appendixes E + F

Labour cost was not included.

Transition Plan Review to Determine Closure Priority

Applicant: City of Durham Permit Number: 32-01

Application Reviewer(s): Lula Hauic Date: 4/14/94

Location Restrictions: Section 4, p.2-6

Airport Safety .1622(1)(c) no

Floodplain .1622(2)(a) yes - 2 acres of LF are w/in 100-yr floodplain of Elletts Creek

Unstable Areas .1622(6)(a) no

Remaining Capacity .1625(6)(a): Section 4, Table 2-4 7/1/94 - 5/31/95 - 425,110 cty; Section 4, p.2-5 10/93 - 5/95 - 330,000 tons

.1603(d)(2)(C) Requirements:

1. Proximity of human/environmental receptors p.2 - Summary Report

~40 residences are w/in 1000 ft of permitted facility boundary and use drinking water wells; ~170 residences exist w/in 2000 ft of permitted facility boundary

2. Design of the MSWLF unit p.3 - Summary Report

Originally designed as a natural attenuation site

3. Age of the MSWLF unit p.3 - Summary Report  
21 years old - constructed in 1973

4. Size of the MSWLF unit p.3 - Summary Report  
waste disposal area - 89 acres; borrow/stockpile area - 20 acres

5. Type and quantities of waste disposed including sewage sludge p.3 - Summary Report

~ 3.2 million tons of MSW upon fill-out

6. Compliance record of the owner/operator Summary Report p.4  
and Appendix D of Section 4

Performance has varied extensively.

Inspection comments include, clean out sediment basin;  
collect wind-blown paper; install fencing; add 6" daily  
cover, etc. One NOV was issued in 1989 regarding  
lack of daily cover.

7. Schedule for fulfilling intent of the landfill design standards of Rule .1624 Summary Report p.4

Propose to close May 1995 + divert MSW to new  
regional LF.

8. Resource value of the underlying aquifer including current and future uses, proximity and withdrawal rate of users, and ground-water quality and quantity Summary Report p.4

Limited resource value

Other Comments:

<u>Closed Unit Documentation</u>	<u>- not provided - mentioned portions of LF have closed</u>
<u>Operations Plan</u>	<u>- meets regulatory requirements (Section 5)</u>
<u>Operations Drawings</u>	<u>" " "</u>
<u>Closure Plan</u>	<u>" " " (Section 4)</u>
<u>Post-closure Plan</u>	<u>" " " (Section 11)</u>

Note: These figures are approximate to ~~the~~ original (April 1994) submittal.

ITEMS TO BE CONSIDERED IN COST ESTIMATES

Cost estimates should consider but not be limited to the following items. Site specific conditions may require additional items be considered in cost estimates.

- A. Closure Costs
- ✓1. Final cap systems <sup>establish</sup> <sup>closure grades</sup> \$ 513,000 + <sup>final cover</sup> 1,322,000 = 1,895,000
    - a. Soil (clay, borrow soil, topsoil, etc.)
    - b. Liner materials
    - c. Other materials (drainage nets, etc.)
    - d. Testing/documentation
  - ✓2. Sedimentation and erosion control devices \$ 270,600
  - ✓3. Gas controls \$ 137,000 + \$ 23,000 = \$ 160,000
    - a. Passive systems (collection, barriers, vents, other)
    - b. Active systems ( collection, extraction, recovery, flaring systems, other)
  - ✓4. Final landscaping \$ 53,000
    - a. Seeding
    - b. Fertilizing
    - c. Mulching
  - ✓5. Mobilization/demobilization \$ 50,000
  - ✓6. Engineering construction management and construction quality assurance \$ 606,000
  - ✓7. Administration 91,000
    - a. Announcements
    - b. Deeds
    - c. Fees
  - ✗8. Labor - missing
  - ✓9. Contingency - \$ 606,000
- Total closure cost = \$ 4,331,600
- B. Post-Closure Care Costs
- ✓1. Inspections/record keeping \$ 2000 + \$ 1000 + 2500 + \$ 1000 + 2500 + 360 = 12,500
  - ✓2. Monitoring
    - a. Explosive gases \$ 15,000
    - b. Groundwater \$ 25,000
    - c. Surface water \$ 15,000
    - d. Leachate
    - e. Air quality
  - 3. Leachate collection and treatment
  - ✓4. Maintenance (preventive/corrective)
    - a. Leachate collection removal and treatment systems - annual cleaning \$ 50,000
    - b. Operate gas removal systems \$ 35,000 + \$ 1500 = \$ 36,500
    - c. Wells (all) \$ 4000
    - d. Final cover (mowing, replace plantings, fill for erosion, etc.) \$ 19,000 + 35,000 = \$ 52,000
  - ✗5. Fees - missing
    - a. License
    - b. Inspection/regulatory charges
  - ✓6. Administration \$ 5000
  - ✗7. Labor - missing
  - ✓8. Contingency 21,600
- total post-closure cost = \$ 236,500/yr  
X 30 yrs = \$ 7,095,000

Appendix F

### Information Checked in Technical Review Letters

✓ Slopes (max 4:1 or 25%, min. 20:1 or 5%) (**Surry**)

Need for slope drains or terraces (**Harnett**)

.1625 - Operation Drawings

- ✓ - existing conditions, including limits of disposal areas
- ✓ - progression of operation (**Harnett**), including initial waste placement, daily operations (**none**), transition contours (**Vance**), and final contours (**N. Wake lined LF app.**)
- ✓ Leachate and stormwater controls
- ✓ special waste areas within the MSWLF unit
- ✓ buffer zones, noting restricted use
- ✓ stockpile and borrow operations

Operation Drawings Should Also Show:

- ✓ the thickness and sequence of filling of vertical lifts (**Vance - C5.2, C6.1**)
- ✓ how the landfill operator will construct terraces, if necessary, at the correct elevations,
- ✓ how filling will occur so as to prevent ponding after rainfall events (**Vance - C3.1**)
- ✓ annual phases of development consistent with slope and closure requirements outlined in Rule .1627(c)(3) (**Harnett, Surry, Vance - C6.1**)

Other Drawings:

✓ - Cross-sections of landfill (**Harnett, Vance - C4.1, C4.2**)

✓ Final cap system drawing (**Vance - C3.1, C5.1, C5.2**)

✓ .1625 - Operation Plan (Drawings & Report) Requirements

✓ Sediment Basin Design Based on 24-hour, 25-year storm event

✓ .1626 - Operational Requirements \* (comments)

✓ Rationale for Well or Probe Location

Slope Stability Analysis (for steep slopes, i.e., LF's in mountainous region)

- Factor of safety should be greater than 1.0 (**Jackson**)

Copy of TP to Land Quality Section

✓ .1627 - Closure & Post-closure Requirements \* (comments)

✓ .1629(b)(3) - Cost Estimate (i.e., labor and mobilization/demobilization costs)

✓ Completeness Review Information