CITRUS COUNTY
CLASS I LANDFILL
OPERATION PERMIT RENEWAL
RESPONSE TO FDEP RAI#2

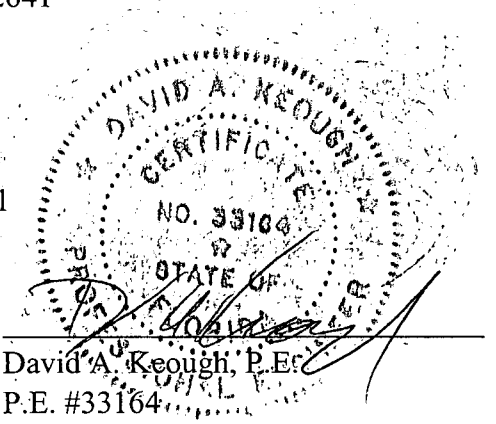
Prepared for:

CITRUS COUNTY BOARD OF COUNTY COMMISSIONERS
P.O. Box 340
Lecanto, Florida 34460

Prepared by:

JONES, EDMUNDS & ASSOCIATES, INC.
730 NE Waldo Road, Building A
Gainesville, FL 32641

September 2001



David A. Keough, P.E.
P.E. #33164

CITRUS COUNTY CLASS I LANDFILL
OPERATION PERMIT RENEWAL
RESPONSE TO FDEP RAI#2

Permit No.: SO09-274381
DEP ID No: 4009C00086

Response to the Florida Department of Environmental Protection
Request for Additional Information #2
September 2001

The following information is provided in response to the Florida Department of Environmental Protection (DEP) August 17, 2001, request for additional information prepared by Kim Ford, P.E. Information is provided in the order requested in the referenced correspondence. In each case the DEP request is repeated with the response immediately following.

TABLE OF CONTENTS

ATTACHMENTS

PART 1

RESPONSES TO KIM FORD'S COMMENTS

Comment 1: 62-701.330(3)(d). One set of full-sized site plans referenced in Jones Edmunds' response dated July 2001 were not provided. The one sheet entitled Site Plan needs to be signed and sealed.

Response 1: The signed and sealed Site Plan is provided as Attachment 1.1.

Comment 2: 62-701.500(2)(g). The actual and recommended minimum weight for the landfill compactor is requested.

Response 2: The compactor used at the Citrus County Central Landfill is a Bomag 671 landfill compactor as listed in Section 11.0 of the Operations Plan prepared by Jones, Edmunds & Associates, July 2001. According to specifications provided by the manufacturer (Attachment 1.2), the weight of this compactor is approximately 32,200 kA, which is equal to approximately 71,000 pounds.

Comment 3: 62-701.500(7). 1) Description of methods procedures used for placement of the 2 feet protective layer to prevent damage to the liner are requested. The description should include timeframes for placement, height of each increment, and equipment used for placement. 2) A description of special precautions taken during normal operations for protection of the sideslope liner is requested.

Response 3: Section 2.7.1 of the Operations Plan has been revised to include the following comments. The revisions to the Operations Plan are provided as Attachment 1.3.

- **The protective soil layer is carefully placed on the liner using low ground pressure tracked dozer approximately 1 week prior to the placement of waste. The equipment operator is directed by a spotter to ensure that the soil is placed correctly and that the equipment does not come in contact with the liner. The 2-foot minimum in-place thickness of the protective soil layer is verified by the landfill operator.**

- **The landfill spotter directs equipment away from the side slope liner during normal operations.**

Comment 4: 62-701.500(7)(c). The actual maximum slope of the working face is requested. Figure 7-1 should be revised to show no steeper than 3 to 1 slopes for the working face.

Response 4: Figure 7-1 has been revised to include a note regarding the 3 to 1 slope of the working face. The revised Figure 7-1 is provided in Attachment 1.3.

Comment 5: 62-701.500(8)(h). Clarification is requested for the conclusion that the leachate collection system is in good working condition. The clarification should address such comments as "impassable" and "crushed pipe" as described in Florida Jet Clean's February 2001 video log.

Response 5: **Based on a phone conversation with a representative of Florida Jet Clean, who performed the work at Citrus County Central Landfill, the following terms are defined:**

- **Impassable – This term refers to the tractor or the camera being unable to pass through the pipe. Reasons for this could include the wheels slipping due to submergence, the tractor unable to make a turn in the pipe, or the grade of the pipe preventing the tractor from continuing. Other reasons could be the camera being pushed into the pipe using a push rod and the change of the pipe grade could prohibit the push rod from being extended any further. Impassable does not refer to substandard conditions of the pipe.**
- **Crushed pipe – This term is used when the camera or tractor does not fit in the pipe. The substandard structure of the pipe is an assumed condition, although there is no documentation that the pipe is actually broken or crushed. There are two instances in the video log where the term 'crushed pipe' is used. In both of these instances, there may be other reasons for the camera to have not been able to proceed, such as detritus or sludge in the pipe. Since the pipe was submerged, there is no conclusive evidence that the pipe is crushed.**

Based on the operation of the leachate collection system, the leachate system is working as designed. There is no indication in the leachate quantities that there may be leachate loss through the system.

Comment 6: 62-701.500(9). 1) Clarification is requested for the reference to "this" LFG Monitoring Program. Is "this" program the one received in October of 1996? 2) Revisions are needed to correctly describe the construction and depth of the gas probes. According to previous descriptions, not all probes are 3 feet or 80 feet deep. 3) Is Figure 9-2 the construction detail for all probes or GS-1S and GS-1E only? 4) Does the gas measurement device provide direct reading in % LEL, or is a calculation required for conversion to % LEL?

Response 6: **1) "This" LFG Monitoring Program refers to the previously submitted monitoring program included in Citrus County Central Landfill Phase 1 and 1A Expansion Operations Plan, prepared by CH2M Hill, October 1996.**

2) The following table lists the gas monitoring probes and their respective depths. See Figure 9-1 of the previously submitted Citrus County Central Landfill Operations Plan, prepared by Jones, Edmunds & Associates, July 2001, for the locations of the gas monitoring probes.

Depth (feet)	Gas Monitoring Probe Designation
3	GS-A3S, GS-B3S, GS-C3S, GS-D3S, GS-E3S, GS-F3S, GS-G3S, GS-H3S GS-A3E, GS-B3E, GS-C3E, GS-D3E, GS-E3E, GS-F3E, GS-G3E, GS-H3E, GS-I3E, GS-J3E, GS-K3E, GS-L3E, GS-O3E, GS-R3E, GS-U3E, GS-W3ER, GS-X3E, GS-A3N, GS-B3N, GS-C3N, GS-D3N, GS-E3N, GS-F3N, GS-G3N, GS-H3NR, GS-A3W, GS-B3W, GS-C3W, GS-D3W, GS-E3WA, GS-E3W, GS-F3W, GS-G3WA, GS-G3W, GS-H3W, GS-I3WA, GS-I3W, GS-J3W, GS-K3W, GS-L3W
6	GS-N6E, GS-Q6E, GS-T6E, GS-V6E,
10	GS-M10E, GS-P10E, GS-S10E
15	GS-M15E, GS-P15E, GS-S15E
25	GS-M25E, GS-P25E, GS-S25E
80	GS-1S, GS-1E

3) Figure 9-2 of the previously submitted Citrus County Central Landfill Operations Plan, prepared by Jones, Edmunds & Associates, July 2001, shows the well construction of the 80-foot probes.

4) The gas instrument measures percent LEL directly.

Comment 7: 62-701.510. A response to Mr. John Morris' August 16, 2001 memorandum (attached). You may call Mr. Morris at (813) 7446100, extension 336 to discuss this item.

Response 7: Mr. Morris's comments are addressed in Part 2. The revised Groundwater and Leachate Monitoring Plan Review is provided as Attachment 2.1.

Comment 8: 62-701.630. Cost estimates for long-term care of the old closed 60 acre landfill and proof of financial assurance for the site. A response to Ms. Susan Pelz's August 17, 2001 letter (attached) is required. You may call Ms. Pelz at (813) 744-6100, extension 386.

Response 8: Ms. Pelz's comments are addressed in Part 3.

PART 2

RESPONSES TO JOHN MORRIS'S COMMENTS

PART L – WATER QUALITY AND LEACHATE MONITORING (RULE 62-701.510, F.A.C.)

Comment 1: *L.1.c.(4) – Location Information for each Monitoring Well*
L.1.c.(5) – Well Spacing...
L.1.c.(6) – Well Screen Locations Properly Selected
L.1.c.(7) – Procedures for Properly Abandoning Monitoring Wells
L.1.d.(1) – Location and Justification...
L.1.d.(2) – Each Monitoring Location...
L.1.f.(4) – Compliance Well Sampling...
L.1.f.(5) – Surface Water Sampling...
L.1.g. - Describe Procedures for...
L.1.h.(1) – Semi-annual Report Requirements
L.1.h.(2) – Bi-monthly Report Requirements...
The revised references in the listed sections of the application from provided in Attachment 1.13 of Document 1 are noted. No additional information is requested.

Response 1: Acknowledged.

Comment 2: *L.1.e. – Leachate Sampling Locations Proposed – The clarifications regarding the leachate influent and effluent sampling locations provided in Section 2.2 of Document 3 are noted. No additional information is requested.*

Response 2: Acknowledged.

Comment 3: *L.1.f.(1) – Background Ground Water...*
L.1.f.(3) – Detection Well Semi-annual...
The revised references in the listed sections of the application form provided in Attachment 1.13 of Document 1 are noted. No additional information is requested.

Response 3: Acknowledged.

GROUNDWATER AND LEACHATE MONITORING PLAN REVIEW FOR CITRUS COUNTY CLASS I CENTRAL LANDFILL, PREPARED BY JEA, APRIL 2001

Comment 4: The signed and sealed cover page provided with Document 3 is noted. No additional information is requested.

Response 4: Acknowledged.

Section 1.1 – Site Information
Comment 5: The revisions to Table 1 in Document 3 that provide the requested elevations and lithologic description are noted. No additional information is requested.

Response 5: Acknowledged.

Section 2.1.1 – Ground Water Quality

Comment 6: The revisions to Section 2.1.1 and Appendix C of Document 3 regarding benzene concentrations are noted. No additional information is requested.

Response 6: Acknowledged.

Comment 7: The revisions to Section 2.1.1 of Document 3 regarding iron concentrations are noted. No additional information is requested.

Response 7: Acknowledged.

Comment 8: The revisions to Appendix C of Document 3 regarding nitrate concentrations are noted. No additional information is requested.

Response 8: Acknowledged.

Section 2.1.2 – Groundwater Flow

Comment 9: The revision to Section 2.1.2 of Document 3 that uses a hydraulic gradient value of 0.0028 ft/ft in the calculation of ground water velocity appears to be conservative estimate of wet season conditions. No additional information is requested.

Response 9: Acknowledged.

Section 2.2 - Leachate

Comment 10: The revisions to Section 2.2 of Document 3 regarding the identification of those parameters that are used for process control rather than for regulatory compliance are noted. No additional information is requested.

Response 10: Acknowledged.

Comment 11: The revisions to Section 2.2 of Document 3 regarding the occurrence of total trihalomethanes in the leachate effluent samples are noted. No additional information is requested.

Response 11: Acknowledged.

Section 3.1 – Ground Water

Comment 12: The revision of Section 3.1 of Document 3 regarding the location of well MW-B is noted. No additional information is requested.

Response 12: Acknowledged.

Comment 13: The revision of Section 3.1 of Document 3 regarding the lithology that is monitored at each monitor well is noted. No additional information is requested.

Response 13: Acknowledged.

Comment 14: The response to this review comment provided in Part 2 of Document 1 appears to be inconsistent with the revision to Section 3.2 of Document 3. Please submit a revised page 3-2 that is consistent with Rule 62-701.510(6)(c)1, F.A.C., and that indicates the annual sample of the leachate influent will be analyzed for the parameters listed in Rule 62-701.510(8)(c) and (8)(d), F.A.C.

Response 14: Section 3.2 of the Groundwater and Leachate Monitoring Plan Review has been revised accordingly and is provided as Attachment 2.1.

Comment 15: The revisions to Section 3.2 of Document 3 regarding sampling parameters and sampling frequency of the leachate effluent are noted. The following comments are provided for the five proposed modifications:

Comment 15a: Analysis of total trihalomethanes: Based on the results of quarterly analyses of total trihalomethanes provided for the leachate effluent for the last three years, the Department does not support the proposed reduction from quarterly to annual analysis for these parameters. Please note that it is the Department's intention to prepare a permit condition that requires the leachate effluent be analyzed for total trihalomethanes at a semi-annual frequency rather than at the annual frequency indicated in Section 3.2 of Document 3. It is also intended that samples of leachate effluent and ground water from well MW-6 be submitted for analysis for total trihalomethanes on the same schedule to allow comparison. Please submit a revised page 3-2 that reflects this change to the leachate effluent sampling.

Response 15a: Section 3.2 of the Groundwater and Leachate Monitoring Plan Review has been revised accordingly and is provided as Attachment 2.1.

Comment 15b: Analysis of fecal coliform: Based on the results of weekly analyses for fecal coliform provided for the leachate effluent for the last three years and the proposed semi-annual analysis of fecal coliform from ground water collected at well MW-6, the Department does not object to the deletion of this parameter for the leachate effluent. No additional information is requested.

Response 15b: Acknowledged.

Comment 15c: Analysis of metals: Based on the results of the quarterly analyses of the required metals provided for the leachate effluent for the last three years, the Department does not object to reducing the frequency of analysis of the leachate effluent from quarterly to annually. No additional information is requested.

Response 15c: Acknowledged.

Comment 15d: Analysis of residual chlorine: Based on the indication in Section 2.2 of Document 3 that the results of residual chlorine are used for process control purposes, the Department does not

object to the deletion of this parameter for the leachate effluent. No additional information is requested.

Response 15d: Acknowledged.

Comment 15e: Analysis of Appendix II parameters listed in 40 CFR Part 258: Based on the results of annual analyses for the Appendix II parameters provided for the leachate effluent for the last three years, the Department does not object to the substitution of annual analysis of the Appendix I parameters. However, it is the Department's intention to prepare a permit condition that requires one leachate effluent sampling event be completed prior to permit renewal that includes the analysis of the Appendix II parameters. Please submit a revised page 3-3 that reflects this change to the leachate effluent sampling.

Response 15e: Section 3.2 of the Groundwater and Leachate Monitoring Plan Review has been revised accordingly and is provided as Attachment 2.1.

PART 3

RESPONSES TO SUSAN PELZ'S COMMENTS

This letter is to acknowledge receipt of the revised cost estimates prepared by Jones, Edmunds & Associates, Inc., dated July 2001 (received July 20, 2001), for closing and long-term care of the Citrus County Landfill (Phase 1, 1A). The cost estimates received July 20, 2001 (closing $2,363,996 and long-term care $210,946/year x 30 years=$6,328,377), are APPROVED for 2001. The next annual update (revised or inflation-adjusted estimates) is due no later than September 1, 2002. The estimates submitted are approved. However, please note that it has been the Department's experience that leachate generation may not decrease linearly to 28,000 gallons per year for this size site in only three years. Department files indicate that a similarly lined and closed Class I landfill (approximately 14 acres) in the Southwest District generated approximately 140,000 gallons of leachate in 2000, 5 years after final closure.

Additionally, please be advised that since these estimates did not include the long-term care for the old closed 60-acre site (permit 126601-002-SF), estimates for the continued long-term care of the old closed 60-acre site are due no later than September 2001.

A copy of these estimates will be forwarded to Mr. Fred Wick, Solid Waste Section, FDEP, 2600 Blair Stone Road, Tallahassee, Florida 32399-2407. Please work with him directly to assess the facility's compliance with the funding mechanism requirements of Rule 62701.630, F.A.C. If you have any questions, you may contact me at (813) 744-6100 ext. 386.

Response: The previously submitted long-term care cost estimates include the closed 60-acre site.

Based on our conversation on Wednesday, September 5, 2001, the cover letter and mowing bid document for the previously submitted and approved Long-Term Care Cost Estimates for the Citrus County Central Landfill prepared by CH2M Hill, August 23, 1999 is provided as Attachment 3.1. The lump sum price used includes the total price of $2,700.00 per year for mowing the closed portion of the landfill plus $1,500.00 per year for mowing the active portion of the landfill, totaling $4,200.00 per year for mowing.

Please note that the bid was made as a lump sum price and the acreage was estimated by the bidder. The total price of $4,200.00 for the total 80 acres equates to a cost of $52.50 per acre. This price is higher than typical prices for mowing provided by other area contractors of $35.00 to $45.00 per acre. These typical bids are also provided in Attachment 3.1.

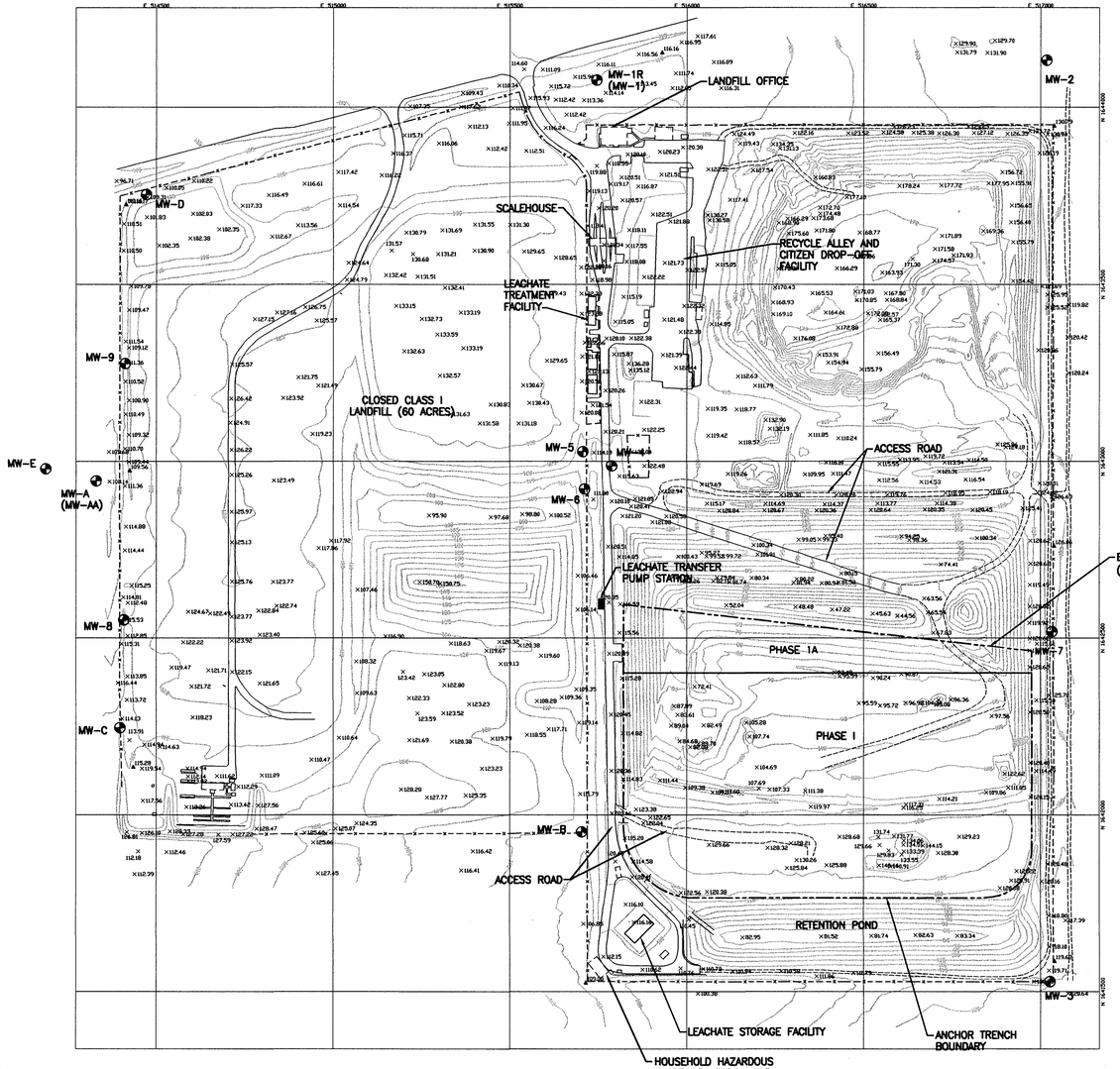
The estimated cost for landscape maintenance of $4,200.00 per year is sufficient to cover the required mowing costs for the total 80 acres of the Citrus County Central Landfill.

ATTACHMENT 1.1

SITE PLAN

1028292
(1)

GRAPHIC SCALE
0 100 200 400
SCALE IN FEET



LEGEND

● MONITORING WELL

Note:
Survey data provided by PTI, 12/2000.

09/07/01 08:06 ABG je005f2-1-200 scale.dwg

LTR.	DATE	REVISIONS	BY	APPRD.

DESIGNED
DRAWN
CHECKED
PROJECT ENGINEER

Jones Edmunds & Associates, Inc. JEA CONSULTING ENGINEERS AND SCIENTISTS
730 Northeast Waldo Road/Gainesville, Florida 32641 / (352) 377-5821

CITRUS COUNTY CENTRAL LANDFILL

SITE PLAN

APPROVED FOR JEA BY
9-07-01
DAVID A. KEOUGH
P.E. #33164

DATE	PROJECT NO.
SEP 2001	03860-005-01
SCALE	DWG. NO.
1" = 200'	

ATTACHMENT 1.2

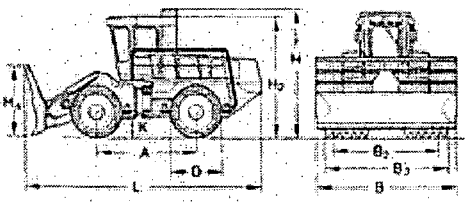
LANDFILL COMPACTOR SPECIFICATIONS

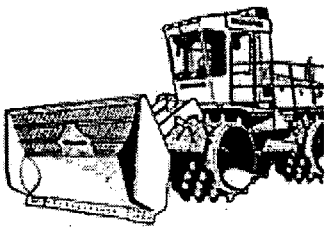
Bomag Product Range
Next Page
Previous Page
Specifications
Banbury Main Index
Company Profile
Banbury Contact Details
e-Mail Banbury

Bomag Landfill Compactor Range

BC 571 RB BC 671 RB BC 771 RB BC 671 RS BC 771 R

Specifications Bomag RB Series Landfill Compactors





Dimensions in mm

	A	B	B2	B3	D	H	H2	H4	K	L
BC 571 RB	3500	3800	3200	3425	1660	4120	3820	1950	600	8120
BC 671 RB	3500	3800	3550	3775	1660	4120	3820	1950	600	8120
BC 771 RB	3500	3800	3550	3775	1660	4120	3820	1950	600	8120

Technical Data	BC 571 RB	BC 671 RB	BC 771 R
Operating Weight CECE (kg)	26,100	32,200	36,250
Axle Load - Front CECE (kg)	12,566	15,383	17,421
Axle Load - Rear CECE (kg)	13,534	16,817	18,829
Engine Type	Deutz BF6M 1015	Deutz BF6M 1015	Cummins M11C370
Cyliners	6	6	6
Cooling	Water	Water	Water
Performance ISO 9249 (kW)	214@2100rpm	240@2100rpm	266@2100r
Travel System	Hydrostatic	Hydrostatic	Hydrostatic
Number of travel motors and pumps	4	4	4
Wheel Width (Front/Rear)	1175/950mm	1350/1125mm	1350/1125m
Outer Diametre (Front and Rear)	1620	1620	1620
Number of Teeth/Cutters (Front/Rear)	50/40	60/50	60/50
Dozer Blade Height Adjustment Above Ground	1200mm	1200mm	1200mm
Dozer Blade Height Adjustment Below Ground	200m	200mm	200mm
Maximum Steering Angle	40 degrees	40 degrees	40 degrees
Inner Track Radius (mm)	3265	3090	3090
Fuel Capacity (litres)	500	500	500

ATTACHMENT 1.3

OPERATIONS PLAN REVISIONS

2.6 METHOD AND SEQUENCING OF FILLING WASTES (62-701.500(2)(f), FAC)

Historical and projected waste volumes are summarized in Table 2-2. Historical volumes are consistent with the known waste volumes in the Citrus County Central Landfill, projected volumes have been estimated using the most recent population projections.

Table 2-2 Summary of Filling Sequences for Phase 1 and 1A

Time Interval	Population Projection*	Volume (tons)†	Volume (cy)‡	Volume Remaining (cy)§
0	--			758,477
97-'98	111,068	58,325	89,731	668,746
98-'99	113,358	75,030	115,431	643,046
99-'00	115,608	80,803	124,312	544,434
00-'01	118,085	81,242	124,988	419,445
01-'02	120,388	82,827	127,426	292,019
02-'03	122,691	84,411	129,864	162,156
03-'04	124,994	85,996	132,301	29,854
04-'05	127,297	87,580	134,739	0

* Based on BEBR medium population projections May 2001, except 2000-2001 – based on actual census (www.floridacensus.com).

† Based on actual measured values until 2000-2001. Then based on population projections and 0.688 tons/year per capita trash production.

‡ Based on average trash density of 1300 pounds/cubic yard.

§ Based on volume of Phase 1 and 1A of 758,477 cubic yards.

2.7 WASTE COMPACTION AND APPLICATION OF COVER (62-701.500(2)(g), FAC)

2.7.1 Method of Filling Wastes/Compaction

The procedure for filling and compacting of the initial waste lifts over the remaining areas of exposed liner will be as follows:

- To protect the integrity of the leachate collection system and liner, driving vehicles directly over the liner will be prohibited.
- The liner will be covered with a minimum of two (2) feet of protective soil at least one week prior to the placement of waste.
- The protective soil layer is carefully placed on the liner using low ground pressed tracked dozer approximately 1 week prior to the placement of waste. The equipment operator is directed by a spotter to ensure that the soil is placed correctly and that the equipment does not come in contact with the liner. The 2-foot minimum in-place thickness of the protective soil layer is verified by the landfill operator.

- The landfill spotter directs equipment away from the side slope liner during normal operations.
- The initial lift of waste will be 4 feet thick and selected for material that will not cause damage to the liner. The initial lift of waste will be spread with equipment that will preserve the integrity of the liner system.

The procedures for filling and compacting all waste will be as follows:

- Waste will be placed against the working face of the previous day's waste, so that the first row will act as a means of access and a berm to guide the placement of waste material for the remaining rows.
- The waste will be spread and completed in 2-foot lifts and compacted to approximately 1 foot in thickness by a minimum of five passes using a landfill compactor.

2.7.2 Daily and Intermediate Cover

Cover material will be utilized to minimize vector breeding, animal attraction, and fire potential, as well as to prevent blowing litter and control odors. The intermediate cover will comprise soil from the on-site stockpile and 4 to 8 inches of mulch for erosion control and slope stabilization. Daily cover will be composed of soil from the on-site stockpile or synthetic materials such as tarps and geomembranes. Daily soil cover will be placed and compacted to a minimum thickness of 6 inches. The intermediate soil cover will be placed and compacted to a minimum thickness of 12 inches. Mulch is from on-site recycled yard waste.

2.7.3 Final Cover

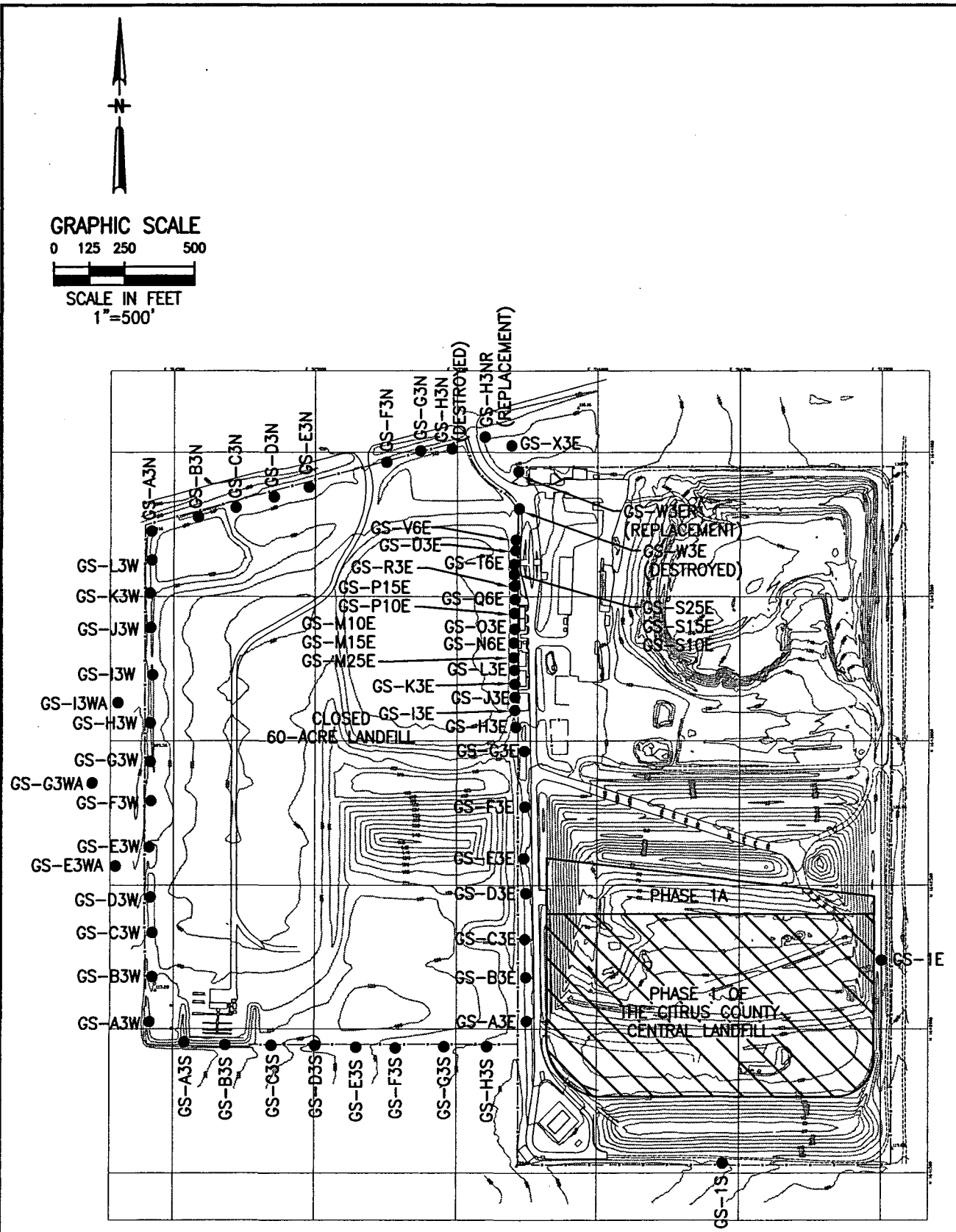
The final cover system will be designed in accordance with Rule 62-701.600(5), FAC. The final cover will be placed on the intermediate cover as phases of the facility are closed. The conceptual final cover system for landfill closure, from top to bottom includes the following:

- 4-inch layer of top soil material with surface vegetation
- 20-inch soil layer
- Composite drainage net layer (geosynthetic filter fabric with drainage net)
- 40-mil textured geomembrane

2.8 OPERATION OF GAS, LEACHATE, AND STORMWATER CONTROLS (62-701.500(2)(h), FAC)

2.8.1 Landfill Gas Controls

Passive gas vents will be installed as part of final closure for the landfill. The operations plan will be updated at that time to provide operation and maintenance of the landfill gas controls.



LEGEND

● GAS MONITORING SAMPLING POINT

Figure 9-1
Gas Monitoring Probes

ATTACHMENT 2.1

GROUNDWATER AND LEACHATE MONITORING PLAN REVIEW REVISIONS

Site Background Wells	Detection Wells	Intermediate Wells	Compliance Wells
MW-1R	MW-8	MW-6	MW-E
MW-2	MW-9		
MW-3	MW-AA	Piezometers	
MW-7	MW-B	MW-4	
	MW-C	MW-5	
	MW-D		

The second proposed modification is that groundwater samples collected from monitoring well MW-6 be analyzed for THM and fecal coliform on a semiannual basis in addition to the current parameters listed in Table 2.

Groundwater monitoring will be continued on a semiannual basis with reports submitted to DEP.

3.2 LEACHATE

One modification to the existing Leachate influent monitoring scheme is proposed at this time. Per pending revisions to Rule 62-701.510(6)(c), F.A.C., leachate influent shall be sampled on an annual basis for the parameters listed in Rule 62-701.510(8)(c) and (8)(d) with reports submitted to DEP.

Several modifications to the existing Leachate effluent monitoring scheme are proposed at this time. The first proposed modification is that the analysis of Total Trihalomethanes (THM) within the leachage effluent be changed from the quarterly to semiannual. In addition to semiannual THM monitoring of the leachate effluent, monitoring of THM will be added to the semiannual groundwater analyses performed on samples collected from MW-6, as discussed in Section 3.1. The semiannual sampling of leachate effluent and MW-6 for THM should be performed on the same schedule to allow for comparison. Based on the horizontal distance between the infiltration ponds and the edge of the zone of discharge (approximately 1,200 feet) and the vertical distance between land surface and the water table surface (approximately 100 feet of sands) monitoring of THM within MW-6 should be adequate to detect any potential impacts to groundwater quality. The second proposed modification is that the weekly fecal coliform sampling be removed from the leachate effluent requirements. As discussed in Section 3.1, monitoring of fecal coliforms will be added to the semiannual analyses performed on samples collected from MW-6. Monitoring of fecal coliforms within MW-6 should be adequate to detect any potential impacts to groundwater quality. The third proposed modification is that the quarterly requirement to analyze for metals (Arsenic, Barium, Cadmium, Chromium, Iron, Mercury, Lead, Selenium, and Silver) be reduced to annual. These metals are monitored on a semiannual basis within groundwater samples collected from all on-site monitoring wells, which provides adequate data to evaluate potential impacts to groundwater quality. The final proposed modification is that the annual requirement to analyze Leachate effluent for the parameters listed in 40 CFR Part 258 Appendix II be changed to Appendix I. Within 180 days of the permit expiration, leachate effluent will be sampled and analyzed for the parameters listed in 40 CFR

Part 258 Appendix II. No other modifications to the existing Leachate effluent monitoring scheme are proposed at this time.

ATTACHMENT 3.1

PREVIOUSLY SUBMITTED AND APPROVED LONG-TERM CARE COST ESTIMATE PREPARED BY CH2M HILL, AUGUST 23, 1999 AND SUPPORTING DOCUMENTS

CH2M HILL
3011 S.W. Williston Road
Gainesville, FL
32608-3928
Mailing address:
P.O. Box 147009
Gainesville, FL
32614-7009
Tel 352.335.7991
Fax 352.335.2959

CH2MHILL

August 23, 1999

153891.46.01

Ms. Susan J. Metcalfe, P.G., Director
Citrus County Division of Solid Waste Management
P.O. Box 340
Lecanto, FL 34460-0340

Dear Ms. Metcalfe:

Subject: Regualtory Closure/Long-Term Care Cost Estimates for the Citrus County Central Landfill

Attached are closure and long-term care (C/LTC) cost estimates for the Citrus County Central Landfill developed based on the Florida Department of Environmental Protection's (FDEP) *Financial Assurance Cost Estimate Form*. Also attached are solid waste tonnage projections, landfill life expectancy predictions, and C/LTC escrow account deposit requirements.

Solid Waste Tonnage Projections

Table 1 presents landfilled waste and recyclable materials generation rate projections based on the following:

- Population growth is based on median growth rate projections from the Bureau of Economic and Business Research, February 1999
- Landfilled waste and recyclable materials quantities for FY 93-94 through FY 97-98 are actual quantities based on landfill scale records
- Landfilled waste and recyclable materials quantities for FY 98-99 are estimates extrapolated from the amounts received between October 1, 1998 and June 30, 1999
- Landfilled waste and recyclable materials quantity projections for FY 99-00 and beyond are based on the following assumptions
  - Per capita waste and recyclable generation rates will remain constant at the FY 98-99 rates

- All of the solid waste generated in the County will be disposed of at the County's landfill

Landfilled waste tonnage decreased by approximately 55 percent during FY 96-97 because waste was being transported out of the County for disposal. Changes in tipping fees, and County billing and assessment procedures reversed this trend, and landfilled waste tonnage increased approximately 33 percent and 23 percent, respectively during FY 97-98 and FY 98-99. Using the assumptions stated above, landfilled waste tonnage is projected increase by approximately 2.0 percent annually through FY 04-05.

Landfill Life Expectancy

Apparent waste density is the quantity of waste placed in the landfill divided by the volume of landfill capacity consumed ignoring the amount and volume of cover material. Apparent waste density at the Citrus County Central Landfill averaged approximately 875 pounds per cubic yard (lbs./CY) between surveys conducted in July 1992 and July 1995. This apparent density is used in Table 1 to calculate waste volumes for FY 93-94 and FY 94-95.

As the landfilled waste quantity increases, apparent waste density is expected to increase because the ratio of cover soil to waste is lower. Apparent waste density also increases as the solid waste in the landfill degrades and settles resulting in recovered capacity. Between July 1995 and December 1998, the landfill achieved an apparent density of approximately 1,200 lbs./CY. In order to estimate waste volumes for FY 95-96 through FY 98-99 and project waste volumes for FY 99-00 and beyond, an apparent waste density of 1,150 lbs./CY has been assumed. The landfill life expectancy projection is presented in Table 1. Based on this projection, the Central Landfill is expected to reach its permitted capacity during mid-FY 03-04.

Closure and Long-Term Care Cost Estimates

According to FDEP regulations (FAC 62-701.630), updates to C/LTC cost estimates prepared by a Professional Engineer are required annually. The closure cost estimates must be based on the type of waste handled at the facility, cover material, topsoil, seeding, and other cost associated with proper closure of the facility. LTC cost estimates must include land surface care; groundwater, surface water, leachate, and gas monitoring; leachate treatment and disposal; and maintenance of onsite facilities. C/LTC cost estimates for the Phase 1 & 1A disposal area, the closed 60-acre disposal area and the waste tire storage area are discussed below and summarized in Attachment 1. Rationale and justification for unit prices is provided in Attachment 2. The cost estimates are in 2000 dollars.

The proposed cover system for Phases 1 & 1A is shown on Figure 1. The closure cost for the 18.3-acre disposal area is estimated to be $2,716,000. LTC costs for Phases 1 & 1A and the

closed 60-acre disposal area is estimated to be $158,000 annually for 30 years. These C/LTC cost estimates have been prepared without detailed engineering design and are considered order-of-magnitude estimates as defined by the American Association of Cost Engineers. The final cost will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, continuity of personnel and engineering, and other variable factors. As a result, actual cost will vary from the estimates presented.

Closure and Long-Term Care Escrow Account Deposits

FAC 62-701.630 require that escrow accounts or alternative financial mechanisms be established by the owner or operator of a solid waste management facility to accumulate funds for closure of the facility during its useful life. Annual contributions to the account should be based on the closure cost estimate divided by the number of years of remaining facility life.

According to FAC 62-701.620, the owner or operator of a landfill shall be responsible for monitoring and maintaining the facility for a period of 30 years from the date of closing. FAC 62-701.630(5)(d)2 allows owners or operators of government-owned landfills to fund LTC costs on an annual basis during the LTC period provided the owner or operator specifically documents the method to be used to finance the LTC costs.

The C/LTC escrow account calculations presented in Table 2 are based on the assumption that the County will make fixed annual deposits to the escrow account during the operating life of the landfill and throughout the LTC period.. The escrow account deposits shown in the table have been determined on a cash flow basis using the Construction Cost Index (CCI) as the inflation factor for closure costs, the Producer Price Index (PPI) as the inflation factor for LTC costs, and projected long-term interest earnings provided by the County. The CCI of 2.4 percent is based on the average annual increase in the 20-City Index between January 1994 and January 1999 as reported by the *Engineering News-Record*. The PPI of 1.0 percent is based on the average annual increase in the Finished Goods Index between October 1993 and October 1998 as reported in the *PPI Detailed Report* produced by the U.S Department of Labor, Bureau of Labor Statistics.

Based on these assumptions, the County will need to deposit $95,500 annually into its C/LTC escrow account during FY 98-99 through FY 33-34. This deposit will fully fund the closure costs and partially fund the LTC costs during the operating life of the landfill. The remainder of the LTC costs will be funded on an annual basis during the LTC period.

Conclusions

Based on the information presented and assumption used in this report regarding the quantity of waste disposed at the County's landfill, landfill capacity, and apparent waste

density, Phases 1& 1A have adequate capacity to remain operational until mid-FY 03-04. Based on the current C/LTC cost estimates and the end of year C/LTC escrow account balance for FY 97-98, the County needs to make annual C/LTC escrow account deposits of $95,500 during FY 98-99 through FY 33-34.

Sincerely,

CH2M HILL

R. J. Bruner III, P.E.
Project Engineer

GNV/METCALFE.DOC
c: Dave Green/DFB

Table 1
Citrus County Population and Waste Projections
Phases 1 & 1A Closure Using Off-Site Soils

Fiscal Year	Citrus County Population Projection[1]	Projected Waste (Tons)	Solid Waste Breakdown		LF Volume Consumed[3] (CY)	Volume Remaining[4] (CY)
			Landfilled Waste[2] (Tons)	Recyclables[2] (Tons)		
93-94	102,846	65,709	62,304	3,405	142,409	1,174,479
94-95	105,468	66,710	62,635	4,075	143,166	1,021,519
95-96	107,884	64,823	60,637	4,186	105,456	916,063
96-97	109,984	41,993	39,003	2,990	67,831	861,063
97-98	112,424	61,783	57,882	3,901	100,664	758,477
98-99	114,934	79,855	75,369	4,485	131,077	627,400
99-2000	117,500	81,638	77,052	4,585	134,004	493,396
2000-01	119,900	83,305	78,626	4,679	136,741	356,656
01-02	122,349	85,006	80,232	4,775	139,533	217,122
02-03	124,848	86,743	81,870	4,872	142,383	74,739
03-04	127,398	88,514	83,543	4,972	145,292	0
04-05	130,000	90,322	85,249	5,073	148,259	
05-06	132,241	91,880	86,719	5,161	150,815	
06-07	134,521	93,464	88,214	5,250	153,416	
07-08	136,841	95,075	89,735	5,340	156,061	
08-09	139,200	96,714	91,282	5,432	158,751	
09-10	141,600	98,382	92,856	5,526	161,489	

Notes:

1 Population growth is based on median growth rate projections from the Bureau of Economic and Business Researc h, February 1999.

2 Waste Landfilled and Recyclables for FY 93-94 through FY 97-98 are actual values based on scale records. Waste Landfilled and Recyclables for FY 98-99 are estimates extrapolated from the amounts received between October 1, 1998 and June 30, 1999. Waste Landfilled and Recyclables projections for FY 99-00 and beyond are based on the assumption that the per capita waste and recyclable generation rates will remain constant at the FY 98-99 rate and that all waste generated in the County will be disposed of in the County's landfill.

3 Based on an apparent waste density of 875 pounds per cubic yard prior to FY 95-96 and 1,150 pounds per cubic yard during FY 95-96 and thereafter.

4 The remaining waste volume for FY 94-95 volume was corrected based on a July 1995 survey by I. F. Rooks. The remaining waste volume for FY 96-97 and FY 97-98 were corrected based on the *Landfill Capacity Report*, CH2M HILL, April, 1999..

Table 2
Citrus County Division of Solid Waste Management
Funding of Closure & Long-Term Care Escrow Account with Long-Term Care Escrow Account Funded Annually
Phases 1 & 1A Closure Using Off-Site Soils

Fiscal Year	Deposit	Withdrawal	Balance	Current $ Closure	Current $ Long-Term Care	2000$ Closure	2000$ Long-Term Care
95-96			1,970,638				
96-97			2,350,407				
97-98			2,805,918				
98-99	95,500		3,038,908				
99-00	95,500		3,283,314				
00-01	95,500		3,539,697				
01-02	95,500		3,808,642				
02-03	95,500		4,090,765				
03-04	95,500	2,983,171	1,403,542	2,983,171		2,716,000	
04-05	95,500	165,982	1,401,833		165,982		158,000
05-06	95,500	167,627	1,398,397		167,627		158,000
06-07	95,500	169,287	1,393,131		169,287		158,000
07-08	95,500	170,964	1,385,930		170,964		158,000
08-09	95,500	172,658	1,376,683		172,658		158,000
09-10	95,500	174,368	1,365,273		174,368		158,000
10-11	95,500	176,095	1,351,576		176,095		158,000
11-12	95,500	177,840	1,335,463		177,840		158,000
12-13	95,500	179,601	1,316,800		179,601		158,000
13-14	95,500	181,381	1,295,442		181,381		158,000
14-15	95,500	183,177	1,271,242		183,177		158,000
15-16	95,500	184,992	1,244,041		184,992		158,000
16-17	95,500	186,824	1,213,675		186,824		158,000
17-18	95,500	188,675	1,179,969		188,675		158,000
18-19	95,500	190,544	1,142,744		190,544		158,000
19-20	95,500	192,432	1,101,807		192,432		158,000
20-21	95,500	194,338	1,056,957		194,338		158,000
21-22	95,500	196,263	1,007,985		196,263		158,000
22-23	95,500	198,207	954,669		198,207		158,000
23-24	95,500	200,171	896,778		200,171		158,000
24-25	95,500	202,154	834,066		202,154		158,000
25-26	95,500	204,156	766,279		204,156		158,000
26-27	95,500	206,178	693,149		206,178		158,000
27-28	95,500	208,221	614,392		208,221		158,000
28-29	95,500	210,283	529,714		210,283		158,000
29-30	95,500	212,367	438,803		212,367		158,000
30-31	95,500	214,470	341,334		214,470		158,000
31-32	95,500	216,595	236,965		216,595		158,000
32-33	95,500	218,740	125,336		218,740		158,000
33-34	95,500	220,907	6,070		220,907		158,000
34-35							
35-36							
		8,748,668		2,983,171	5,765,497	2,716,000	4,740,000

Annual Deposit	**$95,500**

Interest	4.9%
Inflation (CCI)	2.4%
Inflation (PPI)	1.0%

Attachment 2C

Citrus County Contract Prices for Mowing and Landscape Maintenance

knowing

Solid Waste Management

$ 98/ac = $5400 / 55 ac

Solid Waste Management Facility - Approximately 55 acres (Total Bid)
230 W. Gulf to Lake Hwy.
PO Box 340
Lecanto, Fl. 34460

Rough Cut Areas:

Area 1. Approximately 45 acres of the "closed landfill" site. Will be mowed three times annually, in March, June, and October.

LTC 5216

Annual Price $ 2700.—

Area 2. Approximately 10 acres consisting of the area between the State Right of Way and the fence line at the Solid Waste facility. This area will be mowed monthly during summer and/or high growth months. Mowing will be on an as needed basis during winter and/or slow growth months.

OP 5242

Annual Price $ 1500.—

Area 3. Fence Line cleaning will be performed three times annually, in March, June and October. This will include the cleaning of any weeds, vines, or other growth that comes in contact with the fence line bordering State Rd. 44.

LTC 5244

Annual Price $ 1200.—

Total Price for Solid Waste Facility $ 5400.—

J & J Tractor
Bidder Name

P.O. Box 640597
Beverly Hills, FL. 34464
Bidder Address

ON File
Occupational License #

746-3109
Phone Number

By signing above the bidder agrees to all terms and conditions as outlined in this document unless otherwise noted.

NOTE : There will be a mandatory pre-bid meeting at the Solid Waste Facility on Wednesday, October 21th, 1998 at 8:00 am at the Solid Waste Facility. If you have any questions or comments please contact David Chamblin at 352-746-5000.

Jones Edmunds & Associates, Inc. JEA
CONSULTING ENGINEERS AND SCIENTISTS
Destin · Gainesville · Jacksonville · Tampa

PROJECT NUMBER: _____ SHEET ____ OF ____
PROJECT NAME: _____
BY: _____ DATE: _____
SUBJECT: _____
CHECKED BY: _____ DATE: _____

Mowing

Grass Masters (904) - 724 - 6255

spoke with Don Anderson

Mowing of landfill = between $35.00/acre and $45.00/acre depend. on size.

Fertilizing Grass Master (same as above)

Fertilizing a landfill = between $100.00/acre and $125.00/acre depend. on size.

Sod Installation

From Marion County Baseline Landfill CLOSURE CELL 3-A+B

Copeland = $.17/SF
GIT = $.16/SF
Kimmins Contracting = $.13/SF
SE Environmental Contracting = $.18/SF

USE $.17/SF or

.17
x 9 SF/SY
$1.53/SY

FEE PROPOSAL
LANDFILL MAINTENANCE

All prices below are for performing the work for a period of two years.

The County reserves the right to extend the contract for an additional year providing it is agreeable with both parties.

1.) $ 595 . 00 per acre to seed, fertilize, and mulch at Doctors Inlet, Long Bay, Keystone Heights, Camp Blanding, and Rosemary Hill Landfills with all materials (seed, fertilizer, mulch, etc.) supplied by proposer.

2.) $ 190 . 00 per acre - spread fertilizer.

3.) $ 480 . 00 per acre - spread seed and fertilizer.

4.) $ 36 . 50 per acre to mow.

5.) $ 4 . 75 per cubic yard for top soil material based on 16 yards per tandem load.

6.) $ 60 . 00 per hour - backhoe (track mounted).

7.) $ 60 . 00 per hour - dozer.

8.) $ 35 . 00 per hour - farm tractor.

9.) $ 60 . 00 per hour - front end loader.

10.) $ 35 . 00 per hour - dump truck (10 wheeler).

11.) $ 60 . 00 per hour - dump truck (off road).

12.) $ 45 . 00 per hour - front end loader / backhoe (rubber tire).

13.) $ 40 . 00 per hour - motor grader.

14.) $ 50 . 00 per hour - lowboy and trailer.

15.) $ 8 . 75 per hour - labor.

16.) $ 62 . 00 per pallet of 500' Bermuda for placing sod.

(NOTE: Size of Equipment will be responsibility of contractor to complete job at prices stated above.)

$ 1823 . 00 TOTAL
(Sum of Item 1 - 16)

(Total used only to determine low bidder only. Payment will be based on actual work performed at unit prices above.)

EROSION CONTROL SEEDING & MULCHING
Company Name (Please Print or Type)

Robert L. Barnes
Authorized Signature Robert L. Barnes