



England-Thims & Miller, Inc.

Consulting & Design Engineers
3131 St. Johns Bluff Road So. Jacksonville, FL 32216
904-642-8990

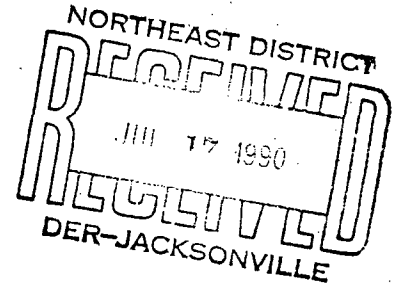
PRINCIPALS

James E. England, P.E., President
Robert E. Thims, V.Pres., Sec.
Douglas C. Miller, P.E., V. Pres.
N. Hugh Mathews, P.E., V. Pres.
James M. Robinson, P.E., V. Pres.

July 17, 1990

Mrs. Mary C. Nogas, P.E.
Supervisor, Solid Waste
Department of Environmental Regulation
Northeast District
3426 Bills Road
Jacksonville, Florida 32207

Reference: Trail Ridge Landfill - Class I and Class III
Request for Additional Information
FDER # 182117
ET&M NO. E89-113-8



Dear Ms. Nogas:

Pursuant to your letter of July 11, 1990, please find attached the responses to your request for additional information.

I trust this additional information is satisfactory and completes the Trail Ridge Landfill application file.

If I can be of further service, please do not hesitate to contact me.

Sincerely,

ENGLAND THIMS & MILLER, INC.


Douglas C. Miller, P.E.
Vice President

Attachments: 1, 2, & 3

- Enclosures:
1. Dewatering Time Calculations
 2. Breakthrough Time Calculations
 3. Foundation Analysis Calculations
 4. Construction Filling Sequence Plan
 5. Equipment Specifications
 6. Revised HELP Calculations
 7. Revised Post Closure Cost Estimate
 8. Bottom Liner Phasing Plan (Revised)
 9. MSSW Permit Drawing No. 2 (Revised)
 10. Base Grade Plan (Revised)
 11. Notice of Application

cc: Harvey Bush
Warren Smith
DeWayne Igou



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To: _____	Location: _____
To: _____	Location: _____
To: _____	Location: _____
From: _____	Date: _____

Interoffice Memorandum

REVIEW MEMORANDUM

FROM: Mary C. Nogas, P.E.
Emerson Raulerson
Mark Sittig

DATE: July 10, 1990

SUBJECT: Duval County - Solid Waste
Trail Ridge Landfill - Class I & III Construction
Review of Permit Application No. 182117

1. Proof of Publication. Please publish and submit proof of publication of a Notice of Application in a newspaper of general circulation in accordance with Florida Administrative Code (FAC) Rule 17-701.030(4). The notice shall comply with the following format:

"NOTICE OF APPLICATION

The Department of Environmental Regulation announces receipt of an application for permit from [name of applicant] to [brief description of project]. This proposed project will be located [location] in [county or city].

This application is being processed and is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at the Department of Environmental Regulation, Northeast District, 3426 Bills Road, Jacksonville, Florida, 32207."

2. Please explain in more detail how the landfill design will meet FAC Rule 17-3 requirements.
3. What will be the basis for determining what is an acceptable leak in the liner versus one which requires remediation?
4. Please provide the calculations performed for the foundation analysis.
5. What "special wastes," in addition to asbestos and white goods, will be accepted? Please show storage area on the site plan.

Review Memorandum

Page Two

July 10, 1990

6. Please provide a more detailed description of the method and sequence of filling waste, including dimensions of the cells. Also, please label the sectors in each phase.
7. Please verify that odor, vectors, and litter will be controlled at any working face left uncovered for up to 18 hours.
8. Please provide more information about who (by position) will be on site during operating hours and indicate that a certified operator will be on site at all times.
9. Please provide the manufacturer's information regarding the capacity ratings of the landfill equipment to be used. Please indicate that equipment reverse alarms will be maintained in good repair at all times.
10. Please specify the types of pesticides to be used pursuant to FAC Rule 17-701(5)(p).
11. Please verify that the gas vents will be installed within 7 days of each sector's final cover placement.
12. The HELP model used in the permit application used rainfall data collected during the period 1974-1978. Please revise to use more recent data. In analysis No. 1, an intermediate cover of 12 inches was used. Please revise to show an intermediate cover of 6 inches.
13. Please provide more information comparing the strengths of the upward force of expanding claymax and the downward force of the fill.
14. Please provide the Closure Cost Estimates in 1989 dollars.
15. Please provide a time table indicating when an inward gradient will be achieved in each sector.
16. Please provide a more detailed description of the stormwater irrigation of adjacent wetlands. For example, how will the operator know when and for how long to pump stormwater to the wetlands?
17. Please show the location of the groundwater monitoring wells on the site plan.
18. Please indicate when the surface water drainage system will be installed.
19. Please clarify how the Class III area complies with FAC 17-701.040(2)(g).

RESPONSE TO ATTACHMENT NO. 2

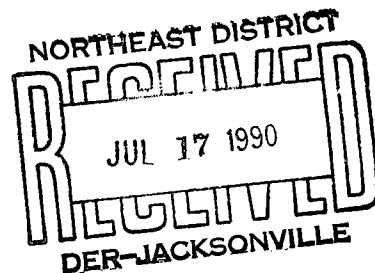
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

TRAIL RIDGE LANDFILL

RESPONSE - JULY 16, 1990

REVIEW MEMORANDUM

FROM: Michae Eaton
Jeremy Tyler



QUESTION 1: Please clarify the wetland jurisdictional line shown on Drawing No. 2 to clearly delineate which areas are wetlands.

RESPONSE 1: Drawing No. 2 has been revised including the removal of topographic lines for clarity.

QUESTION 2: Please indicate if the wetland mitigation area is within or connected to waters of the State.

RESPONSE 2: The proposed mitigation area is located in an upland area adjacent to waters of the State. Upon completion of the wetland creation, the mitigation area will be connected to waters of the State.

QUESTION 3: Please clarify why the ditch shown on Drawing No. 15 is not within the Department's Wetland Resource Management permitting jurisdiction.

RESPONSE 3: This ditch would not be under DER jurisdiction due to its cross-sectional area being less than 35 S.F. However, it is jurisdictional based on Water Management District criteria. The mitigation area will be excavated to the appropriate depth (12" to 24") of the ditch which will allow sheet flow of the ditch water through the mitigation area.

QUESTION 4: Please clarify how the discharges from the ditch and stormwater pond will affect the hydroperiod of the created wetland area.

RESPONSE 4: The existing shallow ditch adjacent to the mitigation area will be redirected to drain by overland flow through the mitigation area. This will increase the hydroperiod in the mitigation area. No discharge from any stormwater pond is near the mitigation area.

QUESTION 5: Please specify the data collection methodology to be used in IV, B(5), Mitigation Plan - Maintenance and Monitoring.

RESPONSE 5: Mike Eaton and the Environmental Services staff will visit and review the mitigation site to discuss the details of the functioning of this area.

The mitigation plan includes the following monitoring and maintenance efforts:

- o The proposed survival rate is 85 percent. (Please note that the original submittal quoted 75 percent).
- o Monitoring will occur during March, May, July, September, and November (five iterations) during the first two years. Monitoring will not occur during December, January, and February, as these represent the period of winter dormancy. During the third year monitoring will occur during April, July, and October.
- o Any infestations of noxious weeds such as primrose will, dog fennel, and cattails will be identified during monitoring and will be removed immediately. Corrective actions will be described in the monitoring report.
- o The sampling plan for determining mitigation success and natural recruitment will be analyzed by establishing eight permanent line transects (Figure 1, enclosed). They will be equally spaced, and four will be on the north-south axis of the mitigation area and four will be on the east-west axis of the mitigation area. Data will be collected by measuring the relative cover and species diversity along each of the transect lines. A permanent one-meter square quadrat will be established in the northeast quadrant of the intersection of the lines (sixteen quadrants). Six piezometers will be established adjacent to selected quadrats to collect groundwater data. Species diversity and approximate cover will be analyzed for each quadrat. Photographic records will be made of each quadrat. Photographic records will be made at the mitigation area from each point where the transects intersect the edge of the creation area.
- o Prior to construction, the edge of the adjacent wetland will be continuously flagged.
- o Mitigation construction will be initiated simultaneously with roadway construction. DER will be notified 48-hours prior to commencement of construction.

RESPONSE TO ATTACHMENT NO. 3

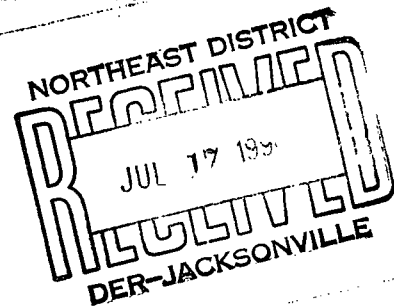
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

TRAIL RIDGE LANDFILL

RESPONSE - JULY 16, 1990

REVIEW MEMORANDUM

FROM: Eric Silvers, P.G.



QUESTION 1: The Department recommends the installation of two additional down gradient groundwater monitoring wells. As discussed by Scott McCallister and myself during our meeting of July 5, 1990, one three well cluster should be located 600 feet southwest of well B-14, and an additional two well cluster located 400 feet south of well B-10.

RESPONSE 1: The Applicant agrees to add the requested additional monitoring wells. These wells are shown on the attached revised liner Phasing Plan.

QUESTION 2: A detailed narrative discussion of the operation of the groundwater control system as it pertains to the potentiometric surface of the unconfined aquifer and the maintenance of the positive hydraulic gradient of the landfill liner is requested. Of particular concern to the Department are periods of negative hydraulic gradient, artificial recharge of the unconfined aquifer, and the operation of the groundwater control system.

RESPONSE 2: Groundwater Control Plan

The Groundwater Control System is required to temporarily lower the surficial water table to allow installation of the liner system. This temporary lowering will occur for a period of 6 to 9 months during the phased installation of the liner. A phase is approximately 450± feet wide and 2500± feet in length. Phase construction and therefore dewatering will begin at the East side of the landfill and proceed Westerly through Phase Ia, Ib, II, III, IV and V. The time between the cessation of dewatering one phase and the beginning of dewatering the next phase will vary from approximately one year to four years depending on the capacity of the phase and the rate of filling. See attached Construction Sequence Plan.

Dewatering Phase

The dewatering cycle consists of two components. These include liner installations (90± days) and initial refuse filling (180± days). The sequence of operation is outlined below.

A. Liner Installation

1. Excavation - A phase (450' x 2500') will be excavated from natural ground elevation to the elevation of the bottom liner. During this excavation groundwater will be controlled by rim ditching the excavation area. The rim ditches will drain by gravity flow to the perimeter groundwater control piping (See W-1 through W-35 on Drawing No. 6) This piping will be installed to serve each phase. The groundwater collected during this phase will be directed into the stormwater detention basin. The stormwater pump station will repump this groundwater through the 8" force main to the 2" spreader pipes located on the North and South side of each phase. The valves to the spreader pipes adjacent to the excavation will remain open allowing the groundwater to be discharged into the adjacent wetlands. The spreader piping will consist of 2" perforated pipe installed along the edge of the wetland system.
2. Underdrain Installation - After the excavation reaches the base grade, the perforated groundwater control piping will be installed every 200 feet across the landfill base. This piping will be connected to the perimeter collection system. A valve in the groundwater control manhole will be opened to allow the water to pass through the weir. This underdrain system replaces the rim ditches for groundwater control.
3. Liner Construction - After the underdrain piping is installed, the liner subgrade will be compacted and fine graded to finish base grade. Upon completion of this activity, the liner will be installed.

B. Initial Refuse Filling

Initial Fill - With the liner in-place, a two foot protective sand blanket will be placed on top of the liner. After the sand layer is installed, the phase will begin to receive refuse. Filling will occur from North to South, until 12 feet of refuse has been placed above the liner. Dewatering will continue to occur via the underdrain piping with discharge to the adjacent wetlands. When the initial 12 feet of fill has been placed (180± days) over the phase, the valve located in each groundwater control manhole (See Detail Drawing No. 16) will be closed. This prohibits the underdrain from discharging groundwater into the perimeter collection system.

Therefore, the groundwater elevation will begin to rise under the landfill liner via the natural flow of groundwater from West to East. However, to supplement this natural recharge, the valve from the stormwater force main will be opened to discharge water on the Underdrain side of the groundwater control manhole weir. This will force water to be injected into the underdrain by creating a hydraulic head on the underdrain equal to the elevation of the weir, i.e. 5 feet to 8 feet above the liner. Any excess water will discharge over the weir into the perimeter piping and drain to the stormwater pond and be recycled.

C. Inward Gradient Phase

Upon the cessation of dewatering and the water table returning to the top of each weir, no additional pumping is required. The recharge valves will be closed. The wetland irrigation valves will be open or closed based on the assessment of the adjacent wetlands. (See Attachment No. 1 Response Question No.16).

The site supervisor will check each groundwater control manhole weekly to inspect the water elevation on the underdrain side of the weir. If the water elevation is below the weir elevation, the recharge valve will be open. If the water is overflowing or near the weir elevation, the recharge valve will remain closed.

It is anticipated that little, if any, pumping will be required based on the weir elevation being designed at or near existing surficial groundwater elevation. However, any pumping required would primarily be the recycling of overflow groundwater at the Eastern (lower) weirs pumping to the Western (higher) weirs.

QUESTION 3: To facilitate permitting, specific alphanumeric designations and accompanying location map are necessary for all monitoring wells or surface water sampling locations. A schedule for the installation of monitoring wells that coincides with the construction of the landfill phases may also be submitted.

RESPONSE 3: The Bottom Liner Phasing Plan (Drawing No. 10) has been revised to show monitoring wells and surface water sampling points. An alphanumeric description is included for cluster wells. A schedule for monitoring well installation coincident with liner phasing is included on the Drawing No. 10 (enclosed).

QUESTION 4: An additional surface water sampling site should be located to include the borrow pit east of the proposed Class III landfill.

RESPONSE 4: The Applicant agrees to add an additional surface water sampling point in the Class III stormwater retention/borrow basin.

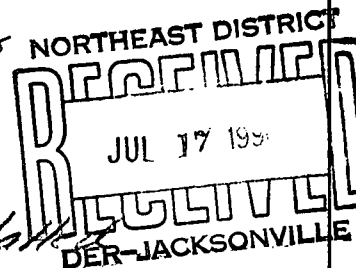
PROJ. NO. 89-113-8 PROJ. NAME TRAIL RIDGE

BY _____ SHEET NO. _____ OF _____

CHECKED BY _____ DATE 7/14/90

REVISED BY _____ DATE _____

MAXIMUM TIME FOR DEWATERING
WITH LINER IN-PLACE
AND REFUSE ON LINER



1. The maximum liner area to be installed at one time is 2500×450 or $25 \pm$ ac.
2. No potential leachate leak can occur until the 1st layer of refuse is deposit on the liner.
3. Therefore how long will it take to deposit enough refuse to counteract the upward gradient of 8 ft.

upward gradient - $8 \text{ FT} \times 62.4 = \underline{500 \text{ PSF}}$

downward force - 2 FT sand cover $2 \times 100 = 200 \text{ PSF}$

12 FT REFUSE $48 \times 12 = \underline{576 \text{ PSF}}$

776 PSF

TOTAL REFUSE $[(2500 \times 450 \times 12 \text{ FT}) \div 27] \times .65 = 325,000 \text{ TONS}$

TIME $325,000 \text{ TONS} @ 1800 \text{ TONS/DAY} = 180 \text{ days} \Rightarrow 6 \text{ mos.}$

DUPLICATE
GLAS C. M.
JUL 17 1990
DU 22880
31
HIT

Written by: RSR Date: 90/07/17 Reviewed by: CAL Date: 90/07/17Client: WMI-1 Project: Trait Ridge Landfill Project/Proposal No.: XI-90019 Task No.: Revised Calculations For Breakthrough
Of Lining System

Darcy's equation

$$v = \frac{k_s}{n} i_s$$

where

v = Slow velocity
 k_s = saturated soil hydraulic conductivity
 n = Soil porosity
 i_s = hydraulic gradient

Breakthrough time through 1 bentonite layer

$$t = \frac{n D_s}{k_s i_s} \quad \text{with} \quad i_s = \frac{h_s + D_s}{D_s}$$

t = travel time
 D_s = bentonite layer thickness

$n = 0.5$ Conservative
 $D_s = 0.25 \text{ in. (6.4 mm)}$
 $h_s = 4 \text{ mm (max head)}$

For $k_s = 1 \times 10^{-9} \text{ cm/s}$ $t = 22,792 \text{ days} \approx 6.2 \text{ yrs}$ Two liners \therefore Breakthrough Time = $2t = 12.4 \text{ years}$ For $k_s = 5 \times 10^{-10} \text{ cm/s}$ $t = 4,558 \text{ days} \approx 12.5 \text{ yrs}$ Breakthrough Time = $2t = 25 \text{ years}$

$k_s = 5 \times 10^{-10} \text{ cm/s}$ is what GeoServices has measured
 in the laboratory and is what would
 be expected

$k_s = 1 \times 10^{-9} \text{ cm/s}$ allows for some imperfection in
 manufacture or placement

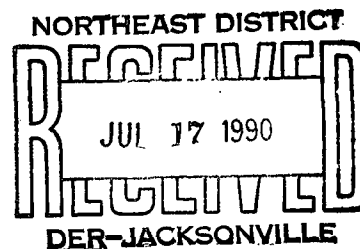


ATTACHMENT NO. 1

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

TRAIL RIDGE LANDFILL

RESPONSE - JULY 16, 1990



REVIEW MEMORANDUM

FROM: Mary C. Nogas, P.E.
Emerson Raulerson
Mark Sittig

QUESTION 1: Proof of Publication. Please publish and submit proof of publication of a Notice of Application in a newspaper of general circulation in accordance with Florida Administrative Code (FAC) Rule 17-701.030(4). The notice shall comply with the following format:

NOTICE OF APPLICATION

The Department of Environmental Regulation announces receipt of an application for permit from [name of applicant] to [brief description of project]. This proposed project will be located [location] in [county or city].

This application is being processed and is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at the Department of Environmental Regulation, Northeast District, 3426 Bills Road, Jacksonville, Florida, 32207."

RESPONSE 1: The "Notice of Application" has been submitted to the Florida Times-Union for Publication consistent with the format outlined above. (See enclosed "Notice of Application") Proof of publication shall be forwarded to the Department upon receipt from the Florida Times-Union.

QUESTION 2: Please explain in more detail how the landfill design will meet FAC Rule 17-3 requirements.

RESPONSE 2: FAC Rule 17-3 requirements for the Trail Ridge Landfill are met based on two parameters. First, the liner design includes two impermeable 60 mil HDPE synthetic layers with a layer of 1×10^{-9} Bentonite Clay Max under each synthetic liner provides a "leachate stop" for any small imperfection in liner installation. The primary and secondary leachate collection system is designed to limit leachate pressure on the liner system to 0.1 inch at peak generation periods. This liner design meets and exceeds the performance standards of previously permitted landfill liners which were found by the Department to meet 17-3 FAC.

However, as an additional groundwater safe guard the Trail Ridge liner base has been designed with an inward pressure gradient differential of 5 feet minimum. This inward pressure gradient precludes the migration of any leachate into the underlying groundwater. In fact, if a leak potential existed, groundwater would flow into the secondary leachate collection/leak detection system and be pumped to the leachate storage facilities instead of leachate flowing into the groundwater under the liner.

The inward gradient pressure on the liner base will be in effect for the life of the facility with one exception. During the initial filling of refuse on the installed liner, the groundwater control system will lower the groundwater under the liner. The period of dewatering during refuse deposition is 6 months or less. (See attached calculations). During this temporary period, the previously described liner systems prohibits leachate from reaching the groundwater. In particular, if a leak were to develop, it would take greater than 12.5 years minimum to migrate through the liner system and reach the underlying groundwater. (See attached calculations). Therefore, the inward gradient would be in effect long before any leachate could reach the groundwater.

In conclusion, the combination of liner design and inward gradient design for this facility meets and exceeds the requirement of FAC Rule 17-3.

QUESTION 3: What will be the basis for determining what is an acceptable leak in the liner versus one which requires remediation?

RESPONSE 3: The primary and secondary leachate collection system is designed for a peak day leachate generation of 42,000 G.P.D. A liner leak that generated a continuous flow of greater than 42,000 GPD for a period of 6 months or longer will be the minimum basis for implementing a remediation plan.

QUESTION 4: Please provide the calculations performed for the foundation analysis.

RESPONSE 4: The calculations for the foundation analysis prepared by Ellis & Associates are attached.

QUESTION 5: What "special wastes," in addition to asbestos and white goods, will be accepted? Please show storage area on the site plan.

RESPONSE 5: Additional special wastes which maybe accepted and temporarily stored for off-site processing include batteries, waste oil, used tires, and abandoned automobiles. These special wastes will be temporarily stored at the white goods storage area shown on the plans.

QUESTION 6: Please provide a more detailed description of the method and sequence of filling waste, including dimensions of the cells. Also, please label the sectors in each phase.

RESPONSE 6: The landfill is to be constructed in phases from East to West. Each phase is consistent with the liner installation which also proceeds from East to West. (Sectors have been eliminated for clarity of nomenclature) Each phase includes a bottom liner area of approximately 25 acres (2500' N-S; 450' E-W).

Phases will be filled by constructing cells 100'x450'x12'± per lift and proceeding one lift high from North to South. Upon completion of the 1st lift over a phase, the second lift will be added in the same cell size as the first lift. Lifts will continue in each phase until the final elevation is reached, or the maximum interim elevation is reached. A schematic of the filling sequence is attached.

QUESTION 7: Please verify that odor, vectors, and litter will be controlled at any working face left uncovered for up to 18 hours.

RESPONSE 7: Odors, vectors and litter will be controlled at any working face left uncovered for up to 18 hours.

QUESTION 8: Please provide more information about who (by position) will be on-site during operating hours and indicate that a certified operator will be on-site at all times.

RESPONSE 8: As indicated in the permit application, the proposed operating hours are 7:30 A.M. to 5:30 P.M., Monday through Saturday. The General Manager and the Site Supervisor will both be certified operators. One or both will be on-site during operating hours.

During peak operating hours all personnel listed will be on-site.

- (1) General Manager
- (8) Equipment Operators
- (1) Site Supervisor
- (1) Mechanic
- (2) Laborers/Spotters
- (3) Clerical

During off peak operating hours, the minimum staff will include:

- (1) General Manager/Site Supervisor
- (4) Equipment Operators
- (1) Labor/Spotter
- (1) Clerical

QUESTION 9: Please provide the manufacturer's information regarding the capacity ratings of the landfill equipment to be used. Please indicate that equipment reverse alarms will be maintained in good repair at all times.

RESPONSE 9: Enclosed is the manufacture information on the following:

1. Compactor (Caterpillar 826)
2. Bulldozer (Caterpillar D8C)
3. Dump Truck (Caterpillar D25)
4. Motor Grader (Caterpillar 12G)
5. Excavator (Caterpillar 235C)

All appropriate equipment will have reverse alarms and those alarms will be maintained in good repair at all times.

QUESTION 10: Please specify the types of pesticides to be used pursuant to FAC Rule 17-701(5) (p).

RESPONSE 10: Pesticides used to control rodents, flies and other insects shall be as specified by the Florida Department of Agriculture and Consumer Services.

QUESTION 11: Please verify that the gas vents will be installed within 7 days of each sector's final cover placement.

RESPONSE 11: It is not possible to have all gas vents installed within 7 days of final cover. However, the applicant does commit to have gas vents installed within 6 months of final cover placement for each phase.

QUESTION 12: The HELP model used in the permit application used rainfall data collected during the period 1974-1978. Please revise to use more recent data. In analysis No. 1, an intermediate cover of 12 inches was used. Please revise to show an intermediate cover of 6 inches.

RESPONSE 12: The HELP model has been amended using the rainfall data supplied by the Department. Analysis No. 1 has been amended to represent 6" of intermediate cover. These modifications resulted in no change to the 0.1" of leachate head on the liner. Revised calculations are attached.

QUESTION 13: Please provide more information comparing the strengths of the upward force of expanding claymax and the downward force of the fill.

RESPONSE 13: The "technical data" provided by the manufacture indicates that post installation swelling of the claymax is limited to 2 to 3 times the original volume after cover material is applied. Based on this information, expansion would be limited between 1/2" and 3/4". This is insignificant related to liner deformation.

QUESTION 14: Please provide the Closure Cost Estimates in 1989 dollars.

RESPONSE 14: The revised Closure Cost Estimates in 1990 dollars are attached.

QUESTION 15: Please provide a time table indicating when an inward gradient will be achieved in each sector.

RESPONSE 15: An inward gradient will be achieved in each phase in 6 months or less. (See response to Question 2 and Attachment)

QUESTION 16: Please provide a more detailed description of the stormwater irrigation of adjacent wetlands. For example, how will the operator know when and for how long to pump stormwater to the wetlands?

RESPONSE 16: The wetland irrigation system is controlled manually by a series of gate valves located adjacent to the groundwater control manhole. These valves are located approximately 200 feet apart on the North and South sides of the Class I landfill. Each valve independently controls whether stormwater will be pumped into the adjacent wetland area or injected into the groundwater control piping to supplement groundwater elevations. Each valve controls the irrigation system for a 200 wetland border.

Water is pumped into the adjacent wetland during two events.

Event 1: Temporary Dewatering

During temporary dewatering for the installation a liner phase, the groundwater collected during dewatering would be pumped into the wetland adjacent to the dewatered phase. Each phase is approximately 450' wide, therefore three valves would be opened to irrigate approximately 600' of wetland border adjacent to the dewatered phase. This dewatering and wetland irrigation would be a one time event per phase and would last approximately 6 to 9 months.

Event 2: Stormwater Runoff

In accordance with FAC Rules 17-25 and 40C-42, the first one inch of runoff must be treated prior to discharge. It is anticipated that the discharge of this treated water into the adjacent wetlands would be beneficial in enhancing the hydro-period of the wetlands. This is particularly true of the wetlands on the North and South side of the Class I landfill which have been drained by a man-made ditch located through the center of the wetlands.

The stormwater pump station will operate automatically by level sensors with its discharge being directed through which ever valves are open.

In order to properly evaluate which wetlands should be irrigated, an Environmental Consultant will review the wetland systems and recommend which wetlands to irrigated prior to placing the stormwater system into operation. Subsequent to the initial operation the Environmental Consultant will review the wetlands annually and modify the operation plan, if required. In the event, no wetland irrigation is appropriate, the treated stormwater will be discharged at the outfall structure.

QUESTION 17: Please show the location of the groundwater monitoring wells on the site plan.

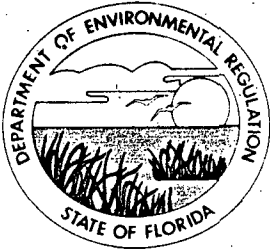
RESPONSE 17: The groundwater monitoring wells have been added to the Phasing Plan. A copy of the revised plan is attached.

QUESTION 18: Please indicate when the surface water drainage system will be installed.

RESPONSE 18: The surface water drainage system will be installed in phases from East to West. The surface water collection system which collects the runoff from each phase will be installed with the construction of that phase. The stormwater management lakes, outfall structure and pump station will be installed in Phase Ia.

QUESTION 19: Please clarify how the Class III area complies with FAC 17-701.040(2)(g).

RESPONSE 19: The footprint of the Class III landfill is not within 200 feet of any natural or artificial body of water. The attached Base Grade Plan has been modified to show the 200 foot minimum separation between the landfill area and DER jurisdictional wetlands.



Florida Department of Environmental Regulation

Northeast District • 3426 Bills Road • Jacksonville, Florida 32207 • 904-798-4200

Bob Martinez, Governor

Dale Twachtman, Secretary

John Shearer, Assistant Secretary
Ernest Frey, Deputy Assistant Secretary

July 11, 1990

CERTIFIED - RETURN RECEIPT

Mr. Dwayne Igou
Trail Ridge Landfill, Inc.
Post Office Box 6987
Jacksonville, Florida 32236

Dear Mr. Igou:

Duval County - Solid Waste
Trail Ridge Landfill - Class I & III Construction
Permit Application No. 182117
Request for Additional Information

The Department has reviewed the referenced permit application package, received in this office June 13, 1990, in accordance with Florida Administrative Code (FAC) Rule 17-4.055. The following reviews are enclosed.

Attachment 1, Review Memorandum dated July 10, 1990, prepared by Mary C. Nogas, P.E., Emerson Raulerson, and Mark Sittig

Attachment 2, Review Memorandum dated July 10, 1990, prepared by Michael Eaton and Jeremy Tyler

Attachment 3, Review Memorandum dated July 7, 1990, prepared by Eric Silvers, P.G.

The information requested in these reviews is required in order for the Department to proceed with the processing of your application. Please provide the requested information within thirty (30) days from the date of receipt of this letter. Action on the permit application will be delayed until the requested information has been received by this office.

Mr. Dwayne Igou
Page Two
July 11, 1990

If you have any questions or immediate comments, please contact me at the letterhead address or telephone number.

Sincerely,

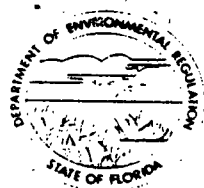
A handwritten signature in dark ink, appearing to read 'MC Nogas', written over the typed name.

Mary C. Nogas, P.E.
Supervisor, Solid Waste

MCN:msl

Enclosures

cc: Douglas Miller, P.E.



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To: _____	Location: _____
To: _____	Location: _____
To: _____	Location: _____
From: _____	Date: _____

Interoffice Memorandum

REVIEW MEMORANDUM

FROM: Mary C. Nogas, P.E.
Emerson Raulerson
Mark Sittig

DATE: July 10, 1990

SUBJECT: Duval County - Solid Waste
Trail Ridge Landfill - Class I & III Construction
Review of Permit Application No. 182117

1. Proof of Publication. Please publish and submit proof of publication of a Notice of Application in a newspaper of general circulation in accordance with Florida Administrative Code (FAC) Rule 17-701.030(4). The notice shall comply with the following format:

"NOTICE OF APPLICATION

The Department of Environmental Regulation announces receipt of an application for permit from [name of applicant] to [brief description of project]. This proposed project will be located [location] in [county or city].

This application is being processed and is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at the Department of Environmental Regulation, Northeast District, 3426 Bills Road, Jacksonville, Florida, 32207."

2. Please explain in more detail how the landfill design will meet FAC Rule 17-3 requirements.
3. What will be the basis for determining what is an acceptable leak in the liner versus one which requires remediation?
4. Please provide the calculations performed for the foundation analysis.
5. What "special wastes," in addition to asbestos and white goods, will be accepted? Please show storage area on the site plan.

6. Please provide a more detailed description of the method and sequence of filling waste, including dimensions of the cells. Also, please label the sectors in each phase.
7. Please verify that odor, vectors, and litter will be controlled at any working face left uncovered for up to 18 hours.
8. Please provide more information about who (by position) will be on site during operating hours and indicate that a certified operator will be on site at all times.
9. Please provide the manufacturer's information regarding the capacity ratings of the landfill equipment to be used. Please indicate that equipment reverse alarms will be maintained in good repair at all times.
10. Please specify the types of pesticides to be used pursuant to FAC Rule 17-701(5)(p).
11. Please verify that the gas vents will be installed within 7 days of each sector's final cover placement.
12. The HELP model used in the permit application used rainfall data collected during the period 1974-1978. Please revise to use more recent data. In analysis No. 1, an intermediate cover of 12 inches was used. Please revise to show an intermediate cover of 6 inches.
13. Please provide more information comparing the strengths of the upward force of expanding claymax and the downward force of the fill.
14. Please provide the Closure Cost Estimates in 1989 dollars.
15. Please provide a time table indicating when an inward gradient will be achieved in each sector.
16. Please provide a more detailed description of the stormwater irrigation of adjacent wetlands. For example, how will the operator know when and for how long to pump stormwater to the wetlands?
17. Please show the location of the groundwater monitoring wells on the site plan.
18. Please indicate when the surface water drainage system will be installed.
19. Please clarify how the Class III area complies with FAC 17-701.040(2)(g).



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To: _____	Location: _____
To: _____	Location: _____
To: _____	Location: _____
From: _____	Date: _____

Interoffice Memorandum

REVIEW MEMORANDUM

FROM: Jeremy Tyler
Michael Eaton

DATE: July 10, 1990

SUBJECT: Trail Ridge Landfill, Inc.
MSSW - Wetland Completeness Review

1. Please clarify the wetland jurisdictional line shown on Drawing No. 2 to clearly delineate which areas are wetlands.
2. Please indicate if the wetland mitigation area is within or connected to waters of the State.
3. Please clarify why the ditch shown on Drawing No. 15 is not within the Department's Wetland Resource Management permitting jurisdiction.
4. Please clarify how the discharges from the ditch and stormwater pond will affect the hydroperiod of the created wetland area.
5. Please specify the data collection methodology to be used in IV, B(5), Mitigation Plan - Maintenance and Monitoring.

JT:mel



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To: _____	Location: _____
To: _____	Location: _____
To: _____	Location: _____
From: _____	Date: _____

Interoffice Memorandum

Northeast District

TO: Mary C. Nogas, P.E.
Solid Waste Supervisor *MC*

THROUGH: Jay Carver
Waste Cleanup Manager

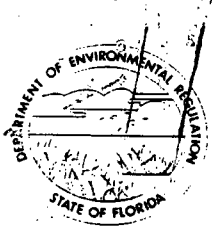
FROM: Eric R. Silvers, P.G. *ES*
Environmental Specialist

DATE: July 7, 1990

SUBJECT: Solid Waste - Duval County
Trail Ridge Landfill
Groundwater Monitoring Plan

In response to Solid Waste Construction Permit Application No. SC16-182117 the Department has evaluated the proposed groundwater monitoring plan for the referenced facility. To provide the Department with reasonable assurance that the proposed groundwater monitoring plan will allow a predictive evaluation of the movement and composition of a discharge plume the following additional information is requested.

1. The Department recommends the installation of two additional downgradient groundwater monitoring wells. As discussed by Scott McCallaster and myself during our meeting of July 5th 1990, one three well cluster should be located 600 ft. southwest of well B-14, and an additional two well cluster located 400 ft. south of well B-10.
2. A detailed narrative discussion of the operation of the groundwater control system as it pertains to the potentiometric surface of the unconfined aquifer and the maintenance of the positive hydraulic gradient of the landfill liner is requested. Of particular concern to the Department are periods of negative hydraulic gradient, artificial recharge of the unconfined aquifer, and the operation of the groundwater control system.
3. To facilitate permitting, specific alphanumeric designations and accompanying location map are necessary for all monitoring wells or surface water sampling locations. A schedule for the installation of monitoring wells that coincides with the construction of the landfill phases may also be submitted.
4. An additional surface water sampling site should be located to include the borrow pit east of the proposed Class III landfill.



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To: _____	Location: _____
To: _____	Location: _____
To: _____	Location: _____
From: _____	Date: _____

Interoffice Memorandum

~~NORTHEAST DISTRICT - JACKSONVILLE~~

TO: Mary Nogas
Mark Sittig

THROUGH: Jeremy Tyler JT

FROM: Michael Eaton ME

DATE: July 10, 1990

SUBJECT: Trail Ridge Landfill, Inc.
MSSW - Wetland Completeness Review

The following questions should be included in the request for additional information for the above-referenced project.

1. Please clarify the wetland jurisdictional line shown on Drawing No. 2 to clearly delineate which areas are wetlands.
2. Please indicate if the wetland mitigation area is within or connected to waters of the State.
3. Please clarify why the ditch shown on Drawing No. 15 is not within the Department's Wetland Resource Management permitting jurisdiction.
4. Please clarify how the discharges from the ditch and stormwater pond will affect the hydroperiod of the created wetland area.
5. Please specify the data collection methodology to be used in IV, B(5), Mitigation Plan - Maintenance and Monitoring.

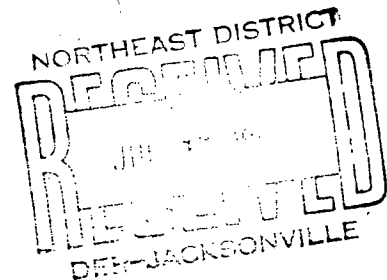
ME/eml

RESPONSE TO ATTACHMENT NO. 2

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

TRAIL RIDGE LANDFILL

RESPONSE - JULY 16, 1990



REVIEW MEMORANDUM

FROM: Michae Eaton
Jeremy Tyler

QUESTION 1: Please clarify the wetland jurisdictional line shown on Drawing No. 2 to clearly delineate which areas are wetlands.

RESPONSE 1: Drawing No. 2 has been revised including the removal of topographic lines for clarity.

QUESTION 2: Please indicate if the wetland mitigation area is within or connected to waters of the State.

RESPONSE 2: The proposed mitigation area is located in an upland area adjacent to waters of the State. Upon completion of the wetland creation, the mitigation area will be connected to waters of the State.

QUESTION 3: Please clarify why the ditch shown on Drawing No. 15 is not within the Department's Wetland Resource Management permitting jurisdiction.

RESPONSE 3: This ditch would not be under DER jurisdiction due to its cross-sectional area being less than 35 S.F. However, it is jurisdictional based on Water Management District criteria. The mitigation area will be excavated to the appropriate depth (12" to 24") of the ditch which will allow sheet flow of the ditch water through the mitigation area.

QUESTION 4: Please clarify how the discharges from the ditch and stormwater pond will affect the hydroperiod of the created wetland area.

RESPONSE 4: The existing shallow ditch adjacent to the mitigation area will be redirected to drain by overland flow through the mitigation area. This will increase the hydroperiod in the mitigation area. No discharge from any stormwater pond is near the mitigation area.

QUESTION 5: Please specify the data collection methodology to be used in IV, B(5), Mitigation Plan - Maintenance and Monitoring.

RESPONSE 5: Mike Eaton and the Environmental Services staff will visit and review the mitigation site to discuss the details of the functioning of this area.

The mitigation plan includes the following monitoring and maintenance efforts:

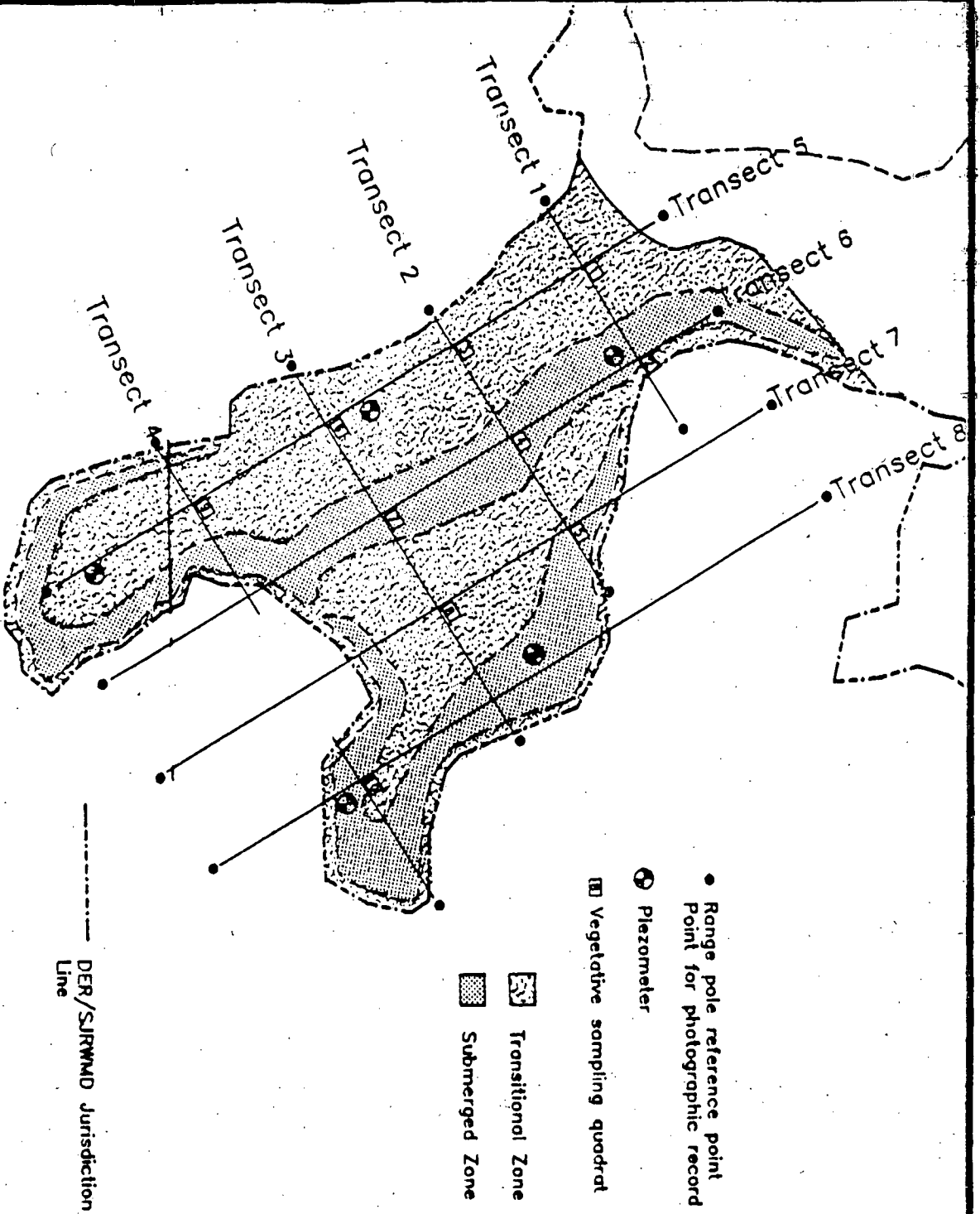
- o The proposed survival rate is 85 percent. (Please note that the original submittal quoted 75 percent).
- o Monitoring will occur during March, May, July, September, and November (five iterations) during the first two years. Monitoring will not occur during December, January, and February, as these represent the period of winter dormancy. During the third year monitoring will occur during April, July, and October.
- o Any infestations of noxious weeds such as primrose will, dog fennel, and cattails will be identified during monitoring and will be removed immediately. Corrective actions will be described in the monitoring report.
- o The sampling plan for determining mitigation success and natural recruitment will be analyzed by establishing eight permanent line transects (Figure 1, enclosed). They will be equally spaced, and four will be on the north-south axis of the mitigation area and four will be on the east-west axis of the mitigation area. Data will be collected by measuring the relative cover and species diversity along each of the transect lines. A permanent one-meter square quadrat will be established in the northeast quadrant of the intersection of the lines (sixteen quadrants). Six piezometers will be established adjacent to selected quadrats to collect groundwater data. Species diversity and approximate cover will be analyzed for each quadrat. Photographic records will be made of each quadrat. Photographic records will be made at the mitigation area from each point where the transects intersect the edge of the creation area.
- o Prior to construction, the edge of the adjacent wetland will be continuously flagged.
- o Mitigation construction will be initiated simultaneously with roadway construction. DER will be notified 48-hours prior to commencement of construction.



ENVIRONMENTAL
SERVICES, INC.

Trail Ridge Landfill Mitigation Plan

Proj No.	89-395
Date	7/16/90
Scale	1"=150'
Drawing No.	FIGURE ONE





England-Thims & Miller, Inc.

Consulting & Design Engineers
3131 St. Johns Bluff Road So. Jacksonville, FL 32216
904-642-8990

PRINCIPALS

James E. England, P.E., President
Robert E. Thims, V.Pres., Sec.
Douglas C. Miller, P.E., V. Pres.
N. Hugh Mathews, P.E., V. Pres.
James M. Robinson, P.E., V. Pres.

TELECOPIER TRANSMITTAL LETTER

DATE:

7/6/90

TO:

Mark Sittig

ATTENTION:

FROM:

JOE TAVER

REFERENCE:

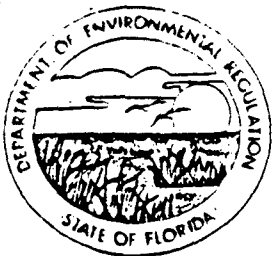
Trail Ridge

PROJECT NO:

89-113

WE ARE TRANSMITTING 4 PAGES, INCLUDING COVER PAGE. IF YOU DO NOT
RECEIVE ALL PAGES OR HAVE DIFFICULTY READING THIS DOCUMENT, PLEASE CALL
US IMMEDIATELY AT (904) 642-8990.

ENGLAND, THIMS & MILLER, INC. TELECOPIER NUMBER (904) 646-9485.



Florida Department of Environmental Regulation

Northeast District • 3426 Bills Road • Jacksonville, Florida 32207 • 904-798-4200

Bob Martínez, Governor

Dale Twachtman, Secretary

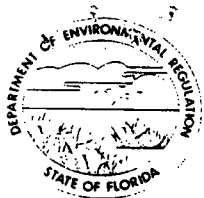
John Shearer, Assistant Secretary
Ernest Frey, Deputy Assistant Secretary

CONFERENCE

SUBJECT: Trail Ridge Landfill
Permit Application Review

DATE: 7/5/90

NAME/TITLE	AFFILIATION	PHONE NUMBER
<u>Mark Sittig</u>	<u>F DER</u>	<u>798-4200</u>
<u>LEE MARCHMAN</u>	<u>F DER</u>	<u>798-4200</u>
<u>Emerson C. Raulerson</u>	<u>"</u>	<u>"</u>
<u>ERIC B. SILVERS</u>	<u>"</u>	<u>"</u>
<u>DEWAYNE IGOU</u>	<u>TRAIL RIDGE LANDFILL INC</u>	<u>237-4800</u>
<u>SCOTT A. WILD</u>	<u>ENGLEND - THINS AND MURK</u>	<u>642-8990</u>
<u>JOE TARVER</u>	<u>"</u>	<u>"</u>
<u>DOUG MILLER</u>	<u>"</u>	<u>"</u>
<u>Mary Nolas</u>	<u>F DER</u>	<u>904/798-4200</u>
<u>Jim O'Connor</u>	<u>TRAIL RIDGE LANDFILL</u>	<u>305-771-9850</u>
<u>Harvey Bush</u>	<u>"</u>	<u>"</u>
<u>Wanda Smith</u>	<u>"</u>	<u>"</u>
<u>DEWEY</u>	<u>305-771-9850</u>	
<u>Scott McCallister</u>	<u>Trail Ridge Landfill</u>	<u>305-771-9850</u>



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To: _____	Location: _____
To: _____	Location: _____
To: _____	Location: _____
From: _____	Date: _____

Interoffice Memorandum

TO: Mary Nogas

FROM: Lee Marchman

DATE: July 2, 1990

SUBJECT: Duval County -- MSSW Permitting
Trail Ridge Landfill

I have reviewed the above referenced application, and the following questions need to be addressed before the application can be considered complete:

1. Sheets 13 and 14 of the Engineering Drawings indicate that some swales or ditches have been designed with 2:1 side slopes. I would suggest side slopes of 3:1 or shallower to prevent erosion of the channel beds.
2. Sheet 17 of the Engineering Drawings, depicting the Liner Anchor Trench - Typical Section, indicates roadside swales with side slopes of 2:1. Again, there is some question of side slope stability. In addition, if these swales are to be used for treatment of road runoff, Chapter 17-25.020(16)(a) requires side slopes of 3:1.
3. Sheet 22 of the Engineering Drawings, depicting Leachate Collection Area Details, shows a containment area sump for stormwater runoff. Where does this sump discharge, and how is the runoff conveyed? Has this volume of water been accounted for in the water balance?
4. Sheet 34 of the Engineering Drawings, depicting the Plan and Profile of the Admin/Lab Building and Parking Lot is incomplete. Please include more data for the Retention Pond, such as depth, details of the outfall, any oil and grease control mechanism, plan contours showing bottom contours and all design dimensions, side slopes, and top of bank elevations.
5. Sheet 36 of the Engineering Drawings, detailing the Roadway Section between the Class I and Class III Landfills, again shows 2:1 side slopes in the roadside swales. See Comment 2.
6. Has any consideration been given to lessening the side slopes of the Class I and Class III detention ponds to 6:1 or shallower and planting appropriate aquatic vegetation to create littoral zones? In addition to improved pollution abatement, littoral zones can, in some instances, be used for wetland mitigation credit.

7. Sheet 41 of the Engineering Drawings indicates that two pumps service the Class III Pump Station. Is one of these to be an auxillary, as is the case for the Class I Pump Station? If not, what contingency plans are there in the event of pump failure?

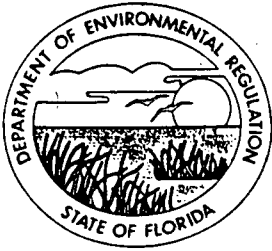
8. Pages 9-4 to 9-6 of the Permit Documents, detailing the Phasing Plan, should indicate the use of all appropriate anti-erosion Best Management Practices (hay bales, silt screens, etc.) be used in the interum between clearing and excavation of the stormwater basins.

9. Do plans call for the cleaning of the first filter beds in the detention ponds after the second filter is placed in service? Siltation is very likely during the construction phases, as mentioned in the Permit Documents, which would reduce the capacity of the first filters to treat 100% of the design stormwater runoff, a goal stated on Page 1-2 of the introduction.

10. The velocity calculated for the Northerly and Southerly Class III Interior Ditches is stated to be 4.5 ft/s. This would appear to be high enough to cause significant erosion. I suggest sodding or swale blocks to reduce the velocity.

11. Swales for the entrance road (Supplemental Stormwater Treatment Systems section) should be grassed to comply with Chapter 17-25.020(16)(c).

12. As mentioned in Comment 4, details of the retention pond serving the Admin/Lab facilities and accompanying parking lot are incomplete. Please submit all relevent design calculations and drawings detailing items such as inflow and outfall structure details, recovery calculations, any oil and grease control mechanism (recommended as the site is to be used as a parking lot subject to oil and grease contamination), rational method coefficient, drainage area, impervious area, maintenance and operation schedule for the proposed treatment facility, and any other information necessary to insure compliance with Chapter 17-25, FAC.



Florida Department of Environmental Regulation

Northeast District • 3426 Bills Road • Jacksonville, Florida 32207 • 904-798-4200

Bob Martinez, Governor

Dale Twachtmann, Secretary

John Shearer, Assistant Secretary
Ernest Frey, Deputy Assistant Secretary

C O N F E R E N C E

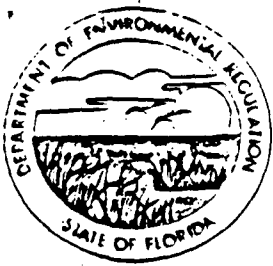
SUBJECT: TRAIL RIDGE LANDFILL

DATE: 6/20/90

PROJECT OVERVIEW

<u>NAME/TITLE</u>	<u>AFFILIATION</u>	<u>PHONE NUMBER</u>
GRADY L. WARCHMAN	FDER (STORMWATER)	(904) 798-4200
Emeran C. Raulson	" (HELP MODEL)	"
WARREN N. SMITH	TRAIL RIDGE LANDFILL, INC.	(305) 771-9850
HARVEY BUSH	"	"
Scott McCallister	"	"
JOE TARTER	ENGLAND-THIMSE MILLER	(904) 642-8990
RIK FRENCH	"	"
Doug Miller	"	"
RHODES ROBINSON	ENVIRONMENTAL SERVICES INC	904-636-8552
MARK SITTIG	FDER	904-798-4200
Michael EATON	FDER (WETLANDS)	798-4200
JEREMY TYLER	FDER (WETLANDS)	798-4200
DEWAYNE IGOO	TRAIL RIDGE LANDFILL	737-4800
ERIC R. SILVER	FDER - JAY	798-4200

cc: Files



Florida Department of Environmental Regulation

Northeast District • 3426 Bills Road • Jacksonville, Florida 32207 • 904-798-4200

Bob Martinez, Governor

Dale Twachtman, Secretary

John Shearer, Assistant Secretary
Ernest Frey, Deputy Assistant Secretary

CONFERENCE

SUBJECT: Trail Ridge Landfill
Permit Application Review

DATE: 7/5/90

NAME/TITLE	AFFILIATION	PHONE NUMBER
<u>Mark Sittig</u>	<u>FDER</u>	<u>798-4200</u>
<u>LEE MARCHMAN</u>	<u>FDER</u>	<u>798-4200</u>
<u>Emerson C. Rouleau</u>	<u>"</u>	<u>"</u>
<u>ERIC R. SILVERS</u>	<u>"</u>	<u>"</u>
<u>DEWAYNE EGOU</u>	<u>TRAILRIDGE LANDFILL INC</u>	<u>237-4800</u>
<u>SCOTT A. WILD</u>	<u>ENGLAND - THIMS AND MILLER</u>	<u>642-8990</u>
<u>JOE TARTER</u>	<u>"</u>	<u>"</u>
<u>DOUG MILLER</u>	<u>"</u>	<u>"</u>
<u>Mary Nagas</u>	<u>FDER</u>	<u>904/798-4200</u>
<u>Jim O'Connor</u>	<u>TRAILRIDGE LANDFILL</u>	<u>305-771-9850</u>
<u>Harvey Bush</u>	<u>"</u>	<u>"</u>
<u>Warren Smith</u>	<u>"</u>	<u>"</u>
SCOTT MCGILLISTER	TRAILRIDGE LANDFILL	305-771-9850
<u>Scott McGillister</u>	<u>Trail Ridge Landfill</u>	<u>305-771-9850</u>



England-Thims & Miller, Inc.

Consulting & Design Engineers
3131 St. Johns Bluff Road So. Jacksonville, FL 32216
904-642-8990

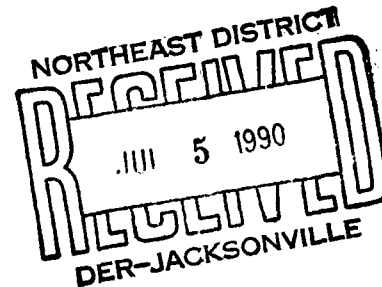
PRINCIPALS

James E. England, P.E., President
Robert E. Thims, V.Pres., Sec.
Douglas C. Miller, P.E., V. Pres.
N. Hugh Mathews, P.E., V. Pres.
James M. Robinson, P.E., V. Pres.

July 3, 1990

Mrs. Mary C. Nogas, P.E.
Supervisor, Solid Waste
Department of Environmental Regulation
3426 Bills Road
Jacksonville, Florida 32207

Reference: Trail Ridge Landfill
ET&M NO. E89-113-8



Dear Mrs. Nogas:

Enclosed herewith please find responses to comments made by Mr. Lee Marchman regarding the M.S.S.W. permitting on the above captioned project. The responses have been included in the sequential order as presented in the completeness summary report.

1. The location of swales designed with 2:1 side slopes are in areas where a roadway is traversing a wetland and along perimeter ditches at the landfill cells. Where the road is traversing a wetland between the Class I and Class III landfill areas, 2:1 side slopes were designed to minimize the area of impact to said wetland. Calculations indicate the maximum velocity in these swales are 2.4 FPS. Best Management Practices will be utilized to prevent a possible erosion problem. Along the perimeter ditches of the landfill cells, concrete ditch paving is proposed to prevent erosion problems. Please refer to Sheets 24, 25 and 36 for locations and details of these paved ditches.

The cross-sections mentioned on Sheets 13 and 14 were drawn at scales such that the ditch paving would not have shown clearly.

2. The ditch detail mentioned on Sheet 17 is proposed to be concrete paved. Referring to the location where the detail cross-section was obtained on Sheet 8 to the Final Contour Plan on Sheet 24 you will notice this proposed paving. No stormwater treatment shall be taking place in the ditch. This ditch is for conveyance only. The stormwater in the ditch will be treated in the Class I detention pond.

The detail on Sheet 17 has been revised to indicate concrete ditch paving (see enclosed.)

Reference: Trail Ridge Landfill

3. The containment area sump discharges into a concrete paved ditch with the ultimate outfall being the Class I stormwater pond. This is depicted on Sheet 21. The volume of stormwater runoff is not accounted for in leachate generation calculations since it is discharging into the stormwater pond and not within the landfill cells.
4. Additional information has been provided on Sheets 34 and 38. This included details such as pond bottom elevation, side slopes, oil skimmer, outfall structure and stormwater facility dimensions.
5. As previously mentioned in Response No. 1 above, this roadway is traversing a wetland area. To reduce impacts to the wetlands, 2:1 side slopes were designed. No stormwater treatment is proposed in these swales.
6. Several alternatives for the construction details of the stormwater ponds were considered. The determining factor was the need for cover material for the landfill operations. By utilizing 4:1 side slopes instead of a flatter slope, additional excavated material will be generated, therefore reducing the need to go off-site for cover material. The pond is proposed to be excavated "in the wet" in phases. The planting of a littoral shelf would only be disturbed by construction activities in future phases or silt up during such activity. Mitigation is proposed in an alternate area within the project boundaries.
7. Each of the two pumps at the Class III stormwater facility have been designed for the maximum flow required in the event of a single pump failure. Should there be an occasion when both pumps are down or in the event of an extended power failure, there is an emergency pump out connection located within the valve pit at the pump station where a diesel pump can be connected.
8. A new paragraph shall be added in Item 2 on Page 9-4 to read:

Anti-erosion Best Management Practices shall be utilized at all times. These shall include but not be limited to, hay bales, silt screens, etc. Special attention shall be given between clearing activities and the establishment of a grass cover.
9. Once the second filtration system has been put into service, the first system shall be cleaned. It is anticipated that the two feet of filter material will need to be replaced. Once cleaned, the filter system shall be available for re-use.

Mrs. Mary C. Nogas, P.E.
Department of Environmental Regulation


July 3, 1990
Page 3

Reference: Trail Ridge Landfill

10. Velocity calculations for this ditch were based erroneously on a Mannings coefficient of 0.025. The correct coefficient should be 0.04 due to the installation of Enkamat as utilized in the other interior ditches. Based upon this change, the resultant velocity is reduced from 4.5 FPS to 3.2 FPS. This revision has been included herewith.
11. The swales shall be seeded to meet or exceed the requirements in Chapter 17-25.020(16)(c). This note has been added to Sheet 36.
12. As discussed in response No. 4 above, additional details are being included herewith. Also included are calculations which indicate the stormwater facility can meet or exceed State Water Quality Standards.

Sincerely,

ENGLAND, THIMS & MILLER, INC.



Douglas C. Miller, P.E.
Vice President

DCM:kl

cc: Warren Smith
Harvey Bush

CALCULATION OF DEPTH OF FLOW IN NORTHERLY AND SOUTHERLY
INTERIOR DITCHES, CLASS III

CALCULATION OF Tc (Refer to plans)

Distance (Ft)	Slope (%)	Method of Conveyance	Velocity (Ft/s)	Time (Min)
300	33.3	Overland (fallow)	2.7	1.9
220	33.3	Shallow concentrated	9.5	0.4
950	0.7	Open Channel	4.5	<u>3.5</u>
Time of Concentration				5.8 Min

INTENSITY (25 YR STORM)

$$I_{25} = \frac{145}{(T_c + 20)} = 0.863$$

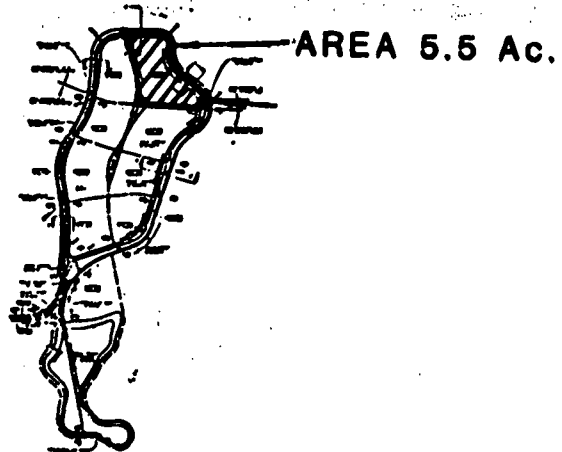
$$= \frac{145}{(5.8 + 20)} = 0.863$$

$$= 8.8 \text{ in/hr}$$

(Formula taken from a chart compiled by the U.S. Weather Bureau; Intensity, duration and frequency of rainfall for Jacksonville, Florida)

AREA

The largest drainage area contributing runoff to the northerly interior ditch is shown below, and has an area of 5.5 acres.



DISCHARGE

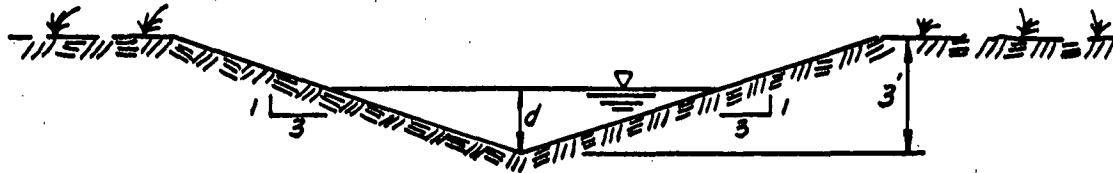
$$Q = CIA = 0.95 (8.8) 5.5 = 46 \text{ cfs}$$

DEPTH OF FLOW IN SWALE

The depth of flow in the channel is determined by using numerical techniques (HP-41 "Solve") to solve the Mannings Equation for a specific discharge and for the given swale geometry. (See swale cross-section on following page.)

Handwritten notes and signatures at the bottom right of the page, including a large signature and some illegible text.

CALCULATION OF DEPTH OF FLOW IN NORTHERLY AND SOUTHERLY
INTERIOR DITCHES, CLASS III (Continued)

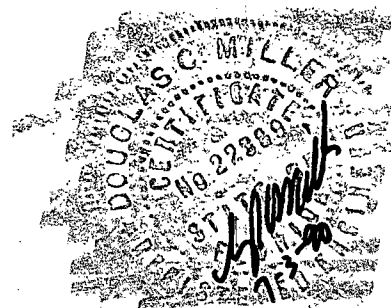


- Flow Area = $3d^2$
- Wetted Perimeter = $2d\sqrt{10}$
- Hydraulic Radius = $\frac{3d^2}{2d\sqrt{10}}$
- Manning's "n" for a Enkamat lined channel = 0.04 (Enkamat specifications)
- Slope: 0.007
- Q (from previous page) = 46 cfs
- Solving Manning's equation in the following form:

$$46 = \frac{1.486}{0.04} \left(\frac{3d^2}{2d\sqrt{10}} \right)^{2/3} \sqrt{0.007} (3d^2)$$

Yields $d = 2.19$ feet and
 $v = 3.2$ ft/s

- The northerly and southerly interior ditches have a depth of 3 feet, therefore no overtopping will occur.



2. Phasing Plan (Sequence)

The phasing plan for development of the Trail Ridge Landfill is presented on the construction drawings.. The completed landfill, indicating final contours after stabilization and allowing for 15 percent settlement, is also shown. The multi-phase development of the landfill is determined by several factors: the anticipated rate for landfilling, geomembrane installation, leachate collection system construction, groundwater, and surface water handling. All of these factors are accounted for in facilitating the development of the landfill in an environmentally sound manner.

Liner system installation and leachate collection system construction will be scheduled such that the subsequent fill sector is prepared and completed prior to completion of the preceding fill sector.

Anti-erosion Best Management Practices shall be utilized at all times. These shall include but not be limited to, hay bales, silt screens, etc. Special attention shall be given between clearing activities and the establishment of a grass cover.

I. CLASS I

A. Site Preparation (Phase I)

1. Site clearing of Phase I area
2. Excavate to approximate base grade elevation
3. Install groundwater control system.
4. Finish grading to base grade elevation.
5. Install primary and secondary liner and leachate collection system.
6. Install 24" of protective sand blanket.
7. Begin refuse spreading and compaction with initial 2 feet layer.
8. When refuse has reached a height of 15 feet (adequate to resist hydrostatic uplift) over a groundwater control sector cease dewatering and allow groundwater to provide a positive inward pressure gradient on the liner.

B. Groundwater Control (Phase I)

1. Install groundwater control system under base grades in Phase I.
2. Install exterior groundwater collection piping from landfill underdrain to stormwater pump station.
3. Construct interceptor ditch west and adjacent to liner area. This ditch will drain into the temporary terminus of the groundwater collection pipe.

(Revised July 3, 1990)

=====

<<<<<< ENGLAND THIMS & MILLER, Inc. >>>>>>

=====

PROJECT NAME : TRAIL RIDGE LANDFILL - ADMIN/LAB RETENTION

NUMBER No. : E89 - 113 - 8

DATE : 03-Jul-90

PERCOLATION OF '17 - 25' VOLUME
AND DRAWDOWN TIME CALCULATIONS

SITE DATA :		RETENTION POND DATA :	
Drainage Area No. :	1	Top of Bank Elev. :	99.00
Drainage Area (Ac) :	1.30	Area of Top of Bank :	0.244
Coeff. of Runoff :	0.75	Bottom Elevation :	98.00
Ret. Req'd. (Inches) :	0.50	Area of Bottom :	0.195
17 - 25 Vol. Req'd :	0.054	Pond Sideslopes :	4 : 1
17 - 25 Vol. Prov'd :	0.054	Discharge Elev. :	98.27
Depth Increment :	0.10		

PERCOLATION DATA :

Permeability : 0.50 feet/hour , based on soil types
D . Source : SCS Soil Survey of City of Jacksonville

Rate of Percolation = 0.000139 Cfs.

Area of Percolation = N / A sq.feet

Rate of Percolation per Sft. = 0.000139 Cfs/Sft

TOTAL DRAWDOWN TIME = 2.17 Hours

STAGE	AVERAGE PERC AREA (Ac)	STORAGE VOLUME (Ac-Ft)	INCREMENTAL STORAGE VOLUME	AMOUNT OF PERC.	DRAWDOWN TIME (Hrs.)
99.00	10522	8494	849	1.4614	0.161
98.90	10308	7645	849	1.4317	0.165
98.80	10095	6795	849	1.4021	0.168
98.70	9882	5946	849	1.3724	0.172
98.60	9668	5097	849	1.3428	0.176
98.50	9455	4247	849	1.3132	0.180
98.40	9241	3398	849	1.2835	0.184
98.30	9028	2548	1699	1.2539	0.376
98.20	8814	1699	1699	1.2242	0.385
98.10	8601	849	849	1.1946	0.198
98.00				0.0000	0.000

[Handwritten signature and notes]

<<<<<<<<<< ENGLAND THIMS & MILLER, Inc. >>>>>>>>>

STAGE - STORAGE - DISCHARGE CALCULATIONS

PROJECT : TRAIL RIDGE LANDFILL - ADMIN BLD	PIPE	ORIFICE	
No. : EB9 - 113 - 8	HOW MANY ? 0	0	
DATE : 03-Jul-90	DIAMETER 0	0	Inches
SITE DATA	LENGTH 0	xxxxxx	Feet
DRAINAGE AREA-PRE : 1.30 Acres	SLOPE 0.000	xxxxxx	Ft/Ft
DRAINAGE AREA-POST : 1.30 Acres	'N' 0.000	0.000	'C'
PRE-DEVELOPMENT 'C' : 0.30	ENT COEFF. 0.00		
POST-DEVELOPMENT 'C' : 0.75	INV. ELEV. 0.00	0.00	Centroid
LAKE DATA	WEIR 1	WEIR 2	
AREA AT TOP OF BANK : 0.244 Acres	LENGTH 0.00	0.00	Feet
TOP OF BANK ELEV. : 99.00	'C' 0.00	0.00	
AREA AT BOT/NWL : 0.195 Acres	WEIR ELEV. 0.00	0.00	
BOT/NWL ELEVATION : 98.00			
	DEPTH INCREMENT :	0.05	Feet
TREATMENT VOLUME : 0.054 Ac.Ft	LAKE BANK SLOPE :	4 : 1	

DEPTH OF WATER (Feet)	ELEVATION	POND AREA (Acres)	TOTAL STORAGE (Ac.Ft)	PIPE DISCHARGE (Cfs)	ORIFICE DISCHARGE (Cfs)	WEIR DISCHARGE (Cfs)	TOTAL DISCHARGE (Cfs)
0.27	98.27	0.208	0.054	0.00	0.00	0.00	0.00
0.00	98.00	0.195	0.000	0.00	0.00	0.00	0.00
0.05	98.05	0.197	0.010	0.00	0.00	0.00	0.00
0.10	98.10	0.200	0.020	0.00	0.00	0.00	0.00
0.15	98.15	0.202	0.030	0.00	0.00	0.00	0.00
0.20	98.20	0.205	0.040	0.00	0.00	0.00	0.00
0.25	98.25	0.207	0.050	0.00	0.00	0.00	0.00
0.30	98.30	0.210	0.061	0.00	0.00	0.00	0.00
0.35	98.35	0.212	0.071	0.00	0.00	0.00	0.00
0.40	98.40	0.215	0.082	0.00	0.00	0.00	0.00
0.45	98.45	0.217	0.093	0.00	0.00	0.00	0.00
0.50	98.50	0.219	0.104	0.00	0.00	0.00	0.00
0.55	98.55	0.222	0.115	0.00	0.00	0.00	0.00
0.60	98.60	0.224	0.126	0.00	0.00	0.00	0.00
0.65	98.65	0.227	0.137	0.00	0.00	0.00	0.00
0.70	98.70	0.229	0.148	0.00	0.00	0.00	0.00
0.75	98.75	0.232	0.160	0.00	0.00	0.00	0.00
0.80	98.80	0.234	0.172	0.00	0.00	0.00	0.00
0.85	98.85	0.237	0.183	0.00	0.00	0.00	0.00
0.90	98.90	0.239	0.195	0.00	0.00	0.00	0.00
0.95	98.95	0.242	0.207	0.00	0.00	0.00	0.00
1.00	99.00	0.244	0.219	0.00	0.00	0.00	0.00
1.00	99.00	0.244	0.219	0.00	0.00	0.00	0.00

GLASC MILLER
 CERTIFICATE
 03 JUL 1990
 11:30 AM
 11/3/90

DEPARTMENT OF PUBLIC UTILITIES
Office of the Director

Water
Wastewater
Solid Waste

June 29, 1990



Mr. Ernie E. Frey, P.E.
Deputy Assistant Secretary, Northeast District
Department of Environmental Regulation
3426 Bills Road
Jacksonville, Florida 32207

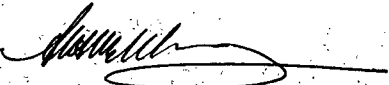
RE: NORTH/WEST LANDFILL

Dear Ernie:

The City of Jacksonville has been advised that Trail Ridge, Inc., a subsidiary of Waste Management of North America, Inc., has applied to the Florida Department of Environmental Regulation for a Landfill Construction and Operation Permit. As you may know, Trail Ridge, Inc. is one of four firms competing in a selection process with the City of Jacksonville to site a landfill in the North and/or West quadrants of the city. In mid-August the City's review committee will begin evaluating the four individual projects to determine which firm is most qualified to meet the City's pressing needs. In that determination "permittability" will be a major issue of consideration. Therefore, it is in the best interest of the public and the citizens of Jacksonville for each competitor to be as far along in the permit process as possible. We urge the Department to expedite the permitting process for the Trail Ridge landfill in any way possible.

Your assistance in this matter is deeply appreciated.

Sincerely,

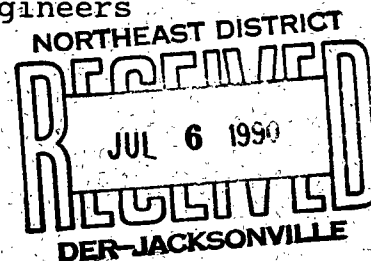

Allan E. Williams, P.E.
Director

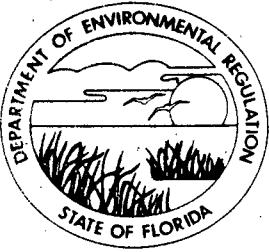
AEW/rgd

cc: Thomas L. Hazouri, Mayor
Daniel D. Richardson
Douglas G. Wood

Warren Smith
Waste Management, Inc.

Bertil Heimer
Corps of Engineers





Florida Department of Environmental Regulation

Northeast District • 3426 Bills Road • Jacksonville, Florida 32207 • 904-798-4200

Bob Martinez, Governor

Dale Twachtman, Secretary

John Shearer, Assistant Secretary
Ernest Frey, Deputy Assistant Secretary

June 15, 1990

Honorable Watson Goodwin, Chairman
Board of County Commissioners
Baker County
55 North Third Street
Macclenny, Florida 32063

Dear Chairman Goodwin:

Trail Ridge Landfill
Duval County -Solid Waste

Please be advised that permit applications were received in this office on June 13 to construct and operate a Class I and Class III landfill in Duval County by Trail Ridge Landfill, Inc.

Your name has been added to the list of persons requesting notification of agency action on this permit application. Therefore, you will receive a copy of the Intent to Issue or Deny, which will contain instructions and the time frame for filing a petition for an administrative hearing.

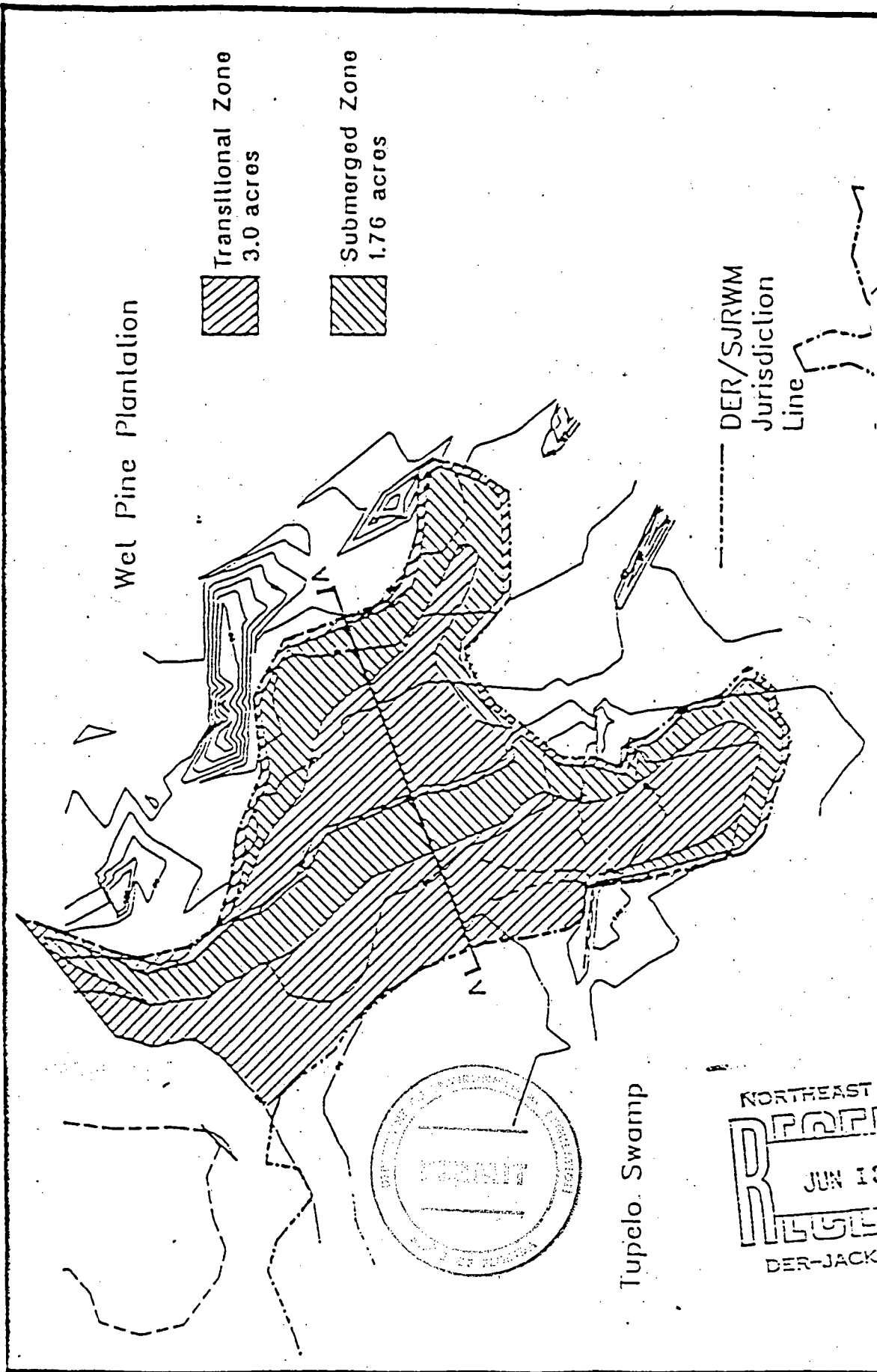
If you have any questions concerning this permit application, please contact me at the letterhead address or telephone number.

Sincerely,

Mary C. Nogas, P.E.
Supervisor, Solid Waste

MCN:ml





Proj No.	89-395
Date	JUNE 11, 1990
Scale	1"=150'
Drawing No.	16

Figure 4 Proposed Conditions
Trail Ridge Landfill
Mitigation Plan

NORTH EAST DISTRICT
REGISTERED
JUN 13 1990
DER-JACKSONVILLE

ENVIRONMENTAL
SERVICES, INC.

DER

Lyndell
6-11-90

DER/SJRVID Jurisdiction Line

DER/SJRVID Jurisdiction Line

Transitional Zone

Submerged Zone

Transitional Zone

Submerged Zone

Tupelo Swamp

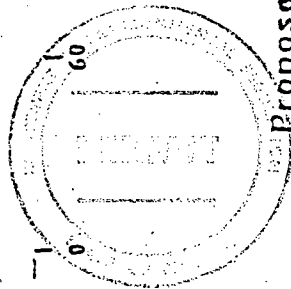
Wet Pine Plantation

Existing Grade

Proposed Grade

100 -
99 -
98 -
97 -
96 -
95 -
94 -

120 100 80 60 40 20 0 240 300 360 420 480



Proposed Planting Schedule

Transitional Zone

Red Maple
Sweetgum
Laurel Oak
Wax Myrtle
Fetterbush

Submerged Zone

Cypress
Tupelo
Sweet Bay
Buttonbush
Virginia Willow

Figure 5 Mitigation Cross-Section

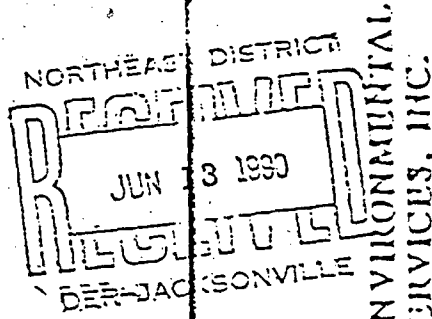
Trail Ridge Landfill
Mitigation Plan

Proj No. 89-395

Date JUNE 11, 1990

Scale as shown

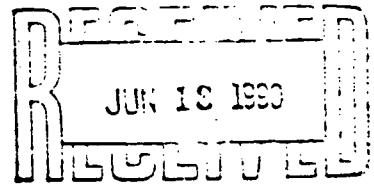
Drawing No. 17



DER

Signature
11-11-90

TRAIL RIDGE LANDFILL
WETLANDS ASSESSMENT REPORT



DER-JACKSONVILLE

The Trail Ridge Landfill site consists of approximately 1,280 acres located in Duval County between U.S. 301 and the Baker County line. Until recently, the property was owned by Gilman Paper Company and was intensively managed for silviculture. At least 560 acres of the property consist of various types of wetlands. These wetlands serve as the headwaters of Long Branch and Deep Creek which discharge respectively into Black Creek and the St. Marys River.

All of the wetlands have been affected to varying degrees by silvicultural practices. This report describes the different types of wetlands along with past and future impacts.

WETLAND TYPES

The property includes a portion of the eastern half of the Trail Ridge geologic information. The topography drops to the east from a high of 155 feet down to 90 feet NGVD. Runoff from the surrounding uplands on the ridge drains into three large wetland sloughs oriented east/west and several smaller wetland strands in the northwest property corner. As the property drops to the east, the water table approaches the surface. Wetlands occur in various locations along the slope that are slightly lower and intercept the ground water. The eastern edge of Trail Ridge roughly follows the 100-foot contour. The land east of this contour is relatively flat and consists primarily of wetlands. All of these wetlands have been classified into five main categories based on dominant vegetation and hydrologic conditions.

1. Hardwood swamp. The major drainageways and deeper wetlands consist of hardwood swamps. The canopy here includes such species as black gum (Nyssa sylvatica var. biflora), swamp bay (Persea palustris), swamp laurel oak (Quercus laurifolia), sweet bay (Magnolia virginiana), red maple (Acer rubrum) and sweetgum (Liquidambar styraciflua). The understory and ground cover consist of such species as dog hobble (Leucothoe axillaris), pipestem (Leucothoe populifolia), Virginia willow (Itea virginica), cinnamon fern (Osmunda cinnamomea) and royal fern (Osmunda regalis).

The smaller drainageways consist primarily of titi strands. The vegetation here is dominated by titi (Cyrilla racemiflora), wax myrtle (Myrica cerifera), sweet gallberry (Ilex coriacea) and scattered royal fern (Osmunda regalis).

2. Cypress/Gum swamp. This community type occurs as deeper pockets within other wetland types and as isolated wetlands. The vegetation is dominated by cypress (Taxodium distichum), black gum, and black-stemmed chain fern (Woodwardia virginica).

3. Seepage slope wetlands. Transitional, fringing areas along the main swamps may be characterized as seepage slope

wetlands. The vegetation here consists of pond pine (Pinus serotina), loblolly bay, slash pine (Pinus elliottii), sweet gallberry, tupelo, and cinnamon fern. Isolated seepage slope wetlands are vegetated with such species as sweet bay, sweet gallberry, gallberry (Ilex glabra), southern magnolia (Magnolia grandiflora), St. John's wort (Hypericum fasciculatum) and bogbutton (Lachnocaulon spp.). One isolated wetland (0.9 acre) near the south central part of the site, is scattered cypress.

4. Pine/Bay wetlands. Much of the eastern half of the site may be characterized as pine/bay wetlands. The canopy consists of a mixture of slash pine, loblolly bay, swamp bay, and sweet bay. In some areas slash pine is the dominant species along with scattered tupelo and cypress. The pines may occur naturally or may have been planted for silviculture. The ground cover vegetation includes such species as St. Johns wort, wiregrass (Aristida stricta), bogbuttons and sweet gallberry.

5. Ditches and swales. Ditches and swales occur along many of the trail roads and throughout the remainder of the site as drainage ditches and fire breaks. The deeper ditches that contain standing water are vegetated with such species as floating hearts (Nymphoides aquatica), bladderwort (Utricularia sp.) and rushes (Juncus spp.). The drier ditches and swales are vegetated with St. Johns wort, rushes, and warty panic grass (Panicum verrucosum).

PAST IMPACTS

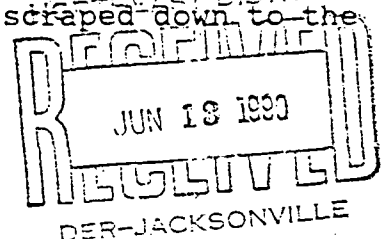
As stated above, this site has been intensively managed for silviculture for many years. The property is crisscrossed by 8+ miles of trail roads (including the main entrance road) and 5.5 miles of ditches. Most of the sloughs and natural flow ways have been channelized. In some areas the ditches were excavated up to 4 feet below surrounding natural grad. This ditching has drained the adjacent wetlands and significantly altered the hydrology of the entire wetland system.

Extensive wetland areas have been cleared and planted with slash pine. Most of the vegetation onsite has been disturbed and is submature. Windrows have been formed in a number of wetlands.

PROPOSED IMPACTS

Development of this site as a landfill will entail only 4.44 acres of wetland impacts. The majority of this (2.54 acres) will occur as a result of filling portions of roadside ditches and swales. The remainder of the impacts consist of filling a 0.8-acre isolated, shallow pine wetland and 0.90 acre of bay/pine seepage slope. Except for the 4.44 acres of impact, the rest of the wetlands will remain undisturbed.

Wetland impacts will be compensated for with 4.76 acres of wetland creation. An area of upland pine plantation surrounded by cypress/gum swamp and pine/bay wetland will be scraped down to the



wetlands. The vegetation here consists of pond pine (Pinus serotina), loblolly bay, slash pine (Pinus elliottii), sweet gallberry, tupelo, and cinnamon fern. Isolated seepage slope wetlands are vegetated with such species as sweet bay, sweet gallberry, gallberry (Ilex glabra), southern magnolia (Magnolia grandiflora), St. John's wort (Hypericum fasciculatum) and bogbutton (Lachnocaulon spp.). One isolated wetland (0.9 acre) near the south central part of the site, is scattered cypress.

4. Pine/Bay wetlands. Much of the eastern half of the site may be characterized as pine/bay wetlands. The canopy consists of a mixture of slash pine, loblolly bay, swamp bay, and sweet bay. In some areas slash pine is the dominant species along with scattered tupelo and cypress. The pines may occur naturally or may have been planted for silviculture. The ground cover vegetation includes such species as St. Johns wort, wiregrass (Aristida stricta), bogbuttons and sweet gallberry.

5. Ditches and swales. Ditches and swales occur along many of the trail roads and throughout the remainder of the site as drainage ditches and fire breaks. The deeper ditches that contain standing water are vegetated with such species as floating hearts (Nymphoides aquatica), bladderwort (Utricularia sp.) and rushes (Juncus spp.). The drier ditches and swales are vegetated with St. Johns wort, rushes, and warty panic grass (Panicum verrucosum).

PAST IMPACTS

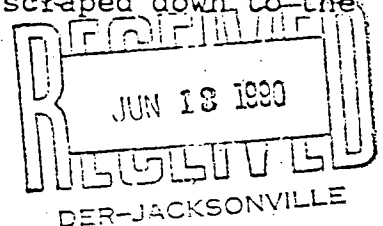
As stated above, this site has been intensively managed for silviculture for many years. The property is crisscrossed by 8+ miles of trail roads (including the main entrance road) and 5.5 miles of ditches. Most of the sloughs and natural flow ways have been channelized. In some areas the ditches were excavated up to 4 feet below surrounding natural grad. This ditching has drained the adjacent wetlands and significantly altered the hydrology of the entire wetland system.

Extensive wetland areas have been cleared and planted with slash pine. Most of the vegetation onsite has been disturbed and is submature. Windrows have been formed in a number of wetlands.

PROPOSED IMPACTS

Development of this site as a landfill will entail only 4.44 acres of wetland impacts. The majority of this (2.54 acres) will occur as a result of filling portions of roadside ditches and swales. The remainder of the impacts consist of filling a 0.8-acre isolated, shallow pine wetland and 0.90 acre of bay/pine seepage slope. Except for the 4.44 acres of impact, the rest of the wetlands will remain undisturbed.

Wetland impacts will be compensated for with 4.76 acres of wetland creation. An area of upland pine plantation surrounded by cypress/gum swamp and pine/bay wetland will be scraped down to the



wetlands. The vegetation here consists of pond pine (Pinus serotina), loblolly bay, slash pine (Pinus elliotii), sweet gallberry, tupelo, and cinnamon fern. Isolated seepage slope wetlands are vegetated with such species as sweet bay, sweet gallberry, gallberry (Ilex glabra), southern magnolia (Magnolia grandiflora), St. John's wort (Hypericum fasciculatum) and bogbutton (Lachnocaulon spp.). One isolated wetland (0.9 acre) near the south central part of the site, is scattered cypress.

4. Pine/Bay wetlands. Much of the eastern half of the site may be characterized as pine/bay wetlands. The canopy consists of a mixture of slash pine, loblolly bay, swamp bay, and sweet bay. In some areas slash pine is the dominant species along with scattered tupelo and cypress. The pines may occur naturally or may have been planted for silviculture. The ground cover vegetation includes such species as St. Johns wort, wiregrass (Aristida stricta), bogbuttons and sweet gallberry.

5. Ditches and swales. Ditches and swales occur along many of the trail roads and throughout the remainder of the site as drainage ditches and fire breaks. The deeper ditches that contain standing water are vegetated with such species as floating hearts (Nymphoides aquatica), bladderwort (Utricularia sp.) and rushes (Juncus spp.). The drier ditches and swales are vegetated with St. Johns wort, rushes, and warty panic grass (Panicum verrucosum).

PAST IMPACTS

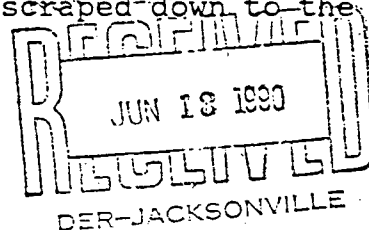
As stated above, this site has been intensively managed for silviculture for many years. The property is crisscrossed by 8+ miles of trail roads (including the main entrance road) and 5.5 miles of ditches. Most of the sloughs and natural flow ways have been channelized. In some areas the ditches were excavated up to 4 feet below surrounding natural grad. This ditching has drained the adjacent wetlands and significantly altered the hydrology of the entire wetland system.

Extensive wetland areas have been cleared and planted with slash pine. Most of the vegetation onsite has been disturbed and is submature. Windrows have been formed in a number of wetlands.

PROPOSED IMPACTS

Development of this site as a landfill will entail only 4.44 acres of wetland impacts. The majority of this (2.54 acres) will occur as a result of filling portions of roadside ditches and swales. The remainder of the impacts consist of filling a 0.8-acre isolated, shallow pine wetland and 0.90 acre of bay/pine seepage slope. Except for the 4.44 acres of impact, the rest of the wetlands will remain undisturbed.

Wetland impacts will be compensated for with 4.76 acres of wetland creation. An area of upland pine plantation surrounded by cypress/gum swamp and pine/bay wetland will be scraped down to the



wetlands. The vegetation here consists of pond pine (Pinus serotina), loblolly bay, slash pine (Pinus elliottii), sweet gallberry, tupelo, and cinnamon fern. Isolated seepage slope wetlands are vegetated with such species as sweet bay, sweet gallberry, gallberry (Ilex glabra), southern magnolia (Magnolia grandiflora), St. John's wort (Hypericum fasciculatum) and bogbutton (Lachnocaulon spp.). One isolated wetland (0.9 acre) near the south central part of the site, is scattered cypress.

4. Pine/Bay wetlands. Much of the eastern half of the site may be characterized as pine/bay wetlands. The canopy consists of a mixture of slash pine, loblolly bay, swamp bay, and sweet bay. In some areas slash pine is the dominant species along with scattered tupelo and cypress. The pines may occur naturally or may have been planted for silviculture. The ground cover vegetation includes such species as St. John's wort, wiregrass (Aristida stricta), bogbuttons and sweet gallberry.

5. Ditches and swales. Ditches and swales occur along many of the trail roads and throughout the remainder of the site as drainage ditches and fire breaks. The deeper ditches that contain standing water are vegetated with such species as floating hearts (Nymphoides aquatica), bladderwort (Utricularia sp.) and rushes (Juncus spp.). The drier ditches and swales are vegetated with St. John's wort, rushes, and warty panic grass (Panicum verrucosum).

PAST IMPACTS

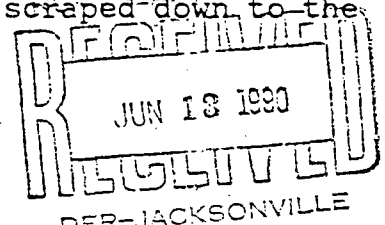
As stated above, this site has been intensively managed for silviculture for many years. The property is crisscrossed by 8+ miles of trail roads (including the main entrance road) and 5.5 miles of ditches. Most of the sloughs and natural flow ways have been channelized. In some areas the ditches were excavated up to 4 feet below surrounding natural grad. This ditching has drained the adjacent wetlands and significantly altered the hydrology of the entire wetland system.

Extensive wetland areas have been cleared and planted with slash pine. Most of the vegetation onsite has been disturbed and is submature. Windrows have been formed in a number of wetlands.

PROPOSED IMPACTS

Development of this site as a landfill will entail only 4.44 acres of wetland impacts. The majority of this (2.54 acres) will occur as a result of filling portions of roadside ditches and swales. The remainder of the impacts consist of filling a 0.8-acre isolated, shallow pine wetland and 0.90 acre of bay/pine seepage slope. Except for the 4.44 acres of impact, the rest of the wetlands will remain undisturbed.

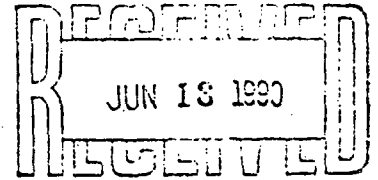
Wetland impacts will be compensated for with 4.76 acres of wetland creation. An area of upland pine plantation surrounded by cypress/gum swamp and pine/bay wetland will be scraped down to the



water table. The creation area will be planted with such species as cypress, black gum, red maple and sweetgum. A more detailed description of this mitigation is outlined in a separate mitigation plan.

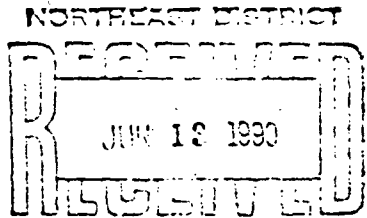
89-395.rpt
(APR90)

NORTHEAST DISTRICT



DER-JACKSONVILLE

TRAIL RIDGE LANDFILL
WILDLIFE SURVEY



INTRODUCTION

DER-JACKSONVILLE

The site for the proposed Trail Ridge Landfill is located in Sections 18, 19, 20 and 21, Township 3 South, Range 23 East, Duval County, Florida. This site consists of 1,280 acres of which at least 720 acres are uplands characterized as pine plantation, and approximately 560 acres are wetlands characterized as mixed hardwood swamp, bay swamp, cypress swamp and wet pine plantation. The diverse habitats and extensive acreage of the site required a comprehensive wildlife/threatened and endangered species survey. The basic format of the survey was in accordance with the official methodology outlined in "Wildlife Survey Methodology Guideline" (Florida Game and Fresh Water Fish Commission, 1987). Generally this methodology consists of three parts: 1) mapping the vegetative communities on the site, 2) creating a list of potentially occurring species, 3) performing habitat/species-specific surveys. A more specific explanation of methodology and survey results is outlined below.

Methods and Findings

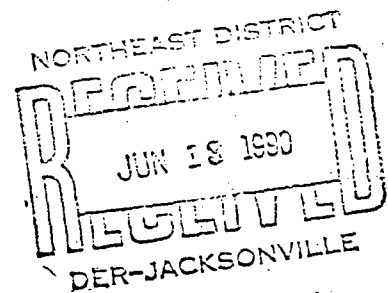
1. The initial phase involved mapping the various habitats on the site. This was accomplished by utilizing aerial photographs, topographic and soils maps and field observations. Field observations included meandering transects across the entire site and a driven survey on all accessible roads. Habitats found on the site were classified according to Florida Land Use, Cover and Forms Classification System (Florida Department of Transportation, September 1985) and include the following:
 - a. Coniferous plantation (440). This upland habitat consists of rows of planted slash pine (Pinus elliottii) of varying maturity with an understory and ground cover of gallberry (Ilex glabra) saw palmetto (Serenoa repens), bracken fern (Pteridium aquilinum) and wiregrass (Aristida stricta). A subcategory was created for this site (441w) to indicate wetlands dominated by planted slash pine with fetterbush (Lyonia lucida), St. John's wort (Hypericum fasciculatum) and cinnamon fern (Osmunda cinnamomea) common as ground cover. The wet pine plantations frequently had loblolly bay (Gordonia lasianthus) mixed in the canopy.
 - b. Bay swamp (611). This habitat is dominated by loblolly bay, swamp bay (Persea palustris), sweet bay (Magnolia virginiana) with sweet gallberry (Ilex coriacea), fetterbush, wax myrtle (Myrica cerifera) and titi (Cyrilla racemiflora) common in the understory.

- c. Titi swamp (614). This habitat is composed of dense stands of titi as the dominant vegetation. Also present are wax myrtle, fetterbush, and various bays.
- d. Mixed wetland Hardwoods (617). This habitat is composed of a mixture of cypress (Taxodium distichum), black gum (Nyssa sylvatica var. biflora), red maple (Acer rubrum), diamond-leaf oak (Quercus laurifolia) and bays.
- e. Cypress swamp (621). This habitat is dominated by cypress with blackgum and sweetbay. Cinnamon fern, black-stemmed chain fern (Woodwardia virginica), royal fern (Osmunda regalis) and fetterbush are common as ground cover species.
- f. Wet Prairies (643). This habitat is dominated by St. Johns wort with bogbutton (Lachnocaulon sp.), cinnamon fern, asiatic coinwort (Centella asiatica) and sphagnum moss (Sphagnum sp.) also present. A stunted subcanopy of planted slash pine may be present. The community type may also be classified as clear cut wet pine plantation or wet pine flatwoods.
2. The second phase involved the creation of a list of potentially occurring endangered/threatened species which may occupy the existing habitats. The Florida Game and Fresh Water Fish Commission, Official Lists of Endangered and Potentially Endangered Fauna and Flora in Florida (1987) is the primary reference for the list. The list is presented in this report as Attachment A.
3. The third phase involved the performance of habitat/species - specific surveys to evaluate the presence of endangered/threatened species. Surveys were performed in accordance with the following guidelines. A summary of the results is presented following the methodology.

A. Wetland survey

Potential species:

Wood stork
Bald eagle
Florida sandhill crane
Little blue heron
Snowy egret
Louisiana heron



All wetlands were surveyed for a minimum of five days. For herbaceous wetlands (wet prairies) less than 10 acres in size, a visual scanning of the wetland was considered sufficient. Wetlands that are either forested or exceed 10 acres in size were sampled by pedestrian surveys to attain complete coverage. Estimates of individuals by species were to be

reported for each survey. All observed nesting and roosting sites were to be mapped.

An exhaustive survey of the potential habitats revealed no sign of any of the above-mentioned species of concern. The existence of the wood stork, bald eagle or Florida sandhill crane in this area was initially considered unlikely. The limited extent of open water also makes this area less than satisfactory as habitat for the little blue heron, snowy egret and Louisiana heron.

B. Upland surveys

Potential species:

Sherman's fox squirrel
Florida black bear
Southeastern kestrel
Red-cockaded woodpecker

Survey methodology consisted of morning and evening pedestrian surveys (500 meters of transect per 100 acres) across the upland areas for a minimum of five days. Transects were meandered through the area and changed after each survey to maximize coverage. All observations of protected species as well as physical signs of species presence (tree markings, tracks, nests and cavities in trees, scat, etc.) were mapped.

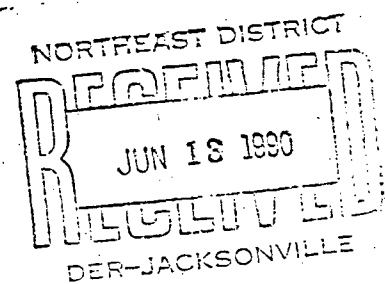
Greater than 40 miles of upland transects revealed no signs of any of the above species. The absence of mature stands of long-leaf pine make this area less than satisfactory as habitat for the Red-cockaded woodpecker or Sherman's fox squirrel. No signs of black bear were observed on-site during this study.

C. Small mammal sampling

Florida mouse

The Florida mouse prefers sand pine scrub and long-leaf pine/turkey oak communities and is often found in association with gopher tortoise burrows. Consequently, surveys for the Florida mouse were concentrated in the areas of existing gopher tortoise burrows and were performed by scientists during the standard upland survey and while conducting gopher tortoise transects.

No signs were found to indicate the presence of the Florida mouse. The close association of the Florida mouse with gopher tortoise habitat and the limited extent of this habitat makes this area unsuitable for the Florida mouse.



D. Herpetofaunal surveys

Florida pine snake
Indigo snake
Gopher frog
Short-tailed snake

Upland pedestrian surveys for these species were conducted by scientists while conducting the standard upland survey previously discussed. Scientists closely observed gopher tortoise burrows for the presence of basking indigo and Florida pine snakes in the vicinity of the burrow and gopher frogs just inside the burrow entrance. Surveys were primarily conducted during warm sunny days between early and mid-afternoon hours to increase the probability of snake observations.

None of the above species were noted. The limited extent of gopher tortoise habitat is considered to be the likely cause for the negative results.

E. Gopher tortoise burrow surveys

All potential gopher tortoise habitat was initially identified utilizing aerial photographs, topographic and soils maps, and ground truthing. Pedestrian transects across suitable habitat were done at 60-foot intervals, checking 30 feet on either side to establish 100 percent coverage. Burrows were flagged and classified as "active", "inactive", or "abandoned" according to the criteria of Auffenburg and Franz (1982), and plotted on a map or aerial photograph.

To arrive at an estimate of the actual number of gopher tortoises present, the following formula was used (Auffenburg and Franz, 1982):

$$\text{Number of individuals} = (A + I) K$$

Where: A = number of active burrows

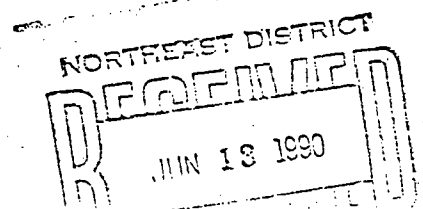
I = number of inactive burrows

K = correction factor of 0.614 to account for interburrow movements, dispersal and natural mortality.

Greater than 40 miles of transects produced the following results:

Active burrows - 2
Inactive burrows - 10
Abandoned burrows - 9

Using the above formula, these data suggest a total of approximately 7 gopher tortoises on the site. This population is concentrated in the well-drained clean sandy soils near the

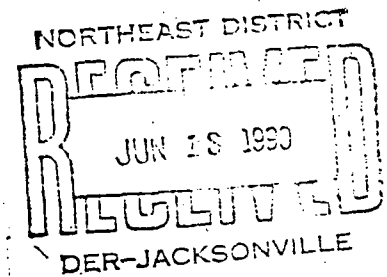


west property boundary. The population density presumably increases off-site to the west.

Conclusion

On 29 May 1990, Mr. Rick McCann of Florida Game and Fresh Water Fish Commission (FGFWFC) conducted a site inspection of the property at the request of Waste Management, Inc. Mr. McCann reviewed the property in order to assess any potential impacts the proposed landfill may have on listed wildlife species and general wildlife habitat. After inspecting the property and the wildlife survey work performed to date, Mr. McCann said that the only real concern FGFWFC should have would be gopher tortoises and their commensal species. The population of gopher tortoises on-site is very small (<10 individuals) and located near the western edge of the property. These tortoises could easily be relocated to a suitable buffer area nearby. ESI is currently reviewing these areas for potential relocation sites.

DM/slr
89-395.rp2
(JAN90)



FLORIDA ARCHEOLOGICAL SERVICES, INC.

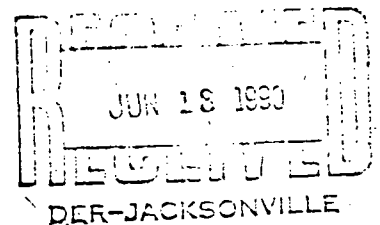
4250 MELROSE AVENUE
JACKSONVILLE, FL 32210

PHONE
(904) 389-1976

April 11, 1990

Mr. Rhodes Robinson
President
Environmental Services, Inc.
9104 Cypress Green Drive
Jacksonville, Florida 32256

NORTHEAST DISTRICT



RE: TRAIL RIDGE LANDFILL PROJECT; HISTORIC PRESERVATION
ELEMENT: ARCHEOLOGICAL PROBABILITY ASSESSMENT

Dear Mr. Rhodes,

Upon your request, I have examined the above project relative to current state and federal Historic Preservation mandates, and have reached the conclusions contained in the following information. It is my opinion that the developer of this project may be required to provide archeological information relative to the project's impact upon known or unknown archeological resources. In the event that certain permit application requests are made, the collection of such archeological information is generally obtained by the completion of an archeological site assessment survey designed to provide information sufficient by which to assess the project's impact on archeological sites deemed eligible or potentially eligible for inclusion in the National Register of Historic Places.

In anticipation of such need, I have conducted a brief examination of pertinent environmental and cultural parameters associated with the project area. In conducting this review, I have examined the archeological site file information housed in the Florida Master Site Files located at the Florida Division of Historical Resources, Department of State, Tallahassee. In addition, I have examined the results of previous archeological investigations in the Trail Ridge vicinity. During the spring of 1987, I conducted archeological investigations associated with the DuPont mining operations on the Trail Ridge landform to the south of the current project area. This work is reported in Johnson (1987). The results of that work and the current examination suggest that the Trail Ridge Landfill project area appears to

Mr. Rhodes Robinson
April 11, 1990
Page Two

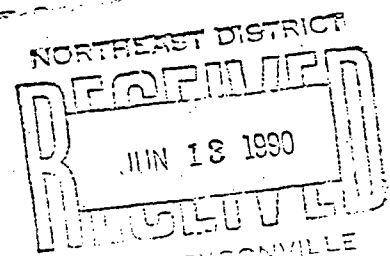
contain a medium to high probability for the presence of archeological sites. At present, however, there are no recorded archeological sites on the project area; a function of the fact that the project area has not been subjected to a professional archeological site assessment survey.

In terms of archeological site distribution (which actually reflects the various aboriginal settlement pattern model(s) of a specific area), I anticipate that an unknown, but probably not high, number of archeological sites may be located at the headwaters of or adjacent to the wetland strand in the eastern portions of Section 18 and 19 of Township 3S, Range 23E. In addition, the small stream or branch which flows east in the southern half of Section 19 is likely to contain archeological sites in close proximity of this drainage system.

Previous investigations in the Trail Ridge area have demonstrated that sites in this vicinity are likely to be represented by surface and subsurface scatters of aboriginal cultural materials (artifacts) in a limited distribution. Sites of the Florida Archaic period (3,000 to 5,000 B.C.) and the Woodland period (post-A.D. 100) have been identified. It should be cautioned, however, that this area of Florida is not well-defined archeologically, and that sites of other cultural periods may also be present in the region. It seems unlikely, however, that sites of the Mississippian period (post A.D. 1250) will be present on the project tract. Sites of this type typically cover broad areas and may contain mortuary structures or features (Indian Burial Mounds).

In terms of specific project impacts relative to Historic Preservation, if sites are present on the tract, they are likely to be small (less than 1 acre) and of unknown significance. Any sites discovered to be eligible or potentially eligible for inclusion in the National Register of Historic Places would have the option of being preserved or subjected to partial excavation such that the development project may proceed following the completion of archeological mitigation. It should be noted, however, that only a small portion of those sites typically discovered on such projects are actually deemed eligible for inclusion in the National Register of Historic Places.

It should be noted that the enclosed information is based upon on my current knowledge of the project area and the region in general. Actual site type and definition, if present, must await the completion of an actual archeological



Mr. Rhodes Robinson

April 11, 1990

Page Three

site assessment survey. Should archeological sites be present, I do not anticipate them to represent extensive land areas, nor are they likely to impede the completion of this development project, if proper Historic Preservation procedures are followed.

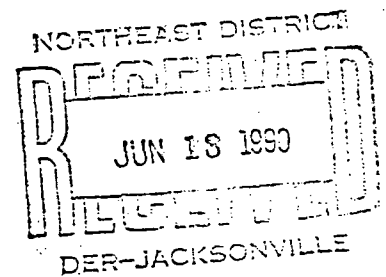
It is my hope that you find the enclosed information useful. If you should have any questions or comments, or I may be of further assistance on this project, do not hesitate to call.

Sincerely,

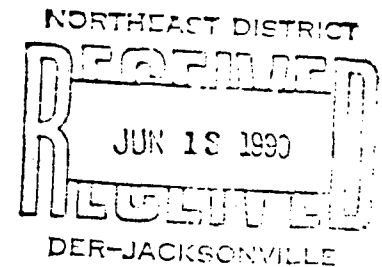
Robert E. Johnson

Robert E. Johnson
President

REJ/bj



TRAIL RIDGE LANDFILL
WETLAND IMPACTS AND MITIGATION PLAN



I. INTRODUCTION

Waste Management, Inc. is proposing the development of Trail Ridge Landfill in western Duval County (Figure 1). Of the approximately 560 wetland acres occurring on the property, only 4.44 acres of relatively low quality wetlands would be impacted, (refer to Trail Ridge Landfill Wetlands Assessment Report. Wetlands impacted by jurisdiction are Corps of Engineers, 4.44 acres; St. Johns River Water Management District, 3.17 acres; and Florida Department of Environmental Regulation, 1.61 acres. To offset the wetland impacts, conversion of 4.76 acres of uplands into high quality wetlands would occur as mitigation.

The following report provides a general overview of the property, a detailed description of the wetland impacts, and the plan for mitigation creation.

II. SITE DESCRIPTION

The tract consists of approximately 1,280 acres in western Duval County between U.S. 301 and the Baker County line. The land was previously owned by the Gilman Paper Company and has been intensively managed for pulpwood. The property is surrounded on all sides by forest land. A network of unpaved logging roads exists throughout the property. The design plans produced by England, Thims & Miller, Inc., propose the development of separate Class I and Class III landfill cells along with two stormwater ponds/borrow pits, and the widening and improvement of the existing, dirt roads.

III. WETLAND IMPACTS

Development of this site as a landfill would involve 4.44 acres of wetland impacts, the majority of which (2.54 acres) would occur as a result of filling portions of roadside ditches and swales. The remainder of the impacts would consist of filling a 0.8-acre isolated, shallow, pine/cypress wetland, 0.9 acre of bay/pine seepage slope and 0.20 acre of wetland pine plantation. Except for these 4.44 acres of impact, the remaining wetlands will not be disturbed.

A. Road Impacts

The majority of the wetland impacts would occur as a result of widening an existing logging road. This road extends for 1.6 miles from U.S. 301 to the edge of the property and would serve as the main access to the landfill. From the eastern property line it continues for an additional 0.4 mile to the Class I landfill cell. The road is currently an unpaved logging road. It will be widened to 24 feet and paved with asphalt. In addition, the existing corrugated metal pipes under the road will be replaced with reinforced concrete pipes.

From U.S. 301 the entrance road extends for approximately 3,000± feet through a pine plantation. The vegetation here consists of rows of planted slash pine (Pinus elliotti) with an understory and ground cover of saw palmetto (Serenoa repens), gallberry (Ilex glabra), and bracken fern (Pteridium aquilinum). The roadside swales here average 4 to 5 feet across and 1 to 2 feet deep. The swales are considered jurisdictional wetlands only where they intersect adjacent wetlands.

Within the upland pine plantation there are ten depressional, wetland areas. The eastern three areas are jurisdictional only by the U.S. Army Corps of Engineers (CE). The road widening will entail impacting 0.24 acres of these three wetlands. The dominant plant species are not on the state's list of wetland plants. The dominant vegetation consists of blackberry (Rubus cuneifolius), Amphicarpum muhlenbergianum, wiregrass (Aristida stricta), and panic grass (Dicanthelium sp.). The remaining seven wetland areas are wholly owned and isolated. Six of these areas are each less than 0.5 acres in size. The vegetation in all seven areas consists of St. John's wort (Hypericum fasciculatum), yellow-eyed grass (Xyris sp.) and red root (Lachnanthes caroliniana). The road widening will entail impacting 0.17 acres (CE/SJRWMD) of swales in these seven depressional areas.

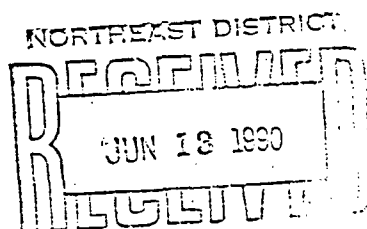
From the edge of the pine plantation the entrance road continues for 3,000± feet through a pine swamp known locally as Hell's Bay. There are ditches along both sides of the road all the way across the swamp. The ditches measure approximately 8 feet across and 2-3 feet deep. Under normal conditions the ditches contain at least 12 inches of water. The vegetation within the ditches consists of pickerelweed (Pontederia cordata), water lily (Nymphaea odorata), and bladderwort (Utricularia sp.). The existing ditches serve to drain the adjacent swamp. During the past 12 months, standing water has not been observed in the swamp on either side of the road.

The vegetation of the pine swamp south of the road consists of a canopy of slash pine mixed with scattered red maple (Acer rubrum), tupelo (Nyssa sylvatica var. biflora), and cypress (Taxodium distichum). The swamp on the north side of the road has been recently clear-cut. The dominant ground cover vegetation there now includes such species as sedges (Cyperus spp.), beak rushes (Rhynchospora spp.), and cinnamon fern (Osmunda cinnamomea).

The entrance road across the swamp will be widened approximately 10 feet on each side. This will result in filling most of the roadside ditches (1.24 acres SJRWMD/DER/CE and 0.17 acres CE only).

From the western edge of Hell's Bay, the entrance road continues into the property to the Class I landfill cell. Wetland impacts due to this portion of roadwork include filling wetland pine plantation (0.65 acres CE) and a narrow slough (0.07 acres DER/SJRWMD/CE).

Widening West Fiftone Road would entail filling 0.3 acres (DER/SJRWMD/CE) of bay/pine seepage wetlands between the Class I and Class III landfill cells.



B. Landfill Impacts

Two wetland impacts would occur as a result of construction of the Class I landfill cell. These impacts include filling an isolated cypress/pine depressional wetland and a narrow finger of bay/pine seepage slope. The cypress/pine wetland is an isolated, shallow, depressional area comprising 0.80 acres (SJRWMD/CE). Following prolonged heavy rains, it will hold some standing water (<1 foot); however, it is dry during much of the year. The vegetation within the cypress/pine wetland consists of a canopy of slash pine and cypress with an understory of scattered myrtle-leaved holly (Ilex myrtifolia) and a ground cover of black-stemmed chain fern (Woodwardia virginica).

The bay/pine wetland consists of 0.60 acres (SJRWMD/CE) and occurs as a narrow finger of seepage slope along the north side of West Fiftone Road. The vegetation here consists of a canopy of tupelo, slash pine and various bay trees with a ground cover of fetterbush (Lyonia lucida) and sweet gallberry (Ilex coriacea).

Wetland impacts will be mitigated with 4.76 acres of wetland creation. An area of upland pine plantation surrounded by a cypress/gum swamp and a pine/bay wetland will be scraped down to form two depressional areas at or below the water table.

IV. MITIGATION PLAN

A. Existing Site Conditions

The mitigation site is located in the northeastern portion of the property in an area bounded by Hat Road to the north, West Fiftone Road to the west, Sellers Road to the south, and the property line to the east (Figure 2). The site is characterized as an upland finger surrounded by forested wetlands on three sides.

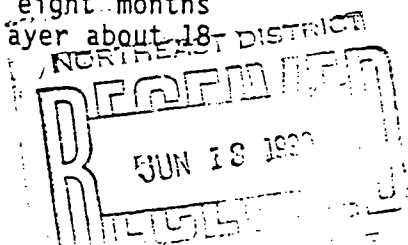
1. Elevations

The U.S. Geological Survey Map (Maxville, Florida, 1970) indicates that the elevations within the mitigation site range from +95 to +100 feet N.G.V.D. To more accurately describe the area, a site-specific topographic survey was conducted by Sunshine State Surveyors. Elevations were found to range from 100.8 feet on the upland ridge to the south to 94.7 on the wetland fringe to the north. The site slopes downhill gradually to the east.

2. Soils

The Soil Conservation Service (Soil Survey of Duval County, 1978) indicates that the upland soil of the mitigation area is Leon fine sand and the wetland soil is Wesconnett fine sand.

Leon fine sand is a poorly drained soil typically found in broad pine flatwood areas. Under natural conditions this soil has a water table at a depth of less than 10 inches for two to four months and at a depth of 10 to 30 inches for two to eight months during most years. There is often a weakly cemented layer about 18 inches below the surface.



Wesconnett fine sand is a very poorly drained soil in shallow depressions and large drainageways. Under natural conditions this soil has a water table at a depth of 0 to 10 inches, or the soil is covered by water for six to twelve months during most years.

3. Hydrology

There is a ditch that extends across a section of the mitigation site. This section of upland-cut ditch is less than 35 square feet in cross section and contains less than 3 feet of standing water at the point where it intersects the DER wetland line. The ditch averages 18 to 20 feet across from top-of-bank to top-of-bank and 12 to 18 inches deep. Water periodically flows east through the ditch from the tupelo swamp to the wet pine plantation. During much of the year, the ditch appears to be dry.

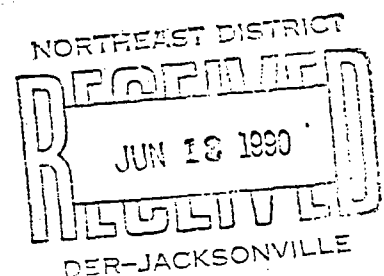
4. Vegetation

The upland pine plantation is characterized by a 15 to 20 year old row-planted slash pine that is approaching canopy closure. The understory and ground cover mostly consist of gallberry, saw palmetto, bracken fern, huckleberry (Vaccinium sp.), broomsedge (Andropogon sp.), wire grass (Aristida stricta), and Aronia arbutifolia.

The wet pine plantation to the east has been clear-cut, bedded, and row-planted with slash pine about 15 to 20 years ago. Logging debris and soil have been pushed into windrows. Other vegetation in this area include scattered tupelo, sweet bay (Magnolia virginiana), loblolly bay (Gordonia lasianthus), red maple, wax myrtle (Myrica cerifera), possumhaw viburnum (Viburnum nudum), maidencane (Panicum hemitomon), panicum (Dichanthelium sp.), bluestem (Andropogon sp.), and Asiatic coinwork (Centella asiatica).

The wetland to the west and south is a moderately deep cypress-hardwood swamp dominated by tupelo and cypress and scattered sweetbay, swamp bay (Persea palustris), and red maple. The dominant shrub is fetterbush with some Virginia willow (Itea virginica) and wax myrtle. Royal fern (Osmunda regalis), cinnamon fern, net-leaved chain fern (Woodwardia areolata), and sphagnum moss (sphagnum sp.) are also found.

Wetland vegetation within the ditch itself consists of rush (Juncus sp.), Dicanthelium sp., yellow-eyed grass (Xyris sp.), buttonbush (Cephalanthus occidentalis), sphagnum moss, and some slash pine. Along the edge of the ditch or berm is wild grape (Vitis sp.), saw palmetto, red chokeberry (Aronia arbutifolia), sweet gallberry, wax myrtle, black stemmed chain fern, poison summac (Toxicodendron vernix) and scattered tupelo, swamp bay, and sweet bay.



B. Proposed Site Conditions

1. Elevations

The elevation of the wetland creation area will range from +99 feet at the western edge to +94.5 feet near the eastern end. It is proposed that the existing rim of the tupelo swamp be maintained (+99 feet) to prevent draining it. The mitigation area will be scraped down to form two shallow depressional bowls each with a transitional and submerged zone (Figure 5). Each transitional zone will be scraped down to the average water table to establish saturated soil conditions. Each submerged zone will be scraped down to a maximum of 1 foot below the average water table to establish areas of intermittent/seasonal standing water. The edge of the eastern depressional bowl will approach the elevation of the wet pine plantation (+95 feet).

2. Soils

The mitigation basins area will be over-excavated approximately 0.5 foot and backfilled with the upper soil layer from the impacted wetlands. This mulch will provide a source of propagules (seeds, roots, tubers, etc.) that will help establish naturally occurring wetland ground cover vegetation.

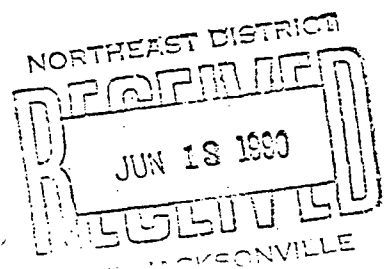
3. Hydrology

The two depressional creations within the mitigation area are designed to be contiguous with the surrounding wetland systems, thus promoting regular and periodic inundation of the site. Fluctuations in the water table are normal and are expected to cause the soils in the mitigation area to be periodically saturated or flooded with water.

The upland-cut portion of the drainage ditch will be realigned. It will curve to the north and outfall into the western basin. Water coming through the ditch will be allowed to sheet flow across the transition zone into the submerged zone.

4. Vegetation

The design of the mitigation area is to create a cypress/hardwood swamp. To accomplish this a variety of wetland tree and shrub species will be planted. The trees will average 4 to 6 feet in height in three-gallon containers to be planted on 10-foot centers or approximately 440 trees/acre. The shrubs will average 2 to 4 feet in height in one-gallon containers to be planted along all edges. Throughout the transitional zones, transitional wetland species will be planted, such as:



red maple (Acer rubrum)
 sweetgum (Liquidambar styraciflua)
 laurel oak (Quercus laurifolia)
 wax myrtle (Myrica cerifera)
 fetterbush (Lyonia lucida)

The deeper, submerged zones will be planted with such wetland species as:

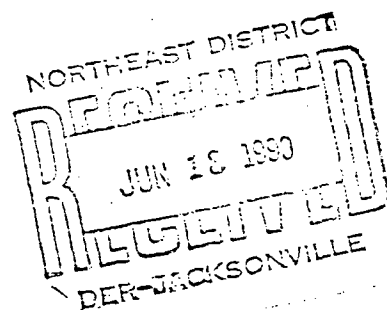
cypress (Taxodium distichum)
 tupelo (Nyssa sylvatica var. biflora)
 sweet bay (Magnolia virginiana)
 button bush (Cephalanthus occidentalis)
 Virginia willow (Itea virginica)

WETLAND CREATION RATIO

<u>Jurisdiction</u>	<u>Wetland Impacted</u>	<u>Wetlands Created</u>	<u>Ratio</u>
Corps of Engineers	4.44 AC	4.76 AC	1.07:1
St. Johns River Water Management District	3.17 AC	4.76 AC	1.50:1
Florida Department of Environmental Regulation	1.61 AC	4.76 AC	2.8:1

5. Maintenance and Monitoring

The creation area will be inspected every six months for two years following planting. Monitoring reports will be forwarded to the appropriate regulatory agencies. Standard mitigation requirements will be met, such as ensuring 75 percent survival of plantings. Routine maintenance will be performed as necessary to control nuisance weed species and to ensure success of the planting.



LEGEND for Figures 1 and 2

Communities

- 441 - Coniferous Plantation
- 611 - Bay Swamp
- 614 - Titi Swamp
- 617 - Mixed Wetland Hardwoods
- 621 - Cypress Swamp
- 643 - Wet Prairies - Hypericum sp.

w - wet

i - immature

Gopher Tortoise Burrows

x - inactive

▲ - active

☐ Potential gopher tortoise habitat; intensively transected.*

*Note: All uplands were checked for potential habitat.

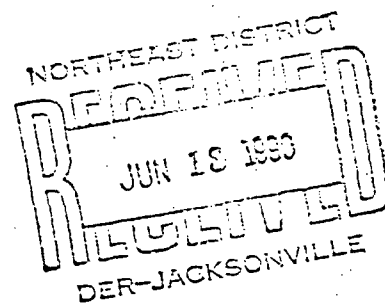
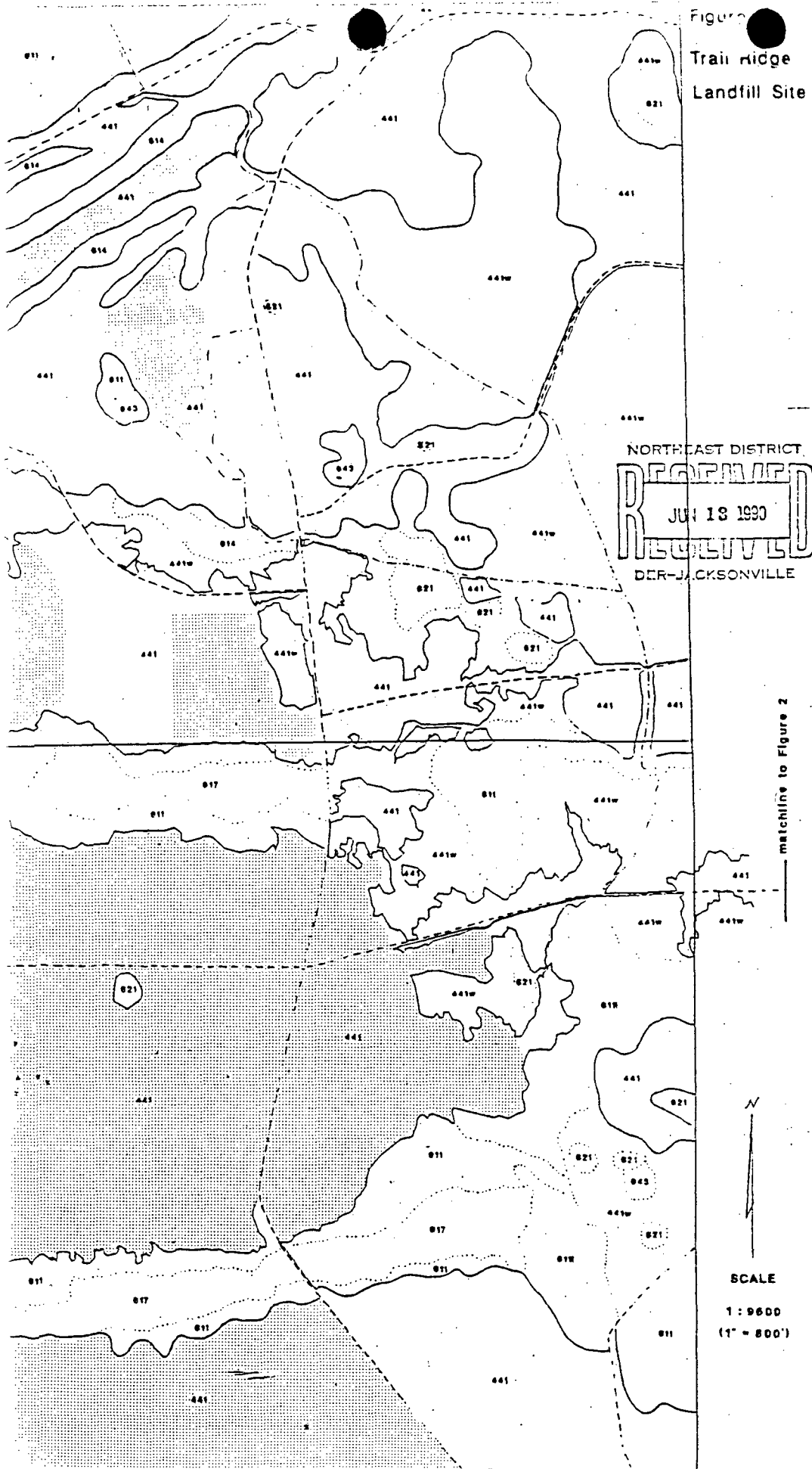
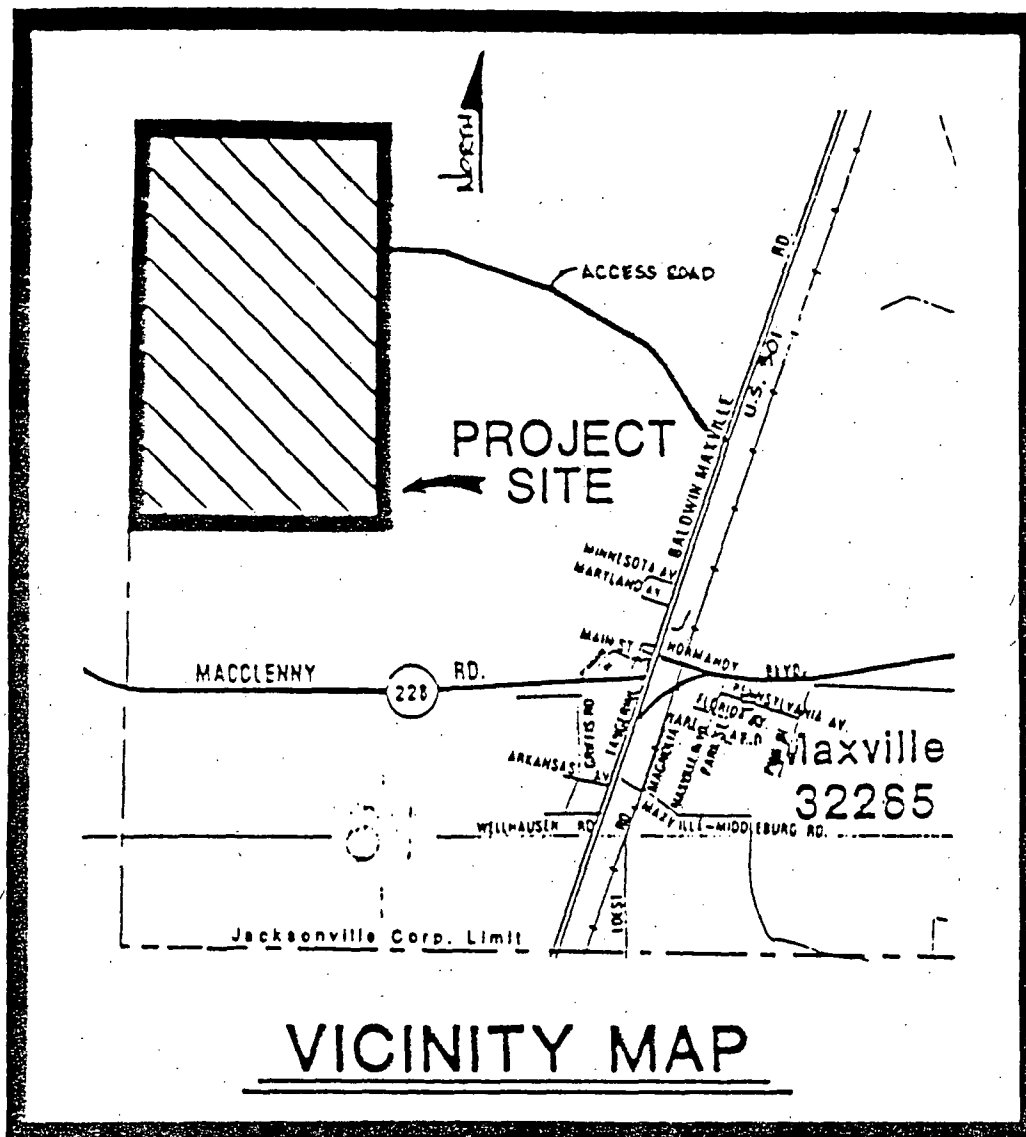


Figure 1
Train ridge
Landfill Site





NORTHEAST DISTRICT
RECEIVED
 JUN 18 1990
REGISTERED



England, Thims
 & Miller, Inc.

VICINITY MAP

TRAILRIDGE LANDFILL
 TRAIL RIDGE LANDFILL, INC.

PROJ. NO. E89-113

DATE JUNE 11, 1990

SCALE 1" = 4000'

DRAWING NO. 1

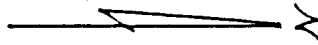
DER

Handwritten signature
 6-11-90

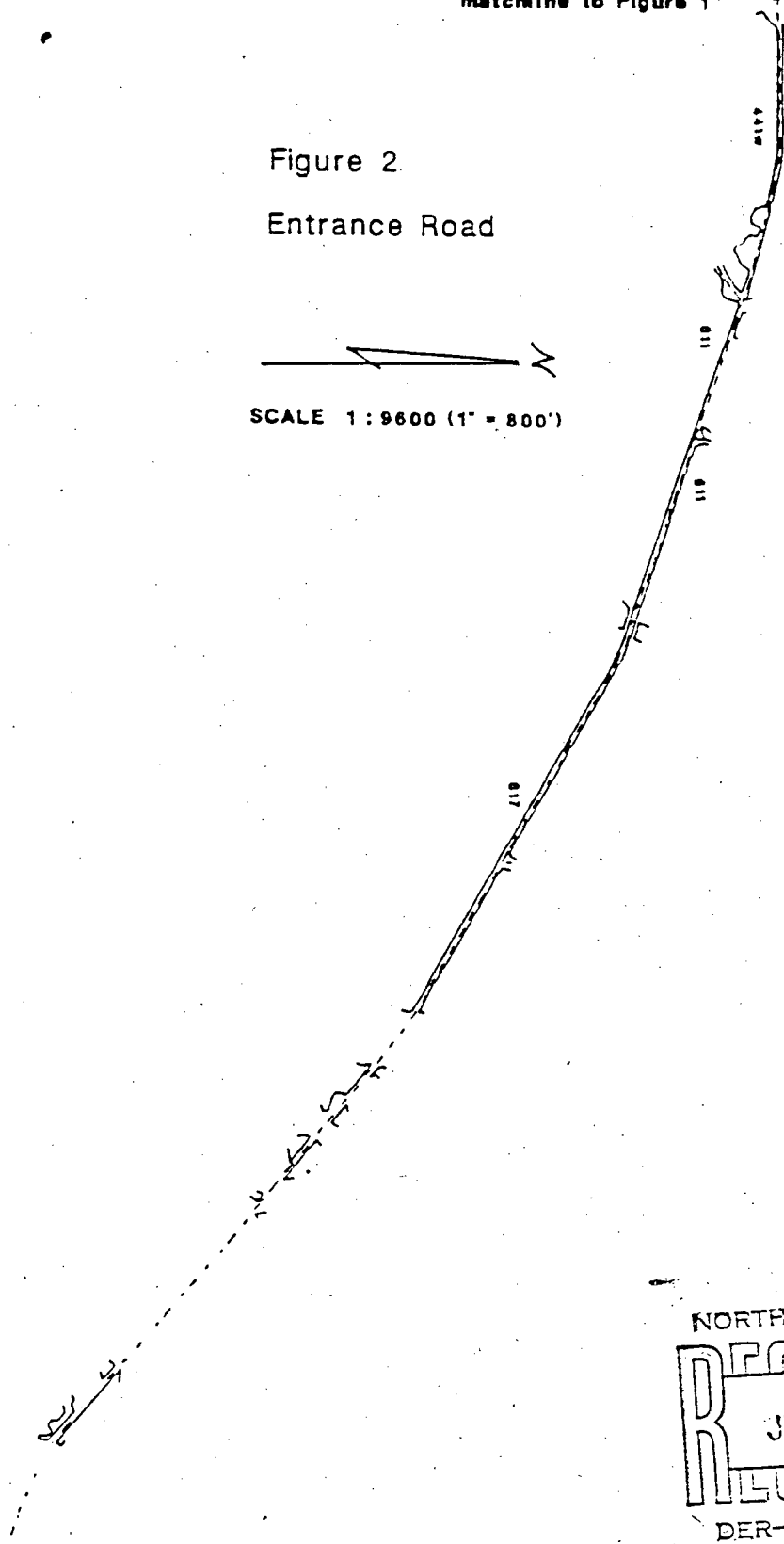
matchline to Figure 1

Figure 2

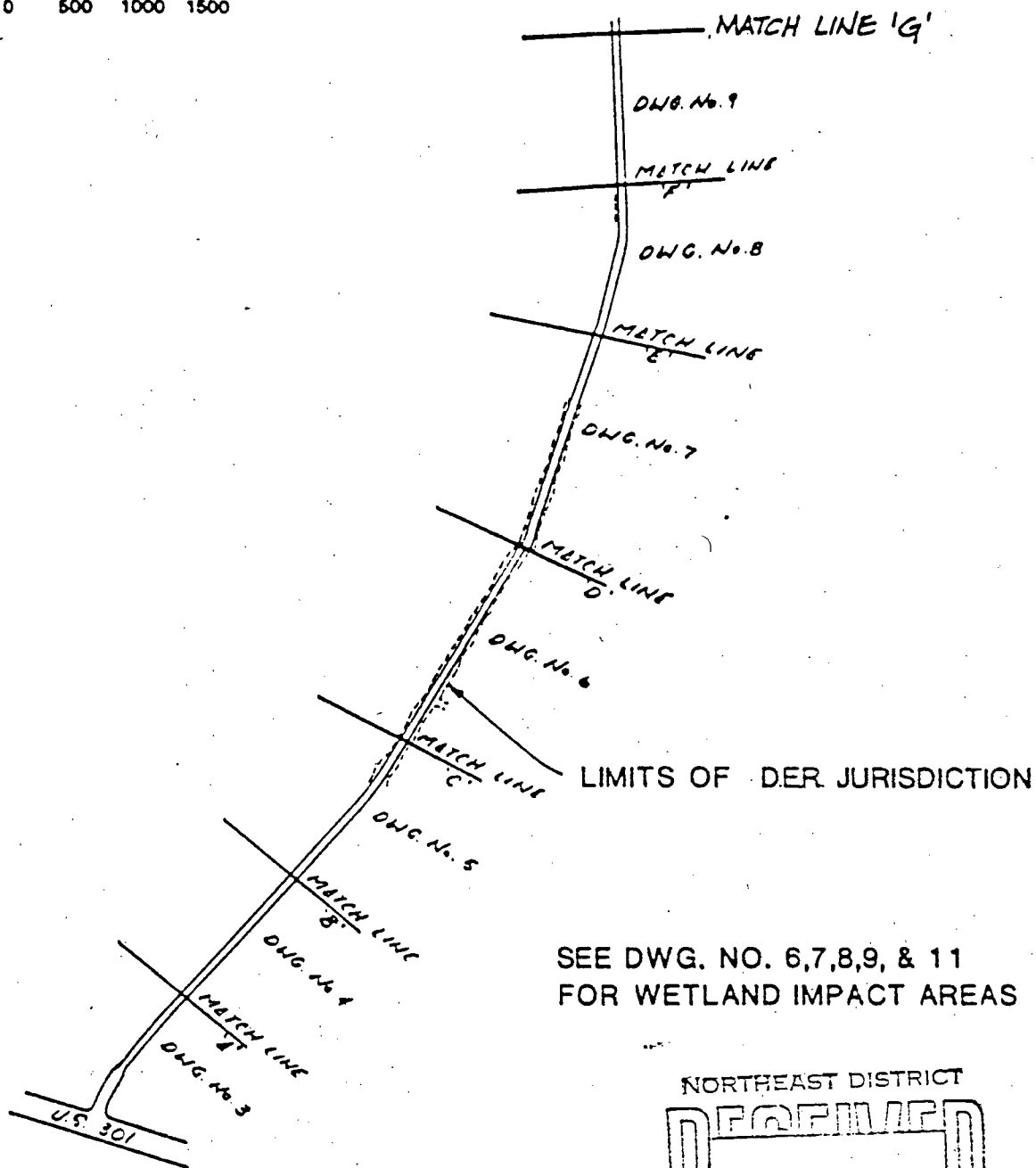
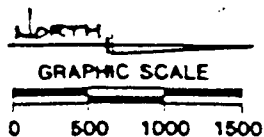
Entrance Road



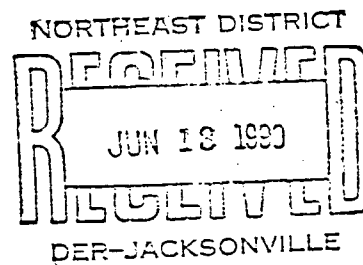
SCALE 1 : 9600 (1" = 800')



NORTHEAST DISTRICT
RECEIVED
JUN 18 1990
RECEIVED
DER-JACKSONVILLE



SEE DWG. NO. 6, 7, 8, 9, & 11
FOR WETLAND IMPACT AREAS



England-Thims
& Miller, Inc.

SITE PLAN
ENTRANCE ROAD

TRAIL RIDGE LANDFILL
TRAIL RIDGE LANDFILL, INC.

PROJ. NO. E89-113

DATE JUNE 11, 1990

SCALE SEE GRAPHIC

DRAWING NO. 3

DER

Sp. control
6-11-90

200 100 0 200
GRAPHIC SCALE

NO D.E.R. IMPACTS THIS SHEET

MATCH LINE 'A'

NORTH

EXISTING TRAIL ROAD

PROPOSED PAVED ENTRANCE ROAD

NORTHEAST DISTRICT
RECEIVED
JUN 18 1990
DER-JACKSONVILLE

U.S. 301

LEGEND

LIMITS OF CONSTRUCTION
D.E.R. WETLAND IMPACT
PROPOSED 24' ASPHALT PVMT.

TOTAL DEPARTMENT OF ENVIRONMENTAL
REGULATION WETLAND IMPACTS
1.61 ACRES TOTAL FILL 5384 C.Y.



England, Thims
& Miller, Inc.

SITE PLAN

TRAIL RIDGE LANDFILL
TRAIL RIDGE LANDFILL, INC.

PROJ. NO. 89-113

DATE JUNE 11, 1990

SCALE GRAPHIC

DRAWING NO. 4

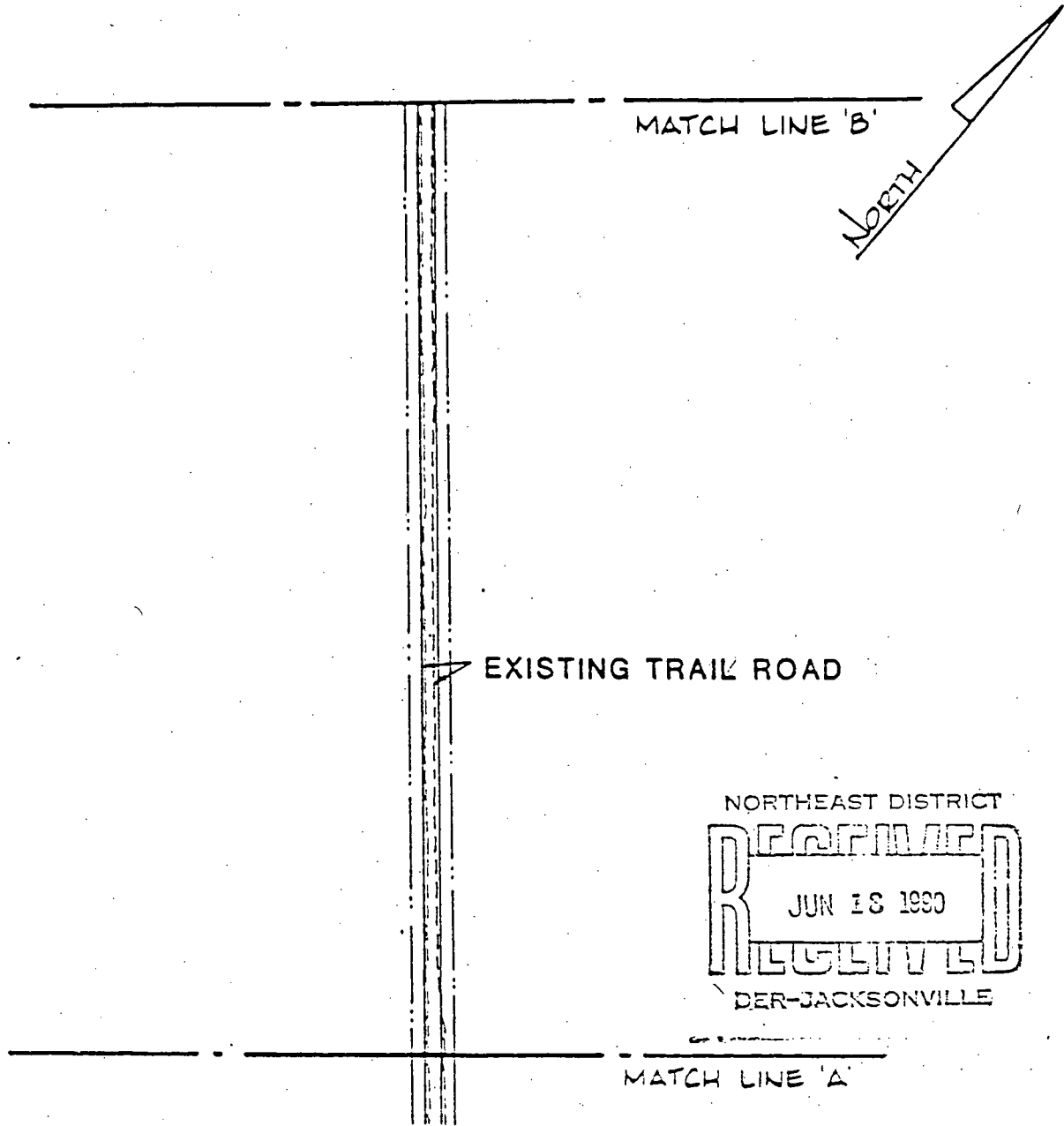
DER

Handwritten signature
4-11-90

200 100 0

GRAPHIC SCALE

NO D.E.R. IMPACTS THIS SHEET



NORTHEAST DISTRICT

RECEIVED

JUN 18 1990

DER-JACKSONVILLE

LEGEND

LIMITS OF CONSTRUCTION
D.E.R. WETLAND IMPACT
PROPOSED 24' ASPHALT PYMT.



England-Thims
& Miller, Inc.

SITE PLAN

TRAIL RIDGE LANDFILL
TRAIL RIDGE LANDFILL, INC.

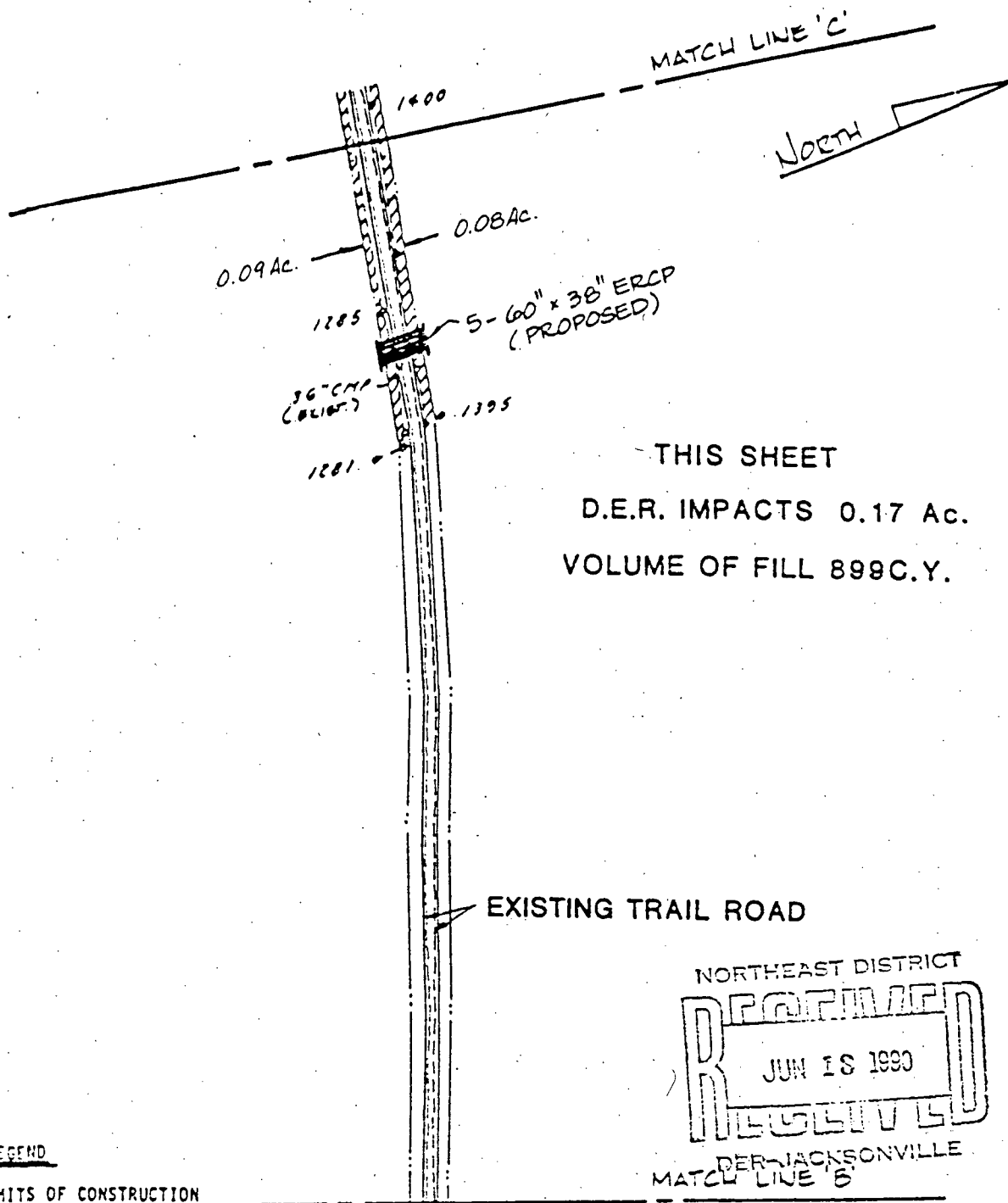
PROJ. NO. 89-113
DATE JUNE 11, 1990
SCALE GRAPHIC
DRAWING NO. 5

DER

Handwritten signature

6-11-90

200 100 0 50
GRAPHIC SCALE



THIS SHEET
D.E.R. IMPACTS 0.17 AC.
VOLUME OF FILL 898 C.Y.

EXISTING TRAIL ROAD

NORTHEAST DISTRICT
RECEIVED
JUN 18 1990
DER-JACKSONVILLE
MATCH LINE B

LEGEND

LIMITS OF CONSTRUCTION
D.E.R. WETLAND IMPACT
PROPOSED 24' ASPHALT PVMT.



England-Thims
& Miller, Inc.

SITE PLAN

TRAIL RIDGE LANDFILL
TRAIL RIDGE LANDFILL, INC.

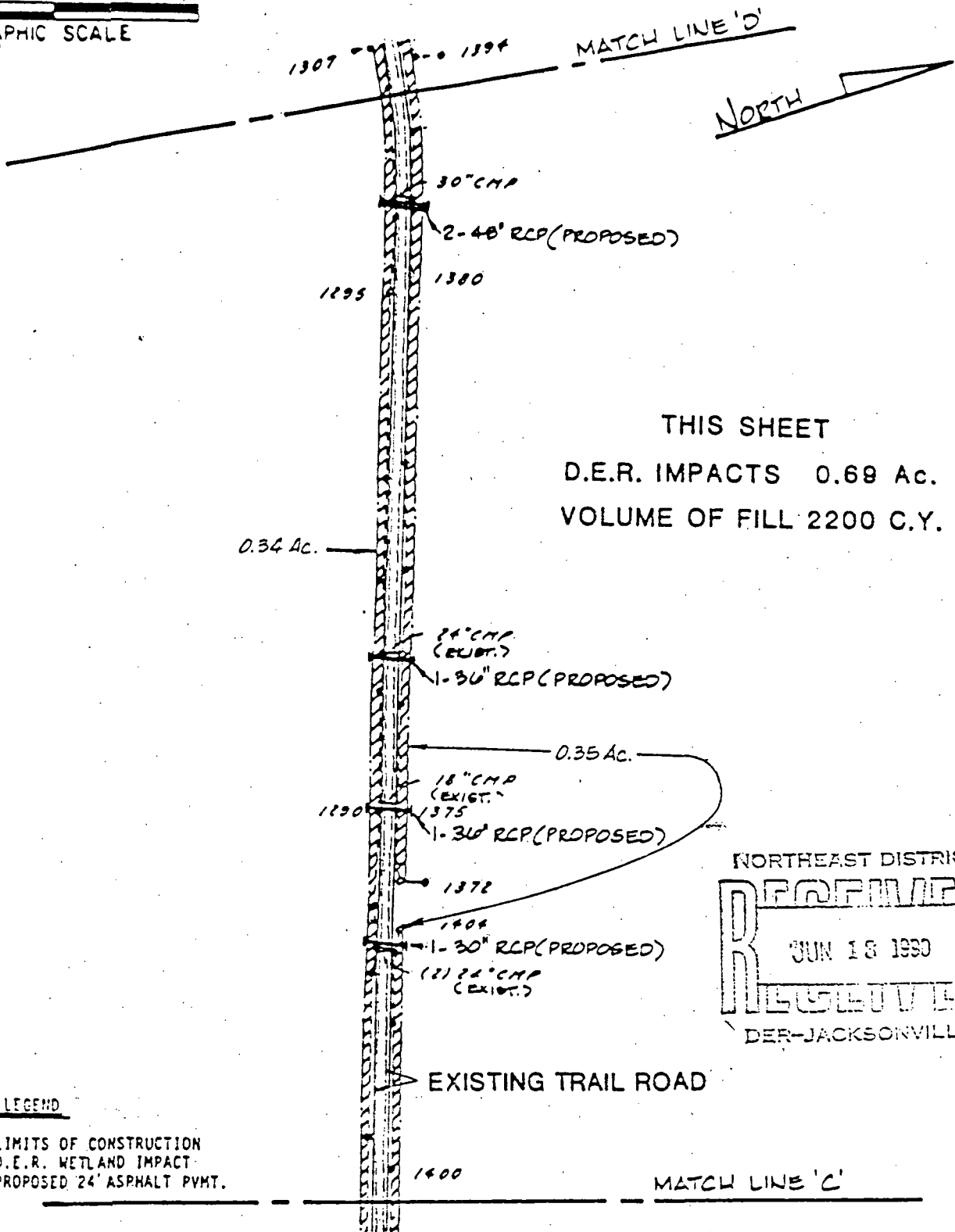
PROJ. NO. 89-113
DATE JUNE 11, 1990
SCALE GRAPHIC
DRAWING NO. 6

DER

Lyman
6-11-90

200 100 0 100

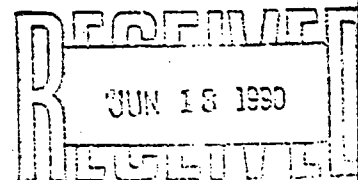
GRAPHIC SCALE



LEGEND

- LIMITS OF CONSTRUCTION
- D.E.R. WETLAND IMPACT
- PROPOSED 24' ASPHALT PVMT.

NORTHEAST DISTRICT



DER-JACKSONVILLE



England-Thims
& Miller, Inc.

SITE PLAN

TRAIL RIDGE LANDFILL
TRAIL RIDGE LANDFILL, INC.

PROJ. NO. 89-113

DATE JUNE 11, 1990

SCALE GRAPHIC

DRAWING NO. 7

DER

Handwritten signature
6-11-90

200 100 0 200

GRAPHIC SCALE

MATCH LINE 'E'



0.17 Ac.

1300

EXISTING TRAIL ROAD

1385

0.21 Ac.

1310

1390

1307

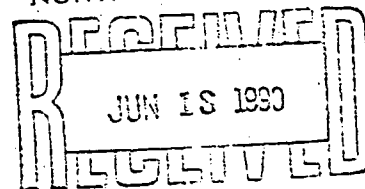
1394

LEGEND

- LIMITS OF CONSTRUCTION
- //// D.E.R. WETLAND IMPACT
- ===== PROPOSED 24' ASPHALT PYMT.

THIS SHEET
D.E.R. IMPACTS 0.38 Ac.
VOLUME OF FILL 1292 C.Y.

NORTHEAST DISTRICT



DER-JACKSONVILLE

MATCH LINE 'D'



England-Thims
& Miller, Inc.

SITE PLAN

TRAIL RIDGE LANDFILL
TRAIL RIDGE LANDFILL, INC.

PROJ. NO. 89-113

DATE JUNE 11, 1990

SCALE GRAPHIC

DRAWING NO. 8

DER

Handwritten signature
6-11-90

200 100 0 200

GRAPHIC SCALE

NORTH

MATCH LINE 'F'

0.06 AC.
1335
1337
1340
(2) 36" CMP
346 (EXIST)
357
40' RCP (PROPOSED)
0.01 AC.

THIS SHEET
D.E.R. IMPACTS 0.07 AC.
VOLUME OF FILL 68 C.Y.

EXISTING TRAIL ROAD

NORTHEAST DISTRICT

RECEIVED
JUN 18 1990
DER-JACKSONVILLE

MATCH LINE 'E'

LEGEND

LIMITS OF CONSTRUCTION
D.E.R. WETLAND IMPACT
PROPOSED 24' ASPHALT PYMT.



England-Thims
& Miller, Inc.

SITE PLAN

TRAIL RIDGE LANDFILL
TRAIL RIDGE LANDFILL, INC.

PROJ. NO. 89-113

DATE JUNE 11, 1990

SCALE GRAPHIC

DRAWING NO. 9

DER

Handwritten signature
6-11-90

200 100 0 200

GRAPHIC SCALE

NORTH

PROPERTY LINE

MATCH LINE 'G'

EXISTING TRAIL ROAD

NORTHEAST DISTRICT

RECEIVED
JUN 18 1990

DER-JACKSONVILLE

MATCH LINE 'F'

LEGEND

LIMITS OF CONSTRUCTION
D.E.R. WETLAND IMPACT
PROPOSED 24' ASPHALT PVMT.

THIS SHEET
NO D.E.R. IMPACTS



England-Thims
& Miller, Inc.

SITE PLAN

TRAIL RIDGE LANDFILL
TRAIL RIDGE LANDFILL, INC.

PROJ. NO. 89-113

DATE JUNE 11, 1990

SCALE GRAPHIC

DRAWING NO.10

DER

England-Thims & Miller
6-11-90

CLASS III

SECTION 18

SECTION 19

THIS SHEET
D.E.R. IMPACTS 0.30 AC.
VOLUME OF FILL 924 C.Y.

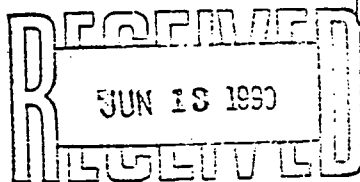
PROPOSED DBL. 48" CMPS.

LIMITS OF JURISDICTION

CLASS I

EXISTING TRAIL ROAD

NORTHEAST DISTRICT



DER-JACKSONVILLE

LEGEND

- LIMITS OF CONSTRUCTION
- D.E.R. WETLAND IMPACT
- PROPOSED 24" ASPHALT PAVT.

SITE PLAN

TRAIL RIDGE LANDFILL
TRAIL RIDGE LANDFILL, INC.

England-Thimby
& Miller, Inc.

Consulting & Design Engineers
301 St. Johns Bluff Rd. SE, Jacksonville, FL 32216

PROJ. NO. 89-113

DATE JUNE 11, 1990

SCALE GRAPHIC

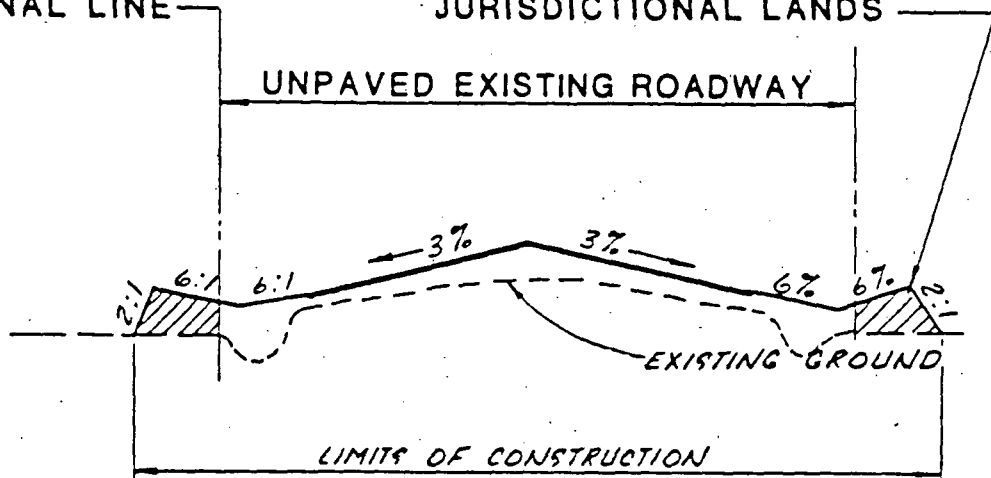
DRAWING NO. 11

DER

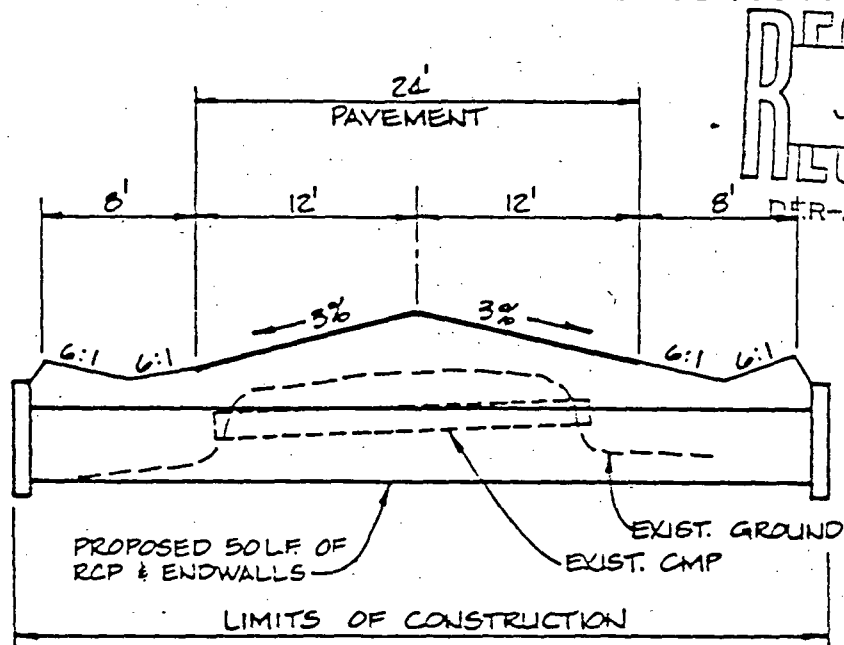
Handwritten signature and date 10-11-92

D.E.R.
JURISDICTIONAL LINE

IMPACTS TO D.E.R.
JURISDICTIONAL LANDS



TYPICAL SECTION WHERE
IMPACTING D.E.R. JURISDICTION



THE EAST DISTRICT
RECEIVED
JUN 13 1990
DER-JACKSONVILLE

TYPICAL CULVERT REPLACEMENT



England-Thims
& Miller, Inc.

ROADWAY SECTIONS

TRAIL RIDGE LANDFILL

TRAIL RIDGE LANDFILL, INC.

PROJ. NO. 89-113

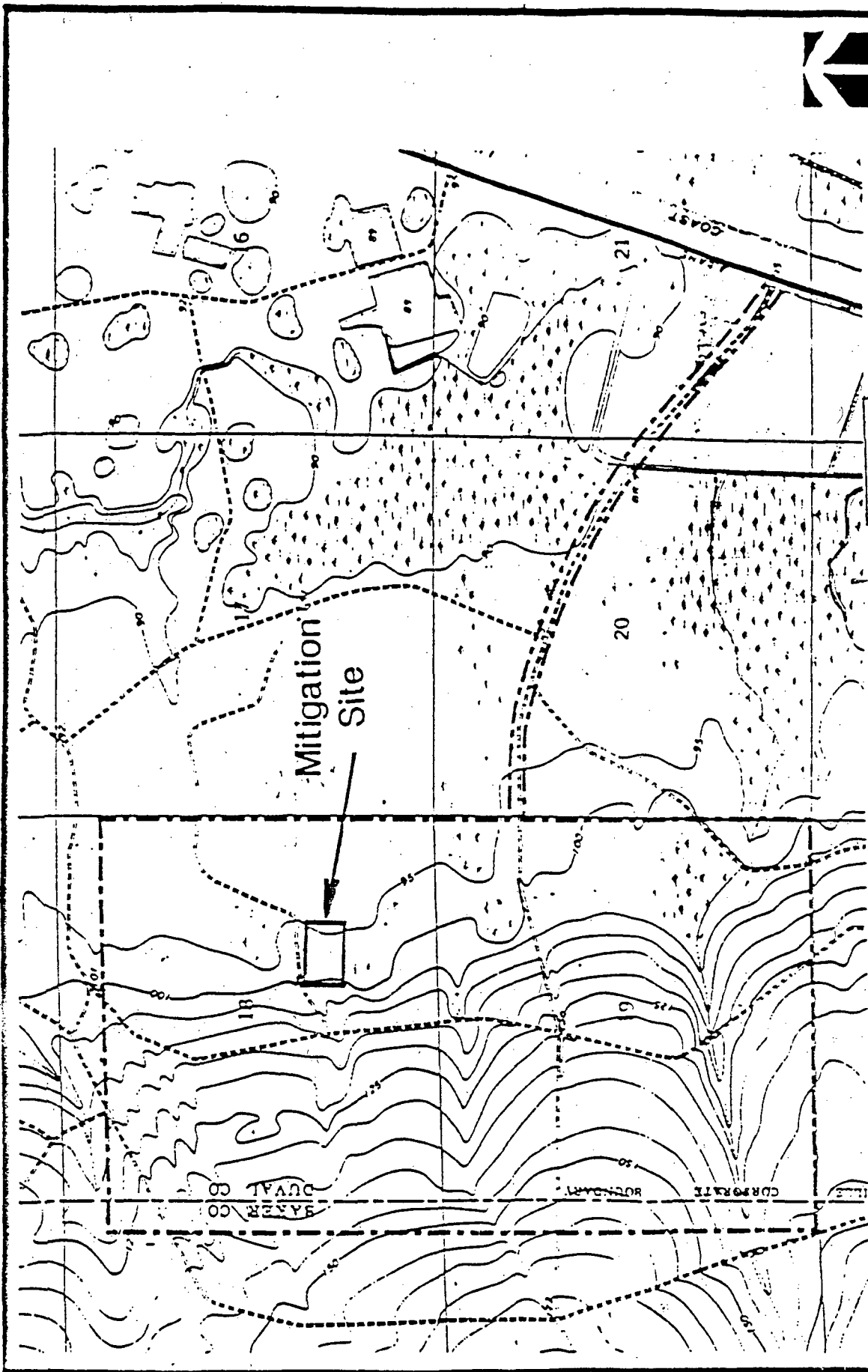
DATE JUNE 11, 1990

SCALE 1'-10'

DRAWING NO. 12

DER

Handwritten signature
6-11-90



Proj No.	89-395
Date	JUNE 11, 1990
Scale	1" = 2000'
Drawing No.	13

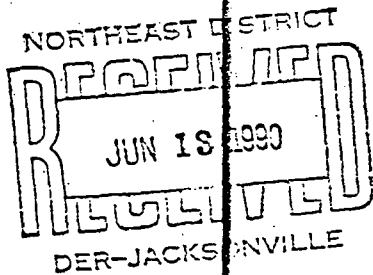
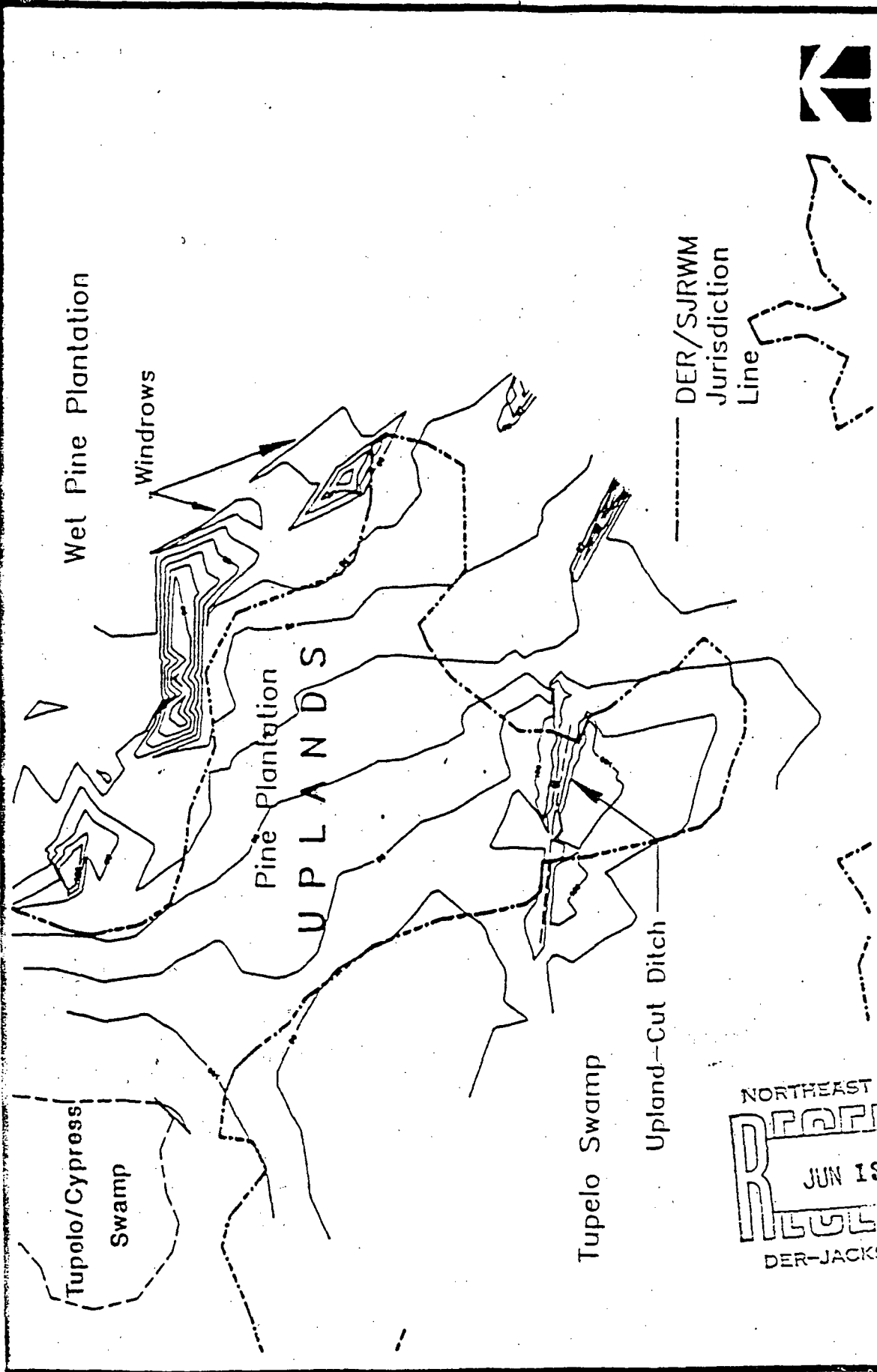
JUN 13 1990
 DER-JACKSONVILLE

Figure 1 Location Map
 Trail Ridge Landfill
 Mitigation Plan

ENVIRONMENTAL
 SERVICES, INC.

DER

6-11-90



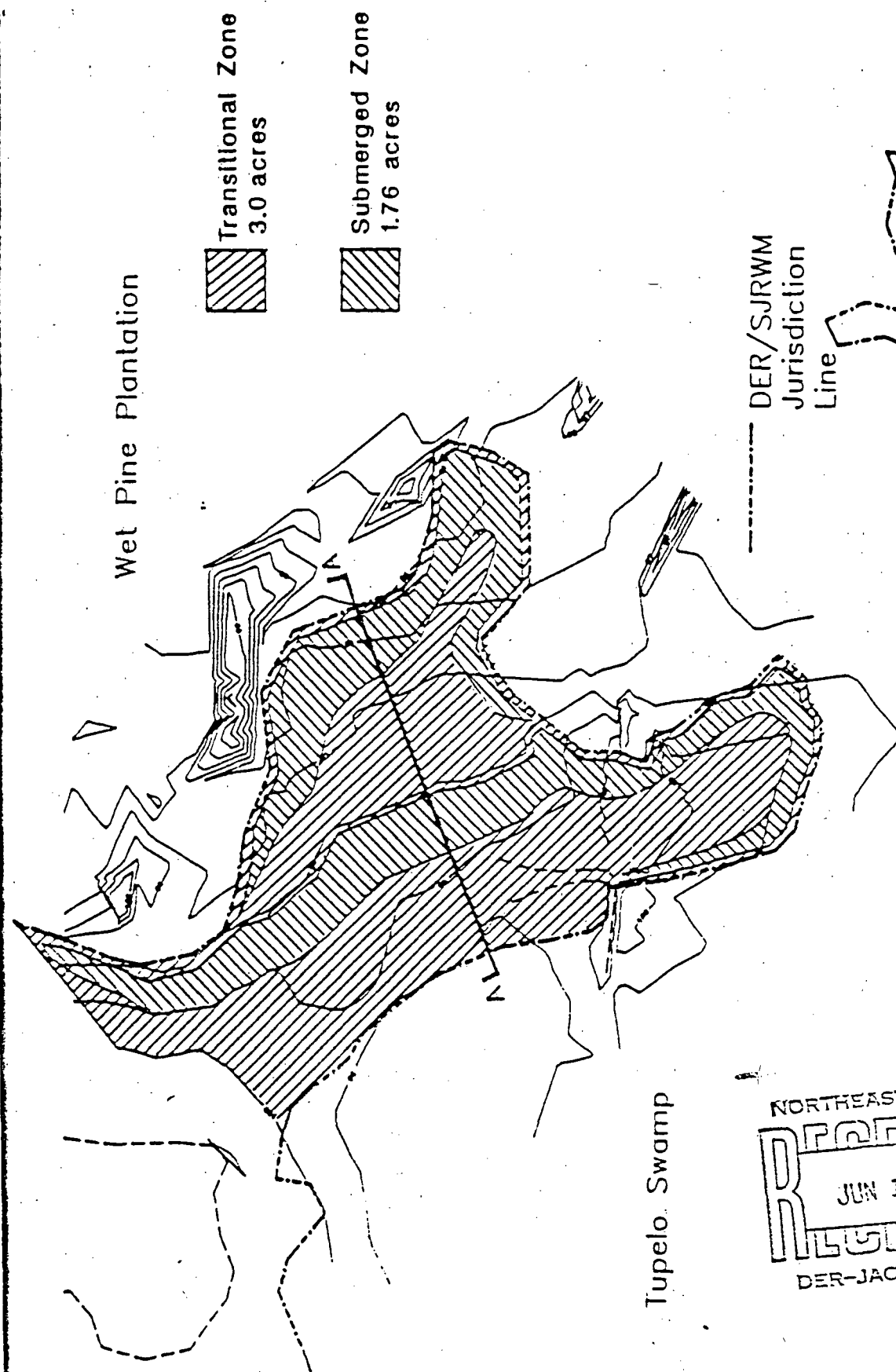
ENVIRONMENTAL
SERVICES, INC.

Figure 3 Existing Conditions
Trail Ridge Landfill
Mitigation Plan

Proj No.	89-395
Date	JUNE 11, 1980
Scale	1"=150'
Drawing No.	15

DER

Spencer
6-11-80



Proj No.	89-395
Date	JUNE 11, 1990
Scale	1"=150'
Drawing No.	16

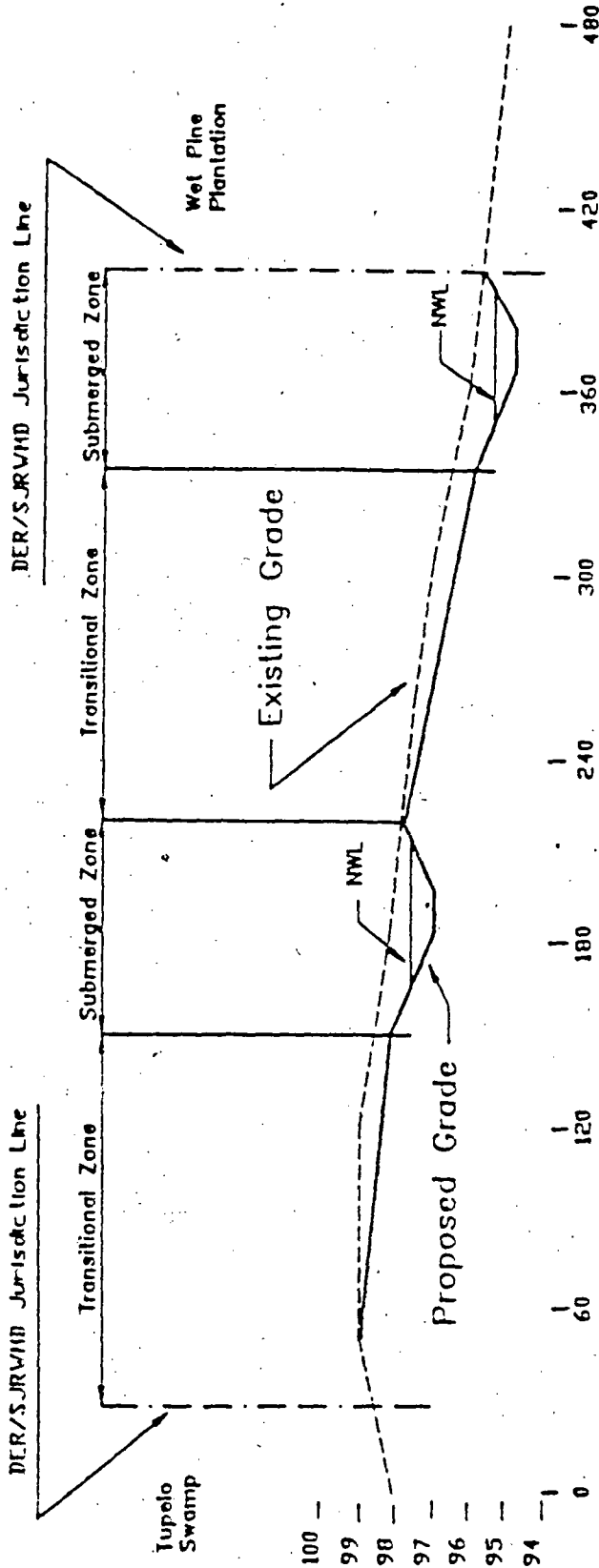
Figure 4 Proposed Conditions
Trail Ridge Landfill
Mitigation Plan

NORTHEAST DISTRICT
RECEIVED
JUN 13 1990
DER-JACKSONVILLE

ENVIRONMENTAL
SERVICES, INC.

DER

Spencer
6-11-90



Proposed Planting Schedule

Transitional Zone	Submerged Zone
Red Maple Sweetgum Laurel Oak Wax Myrtle Fetterbush	Cypress Tupelo Sweet Bay Buttonbush Virginia Willow

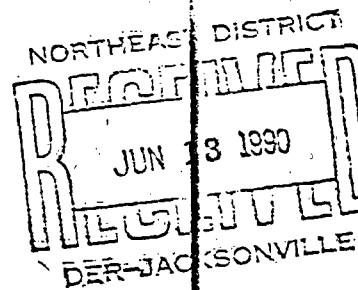


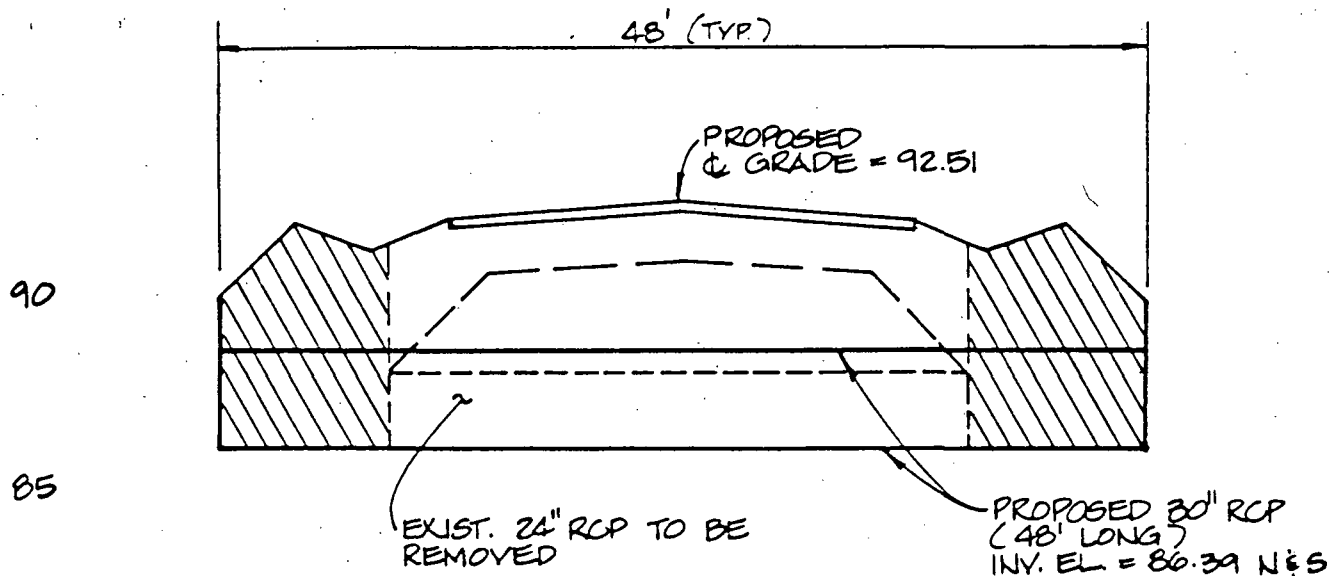
Figure 5 Mitigation Cross-Section
Trail Ridge Landfill
Mitigation Plan

Proj No.	89-395
Date	JUNE 11, 1990
Scale	as shown
Drawing No.	17

ENVIRONMENTAL
SERVICES, INC.

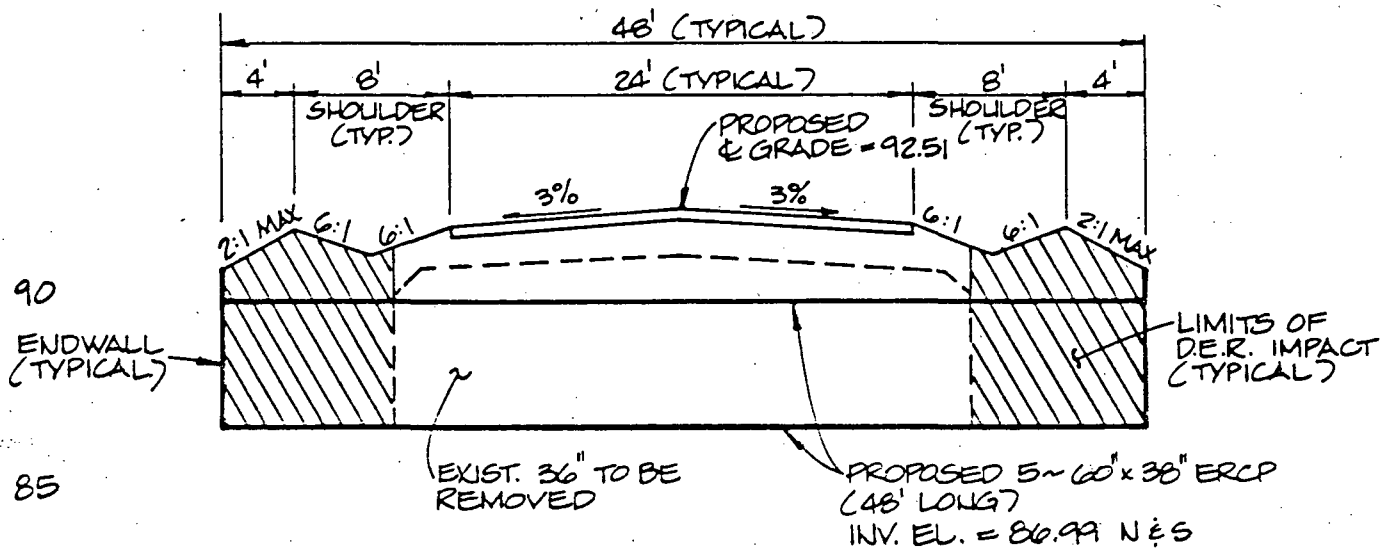
DER

[Signature]
11-11-90



STA. 49 + 03

NORTHEAST DISTRICT
 RECEIVED
 JUL 18 1990
 DER-JACKSONVILLE



STA. 42 + 87

7-14-90 ADDED X-SECT'S PER D.E.R.

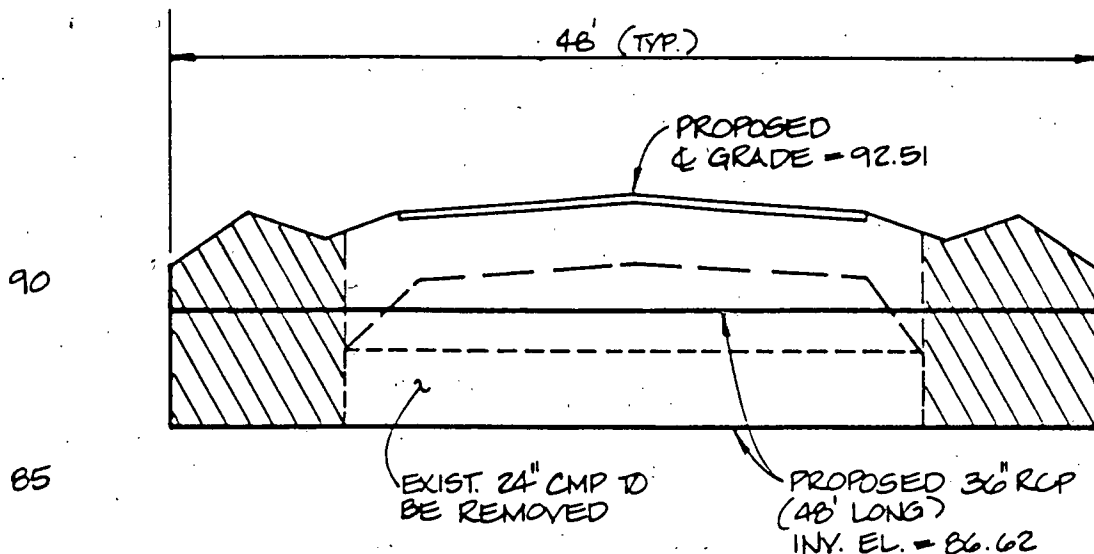
England-Thimby
 & Miller, Inc.
 Consulting & Design Engineers

CULVERT SECTIONS
 TRAIL RIDGE LANDFILL
 TRAIL RIDGE LANDFILL, INC.

PROJ. NO. 89-113
 DATE JULY 14, 1990
 SCALE 1" = 10'
 DRAWING NO. 18

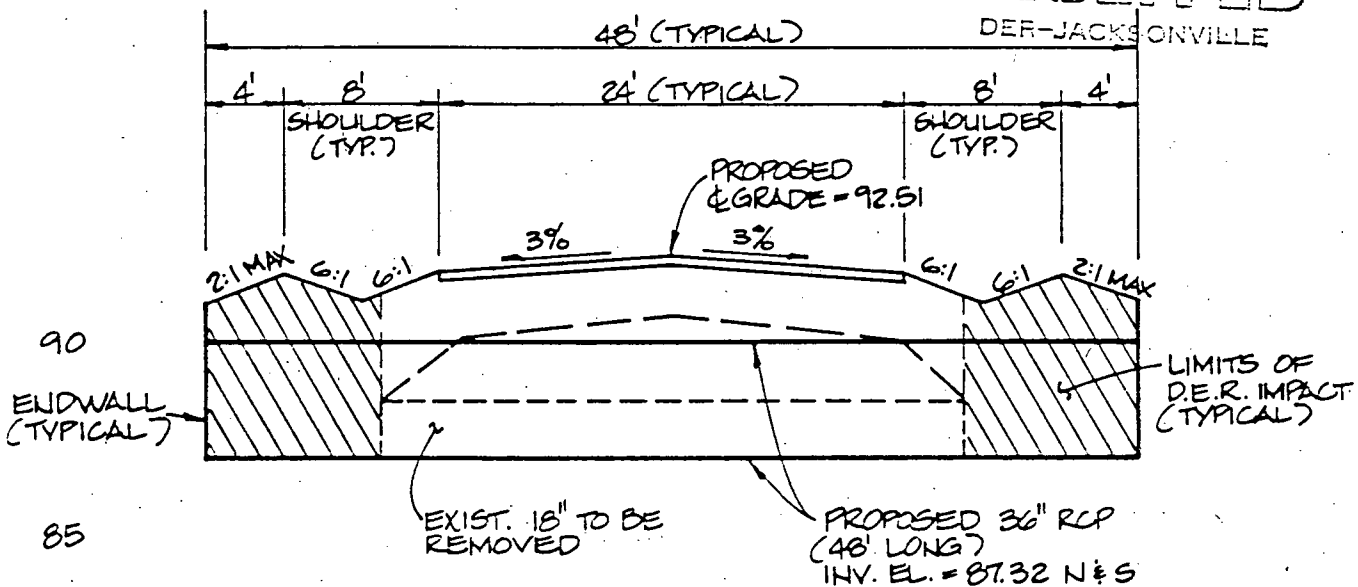
DER

Handwritten signature: D. Miller
 7-17-90



STA. 53 + 01

NORTHEAST DISTRICT
RECEIVED
JUL 18 1990
REGISTERED
DER-JACKSONVILLE



STA. 50 + 98

7-14-90 ADDED X-SECT'S PER. D.E.R.

England-Thims
& Miller, Inc.
Consulting & Design Engineers

CULVERT SECTIONS

TRAIL RIDGE LANDFILL
TRAIL RIDGE LANDFILL, INC.

PROJ. NO. 89-113

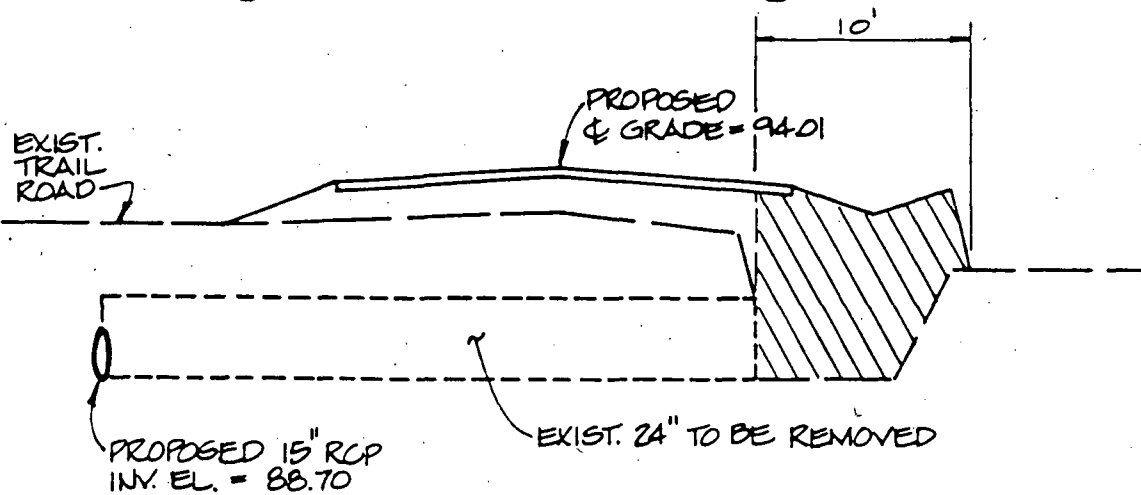
DATE JULY 14, 1990

SCALE 1"=10'

DRAWING NO. 19,

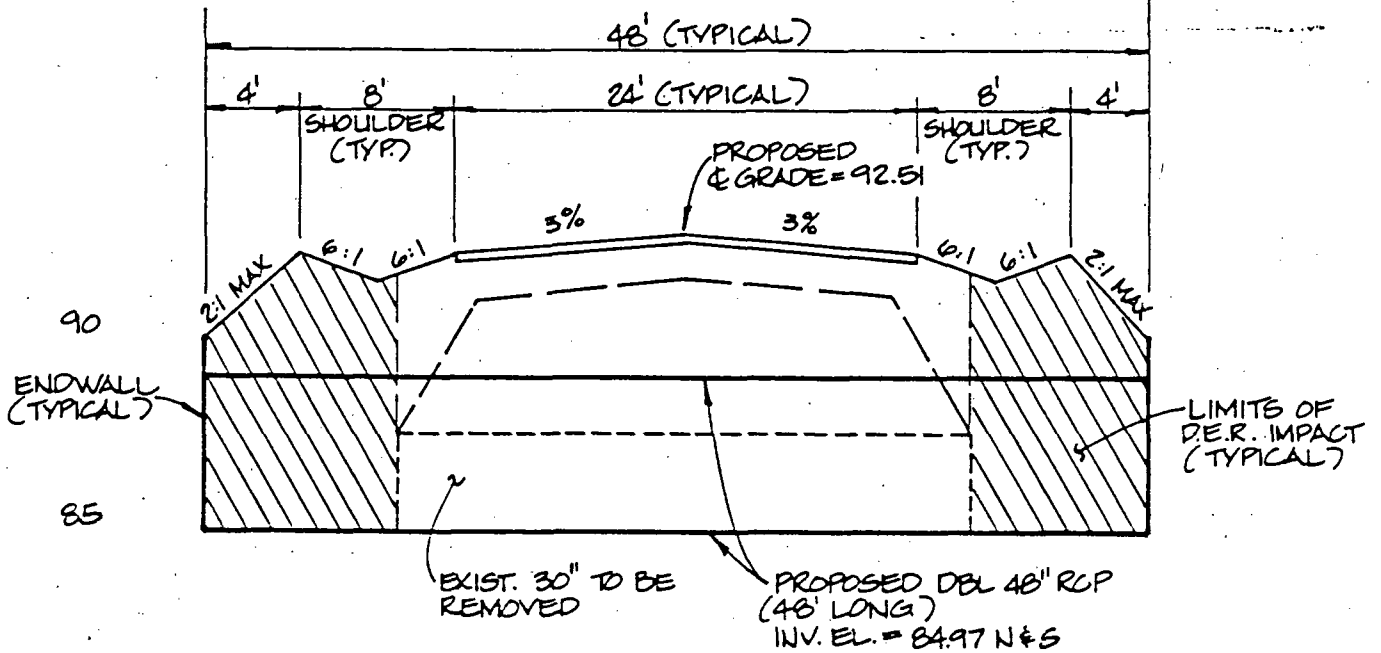
DER

Handwritten signature/initials



STA. 76 + 70

NORTHEAST DISTRICT
RECEIVED
 JUL 16 1990
RECEIVED
 DER-JACKSONVILLE



STA. 59 + 04

7-14-90 ADDED X-SECT'S PER DER.



CULVERT SECTIONS
TRAIL RIDGE LANDFILL
 TRAIL RIDGE LANDFILL, INC.

PROJ. NO. 89-113
 DATE JULY 14, 1990
 SCALE 1"=10'
 DRAWING NO. 20

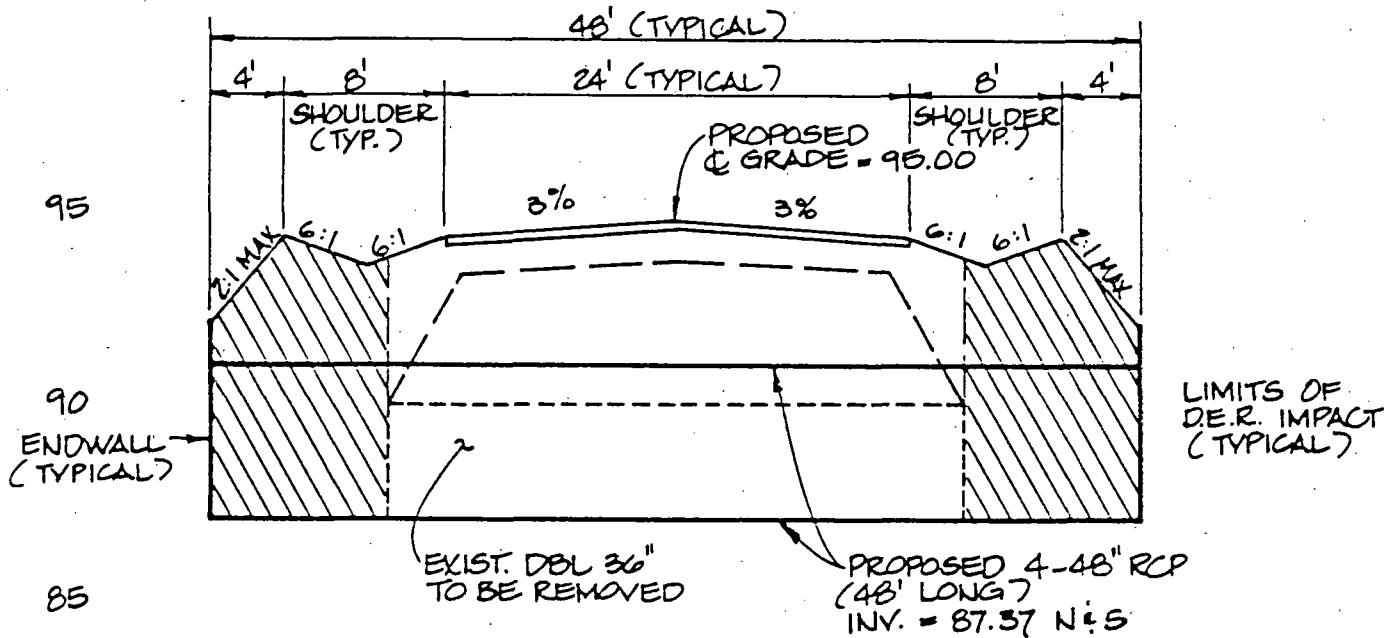
DER

Handwritten signature/initials

NORTHEAST DISTRICT

RECEIVED
JUL 16 1990
RECEIVED

DER-JACKSONVILLE



STA. 85 + 00

7-14-90 ADDED X-SECT.'S PER D.E.R.

England-Thimby
& Miller, Inc.
Consulting & Design Engineers

CULVERT SECTIONS

TRAIL RIDGE LANDFILL
TRAIL RIDGE LANDFILL, INC.

PROJ. NO. 89-113

DATE JULY 14, 1990

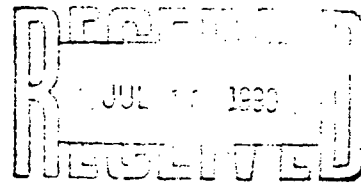
SCALE 1" 10'

DRAWING NO. 21

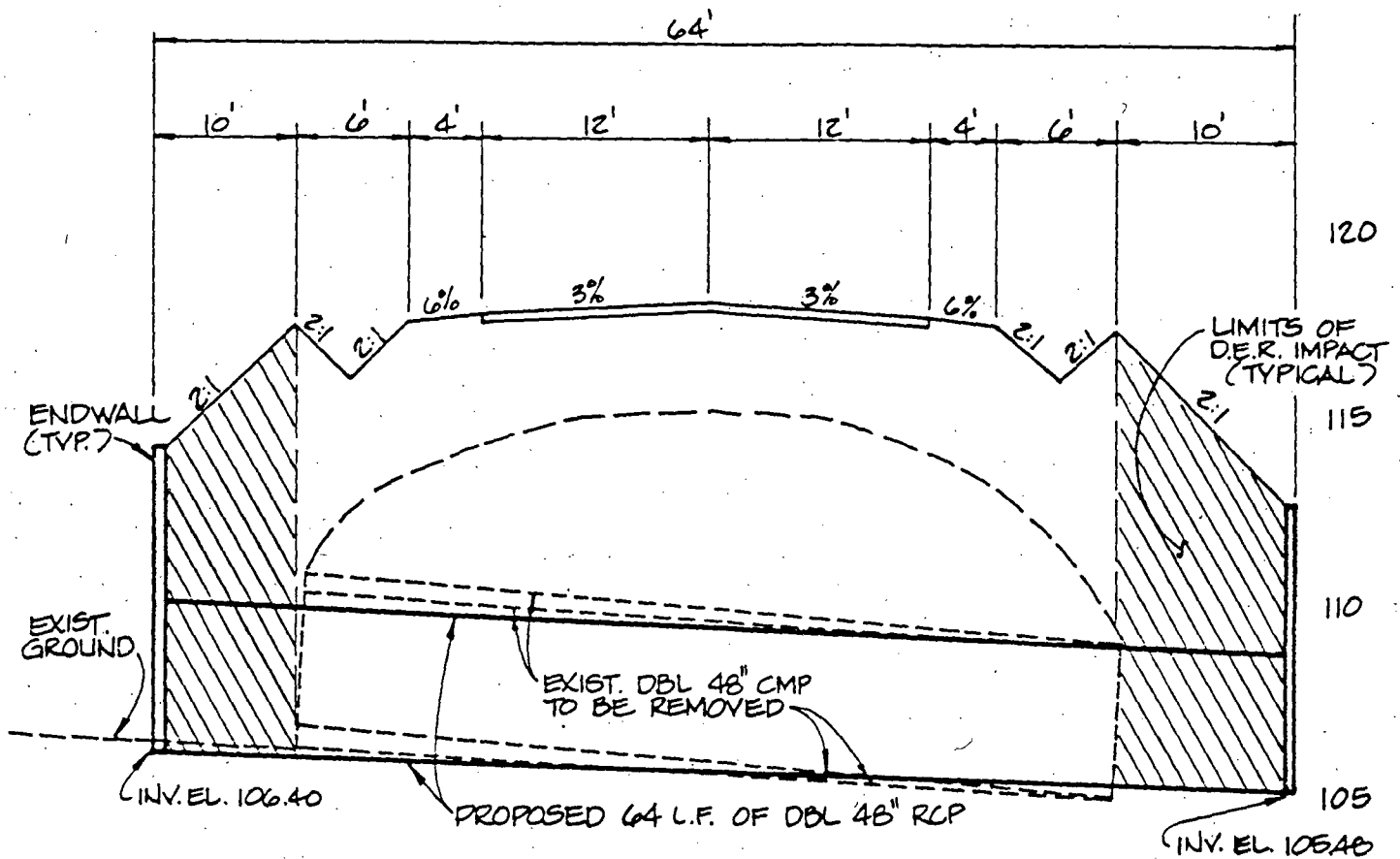
DER

[Handwritten signature]

NORTHEAST DISTRICT



DER-JACKSONVILLE



ROAD CROSSING BETWEEN CLASS I & CLASS III

7-14-90 ADDED X-SECT.'S PER D.E.R.



CULVERT SECTIONS

TRAIL RIDGE LANDFILL
TRAIL RIDGE LANDFILL, INC.

PROJ. NO.	89-113
DATE	JULY 14, 1990
SCALE	1" = 10'
DRAWING NO.	22

DER

Handwritten signature/initials

A PORTION OF SECTIONS 17, 16 AND 20
TOGETHER WITH SECTION 19, ALL LYING
IN TOWNSHIP 3 SOUTH, RANGE 23 EAST,
JACKSONVILLE, DUVAL COUNTY, FLORIDA,
BEING MORE PARTICULARLY DESCRIBED BY

I have

[illegible]

GRAPHIC SCALE

(IN FACT)

[illegible]

NORTH EAST DISTRICT
 JUN 18 1930
 DEER JACKSONVILLE



SUNSHINE STATE SURVEYORS, INC.

1000 N. W. 10th Ave., Suite 1000
 Fort Lauderdale, FL 33311
 Phone: (305) 555-1234
 Fax: (305) 555-5678
 E-mail: info@sunshinestate.com

PROJ. NAME TRAIL RIDGE - PLAN "A"

PROJ. NO. 89-113-9

LEAKAGE RATE CALCULATIONS FOR LINER ANALYSIS

LATERAL DRAINAGE FROM LAYER 4 (PER H.E.L.P. MODEL)

LARGEST AVERAGE MONTHLY VALUE (SEPT.) = 4.0533 IN/MTH

AVERAGE ANNUAL TOTAL = 16.9584 IN/YEAR

$$4.0533 \text{ IN/MTH} > 16.9584 \text{ IN/YR}$$

$$4.0533 \text{ IN/MTH} = 3.9 \times 10^{-8} \text{ M/SEC}$$

$$Q (\text{IMPINGEMENT RATE}) = \underline{3.9 \times 10^{-8} \text{ M/SEC}}$$

$$H = L \left(\sqrt{\frac{Q}{K} + \tan^2 \beta} - \tan \beta \right)$$

H = HEAD ON PRIMARY DRAINAGE LAYER

Q = IMPINGEMENT RATE ($3.9 \times 10^{-8} \text{ M/SEC}$)

K = HYDRAULIC CONDUCTIVITY OF GEODRAIN ($19.6 \text{ cm/SEC} \approx 0.2 \text{ M/SEC}$)

$\tan \beta$ = BASE SLOPE ($2\% = 0.02$)

L = DRAINAGE LENGTH ($150 \text{ FT} = 45.72 \text{ M} \approx 46 \text{ M}$)

$$H = 46 \left(\sqrt{\frac{3.9 \times 10^{-8}}{0.2} + (0.02)^2} - 0.02 \right)$$

$$= 0.00022 \text{ M}$$

$$= \underline{0.0088 \text{ IN}}$$

PROJ. NAME TRAIL RIDGEPROJ. NO. 89-113-9

ASSUMPTION: 1 HOLE/AC

$$AREA = 0.1 \text{ CM}^2 = 1 \times 10^{-5} \text{ M}^2$$

$$Q = 0.6 A \sqrt{2gH}$$

Q = LEAKAGE RATE THROUGH PRIMARY LINER

A = AREA OF HOLE ($1 \times 10^{-5} \text{ M}^2$)

$$g = 9.8 \text{ M/SEC}$$

H = HEAD ($2.2 \times 10^{-4} \text{ M}$ - SEE PREVIOUS SHEET)

$$Q = 0.6 (1 \times 10^{-5}) \sqrt{2(9.8)(2.2 \times 10^{-4})}$$

$$= 3.94 \times 10^{-7} \text{ M}^3/\text{SEC}/\text{HOLE}$$

$$3.94 \times 10^{-7} \text{ M}^3/\text{SEC}/\text{HOLE} \times 1 \text{ HOLE}/\text{AC} \times 1 \text{ AC}/4047 \text{ M}^2$$

$$Q = 9.74 \times 10^{-11} \text{ M}^3/\text{SEC}$$

$$\underline{Q = 9 \text{ GAL}/\text{AC}/\text{DAY}}$$

FOR CONSERVATIVE MEASURES, ASSUME THE GEODRAIN IS SATURATED.
HEAD ON PRIMARY LINER = 0.22 IN = 0.0058 M

$$Q = 0.6 (1 \times 10^{-5}) \sqrt{2(9.8)(0.0058)}$$

$$= 2.02 \times 10^{-6} \text{ M}^3/\text{SEC} \div 4047$$

$$= 5.0 \times 10^{-10} \text{ M}^3/\text{SEC}$$

$$\underline{Q = 46.2 \text{ GAL}/\text{AC}/\text{DAY}}$$

TRAIL RIDGE LANDFILL (PLAN A) - FINAL COVER ANALYSIS (2% SLOPE)
TYPE I SOLID WASTE
E89 - 113 - 9 SEPTEMBER 7, 1990

FAIR GRASS

LAYER 1

VERTICAL PERCOLATION LAYER

THICKNESS	=	6.00 INCHES
POROSITY	=	0.4570 VOL/VOL
FIELD CAPACITY	=	0.1310 VOL/VOL
WILTING POINT	=	0.0580 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0653 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.0010000000475 CM/SEC

LAYER 2

LATERAL DRAINAGE LAYER

THICKNESS	=	18.00 INCHES
POROSITY	=	0.3573 VOL/VOL
FIELD CAPACITY	=	0.1128 VOL/VOL
WILTING POINT	=	0.0580 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0635 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.0007999999798 CM/SEC
SLOPE	=	2.00 PERCENT
DRAINAGE LENGTH	=	850.0 FEET

LAYER 3

BARRIER SOIL LINER

THICKNESS	=	12.00 INCHES
POROSITY	=	0.4300 VOL/VOL
FIELD CAPACITY	=	0.3660 VOL/VOL
WILTING POINT	=	0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2886 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.0000001000000 CM/SEC

LAYER 4

VERTICAL PERCOLATION LAYER

THICKNESS	=	12.00 INCHES
POROSITY	=	0.3573 VOL/VOL
FIELD CAPACITY	=	0.1128 VOL/VOL
WILTING POINT	=	0.0580 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0635 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.0007999999798 CM/SEC

LAYER 5

VERTICAL PERCOLATION LAYER

THICKNESS	=	1200.00 INCHES
POROSITY	=	0.5200 VOL/VOL
FIELD CAPACITY	=	0.2942 VOL/VOL
WILTING POINT	=	0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1554 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.0001999999949 CM/SEC

LAYER 6

VERTICAL PERCOLATION LAYER

THICKNESS	=	24.00 INCHES
POROSITY	=	0.3573 VOL/VOL
FIELD CAPACITY	=	0.1128 VOL/VOL
WILTING POINT	=	0.0580 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0635 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.0007999999798 CM/SEC

LAYER 7

LATERAL DRAINAGE LAYER

THICKNESS	=	0.22 INCHES
POROSITY	=	0.7000 VOL/VOL
FIELD CAPACITY	=	0.0450 VOL/VOL
WILTING POINT	=	0.0200 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0225 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	19.6849994659424 CM/SEC
SLOPE	=	2.00 PERCENT
DRAINAGE LENGTH	=	150.0 FEET

LAYER 8

BARRIER SOIL LINER WITH FLEXIBLE MEMBRANE LINER

THICKNESS	=	0.22 INCHES
POROSITY	=	0.7000 VOL/VOL
FIELD CAPACITY	=	0.0450 VOL/VOL
WILTING POINT	=	0.0200 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0225 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	19.6849994659424 CM/SEC
LINER LEAKAGE FRACTION	=	0.00000000

GENERAL SIMULATION DATA

SCS RUNOFF CURVE NUMBER	=	95.00
TOTAL AREA OF COVER	=	43560. SQ FT
EVAPORATIVE ZONE DEPTH	=	30.00 INCHES
UPPER LIMIT VEG. STORAGE	=	9.1734 INCHES
INITIAL VEG. STORAGE	=	1.5348 INCHES

SOIL WATER CONTENT INITIALIZED BY USER.

CLIMATOLOGICAL DATA

USER SPECIFIED RAINFALL WITH SYNTHETIC DAILY TEMPERATURES AND
SOLAR RADIATION FOR JACKSONVILLE FLORIDA

MAXIMUM LEAF AREA INDEX	=	3.30
START OF GROWING SEASON (JULIAN DATE)	=	37
END OF GROWING SEASON (JULIAN DATE)	=	4

NORMAL MEAN MONTHLY TEMPERATURES, DEGREES FAHRENHEIT

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
53.20	55.10	61.30	67.70	74.10	79.00
81.30	81.00	78.20	69.50	60.80	54.80

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

[illegible]

PERCOLATION FROM LAYER 8

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 5

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	52.26 (6.568)	189711.	100.00
RUNOFF	16.139 (3.237)	58586.	30.88
EVAPOTRANSPIRATION	35.716 (4.029)	129650.	68.34
LATERAL DRAINAGE FROM LAYER 2	0.0144 (0.0127)	52.	0.03
PERCOLATION FROM LAYER 3	0.2553 (0.1675)	927.	0.49
LATERAL DRAINAGE FROM LAYER 7	0.0000 (0.0000)	0.	0.00
PERCOLATION FROM LAYER 8	0.0000 (0.0000)	0.	0.00
CHANGE IN WATER STORAGE	0.392 (2.182)	1423.	0.75

PEAK DAILY VALUES FOR YEARS 1 THROUGH 5

	(INCHES)	(CU. FT.)
PRECIPITATION	4.79	17387.7
RUNOFF	3.647	13239.3
LATERAL DRAINAGE FROM LAYER 2	0.0004	1.3
PERCOLATION FROM LAYER 3	0.0050	18.2
HEAD ON LAYER 3	5.7	
LATERAL DRAINAGE FROM LAYER 7	0.0000	0.0
PERCOLATION FROM LAYER 8	0.0000	0.0
HEAD ON LAYER 8	0.0	
SNOW WATER	0.00	0.0

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.2253

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0579

FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(INCHES)	(VOL/VOL)
1	0.74	0.1241
2	1.47	0.0819
3	3.46	0.2886
4	1.70	0.1413
5	186.82	0.1557
6	1.53	0.0636
7	0.00	0.0225
8	0.00	0.0225
SNOW WATER	0.00	

TRAIL RIDGE LANDFILL (PLAN A) - LINER ANALYSIS (150 FT. CELL)
TYPE I SOLID WASTE
E89 - 113 - 9 SEPTEMBER 7, 1990

BARE GROUND

LAYER 1

VERTICAL PERCOLATION LAYER

THICKNESS	=	6.00 INCHES
POROSITY	=	0.3573 VOL/VOL
FIELD CAPACITY	=	0.1128 VOL/VOL
WILTING POINT	=	0.0580 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0635 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.0007999999798 CM/SEC

LAYER 2

VERTICAL PERCOLATION LAYER

THICKNESS	=	72.00 INCHES
POROSITY	=	0.5200 VOL/VOL
FIELD CAPACITY	=	0.2942 VOL/VOL
WILTING POINT	=	0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1554 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.0001999999949 CM/SEC

LAYER 3

VERTICAL PERCOLATION LAYER

THICKNESS	=	24.00 INCHES
POROSITY	=	0.3573 VOL/VOL
FIELD CAPACITY	=	0.1128 VOL/VOL
WILTING POINT	=	0.0580 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0635 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.0007999999798 CM/SEC

LAYER 4

LATERAL DRAINAGE LAYER

THICKNESS	=	0.22 INCHES
POROSITY	=	0.7000 VOL/VOL
FIELD CAPACITY	=	0.0450 VOL/VOL
WILTING POINT	=	0.0200 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0225 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	19.6849994659424 CM/SEC
SLOPE	=	2.00 PERCENT
DRAINAGE LENGTH	=	150.0 FEET

LAYER 5

BARRIER SOIL LINER WITH FLEXIBLE MEMBRANE LINER

THICKNESS	=	0.22 INCHES
POROSITY	=	0.7000 VOL/VOL
FIELD CAPACITY	=	0.0450 VOL/VOL
WILTING POINT	=	0.0200 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0225 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.0000001000000 CM/SEC
LINER LEAKAGE FRACTION	=	0.00000000

GENERAL SIMULATION DATA

SCS RUNOFF CURVE NUMBER	=	83.31
TOTAL AREA OF COVER	=	43560. SQ FT
EVAPORATIVE ZONE DEPTH	=	10.00 INCHES
POTENTIAL RUNOFF FRACTION	=	0.000000
UPPER LIMIT VEG. STORAGE	=	4.2238 INCHES
INITIAL VEG. STORAGE	=	1.0026 INCHES

SOIL WATER CONTENT INITIALIZED BY USER.

CLIMATOLOGICAL DATA

SYNTHETIC RAINFALL WITH SYNTHETIC DAILY TEMPERATURES AND
SOLAR RADIATION FOR JACKSONVILLE FLORIDA

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	37
END OF GROWING SEASON (JULIAN DATE)	=	4

NORMAL MEAN MONTHLY TEMPERATURES, DEGREES FAHRENHEIT

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
53.20	55.10	61.30	67.70	74.10	79.00
81.30	81.00	78.20	69.50	60.80	54.80

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	2.60 7.46	3.54 9.03	2.57 8.11	2.82 2.39	3.68 2.64	4.36 3.05
STD. DEVIATIONS	1.70 3.02	2.18 1.53	2.39 1.98	2.31 1.69	2.48 1.98	2.07 1.40
RUNOFF						
TOTALS	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000
STD. DEVIATIONS	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000
EVAPOTRANSPIRATION						
TOTALS	1.510 4.337	2.233 4.350	2.206 4.179	1.557 2.431	2.808 1.692	2.917 2.085
STD. DEVIATIONS	0.597 1.219	0.743 1.467	0.952 0.446	1.139 0.918	1.419 0.761	0.621 0.517
LATERAL DRAINAGE FROM LAYER 4						
TOTALS	0.5972 1.2483	0.8141 2.1088	1.1759 4.0533	0.9616 1.9930	1.0768 0.9967	1.0802 0.8527
STD. DEVIATIONS	0.5245 0.7550	0.5620 1.9844	0.8422 2.4607	0.8089 1.1736	0.7078 0.5880	0.6306 0.5524
PERCOLATION FROM LAYER 5						
TOTALS	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000
STD. DEVIATIONS	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 5

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	52.26 (6.568)	189711.	100.00
RUNOFF	0.000 (0.000)	0.	0.00
EVAPOTRANSPIRATION	32.305 (2.790)	117267.	61.81
LATERAL DRAINAGE FROM LAYER 4	16.9584 (9.7427)	61559.	32.45
PERCOLATION FROM LAYER 5	0.0000 (0.0000)	0.	0.00
CHANGE IN WATER STORAGE	2.998 (7.158)	10884.	5.74

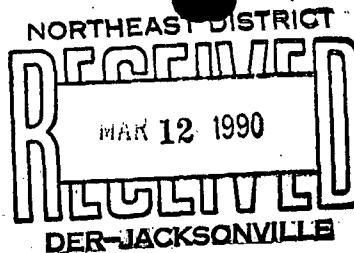
PEAK DAILY VALUES FOR YEARS 1 THROUGH 5

	(INCHES)	(CU. FT.)
PRECIPITATION	4.79	17387.7
RUNOFF	0.000	0.0
LATERAL DRAINAGE FROM LAYER 4	0.3773	1369.6
PERCOLATION FROM LAYER 5	0.0000	0.0
HEAD ON LAYER 5	0.1	
SNOW WATER	0.00	0.0
MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.3749	
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0881	

FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(INCHES)	(VOL/VOL)
1	0.38	0.0635
2	23.05	0.3201
3	4.65	0.1936
4	0.01	0.0586
5	0.00	0.0225
SNOW WATER	0.00	

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



WELL PERMIT

GRANTED TO Trail Ridge Sanitary Landfill, Inc.

500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0253 8-14-1

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E.
(Maxville Quad)

WELL NUMBER J-6761

WELL CONTRACTOR King, W.

LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☐ 11. See attached provisos.

Approved by: _____ Date _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

☐ A Public Supply; see _____, _____, _____

Industrial Use Only _____

☐ Construction of a potable water supply.

Plugging _____

☐ A non-potable water supply.

Other _____

☒ Monitoring

Irrigation and recreation use only _____

ISSUED BY: Don Summerfield

Date 3/8/90

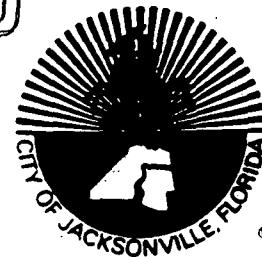
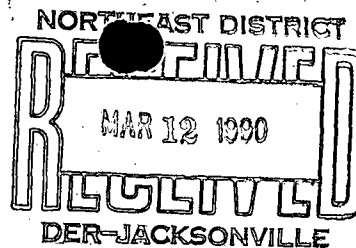
for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:
- 1.) Approval of the BESO Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:
Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
 - 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.
- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:
- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
 - 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
 - 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
 - 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
 - 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
 - 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
 - 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
 - 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



WELL PERMIT

GRANTED TO Trail Ridge Sanitary Landfill, Inc.
500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0252 B-14-S

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E. WELL NUMBER J-6760
(Maxville Quad)

WELL CONTRACTOR King, W. LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____
☐ Construction of a potable water supply.
☐ A non-potable water supply.

Industrial Use Only

Plugging _____

Other _____

☒ Monitoring

Irrigation and recreation use only _____

ISSUED BY: Dan Summerfield

Date 3/6/90

for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESD Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

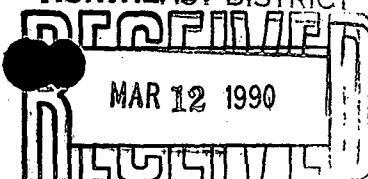
Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.

- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.

- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:

- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.



DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity

WELL PERMIT



GRANTED TO Trail Ridge Sanitary Landfill, Inc.

500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0251 B-13-I

WELL LOCATION Hipps Road

WELL NUMBER J-6759

WELL CONTRACTOR King, W.

LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____

Date _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____
- ☐ Construction of a potable water supply.
- ☐ A non-potable water supply.

Industrial Use Only

Plugging _____

Other _____

☒ Monitoring

Irrigation and recreation use only

ISSUED BY: _____

Date 3/8/90

for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESO Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

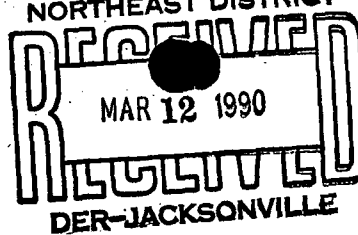
Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.

- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.

- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:

- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.



DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity

WELL PERMIT



GRANTED TO Trail Ridge Sanitary Landfill, Inc.
500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0250 B-13-S

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E.
(Maxville Quad)

WELL NUMBER J-6758

WELL CONTRACTOR King, W.

LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:
APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____
Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:
☐ A Public Supply; see _____, _____, _____ Industrial Use Only
☐ Construction of a potable water supply. Plugging _____
☐ A non-potable water supply. Other _____
☒ Monitoring Irrigation and recreation use only
ISSUED BY: Don Summerville Date 3/8/90
for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESD Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

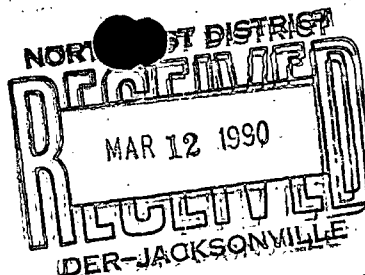
- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.

- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.

- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:

- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



WELL PERMIT

GRANTED TO Trail Ridge Sanitary Landfill, Inc.
500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0249 B-12-I

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E.
(Maxville Quad)

WELL NUMBER J-6757

WELL CONTRACTOR King, W.

LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____
Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____ Industrial Use Only _____
☐ Construction of a potable water supply. _____ Plugging _____
☐ A non-potable water supply. _____ Other _____
☒ Monitoring _____ Irrigation and recreation use only _____

ISSUED BY: Don Summerfield Date 3/8/90
Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESD Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

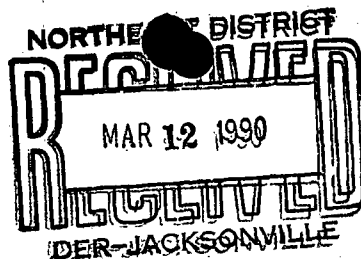
- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.

- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.

- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:

- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



WELL PERMIT

GRANTED TO Trail Ridge Sanitary Landfill, Inc.

500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0248 B-12-S

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E. WELL NUMBER J-6756
(Maxville Quad)

WELL CONTRACTOR King, W. LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____ Industrial Use Only _____
- ☐ Construction of a potable water supply. _____ Plugging _____
- ☐ A non-potable water supply. _____ Other _____
- ☒ Monitoring _____ Irrigation and recreation use only _____

ISSUED BY: Don Summerville Date 3/8/90
for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESD Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

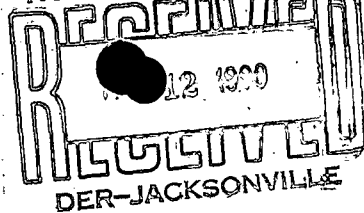
Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.

- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.

- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:

- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.



DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity

WELL PERMIT



GRANTED TO Trail Ridge Sanitary Landfill, Inc.

500 Cypress Creek Road, West

Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0247 B-11-D

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E.
(Maxville Quad)

WELL NUMBER J-6755

WELL CONTRACTOR King, W.

LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____
- ☐ Construction of a potable water supply.
- ☐ A non-potable water supply.

Industrial Use Only

Plugging _____
Other _____

☒ Monitoring

Irrigation and recreation use only

ISSUED BY: Don Sumnerfield

Date 3/6/90

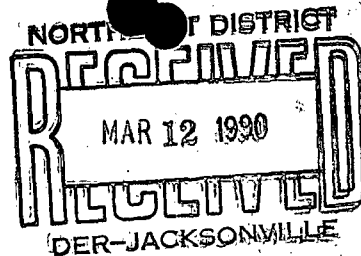
for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:
- 1.) Approval of the BESO Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:
Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
 - 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.
- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:
- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
 - 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
 - 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
 - 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
 - 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
 - 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
 - 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
 - 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



WELL PERMIT EAST DISTRICT

GRANTED TO Trail Ridge Sanitary Landfill, Inc.
500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0246 8-11-I

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E. WELL NUMBER J-6754
(Maxville Quad)

WELL CONTRACTOR King, W. LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

☐ A Public Supply; see _____, _____, _____ Industrial Use Only
☐ Construction of a potable water supply. Plugging _____
☐ A non-potable water supply. Other _____
☒ Monitoring Irrigation and recreation use only _____

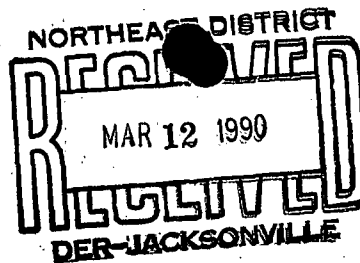
ISSUED BY: Don Summerfield Date 3/8/90

for Manager, Water Conservation Program, Bio-Environmental Services Division.



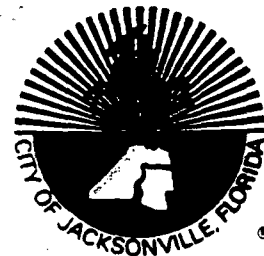
11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:
- 1.) Approval of the BESO Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:
Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
 - 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.
- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:
- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
 - 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
 - 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
 - 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
 - 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
 - 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
 - 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
 - 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.



DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity

WELL PERMIT



GRANTED TO Trail Ridge Sanitary Landfill, Inc.

500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0245 B-11-S

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E. WELL NUMBER J-6753
(Maxville Quad)

WELL CONTRACTOR King, W. LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date: _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____ Industrial Use Only _____
☐ Construction of a potable water supply. Plugging _____
☐ A non-potable water supply. Other _____
☒ Monitoring Irrigation and recreation use only _____

ISSUED BY: Don Sammonsfield Date 3/8/90
for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:
- 1.) Approval of the BESO Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:
Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
 - 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.
- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:
- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
 - 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
 - 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
 - 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
 - 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
 - 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
 - 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
 - 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

WELL PERMIT



PERMIT NUMBER 90-0244 B-10-I

WELL NUMBER J-6752

LICENSE OR BOND NUMBER 2297

APPLICABLE IF CHECKED

1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- X3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- X9. A copy of this permit is given to any future property owner when the property is sold.
10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- X11. See attached provisos.

Administrator, Sanitary Engineering Branch, Public Health

Plugging

Other

Irrigation and recreation use only

Date 3/8/90

for Manager, Water Conservation Program, Bio-Environmental Services Division:

11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:
- 1.) Approval of the BESO Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:
Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
 - 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.
- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:
- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
 - 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
 - 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
 - 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
 - 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
 - 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
 - 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
 - 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity

WELL PERMIT



GRANTED TO Trail Ridge Sanitary Landfill, Inc.

500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0243 B-10-S

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E. WELL NUMBER J-6751
(Maxville Quad)

WELL CONTRACTOR King, W. LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date: _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____
☐ Construction of a potable water supply.
☐ A non-potable water supply.

Industrial Use Only

Plugging _____
Other _____

☒ Monitoring

Irrigation and recreation use only

ISSUED BY: Don Summerfeld Date: 3/8/90
for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESO Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

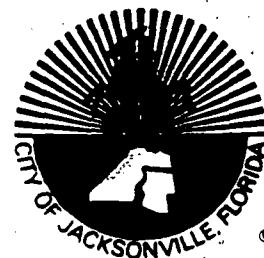
- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.

- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.

- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:

- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DER-JACKSONVILLE
NORTH DISTRICT
RECEIVED
MAR 12 1990
RECEIVED
DER-JACKSONVILLE



500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0242 B-9-I

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E. WELL NUMBER J-6750
(Maxville Quad)

WELL CONTRACTOR King, W.

LICENSE OR BOND NUMBER 2297

1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- X3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- X9. A copy of this permit is given to any future property owner when the property is sold.
10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- X11. See attached provisos.

Approved by: _____ Date _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

A Public Supply; see _____, _____, _____
Construction of a potable water supply.

Industrial Use Only

Plugging

A non-potable water supply.

Other

XMonitoring

Irrigation and recreation use only

ISSUED BY:

Date 3/8/90

for Manager, Water Conservation Program, Bio-Environmental Services Division.

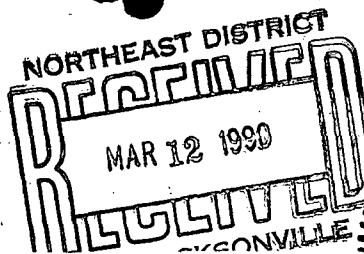


11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:
- 1.) Approval of the BESO Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:
Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
 - 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.
- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:
- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
 - 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
 - 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
 - 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
 - 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
 - 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
 - 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
 - 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity

WELL PERMIT



GRANTED TO Trail Ridge Sanitary Landfill, Inc.

500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0241 B-9-S

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E.
(Maxville Quad)

WELL NUMBER J-6749

WELL CONTRACTOR King, W.

LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date: _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____
- ☐ Construction of a potable water supply.
- ☐ A non-potable water supply.
- ☒ Monitoring

Industrial Use Only

Plugging _____

Other _____

Irrigation and recreation use only

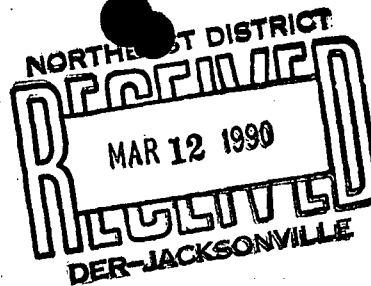
ISSUED BY: Don Summerville Date 3/8/90
for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:
- 1.) Approval of the BESO Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:
Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
 - 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.
- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:
- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
 - 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
 - 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
 - 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
 - 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
 - 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
 - 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
 - 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



WELL PERMIT

GRANTED TO Trail Ridge Sanitary Landfill, Inc.
500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0240 B-8-D

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E. WELL NUMBER J-6748
(Maxville Quad)

WELL CONTRACTOR King, W. LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date: _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____ Industrial Use Only _____
- ☐ Construction of a potable water supply. Plugging _____
- ☐ A non-potable water supply. Other _____
- ☒ Monitoring Irrigation and recreation use only _____

ISSUED BY: Don Summerfield Date 3/8/90
for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:
- 1.) Approval of the BESD Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:
Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
 - 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.
- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:
- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
 - 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
 - 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
 - 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
 - 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
 - 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
 - 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
 - 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



WELL PERMIT

GRANTED TO Trail Ridge Sanitary Landfill, Inc.

500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0239 B-8-I

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E. WELL NUMBER J-6747
(Maxville Quad)

WELL CONTRACTOR King, W. LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:
APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____ Industrial Use Only _____
- ☐ Construction of a potable water supply. _____ Plugging _____
- ☐ A non-potable water supply. _____ Other _____
- ☒ Monitoring _____ Irrigation and recreation use only _____

ISSUED BY: Don Summerfield Date 3/8/90

for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESO Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.

B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.

C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:

- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.



WELL PERMIT

PERMIT NUMBER 90-0238 B-8-S

WELL CONTRACTOR King, W. LICENSE OR BOND NUMBER 2297

1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- X3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- X9. A copy of this permit is given to any future property owner when the property is sold.
10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- X11. See attached provisos.

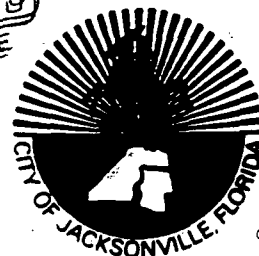
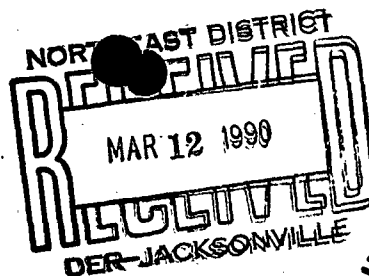


ALL-AMERICAN

11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:
- 1.) Approval of the BESO Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:
Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
 - 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.
- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:
- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
 - 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
 - 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
 - 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
 - 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
 - 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
 - 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
 - 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



WELL PERMIT

GRANTED TO Trail Ridge Sanitary Landfill, Inc.

500 Cypress Creek Road, West

Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0237 B-7-I

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E.
(Maxville Quad)

WELL NUMBER J-6745

WELL CONTRACTOR King, W.

LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____
- ☐ Construction of a potable water supply.
- ☐ A non-potable water supply.

Industrial Use Only

Plugging _____
Other _____

☒ Monitoring

Irrigation and recreation use only

ISSUED BY: _____

Date 3/8/90

Don Summerville
for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESD Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

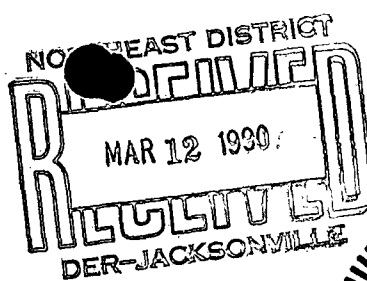
- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.

- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.

- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:

- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



WELL PERMIT

GRANTED TO Trail Ridge Sanitary Landfill, Inc.

500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0236 B-7-S

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E.
(Maxville Quad)

WELL NUMBER J-6744

WELL CONTRACTOR King, W.

LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date: _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____ Industrial Use Only _____
- ☐ Construction of a potable water supply. _____ Plugging _____
- ☐ A non-potable water supply. _____ Other _____
- ☒ Monitoring _____ Irrigation and recreation use only _____

ISSUED BY: Don Sumner Date 3/8/90
Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESO Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

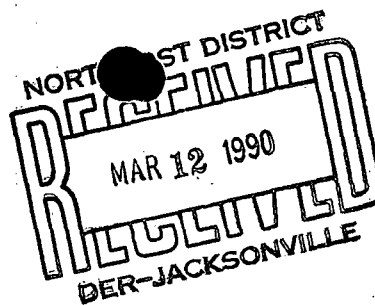
- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.

- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.

- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:

- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



WELL PERMIT

GRANTED TO Trail Ridge Sanitary Landfill, Inc.
500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0235 B-6-D

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E. WELL NUMBER J-6743
(Maxville Quad)

WELL CONTRACTOR King, W. LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____ Industrial Use Only _____
- ☐ Construction of a potable water supply. Plugging _____
- ☐ A non-potable water supply. Other _____
- ☒ Monitoring Irrigation and recreation use only _____

ISSUED BY: Don Summefeld Date 3/8/90
for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESD Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

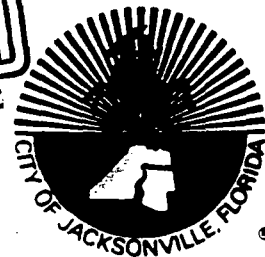
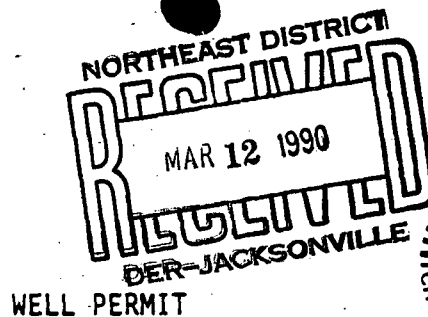
- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.

- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.

- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:

- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



GRANTED TO Trail Ridge Sanitary Landfill, Inc.
500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0234 B-6-I

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E. WELL NUMBER J-6742
(Maxville Quad)

WELL CONTRACTOR King, W. LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____ Industrial Use Only _____
- ☐ Construction of a potable water supply. _____ Plugging _____
- ☐ A non-potable water supply. _____ Other _____
- ☒ Monitoring _____ Irrigation and recreation use only _____

ISSUED BY: Don Summerfield Date 3/8/90
for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESD Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

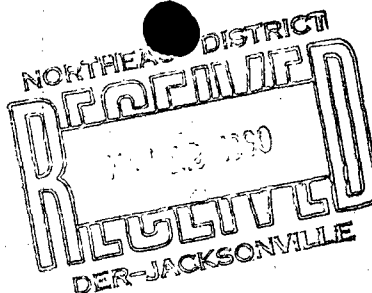
- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.

- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.

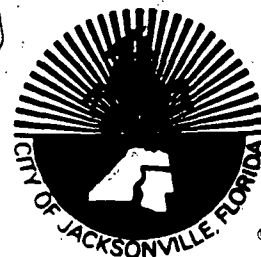
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:

- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



WELL PERMIT



GRANTED TO Trail Ridge Sanitary Landfill, Inc.
500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0233 B-6-S

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E. WELL NUMBER J-6741
(Maxville Quad)

WELL CONTRACTOR King, W. LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____
Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

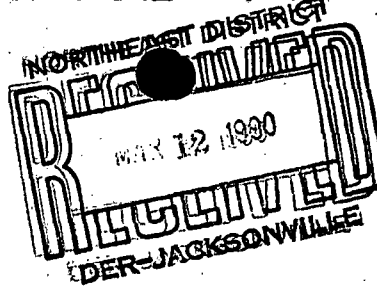
- | | |
|-------------------------------------------------------------------|------------------------------------------|
| <input type="checkbox"/> A Public Supply; see _____, _____, _____ | Industrial Use Only _____ |
| <input type="checkbox"/> Construction of a potable water supply. | Plugging _____ |
| <input type="checkbox"/> A non-potable water supply. | Other _____ |
| <input checked="" type="checkbox"/> Monitoring | Irrigation and recreation use only _____ |

ISSUED BY: Don Sumanfield Date 3/8/90
for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:
- 1.) Approval of the BESO Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:
Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
 - 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.
- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:
- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
 - 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
 - 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
 - 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
 - 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
 - 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
 - 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
 - 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.



DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity

WELL PERMIT



GRANTED TO Trail Ridge Sanitary Landfill, Inc.
500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0232 B-5-D

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E. WELL NUMBER J-6740
(Maxville Quad)

WELL CONTRACTOR King, W. LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____
Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____ Industrial Use Only _____
☐ Construction of a potable water supply. _____ Plugging _____
☐ A non-potable water supply. _____ Other _____
☒ Monitoring _____ Irrigation and recreation use only _____

ISSUED BY: Don Summerfield Date 3/8/90
for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESD Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.
- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:
- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.



WELL PERMIT

PERMIT NUMBER 90-0231 B-5-1.

WELL CONTRACTOR King, W. LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- X3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
4. This permit is for an Other Public Water system 100-4 (i.e. more than 4 living units or a place of business less than 25 people).
5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- X9. A copy of this permit is given to any future property owner when the property is sold.
10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- X11. See attached provisos.

Approved by: _____ Date _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

_____ A Public Supply; see _____, _____, _____
 _____ Construction of a potable water supply.
 _____ A non-potable water supply.

Industrial Use Only

Plugging

Other

XMonitoring

Irrigation and recreation use only.

ISSUED BY: Don Summerfeld Date 3/8/90
Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESD Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

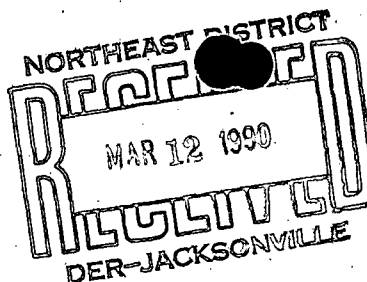
- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.

- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.

- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:

- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



WELL PERMIT

GRANTED TO Trail Ridge Sanitary Landfill, Inc.

500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0230 B-5-S

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E.
(Maxville Quad)

WELL NUMBER J-6738

WELL CONTRACTOR King, W.

LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____
- ☐ Construction of a potable water supply.
- ☐ A non-potable water supply.
- ☒ Monitoring

Industrial Use Only

Plugging _____
Other _____

Irrigation and recreation use only

ISSUED BY: Don Kempf

Date 3/8/90

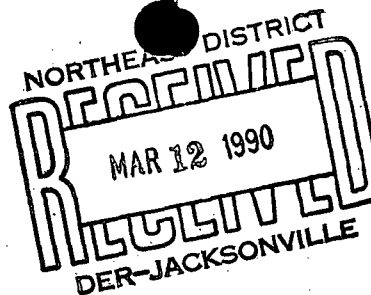
Manager, Water Conservation Program, Bio-Environmental Services Division.



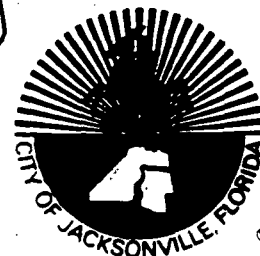
11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:
- 1.) Approval of the BESD Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:
Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
 - 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.
- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:
- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
 - 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
 - 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
 - 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
 - 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
 - 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
 - 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
 - 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



WELL PERMIT



GRANTED TO Trail Ridge Sanitary Landfill, Inc.

500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0229 B-3-D

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E.
(Maxville Quad)

WELL NUMBER J-6737

WELL CONTRACTOR King, W.

LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____

Date: _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____
- ☐ Construction of a potable water supply.
- ☐ A non-potable water supply.

Industrial Use Only

Plugging _____

Other _____

☒ Monitoring

Irrigation and recreation use only

ISSUED BY: _____

Date 3/8/90

for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESD Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

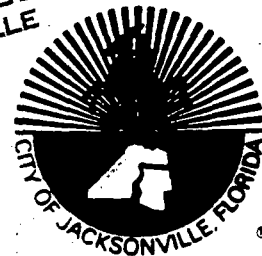
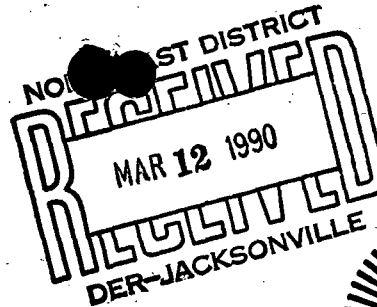
- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.

B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.

C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:

- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



WELL PERMIT

GRANTED TO Trail Ridge Sanitary Landfill, Inc.
500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0228 B-3-I

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E.
(Maxville Quad)

WELL NUMBER J-6736

WELL CONTRACTOR King, W.

LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____
Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____ Industrial Use Only _____
☐ Construction of a potable water supply. _____ Plugging _____
☐ A non-potable water supply. _____ Other _____
☒ Monitoring _____ Irrigation and recreation use only _____

ISSUED BY: Don Sinnerfeld Date 3/8/90
for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:
- 1.) Approval of the BESO Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:
Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
 - 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.
- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:
- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
 - 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
 - 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
 - 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
 - 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
 - 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
 - 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
 - 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

NORTHEAST DISTRICT
RECEIVED
MAR 12 1990
RECEIVED
DER-JACKSONVILLE
WELL PERMIT



PERMIT NUMBER 90-0227 B-3-S

WELL CONTRACTOR King, W. LICENSE OR BOND NUMBER 2297

1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- X3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- X9. A copy of this permit is given to any future property owner when the property is sold.
10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- X11. See attached provisos.

WELL APPROVED FOR:

<u> </u> A Public Supply; see <u> </u> , <u> </u> , <u> </u>	Industrial Use Only <u> </u>
<u> </u> Construction of a potable water supply.	Plugging <u> </u>
<u> </u> A non-potable water supply.	Other <u> </u>
<input checked="" type="checkbox"/> Monitoring <u> </u>	Irrigation and recreation use only <u> </u>

ISSUED BY: Don Summerfield Date 3/8/90
for Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESD Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

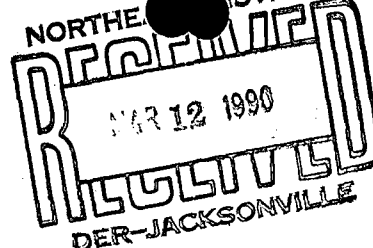
- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.

- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.

- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:

- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity



WELL PERMIT

GRANTED TO Trail Ridge Sanitary Landfill, Inc.

500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0226 B-2-I

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E.
(Maxville Quad)

WELL NUMBER J-6734

WELL CONTRACTOR King, W.

LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____
☐ Construction of a potable water supply.
☐ A non-potable water supply.

Industrial Use Only

Plugging _____

Other _____

☒ Monitoring

Irrigation and recreation use only

ISSUED BY: _____

Date 3/8/90

Don Summerfield
for Manager, Water Conservation Program, Bio-Environmental Services Division.



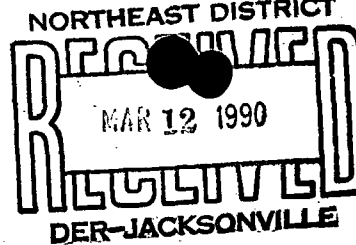
11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:

- 1.) Approval of the BESD Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:

Barry Andrews
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

- 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.
- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:
- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
- 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
- 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
- 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
- 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
- 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
- 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
- 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.



DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Water Conservation Activity

WELL PERMIT



GRANTED TO Trail Ridge Sanitary Landfill, Inc.

500 Cypress Creek Road, West
Ft. Lauderdale, FL 33309

PERMIT NUMBER 90-0225 8-2-S

WELL LOCATION Sec.18 & 19, Twn.3.S., Rng.23E.
(Maxville Quad)

WELL NUMBER J-6733

WELL CONTRACTOR King, W.

LICENSE OR BOND NUMBER 2297

Permission has been granted to construct, repair, or alter well at above location in accordance with information supplied on the application form and with the authority of Chapter 306 of the Municipal Code. Water may never be used for any purpose other than that indicated without prior approval from the responsible agency, subject to the following provisions:

APPLICABLE IF CHECKED

- ☐ 1. This well may not be constructed or located within _____ feet of any possible source of pollution, including but not limited to a sewage disposal system.
- ☐ 2. Construction may not begin on a public supply well (Community or Non-Community) until a permit has been issued by the St. Johns River Water Management District. (SJRWMD)
- ☒ 3. A copy of the drillers log must be filed with the Water Conservation Activity and the SJRWMD within 30 days after completion of the well.
- ☐ 4. This permit is for an Other Public Water system 10D-4 (i.e. more than 4 living units or a place of business less than 25 people).
- ☐ 5. Driller must notify Sanitary Engineering at least 24 hrs. prior to the time of grouting (630-3270) and receive an authorization number.
- ☐ 6. Prior to use, potable water supplies for other than private residences must be cleared by submitting water samples to the Public Health Division after completion. Clearance for private wells is recommended.
- ☐ 7. Water from this well _____ may _____ may not be used for once-through cooling purposes (water-cooled heat pump).
- ☐ 8. Driller must notify the Water Conservation Activity at least 24 hrs. prior to starting work and receive an authorization number.
- ☒ 9. A copy of this permit is given to any future property owner when the property is sold.
- ☐ 10. Artesian well water may not be used to create or maintain surface water level or quality in a "once through" manner; i.e., ponds, pools, streams, etc.
- ☒ 11. See attached provisos.

Approved by: _____ Date _____

Administrator, Sanitary Engineering Branch, Public Health

WELL APPROVED FOR:

- ☐ A Public Supply; see _____, _____, _____
☐ Construction of a potable water supply.
☐ A non-potable water supply.

Industrial Use Only

Plugging _____

Other _____

☒ Monitoring

Irrigation and recreation use only

ISSUED BY: _____

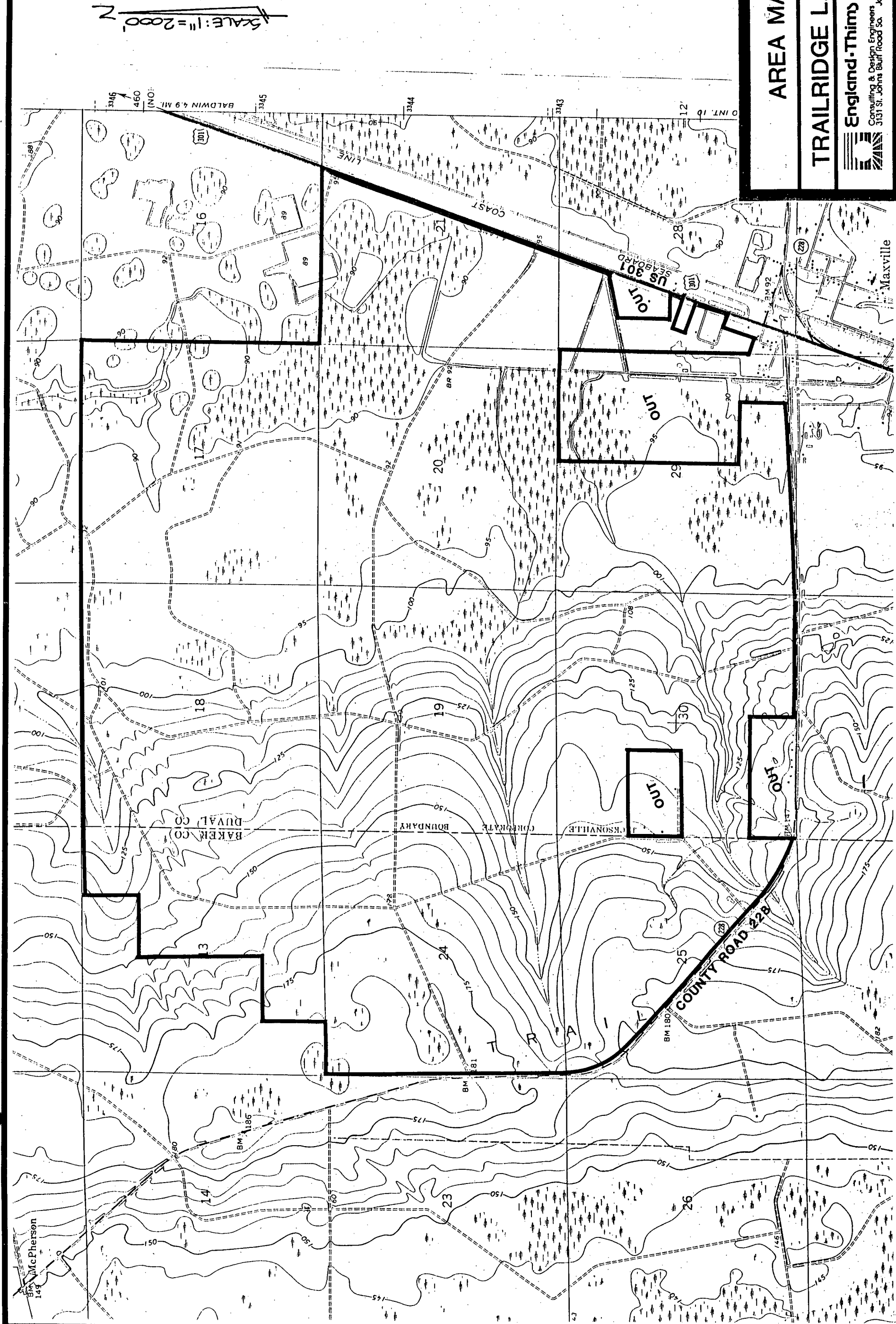
Date 3/8/90

for _____
Manager, Water Conservation Program, Bio-Environmental Services Division.



11. Monitoring/Recovery Well Permit Provisos:

- A. Use of these wells, or any existing or future wells on this site, for contamination removal and/or product recovery shall not take place without:
- 1.) Approval of the BESO Air Pollution Activity (at 630-3666) if air stripping, carbon filter beds, or any other method is used which may result in an air emission. This approval shall be sought by submitting pertinent data to:
Barry Andrews,
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
 - 2.) Obtaining all other required agency approvals, including the St. Johns River Water Management District's "C.U.P.", and the Department of Environmental Regulation's various approvals.
- B. Within 30 days after well construction, an individual well site location plan, as built, must be submitted to this office, along with a copy of the well completion report.
- C. Construction must comply with St. Johns River Water Management District 40-C and DER 17-61, Florida Administrative Codes:
- 1.) 40C-3.502 Pavement must be sloped away from well compartment cover, to prevent flooding of the well head compartment by storm water run-off.
 - 2.) 40C-3.502 Either wrench tightening screw-on type caps or locking type well head caps are required (slip-on caps are not acceptable).
 - 3.) 40C-3.521(2) and 40C-3.502 Manhole compartments or terminal boxes and lids are required to protect the well head.
 - 4.) 40C-3.517(6) Wells must be sealed and grouted with a mixture of neat cement grout. (This mixture is Portland Type 1 cement and water -- no aggregate allowed. Mix 5½ to 6 gallons of water per 94# bag of cement.) Grout seal must extend from just below well cap to a minimum of 18" to 36", the full 36" depth is required when water table will allow.
 - 5.) 40C-3.411(1) Completion reports shall be submitted to St. Johns River Water Management District and Bio-Environmental Services Division Office within 30 days after well completion.
 - 6.) 17-61 and 40C-3.502 No glues or other compounds shall be used in construction of monitor wells if they contain chemicals which are the same as those being sampled for in the monitoring program. Casing and adaptors must be either threaded or riveted together.
 - 7.) 17-61.005(5)(b)2 Monitor wells must be developed during construction until water is clear.
 - 8.) 17-61.005(5)(a)4 Well screens must be packed into the borehole with clean large grain sand or gravel and/or a filter sock.



AREA MAP

TRAILRIDGE LANDFILL

England-Thims & Miller, Inc.
Consulting & Design Engineers
3131 St. Johns Bluff Road So. Jacksonville, FL 32216

January 16, 1990

Honorable Tillie K. Fowler, President
Jacksonville City Council

IN RE: E89-201 (11-30-89) TRAIL RIDGE LANDFILL

Dear Mrs. Fowler:

In November of 1989 we appeared before your City's zoning board in opposition to a zoning exception which would allow the City of Jacksonville to operate a landfill on the Baker County line. We passed a resolution in opposition to said landfill and presented it to the zoning board. A copy of that Resolution is attached for your convenience. The zoning board for the City of Jacksonville chose to grant the petition and gave Waste Management, Inc., through Trail Ridge Landfill, Inc., a variance.

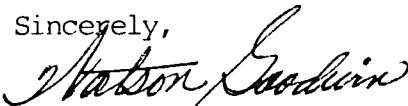
We are receiving input from organized citizen groups and public officials in St. Johns County who have expressed concern that Duval County would allow another landfill to be placed directly on the County line. Those of us with common borders to Duval are most concerned at the apparent disregard Duval County has toward this issue. Some of the counselors for the City of Jacksonville have advised that we should not worry because the full counsel will not issue a certificate of need for any location within one (1) mile of the County line. This is nice to hear, however, it would be more reassuring if the full counsel took some action now that would stop the process.

The City of Jacksonville started the process by asking private industry to locate and develop landfill sites and then allowed, by variance, Waste Management, Inc. to start the permit process on a site where the edge of the pit is only 60 feet from our County line. It is difficult for us to rely on the assertions of your counselors that even though the above is true you are not really going to let them have a landfill.

You are either not being honest with us or you are not being honest with Waste Management, Inc. The City of Jacksonville should step forward and settle the issue of whether you consider the Trail Ridge site a viable site before both sides expend large amounts of time and money fighting for and against the permits. It is our intent to petition for administrative hearings and appeals at every step of the process and to litigate the matter if necessary.

We would appreciate your advising us of the intentions of the City on this issue.

Sincerely,



WATSON GOODWIN

Chairman of Baker County Commission



A RESOLUTION OF THE BAKER COUNTY COMMISSION OPPOSING A CHANGE IN ZONING SO AS TO ALLOW THE LOCATION OF A WASTE DUMP FACILITY ADJACENT TO BAKER COUNTY, FLORIDA; REQUESTING THAT DUVAL COUNTY CONSIDER THE IMPACT OF SUCH FACILITIES ON RESIDENTS IN ADJACENT COUNTIES; REQUESTING THAT DUVAL COUNTY EXPRESSLY GIVE NOTICE TO THOSE COUNTIES TO BE EFFECTED; AND REQUESTING DUVAL COUNTY TO REQUIRE ALL SUCH FACILITIES TO BE NO CLOSER THAN ONE MILE FROM ANY BAKER COUNTY BORDER; AND AUTHORIZING THE BAKER COUNTY ATTORNEY TO TAKE APPROPRIATE ACTION TO OPPOSE THE CURRENT LOCATION OF THE PROPOSED LANDFILL

WHEREAS, requests have been made to the various agencies of Duval County, Florida to change the zoning of a tract of land directly adjacent to Baker County so as to permit the construction and operation of a waste dump facility; and

WHEREAS, the operation of said facility will ultimately result in a permanent mound of waste exceeding one hundred seventy-five feet in height; and

WHEREAS, the location of said waste dump facility adjacent to Baker County will negatively impact the wildlife, land values, aesthetic appearance, and economic viability of Baker County; and

WHEREAS, Duval County, Florida has failed to expressly notify Baker County, or its residents, of the proposed location of a waste dump facility, resulting in area residents and duly elected officials being denied input into the proposed location of the facility.

BE IT RESOLVED BY THE BAKER COUNTY COMMISSION as follows:

Section 1. That Duval County, Florida, through its agents and agencies, should DENY the requested zoning changes of lands directly adjacent to Baker County, Florida that would permit the construction and operation of a waste dump facility on said lands.

Section 2. That Duval County, Florida require by law, that any such waste dump facility be located at least one mile from any Baker County border so as to minimize the impact of such facility on Baker County residents.

Section 3. That Duval County, Florida expressly notify Baker County, Florida of any proposed enactments regarding the location of waste dump facilities that might impact upon the residents, wildlife or lands of Baker County, Florida.

Section 4. That Duval County, Florida deny any zoning changes permitting the construction and operation of such waste dump facilities adjacent to Baker County Florida without first obtaining satisfactory assurances that the health and safety of Baker County residents, wildlife and lands will be protected.

Section 5. That in order to protect the health and safety of Baker County residents, wildlife and lands, the Baker County Commission will oppose, through all legal means, the location of any such waste dump facility adjacent to its border and will seek to enjoin through the Courts, if

necessary its construction and operation if its proposed location is within one mile of any Baker County border.

Section 6. That the Baker County Attorney is hereby authorized to take appropriate action, including the institution of suite, to oppose the permitting and location of any landfills within a one-mile radius of the border between Baker County and Duval County, Florida.

ADOPTED this 7th day of October, 1989 by the Board of County Commissioners of Baker County, Florida.

/s/ Clifton Barton
CHAIRMAN OF THE BOARD

ATTEST:

Harry Richardson
HARRY RICHARDSON, Clerk



WETLAND IMPACTS - 1.9 AC

三

TRAIL RIDGE LANDFILL

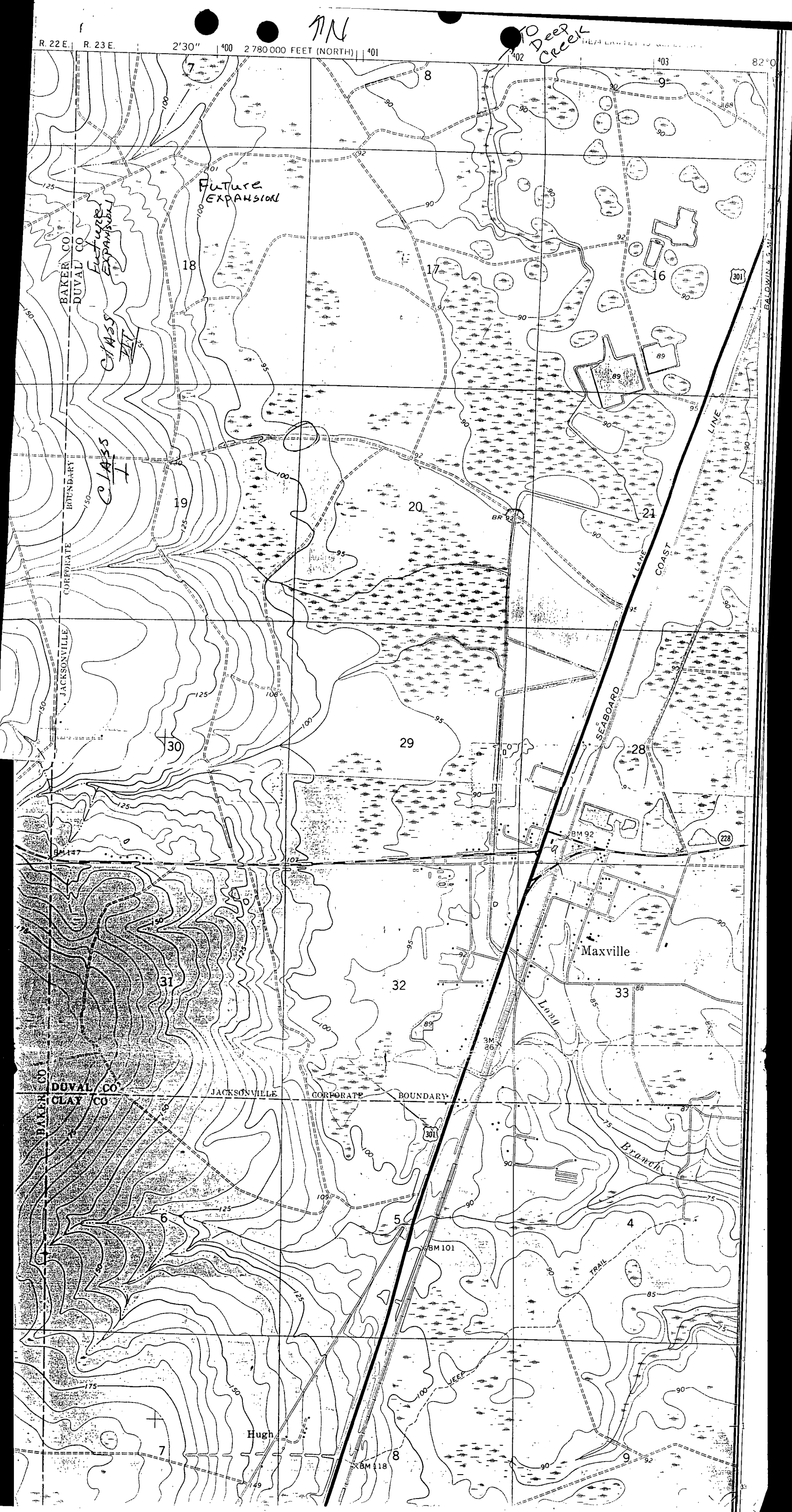
England, Thims & Miller, Inc.
One of the South's largest
air conditioning and heating
installers and service companies. A 1979
ISO 9001:2000

R. 22 E. R. 23 E.

2'30" 400 2 780 000 FEET (NORTH) 401

10 Deep Creek

82°0



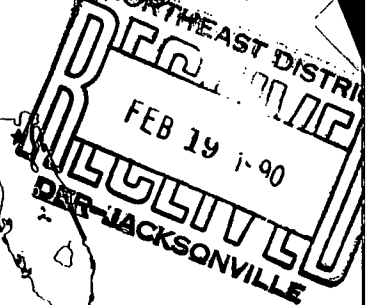
MAP(S)/ PLAN(S)

SCANNED

SEPARATELY

Baker County Board of Commissioners

55 NO. THIRD STREET
MACCLENLY, FLORIDA 32063
Telephone 259-3613



HARRY RICHARDSON
CLERK TO BOARD

February 16, 1990

TERENCE M. BROWN
COUNTY ATTORNEY

Nogas MCV
Sittig MS

Mr. Ernest E. Frey
Fla. Dept. of Environmental Regulation
3426 Bills Road
Jacksonville, FL 32207

Dear Mr. Frey:

I write to you as Chairman of the Baker County Board of Commissioners. We request to be advised of any application by Trail Ridge Landfill, Inc., for a permit to construct a landfill. The proposed site is located on the Baker County line and impacts a significant wetlands system.

We request an administrative hearing be held on that request for permit and that this board receive notice of that hearing. It is our intent to fight this application in every manner possible. The applicant is attempting to place a 150 feet of landfill on top of perhaps the highest elevation in Duval County. The site is bordered on the South, East and North by sensitive wetland areas.

Please advise us of the status of the Trail Ridge Landfill, Inc. application and of the petition dates for hearings.

Sincerely,

Watson Goodwin

Watson Goodwin
Chairman

WG/sc

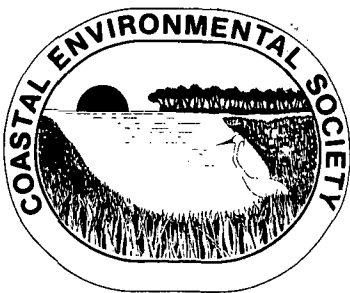
WATSON GOODWIN
DISTRICT 1

GEORGE KNABB
DISTRICT 2

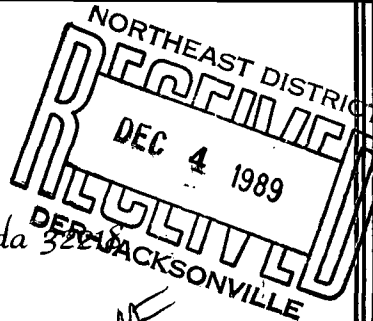
CLIFTON BARTON
DISTRICT 3

MELVIN DOWLING
DISTRICT 4

STEVE KENNEDY
DISTRICT 5



Coastal Environmental Society
Post Office Box 26061 - Jacksonville, Florida 32208
(904) 757-9090



November 28, 1989

Mr. Michael J. Fitzsimmons
Fla. Dept. of Environmental Reg.
Solid Waste Division Administrator
3426 Bills Road
Jacksonville, Florida 32207

Re: Trailridge Landfill West Duval County
Waste Management, Inc.

Dear Mr. Fitzsimmons;

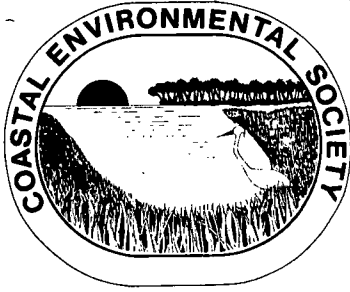
There is no doubt that you understand the concerns we have with the disposal of solid waste. There will always be the need for landfills. With this realization, to protect our health, welfare and natural resources, it is necessary that the highest technical design be utilized, and required.

In reference to the above noted project, I request to be put on the mailing list to receive information and any agency action in regards to the project. If anyone within CES or myself can be of assistance to you, please give me a call.

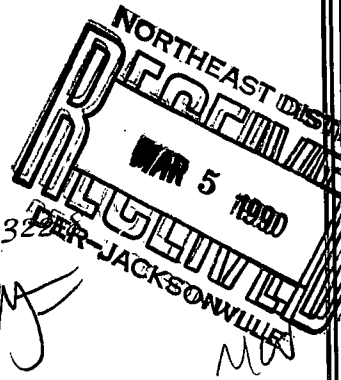
With kindest regards, thank you

Sincerely,

Janice Whatley
Executive Director



Coastal Environmental Society
Post Office Box 26061 - Jacksonville, Florida 32207
(904) 757-9090



Copy

October 10, 1989

Mr. Michael J. Fitzsimmons
Fla. Dept. of Environmental Reg.
Solid Waste Division Administrator
3426 Bills Road
Jacksonville, Florida 32207

Re: Trailridge Landfill- West Duval County
Waste Management Inc.

Dear Mr. Fitzsimmons;

There is no doubt that you understand the concerns we have with the disposal of solid waste. There will always be the need for landfills. With this realization, to protect our health, welfare and natural resources, its necessary that the highest technical design be utilized, and required.

In reference to the above noted project, I request to be put on the mailing list to receive information and any agency action in regards to the project. With kindest regards,

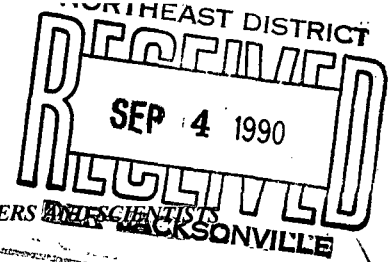
Sincerely,

Janice Whatley
Executive Director

*Jones
Edmunds &
Associates, Inc.* **JEA**

730 North Waldo Road / Gainesville, Florida 32601 / (904) 377-5821

CONSULTING ENGINEERS AND SCIENTISTS



August 31, 1989

MF MW
JECR

Mr. Michael Fitzsimmons
District Program Administrator
Florida Department of Environmental Regulation
7825 Baymeadows Way, Suite B-200
Jacksonville, Florida 32256-7755

RE: Trail Ridge Landfill

Dear Mr. Fitzsimmons:

It would be very much appreciated if you would forward a copy of the DER Notice of Intent to Issue Permit for the Trail Ridge Landfill in Duval County when the notice published. Your help in this matter is greatly appreciated.

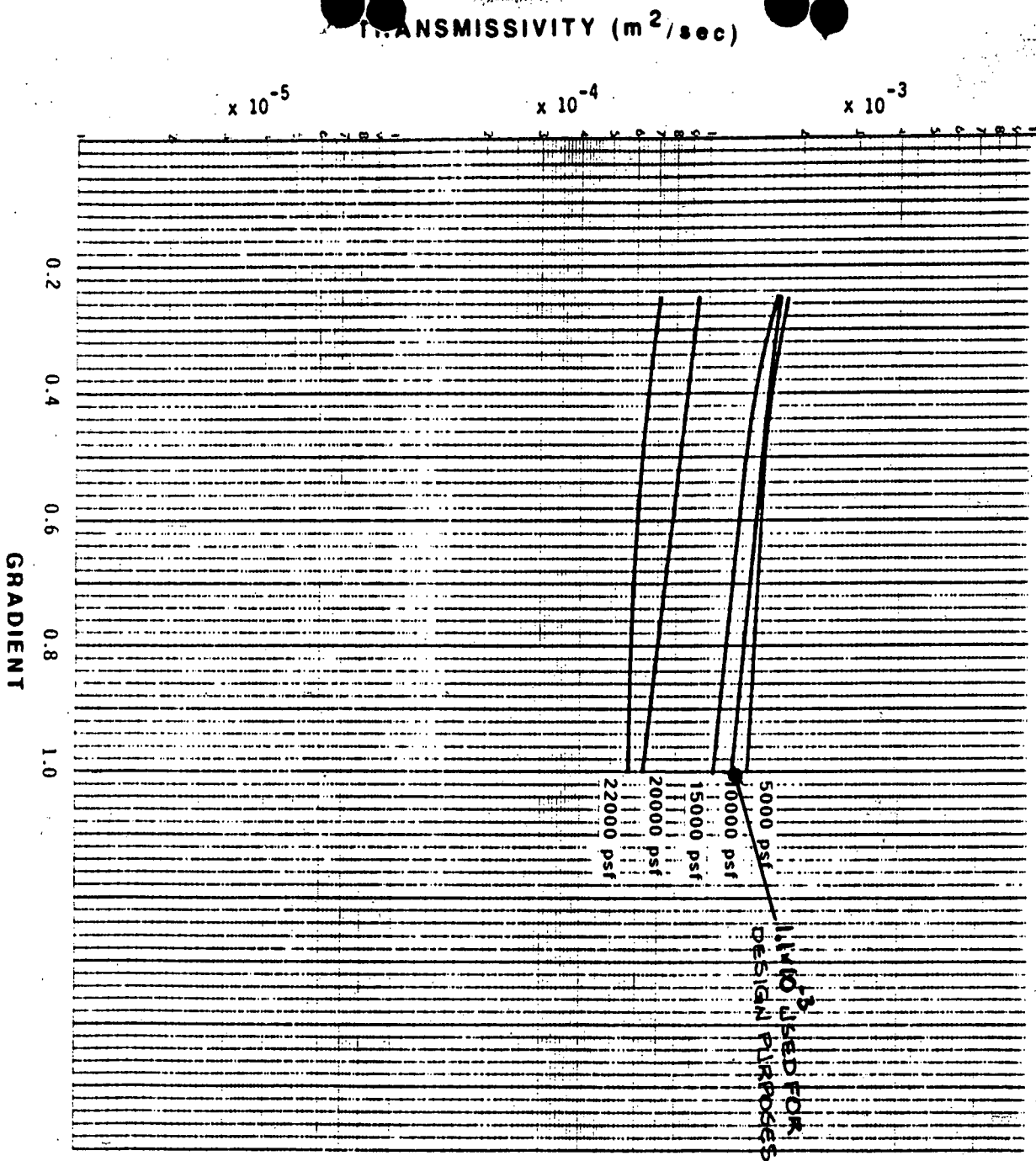
Very truly yours,

JONES, EDMUNDS & ASSOCIATES, INC.

Will E. Furlong

Will E. Furlong, P.E.
Design Manager

WEF/jm:wpsp#1354



J & L TESTING COMPANY, INC.
Geotechnical, Geomembrane and Geosynthetic Testing

MATERIALS:

NSC 60 mil HDPE
PN-3000 Geonet

FLUID: Water

UNIT NO: 1

TEMPERATURE: 60° F

SECTION:

UPPER LOAD PLATE

HDPE

GEONET

HDPE

LOWER LOAD PLATE

TRANSMISSIVITY TEST RESULTS

WASTE MANAGEMENT OF NORTH AMERICA

PROJECT NO: 89R454-01

DATE: March 11, 1989

FIGURE 1A