HODGES VINES
FOX ALLEN &
ASSOCIATES
PLANNERS/ENGINEERS/MANAGEMENT/
ECONOMIC FEASIBILITY CONSULTANTS

3426 OLD CANTRELL ROAD
P.O. BOX 7611
LITTLE ROCK, ARKANSAS 72217
501 664-5000

MAY 4 1979

28723

May 4, 1979

Mr. Bob Dorsey
Arkansas Department of Pollution
Control and Ecology
Solid Waste Control Division
8001 National Drive
Little Rock, AR 72209

Re: Lee County Sanitary Landfill - Phase I

Dear Mr. Dorsey:

Enclosed are the following listed materials:

(a) Three (3) sets detailed engineering plans - Phase I

(b) Three (3) copies of application form

(c) Three (3) copies of operational narrative and cost study

Please consider the submitted material as a request by Lee County for an operating permit.

As an overview of this particular project, we offer the following comments:

1. The Phase I design includes roughly 10 acres, a large part of which is devoted to permanent access and site facilities. Approximately 5.5 acres of landfill space is provided. This area is expected to last from two to two and one-half years. The life of Phase I can be extended by using a second cycle of refuse filling over the completed Phase I area, but all cover material would have to be transported from outside the Phase I limits.

2. A total of 27.75 acres is included in the County's long-term lease. The additional 17.8 acres or so will form Phase II. The longevity of Phase II, due to better suited topography, will be much greater than that of Phase I. Detailed engineering plans for Phase II are in progress, and will be submitted to the Department in the near future.

3. The two most important aspects of operation for Phase I will be compaction of refuse and on-going erosion control. I would like to discuss these aspects with you more fully at a later date.

4. The heavy equipment for the landfill, a D-6 equivalent and a 9 cubic yard towed scraper, has already been acquired by the County.

5. Bids for preparatory work on Phase I (roads, drainage, terrace construction and fencing) will be received on May 17, 1979. Due to a shortage of funds, we will not be able to fully complete site preparation work. The County will have to supplement the contract work with additional terrace construction, and possibly will have to provide the needed equipment housing, site office and entrance fencing. We will not know the exact extent of supplemental work until bids are received.

6. All Phase II preparatory work will be performed by the County on as "as-needed" basis.

I feel that it would be beneficial if Mr. McDuffee could visit the site during construction; I will be periodically observing construction and will try to arrange joint visits. This would enable us to go over details of operation and future expansion.

If you have any questions, or would like to discuss the enclosed, please feel free to call.

Very truly yours
HODGES VINES FOX AND ASSOCIATES

William L. Dean

William L. Dean, P.E.

WLD/pl
JN 18270
copies to: Hon. L. E. Waldrip, County Judge
Mr. Richard McDuffee - ADPCE

enclosures:

HODGES VINES
FOX ALLEN &
ASSOCIATES
PLANNERS/ENGINEERS/MANAGEMENT/
ECONOMIC FEASIBILITY CONSULTANTS

3426 OLD CANTRELL ROAD
P.O. BOX 7611
LITTLE ROCK, ARKANSAS 72217
501 664-5000

Bob -
Mac has the plans in his office.
Steve

28723

June 11, 1979

Mr. Richard McDuffey
Arkansas Department of Pollution
Control and Ecology
8001 National Drive
Little Rock, AR 72209

Re: Lee County Landfill - Phase I

Dear Mac:

We have completed the changes requested in the operations narrative. Enclosed are three (3) copies of the revised report.

Also enclosed are three (3) copies of a supplementary sheet to the landfill plans you already have on Phase I. The additional sheet shows existing and proposed cross-sections on our Phase I bulky item area. Please insert the enclosed sheet into your sets of drawings.

If you have any questions or further comments, please feel free to call.

Very truly yours
HODGES VINES FOX AND ASSOCIATES

William L. Dean

William L. Dean, P.E.

WLD/pl
enclosures:
JN 18270

copy to: Hon. L. E. Waldrip,
County Judge

HODGES VINES
FOX ALLEN &
ASSOCIATES
PLANNERS/ENGINEERS/MANAGEMENT/
ECONOMIC FEASIBILITY CONSULTANTS

3428 OLD CANTRELL ROAD
P.O. BOX 7611
LITTLE ROCK, ARKANSAS 72217
501 664-5000

Mac

June 11, 1979

Mr. Richard McDuffey
Arkansas Department of Pollution
Control and Ecology
8001 National Drive
Little Rock, AR 72209

Re: Lee County Landfill - Phase I

Dear Mac:

We have completed the changes requested in the operations narrative. Enclosed are three (3) copies of the revised report.

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If you have any questions or further comments, please feel free to call.

Very truly yours
HODGES VINES FOX AND ASSOCIATES

William L. Dean

William L. Dean, P.E.

WLD/pl
enclosures:
JN 18270

copy to: Hon. L. E. Waldrip,
County Judge

11/15/77

#____

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
8001 National Drive
Little Rock, Arkansas 72209
Solid Waste Control Division 371-2130

APPLICATION
SOLID WASTE DISPOSAL PERMIT
(Sanitary Landfill)

MAY 4 1979

The undersigned is a registered professional engineer with the state of Arkansas. A permit will be issued following submission and approval of engineering plans and specifications in accordance with the Arkansas Solid Waste Disposal Code.

1. Applicant's name Lee County, Arkansas Phone No. 295-2339

   Address Judge's Office, Lee County Courthouse, Marianna, AR 72360

2. Engineer's name Hodges Vines Fox Allen & Assoc. Phone No. 664-5000

   Address 3426 Old Cantrell Road, P.O.Box 7611, Little Rock, AR 72217

3. Legal description and acreage NW 1/4 of NE 1/4 of S 5, T-3-N, R-4-E,

   Phase I = approx. 10 acres acres 30

4. Total area of site to be used as a sanitary landfill 30 acres.

5. Land is to be leased x, rented ____, owned ____. (If land is to be rented or leased, a copy of rental or lease agreement will be provided in narrative portion of plans.)

6. Present land use surrounding site Timber

7. Distance from nearest public road 400' and nature of access road

   present or planned 30' gravel surface

8. Distance to nearest residence 500'

9. Distance to nearest water well 500'

10. Distance to nearest lake or stream 1.5 miles Name Hawkins Bayou

11. Soil profile description, including depth of soil, wetness, permeability, and soil texture. Include a statement about any evident limitations or hazards such as flooding, character of bedrock, if known, permeable substrate or other factor. This information should be obtained from the Soi Conservation Service or other reliable source (attach copy of report).

12. Depth of minimum water table 70 feet. Determined by McClelland

    Engineers, Little Rock, AR (responsible authority)

11/15/77

#_____

13. Type of operation: Trench fill____ Area fill x or Combination_____.

14. Types, quantities, and sources of materials to be disposed of:

Type	Quantity	Source
Residential/ Commercial	90%	City of Marianna County Individuals
Industrial	10%	City of Marianna
Other		

NOTE: No hazardous wastes, sewage solids or liquids, septic tank pumpings, or other liquids are allowed to be disposed of at a sanitary landfill without written approval from the Department. Any landfill intended for these wastes may required a special permit.

15. Procedures for prevention of unauthorized use of the site
12' high security type chain link fencing along North property line
Also along E. cross fence line (see plans)

16. The proposed use of the site upon termination of the disposal operation
Timber

17. Type collection service provided or planned County: None
City of Marianna - Residential and Commercial by Packer Truck

18. What city/county ordinance control solid waste collection/disposal in the area served by the proposed landfill? none

REMARKS: Special site preparation and operational features:
(a) Use of native liner soils during site preparation of working leve
(b) Selected use of native cover soils during operation
(c) Installation of ground water observation wells at base of ridge
(d) On-going erosion control during operations

NAME OF ENGINEER William L. Dean, P.E. TITLE Project Engineer

SIGNATURE William L. Dean DATE 11-17-77

REGISTERED ENGINEER No.4418 WILLIAM L DEAN

COPY MAC → BOB

HODGES VINES
FOX ALLEN &
ASSOCIATES
PLANNERS/ENGINEERS/MANAGEMENT/
ECONOMIC FEASIBILITY CONSULTANTS

3426 OLD CANTRELL ROAD
P.O. BOX 7611
LITTLE ROCK, ARKANSAS 72217
501 664-5000

RECEIVED
Dept. of Pollution Control
and Ecology

JAN 2 1979

file

December 29, 1978

Mr. Richard McDuffee
Solid Waste Control Division
Arkansas Department of Pollution
Control and Ecology
8001 National Drive
Little Rock, Arkansas 72209

Re: Lee County Sanitary Landfill

Dear Mr. McDuffee:

Enclosed please find the following materials pertaining to Phase I of the subject project:

1. Detailed soils report - McClelland Engineers (1 copy)
2. Engineering plans (1 set)

Please review the enclosed materials at your earliest convenience. I would like to meet with you and the Department engineering staff once you have completed your preliminary review to work out details of site preparation and operations.

If you would like to discuss the enclosed material during your review, please feel free to call.

Very truly yours
HODGES VINES FOX ALLEN & ASSOCIATES

William L. Dean

William L. Dean, P.E.

WLD/pl
enclosures:
copy to: Hon. L. E. Waldrip

JN 18270

AGREEMENT TO LEASE

MAY 4 1979

This lease made this 30th day of April, 1979, by and between Lee County, Arkansas, hereinafter referred to as "County" and Stanley Jones, hereinafter also referred to as "Owner",

W I T N E S S E T H :

I.

Stanley Jones the Lessor, hereby leases to the Lessee, Lee County, the following described real property located in Lee County, Arkansas, to wit:

LEE COUNTY LANDFILL

Part of the NE 1/4 Section 5 T-3-N R-4-E, St. Francis County, Arkansas, more particularly described as follows:

Commencing at the NW corner of the NE 1/4 of Section 5, T-3-N, R-4-E; thence East along the South line of the SE 1/4 of Section 32, T-4-N, R-4-E, 646.0 feet to the point of beginning, thence continuing East 1025.0' ; thence S 13° 20' 21" W, 897.21'; thence S 75°05'41"W, 703.68'; thence N 63°09'28"W, 369.85'; thence S 52°18'21"W, 250.22'; thence N 30° 46'17"W, 408.51'; thence N 68°38'44"E 285.61'; thence N 1°50'51"W; 217.11'; thence N 42°44'07" E, 501.02' to the point of beginning, containing 27.75 acres, more or less.

II

The described property shall be used as a sanitary landfill by Lee County.

III

The term of this lease shall be for twenty (20) years from the date of this instrument.

IV

Lee County shall pay to the Owner for said lease the sum of Twenty-Five Dollars & 23/100 ($25.23) per acre per year.

V

The Owner shall be provided with the phase plans for the landfill use in order to comply with the terms and conditions of this lease.

VI

The County will acquire a fifty (50) foot right-of-way into this 27.75 acre tract from the nearest public road and said access shall be dedicated to the public and a road placed thereon so as to give the Owner permanent access to the leased site.

VII

Upon completion of a landfill phase, the County will apply a 2 foot (minimum) earth cover to the entire phase. The County will further finish grade the phase to insure proper surface drainage and will maintain the completed phase until such time as is necessary to establish vegetative cover, or otherwise prevent and correct any substantial and continuing erosion.

The final cover application and all ensuing maintenance by the County will be performed in accordance with requirements of the Arkansas Department of Pollution Control and Ecology. The Owner shall have the right to begin reaforestation or any other land use that is non-disruptive to the landfill use and operation at any time after a phase has been completed by the County. The County shall notify the Owner in writing of completion of individual areas that are suitable for reuse by the Owner and shall include an effective date of which the Owner may undertake reuse. Should the Owner elect to reassume use of completed landfill areas, the County will cease to be responsible for maintenance as of the date of commencment of the Owner's operations on the area identified in writing by the County.

VIII

This lease shall not be assignable.

IN WITNESS WHEREOF, the undersigned set their hands on the date set forth above.

L. E. Waldrip
COUNTY JUDGE, LEE COUNTY, ARKANSAS

Norris C. Hodge
COUNTY CLERK, LEE COUNTY, ARKANSAS

Stanley Jones
STANLEY JONES

ATTEST: William B. Dean

STATE OF ARKANSAS)
COUNTY OF LEE) ACKNOWLEDGEMENT

On this day personally appeared before me, L. E. Waldrip, County Judge and Norris Hodge, County CLerk, knwon to me to be the persons names subscribed in the foregoing Agreement of Lease and that they signed same for the purposes and intents therein mentioned and set forth.

Mary Jo Carruth
Notary Public

My Commission Expires: 5-17-81
(Seal)

STATE OF ARKANSAS)

COUNTY OF LEE) ACKNOWLEDGEMENT

On this day personally appeared before me Stanley Jones, known to me to be the person whose name is subscribed in the foregoing Agreement of Lease and that they signed same for the purposes and intents therein mentioned and set forth.

Mary Jo Canada
Notary Public

My Commission Expires 5-17-81

(Seal)

LEE COUNTY LANDFILL

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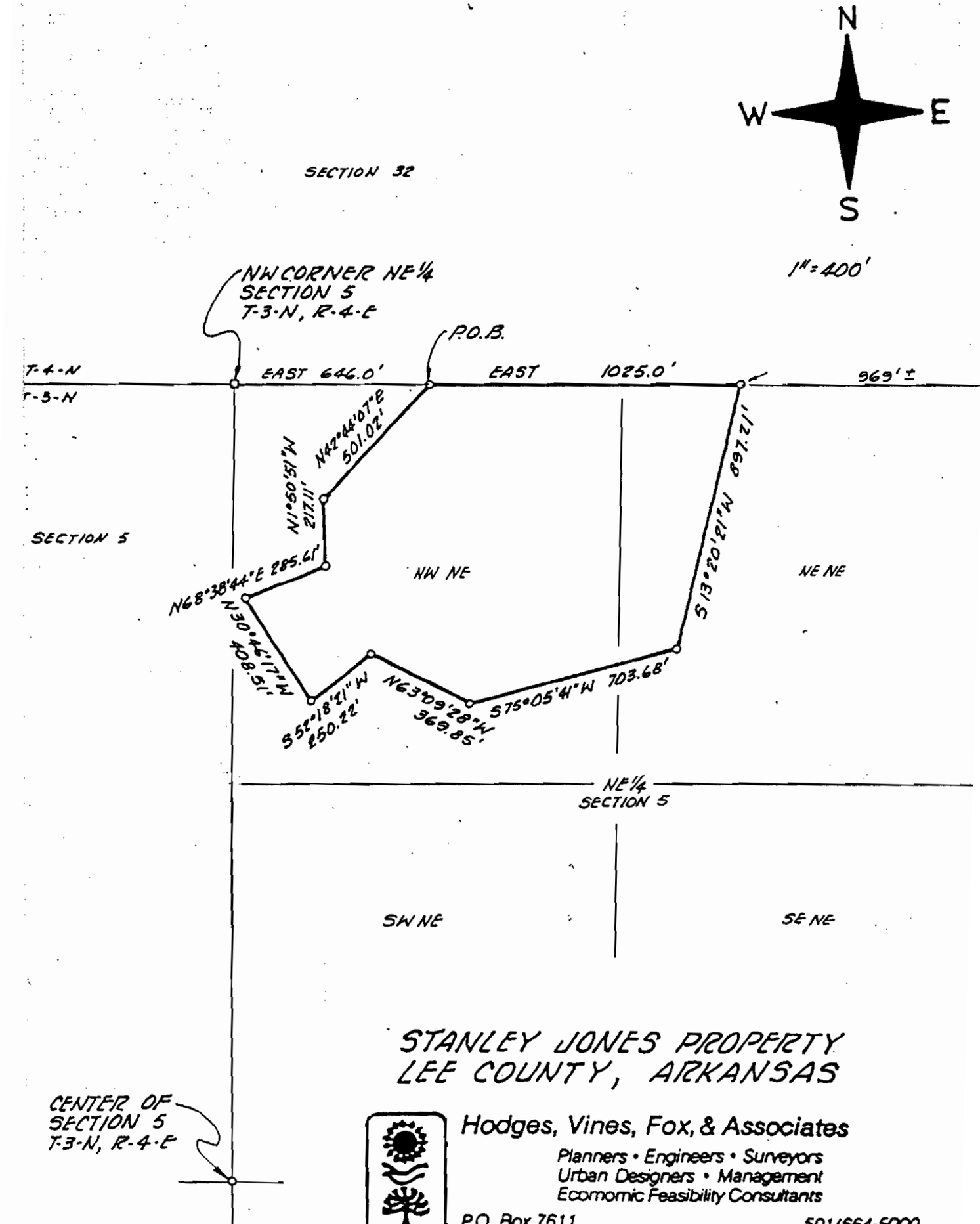

STANLEY JONES PROPERTY
LEE COUNTY, ARKANSAS

Hodges, Vines, Fox, & Associates
Planners • Engineers • Surveyors
Urban Designers • Management
Economic Feasibility Consultants
P.O. Box 7611

28723

OPERATIONS NARRATIVE
AND
COST STUDY

LEE COUNTY SANITARY LANDFILL

June 79

LEE COUNTY, ARKANSAS

(REVISED JUNE, 1979)

PREPARED BY

HODGES VINES FOX ALLEN & ASSOCIATES
3426 OLD CANTRELL ROAD
P. O. BOX 7611
LITTLE ROCK ARKANSAS 72217

SUITE 204 MCILROY PLAZA
FAYETTEVILLE ARKANSAS 72701

11/15/77

#_____

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
8001 National Drive
Little Rock, Arkansas 72209
Solid Waste Control Division 371-2130

RECEIVED
Arkansas Department of Pollution Control & Ecology
MAY 4 1979

APPLICATION
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(Sanitary Landfill)

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(c) Installation of ground water observation wells at base of ridge
(d) On-going erosion control during operations

NAME OF ENGINEER William L. Dean, P.E. TITLE Project Engineer

SIGNATURE William L. Dean DATE 1-17-79

ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.4418 WILLIAM L DEAN SEAL

OPERATIONS NARRATIVE AND COST STUDY

LEE COUNTY SANITARY LANDFILL
Lee County, Arkansas

INTRODUCTION

Lee County Arkansas, obtained funds from the U. S. Department of Housing and Urban Development under the 1976 Community Development Block Grant Program to implement a landfill disposal site for solid wastes. Since award of the grant, the County has proceeded with the lengthy process of site selection, evaluation, preliminary approval, acquisition and preparation of engineering plans.

The current site, the third of the potential sites pursued, is expected to be in operation by summer, 1979. Development plans call for five acres to be utilized initially as Phase I. An additional twenty-five acres will be included in the final landfill design as Phase II.

Lee County's interest in establishing a permitted landfill centers on the hope of reducing promiscuous dumping in rural areas of the County. The provision of a County-run facility will give rural County residents an alternative to open dumping. In addition to this environmental interest, the County hopes to obtain economic benefits. These benefits will result from a centralized disposal operation in lieu of continuing proliferation of independent municipal operations.

Initially, the prime users of the Lee County landfill will be the City of Marianna and individuals. It is possible that, in future years, users will include other incorporated communities in Lee County as these communities expand services to include garbage pickup. Ultimately, users

could as well include rural County residents served by containerized waste pickup.

The economic benefits of centralized landfill disposal could be maximized at the Lee County facility by the acceptance of waste from neighboring St. Francis County, particularly from Forrest City. The location and planned size of the Lee County facility is such that a joint disposal operation is feasible. It is expected that such intergovernmental cooperation will evolve over a period of time. Economic benefits of such cooperation would include lower per ton disposal costs and elimination of unnecessary duplication of labor and heavy equipment.

This report deals with the following aspects of the proposed landfill:

Part I - Equipment and Facilities

Part II - Operational Procedures

Part III - Cost of Operations and User Charges

PART I - EQUIPMENT AND FACILITIES

A. SITE DESCRIPTION

1. Location

The proposed landfill is located along Arkansas Highway 131, approximately five miles east of Haynes, Arkansas. The property is owned by a resident of Lee County, and will be leased on a long-term basis.

Geographically, the proposed landfill is located approximately midway between Marianna, Lee County, and Forrest City, St. Francis County. These two cities are both County seats and are the most populous of the two-county area. The combined 1970 population was in excess of 18,000 persons. Highway route mileage from Marianna is approximately twelve miles, and from Forrest City, roughly eight miles.

A total of three residences are situated within a one-half mile radius of the proposed landfill. All these residences are served by private wells.

2. Access

From Marianna, access to the site is via Arkansas Highway 1 North to Haynes, thence east via Arkansas Highway 131. Asphalt surfacing and the State Highway designation ends within one-half mile of the site.

Access to the site from Forrest City is by Arkansas State Highway 334. This route is asphalt surfaced to within four and one-half miles of the landfill site.

It is expected that the State Highway Department will be petitioned to extend asphalt surfacing along Highway 131 to the landfill site.

This will be desirable to provide more efficient access from Marianna and to accomodate the increase in heavy truck traffic.

If, in the future, some cooperative arrangement on use of the landfill is worked out between Lee County and either Forrest City or St. Francis County, it is expected that the Highway Department will be similarly petitioned to extend asphalt surfacing on Highway 334.

3. Geological

The Lee County site is situated on the eastern fringe of the Crowley's Ridge loess formation. Soils on the initial five acres are mixed, ranging from large amounts of wind-deposited silt to moderate amounts of clay. Soils also include some stratified sand and gravel deposits. Depth to the permanent water table is seventy feet on the lowest elevation of the site. On the higher reaches of Phase I, the depth to the water table is in excess of one hundred feet.

4. Size

The landfill tract is to be leased from an overall tract of one hundred sixty acres. The lease will include thirty acres initially and will be for a period of fifteen years. A five acre portion of the thirty acres will be developed under public contract as Phase I of the landfill. During construction of Phase I, engineering plans will be finalized for development of the remaining twenty five acres. This portion will form Phase II of the landfill, and will be developed on as 'as-needed' basis by County personnel. Prospects for the lease of additional acreage from the one hundred sixty acre tract are good. The lease of such additional acreage would provide for almost unlimited expansion of the facility.

5. Topography

Slopes on the proposed five acre Phase I range from mild (1% - 6%) on the ridgecrests to severe (+10%) on the sideslopes. The silt type soils that predominate are extremely susceptible to erosion. The existing contours do not lend themselves readily to any systematic approach to landfilling. These factors combined will require extensive earthmoving and erosion control as part of Phase I site preparation.

All aspects of site preparation, including the foregoing, are discussed in the following section.

B. SITE PREPARATION

1. Description

Site preparation work will be divided into two categories for Phase I. These categories include public contract work and acquisition of site facilities. Further preparatory work for Phase I will be performed by County forces as part of the landfill operating procedures.

2. Public Contract Work

Work descriptions in this category are as follows:

(a) Clearing, grubbing and operations area grading - this activity consists of removal and disposal of vegetative growth from the areas to be occupied by Phase I. Also included under this item is the necessary earthwork for the operations area. The operations area will provide space for the landfill office, equipment storage shed and material stockpiles.

(b) Unclassified excavation - approximately 12,300 cubic yards of excavation will be required to construct Terrace Levels One through Four and the main entrance road. This amount of excavation will be sufficient to make the fills required for Terrace Level One and for the southern ends of all terraces.

(c) Storm drainage piping - culverts will be installed where necessary to transmit surface runoff under roadways.

(d) Access and haul roads - the main access road will be gravel surfaced (9" thickness) in accordance with Arkansas Department of Highways specifications. Minor on-site haul roads will be constructed to serve landfill Terrace one and the bulky item disposal area. Minor roads will be surfaced with 6" of gravel surface course material according to Highway Department standard specifications.

(e) Swale ditching - shallow swale ditches will be provided for each terrace level as interceptors for surface runoff. The frequency of the swales is such that accumulated runoff between each will be quite small; thus erosion of lower terrace levels should be minimized. Point of discharge for terrace swales will be at the south end of the terraces.

(f) Erosion control features - includes seeding, seeding with mulch cover, solid sodding and ditch checks. Upon completion of earthmoving, the gently sloped (0.10% toward swale at crown of each terrace) working areas will be fertilized and seeded. The sloped embankments between terrace levels and along roadways (2' horizontal to 1' vertical) will be fertilized, seeded and mulch covered. Points of drainage swale discharge on embankments will be slab sodded. Pipe entrances and exits

will also be sodded as will any embankment trouble spots. Ditch checks constructed of sacked sand and cement will be provided at frequent intervals in the roadway ditches alongside the main entrance road. These will be necessary due to the steepness of the proposed roadway grade (10.8% maximum).

(g) Security fencing - security fencing, eight foot high chain link with three strand barbed wire at top, will be provided at the entrance to the site. Security fencing will also enclose the operations area.

3. Site Facilities and Equipment

In addition to the public contract work outlined preceding, items of procurement for Phase I are as follows:

(a) D-6 Caterpillar crawler dozer or equivalent

(b) 9 cubic yard towed scraper

(c) Litter fencing

(d) Office building

(e) Equipment storage shed

(f) Diesel fuel tank

(g) Fire extinguishers

The combination of the crawler dozer and towed scraper is ideally suited for the Lee County facility. Routine operation of the equipment will be discussed in Part II - Operational Procedures.

[redacted] to control the scattering of rubbish from working areas should be lightweight but durable. Its construction should allow for easy disassembly and relocation as the need arises. Litter fencing can be constructed using four foot high, lightweight chain link mesh and

six foot metal tee posts. The metal posts can be driven securely into the soil and the mesh attached with wire clips. Chain link mesh should be cut into sections of twenty feet in length for ease of handling and flexibility. Litter fencing should be provided around each daily working area in locations not interfering with equipment operation or delivery of wastes. Fencing should be moved as the daily working area is moved.

The site office building will consist of a prefabricated, pre-wired and insulated portable building. This structure will be erected on a poured concrete slab and will be skirted and tied. The building size will be roughly 12' x 32' and will be furnished complete with electric wall heaters, air conditioning units and lighting fixtures. The site office building will serve as central storage for equipment maintenance records, personnel break area and user fee collection point.

[redacted]

Electric power can be extended from about one quarter mile from the site. Power will be used for heating, cooling and lighting. Office furniture should include a desk, filing cabinet, two office chairs, sofa or couch and telephone. No water source is available to the landfill. Potable water for drinking and hand washing will have to be imported. Toilet facilities can be provided by either chemical or electric toilet. The electric toilet is preferred, since the unit can be installed within the office building. Voltage required is the same as for the air conditioning units.

To protect the landfill heavy equipment from vandalism and unauthorized use, a wood frame equipment storage shed will be provided. This shed will be tin sided and roofed with two or three equipment bays. The approximate size of the structure will be 36' x 48' for the three bay arrangement. This size will be adequate for initial fuel and equipment storage as well as for possible future heavy equipment or a refuse collection vehicle. Separate construction drawings will be prepared for the shed for public bidding.

Miscellaneous equipment will include hand tools for minor equipment repair and fire extinguishers. One 30-pound, cartridge type extinguisher should be kept on the crawler dozer to protect against equipment fires. Additional 30-pound units should be provided in the office building and in the equipment storage shed.

4. On-going site preparation and maintenance by County. Only the four lower landfill terraces will be built under public contract. Earthmoving and erosion control for the balance of Phase I will be the County's responsibility. Likewise, the earthwork, road building and erosion control work for Phase II will also be a County responsibility.

The balance of Phase I will be constructed on an "as-needed" basis. All earthwork can be performed by County personnel using the landfill equipment; it will, however, be necessary that the County commit additional equipment for preparation of the balance of Phase I. This additional equipment will include a sheeps-foot type roller and a crawler tractor. The roller and tractor combination will be used to compact the fill sections of Phase I. The crawler tractor will also have to assume compaction and covering of daily waste receipts while the regular landfill equipment is involved with earthmoving for terrace construction.

The County will also have to supply supplementary equipment during preparation of Phase II. Types and uses of supplemental equipment will be as previously outlined, except that road construction will in addition require a motor grader and gravel trucks. A backhoe may also be needed for culvert installation in Phase II.

The landfill entrance and haul roads should be maintained on a regular basis just as other County roads. This will be particularly important since the landfill cannot function if refuse trucks cannot navigate its on-site roads.

C. CAPITAL COSTS OF EQUIPMENT AND IMPROVEMENTS

The estimated purchase costs of the landfill equipment and facilities and the installed cost of site improvements are shown in Table 1 below.

TABLE ONE
CAPITAL COSTS - PHASE I

Public Contract Portion:

Clearing, Grubbing & Operations Area Grading	$ 7,000.00
Unclassified Excavation	18,400.00
Culverts	4,000.00
Gravel Surfacing	13,000.00
Ditching	2,000.00
Erosion Control	11,600.00
Security Fencing	$ 8,000.00
	$ 64,000.00

TABLE ONE
CAPITAL COSTS - PHASE I

Site Facilities and Equipment Portion:

D-6 Crawler Dozer	$ 77,000.00
9 c.y. Scraper	36,000.00
Litter Fencing	300.00
Office Building	6,500.00
Equipment Storage Shed	8,500.00
Electric Toilet	900.00
Fuel Tank and Pump	500.00
Fire Extinguishers	200.00
Power Service Extension	1,500.00
Office Furniture and Misc. Supplies	400.00
	$ 131,800.00

The total available Federal funds for the project amount to approximately $201,000.00. The total estimated expenditures amount to $195,800.00. Thus, a total of $5,200.00 would be available to cover construction cost overruns, or could be used to finance further site improvements. The funds available for the project appear to be adequate; receipt of bid prices for site preparation and minimum necessary equipment will determine adequacy of available funds for remaining facilities.

PART II - OPERATIONS

A. GENERAL DESCRIPTION OF WORK ACTIVITIES

1. Preparatory Work by County

After the public contract portion of site preparation is complete and prior to receipt of refuse, the constructed landfill terraces will be inspected for exposed, stratified deposits of sand, gravel or other pervious soils. Some limited spot excavations may be performed on each terrace level to determine presence of such strata within one to two feet of the surface. Such stratified pervious deposits will be either undercut and backfilled with compacted silt soil, or will be sealed from above by placement of two to three feet of compacted silt. Likewise, pervious seams exposed in terrace embankments will be sealed with compacted silt soils. Borrow for use in backfilling and sealing work will come from the abundant supply of loess from the upper reaches of Phase II. The landfill heavy equipment will suffice to handle any of the above described preparatory work, if it is found to be necessary.

2. Detailed Engineering Plans

Detailed engineering plans have been prepared for Phase I and form a part of this narrative. Detailed plans will be prepared on a similar type operation for Phase II. The Phase II engineering plans will be sub-

(a) Refuse Cells - the Phase I terraces range from 50' to 80' in width. All the terraces will be 250' in length. Most terraces are planned for a single lift of compacted refuse, although some terraces are

planned for two lifts. The placing and covering of refuse will be done by the area method of landfilling.

(b) Daily cover - wastes will be first placed at the toe of Terrace Level One near the entrance road. The wastes will be compacted against the 2:1 embankment between Levels One and Two. At the end of each working day, a recommended 9" of daily cover will be graded from the Upper Level Two onto the completed waste Cell. The next days' operation will either begin a second lift, if a two lift terrace, or will begin adjacent and southward of the previous cell. Working cells will systematically progress southward toward the end of the terrace, whether in single or double lifts.

The finish elevations of the prepared terrace levels have been set to ensure that adequate daily cover is always available on the next upper level. Thus, as a lower terrace level is finished out, the next terrace level will be at the finish grade of the lower level. This will ensure progressively wider and wider terraces, but will also mean that some of the upper haul roads will be constructed on top of landfilled wastes. Some of the upper terrace working areas will also be situated over compacted wastes and daily cover. For this to be a workable situation, it is vital that daily waste receipts be compacted to maximum density. A density of 1,000 lbs/cy. should be used as a goal in compaction of wastes. Careful attention should also be given to maximum compaction of the 9" daily cover in two equal lifts. Compaction of wastes and daily cover will be the key to successful operation of the facility. Severe stability problems for haul roads and work areas will result if good compaction is not obtained.

(c) Compaction - to achieve maximum waste compaction, bulky and compressible wastes should be excluded from the terrace working areas. Examples of these materials are construction debris (timber, metal siding, large pieces of concrete), discarded appliances and implements (refrigerators, engine blocks, barrels, etc), and vegetative debris (brush, leaves, trees and limbs, etc). All such non-putrescible materials which would detract from maximum compaction should be segretated from the terrace working areas and disposed of in the bulky item area or worked to the end of a terrace. Burial or covering of such materials may be accomplished in any area where subsequent settling and soft spots do not affect on-going landfill operation.

(d) Surface Drainage - shallow interceptor swales will be provided just above each working terrace to minimize surface runoff across completed cells. Caution must be exercised during operations not to block or obstruct flow in these swales.

The site prepared terraces will be provided with 0.10% fall to their individual swales. This amount of fall should be maintained across all completed refuse cells so as to prevent ponding. It is essential that positive drainage be established and maintained in working areas to enhance compaction, work in wet weather and stability of completed areas.

(e) Maintenance of Daily Cover, Final Cover - due to erodibility of native soils, a minimum of 9" of cover shall be applied daily to the working cells. This daily cover shall be maintained on all completed terraces throughout the estimated 12 to 24 month life of Phase I.

When Phase I has been completed as shown on the engineering plans, a final two foot (2') earth cover shall be spread and compacted over the entire Phase. The cover material shall be obtained from the areas designated on the Phase II plans.

Should the County elect to continue use of Phase I at the end of the landfilling as shown on the plans, application for extension of Phase I should be made to the Arkansas Department of Pollution Control. The application for extension must contain drawings showing the finish grades of Phase I as the beginning condition of a second cycle. The proposed finish elecations of the second cycle should also be shown. If an extension request is made for Phase I, the final 2' cover should be delayed until completion of the second cycle. If a second cycle is approved, all daily cover, as well as the final cover, must come from the areas designated on the Phase II plans.

(f) Wet Weather Operation - no areas have been reserved for wet weather operation, due to the ridge location of the site. Soils are well drained, and as long as surface drainage facilities are properly maintained, the landfill terraces will be the most effective areas in which to work during wet weather.

3. Routine Operation

Two types of haulers will principally use the Lee County Landfill. These two types will be existing municipal pickup systems and private individuals.

Municipal haul personnel should be familiar with the landfill operation so that they require no direction in entering and unloading at the working areas. Informational and directional signs should be erected so that individual haulers will be informed as to the procedure to follow.

Directional signs for individual haulers should indicate the location of the bulky item disposal area. No interruption of the landfill operation should be necessary for haulers to find and use this area. Normal waste loads should be directed to the daily working areas.

Incoming wastes should be deposited as near the working face as is practical. This will reduce the possibility of scattering of refuse. The landfill operator should be aware at all times of the presence of haulers entering and unloading in the working area. This awareness is necessary to avoid injuries and property damage.

Particular care should be taken to spread and compact refuse as soon as possible after delivery. As this is being accomplished, earth should be mixed with the refuse to increase compaction and to prevent scattering.

Refuse lifts for Phase I have been designed for 3' of refuse plus 9" soil cover. This lift in a daily working cell should be constructed in two increments to achieve maximum compaction. First, a layer of loose refuse should be spread against the working face to a maximum depth of 2-1/2' at the face of the upper terrace embankment. This initial layer of refuse should form a wedge against the embankment and should taper down from the 2-1/2' thickness to nothing at a distance of 15' to 20' from the toe of the embankment. Spreading and compaction of the refuse should be accomplished from the lower level to minimize reverse pulling of the dozer.

Next, the crawler dozer should move to the terrace level next above the working cell. A thin (1-3") of soil should then be dozed from the leading edge of the upper level onto the wedge of refuse below. The dozer should then move back to the lower level and repeatedly track back and forth over the complete length of the wedge. When no further rebound of the refuse is evident under the tracks of the crawler, the next increment of refuse should be placed in a manner similar to the first. The operator must use his judgement as to how thick the refuse layer should be at the face of the embankment so that the total compacted maximum thickness of the

refuse wedge is approximately 3' at the embankment. Compaction should be accomplished as before prior to placement of the 9" cover. When no further rebound of the refuse lift is evident, the operator should doze the 9" or so of cover soil from the upper level with attention to maintaining positive drainage across the surface of the completed cell. The 9" of cover soil should completely cover the day's working cell, and should form a tight, highly compacted seal.

Careful attention should be given to keeping the daily working area to the minimum possible size. Placement of as much refuse in the smallest area possible will be the key to successful, long-term operation.

The last one to two hours of each work day should be reserved for the application of daily cover on the working cell, and for maintenance of any erosion trouble spots in previously completed daily cells.

As soon as seasonal considerations permit, fertilizing and seeding of completed refuse cells should be undertaken. A farm type tractor with scarifying attachment should be committed to the site for this purpose. Due to seasonal limitations on plant growth and due to lack of water supply at the site, it will be necessary to limit the seeding operations to only two or three times per year. These times would be early spring, early summer (soil moisture and rainfall permitting), and late fall. Differing, appropriate seed mixtures should be used for the expected growing season. All grass covers should be permanent type; assistance in determining seed mixtures, seeding rate, fertilizing rates and need for lime treatment can be obtained from the Lee County SCS office. If arrangements can be made for a water tank truck to periodically visit the site, it is recommended that the seeding schedule include mid-summer

and early fall operations. Adequate soil moisture must be maintained to germinate seed and to maintain growth until cover is well established.

B. LABOR REQUIREMENTS

The minimum recommended labor force for the Lee County Landfill is two employees. These employees and their respective job functions are described in the following sections.

1. Landfill Superintendent

This employee should normally be stationed at the site entrance near the site office building. Duties for this person will include the following:

(a) General office duties, including recording of municipal deliveries, recording of equipment service and service intervals, answering telephone inquiries, maintaining the stock of fuel and incidental supplies and assessing individual disposal fees, if the need arises.

(b) Collection of individual disposal fees. This employee will be responsible for admission to the site of individual haulers. The appropriate fees must be collected and, if necessary, verbal instructions given to the hauler regarding the location and any sequence of unloading to be followed. Inspection of individual and industrial loads will be required to determine fees charges and to determine which special handling and disposal techniques may be required.

(c) Operation of all on-site equipment. This employee should be trained thoroughly in the operation of this sanitary landfill and in operation of the site earthmoving equipment. Proficiency in these areas will be necessary to offset normal absenteeism.

(d) The landfill superintendent should be directly responsible

for conformance of the landfill operation to the State Solid Waste Code. Inspection of incoming individuals' refuse loads for hazardous materials or materials requiring special handling is also an important function of this individual.

(e) This person will also be responsible for conformance of the operation to the detailed engineering plans, for the maintenance of proper site surface drainage, for scheduling and performing all seeding and erosion control operations, for layout and construction of future landfill phases, and for coordinating with the county road crew the maintenance of on-site haul roads, if necessary.

2. Landfill Equipment Operator

This employee's duties will primarily consist of spreading, compacting and covering of refuse. Maintenance of cover in completed refuse cells prior to seeding will also be a direct responsibility.

This employee should be thoroughly trained in the operation of this sanitary landfill and should be trained in the operational objectives and procedures.

C. HOURS OF OPERATION

A survey of the municipalities expected to use the Lee County Landfill shows that a five day work week, Monday through Friday, would be sufficient. Since, however, rural residents of the County enjoy no organized collection system, many will undoubtedly desire to use the facility on their principal off day. Therefore, it is recommended that a six day work week be used at least initially. If use of the facility by individuals on Saturdays proves to be slight, the sixth work day may be reduced to half day or even eliminated.

During winter months, the operation should be open from 7:00 a.m. to 4:00 p.m., with a one-hour, non-paid lunch break. The landfill should, however, remain open during the lunch hour. At least one of the employees should be required to remain at the site during the hour to prevent un-authorized access and non-payment of disposal fees. The winter-month hours will generally fit hours of daylight. The early morning winter start will allow individuals to deliver refuse to the site on their way to work.

The recommended summer-month hours, beginning with Daylight Savings Time, are from 9:00 a.m. to 6:00 p.m. These hours fit well with daylight hours and will allow individual users to deliver wastes after their normal work day.

The appropriate hours of operation should be posted at the entrance to the landfill. This sign should present the facility name "LEE COUNTY SANITARY LANDFILL", and should indicate the fee schedules (the fees will be recommended in Part III), and should give the name, address and telephone number of the person in the County government having prime responsibility for the operation of the landfill, including landfill employees. In addition, the telephone number of the landfill office phone should be indicated on this sign.

D. LANDFILL EQUIPMENT OPERATION

The most expensive cost of operation of a sanitary landfill is most often assumed to be labor costs. This assumption is not always true for all landfill operations. Whether or not equipment costs exceed labor costs depends very heavily on the type equipment used, number of equipment, number of personnel and wages, and proper operation and maintenance of the equipment.

1. Operational Costs

Some of these costs, such as fuel and routine maintenance, are fairly fixed costs. Other costs, such as repairs and repair labor costs, are highly variable and depend on the experience of the equipment operator, the adherence to routine maintenance schedules and proper operation.

Variable costs should be avoided wherever possible. This means that a regularly scheduled maintenance program should be established for both major pieces of landfill equipment. Maintenance of equipment and accurate maintenance records is vitally important. This importance cannot be over emphasized. Prime responsibility for equipment maintenance and records of such maintenance should lie with the landfill supervisor. The maintenance schedules recommended by the manufacturers of both pieces of landfill equipment should be used.

One area of dozer maintenance at a sanitary landfill is often overlooked by some suppliers of heavy equipment. This area is the cleaning and maintenance of crawler tracks. Three factors are present in operation of a sanitary landfill which are not found in most other normal uses of heavy tracked equipment.

(a) Environmental considerations, predominantly water pollution, most often cause a landfill to be located in an area of at least some heavy clay soils. Such soils are highly cohesive when wet, and will adhere readily to dozer tracks. Unlike sandier soils, clay soils will remain adhered to tracks even when drier conditions prevail. This creates an almost constant abrasive effect on tracks, pins and rollers. Excessive track wear will result unless tracks are cleaned daily and, during wetter weather, more often.

(b) The presence of wire, bed springs and broken cables at a landfill have a severe wearing effect on dozer tracks. These items, when caught in the tracks, are extremely difficult to remove and throw tracks out of adjustment. The larger amounts of these wire and cable items may often be segregated from the normal working areas. Some difficulty, however, can always be expected due to the undetected presence of these items. Track cleaning operations, performed frequently to remove any of these items, will serve to reduce the harmful effects on tracks. The proper amount of tension should be provided in the tracks with each cleaning.

(c) Constant back-and-forth motion of a dozer at a landfill is generally the rule. This will also be true at the Lee County Landfill. Roughly 50% of dozer action at the site will be in reverse. Operation in reverse contributes to track wear, since track tension is decreased with reverse movement. Therefore, frequent adjustment in addition to cleaning will be required.

The importance of track maintenance is stressed for simple economic reasons. The normal operational and maintenance costs of a dozer similar in size to that recommended for Lee County may run as high as $9,000/year. One repair item not included in this figure, new pins and rollers (exclusive of new tracks), may easily cost $6,000. This is 75% of the normal yearly operational cost. Without proper operation and without proper track maintenance, this additional expense (75% of normal operational cost) could occur as often as every one and one-half to two years.

E. RESTRICTIONS ON LANDFILL USE

The large sign to be posted at the landfill entrance should indicate that no refuse loads will be accepted which are not covered. This rule is in accordance with legislation passed in the 71st Arkansas General Assembly, and should be strictly enforced to prevent the littering of roads leading to the landfill.

It should also be made clear that no unauthorized use of the landfill will be permitted. Gates to the landfill should be locked whenever no landfill employees are on duty. Large, closed-top metal or wire mesh containers could, if desired, be placed outside the landfill entrance gates for use of individuals visiting the site during non-working hours. These containers should be emptied each day into the working cell, or at least every two days, even if they are not completely full.

Scavenging at the site should be strictly forbidden. No private vehicles should be allowed to remain unattended at the site.

Many individuals are expected to use the Lee County Landfill due to the lack of a rural collection system. Most individual users will be unfamiliar with the landfill operation, and will require close supervision to prevent indiscriminate dumping. These individuals will deliver wastes ranging from dead animals to normal household wastes. All individual loads should be directed to the working area, unless materials requiring special handling are present. Specific individual instructions will be necessary for special loads or items. These special items will be covered in a later section. Traffic flow at the site should be maintained at all times by the landfill superintendent. Priority should be given to municipal packer trucks. On-site signs indicating the dir-

ections to the bulky item disposal area and the normal refuse disposal area (working cell) should be used to simplify traffic flow.

F. HANDLING OF WASTES

1. General Household, Commercial and Plant Wastes

It is expected that 80% or more of the waste received at the Lee County Landfill will be in this category. Components of the waste stream will include paper, cardboard, cans, bottles, yard and lawn trimmings, lumber, sheet metal, rocks, plastics, kitchen wastes and rubber.

If large loads of the more incompressible, non-putrescible items such as brush, tree cuttings and rubber are received, the loads should be segregated until such time as they may be placed in the bulky item area.

Occasionally, it will be difficult to attain the desired compaction in only a few dozer passes due to high percentages of incompressibles. As a rule of thumb, compactive effort on a lift should continue until the surface is no longer being depressed more than it is rebounding.

2. Bulky Wastes

This waste stream will consist of items such as car bodies, bed springs, furniture, large appliances, construction debris, tree stumps, logs and timbers, heavy equipment tires, heavy wire, cables and barrels or drums. All these wastes should be placed in the bulky item disposal area. Preferably, items such as bed springs, wire and cables should be further segregated in the bulky item area from the crushable items such as car bodies and refrigerators. Instructions should be given by the

landfill superintendent to the hauler regarding the segregation of these items. Bed springs, wire and such tend to catch on dozer tracks, are extremely difficult to remove and contribute to excessive track wear.

Bulky items should be covered weekly. The harborage of rats and other pests will be reduced if weekly covering is performed. Two methods of covering will apply to wastes in the bulky item area.

(a) Crushables such as car bodies and refrigerators should be crushed on hard ground by the dozer. Crushing of the larger items will not be most effective due to the relatively light weight of the County's landfill dozer. The crushed wastes should be piled together and completely covered and surrounded by earth.

An alternative to crushing and covering of junked autos is salvage. Any salvage arrangements, however, should be established on some regular basis so that harborage of pests does not become a problem.

(b) Wire, cables and the like should not be tracked upon by the dozer without first covering them with earch (6" minimum). Covering for these items will ensure that they do not present problems by being caught in the dozer tracks. No attempt should be made to pile or push amounts of wire, bed springs and cables into a mass. Rather, these items should be covered in their deposited, segregated position within the bulky item area.

Some bulky items, such as selected construction and demolition debris can be stockpiled at the site in lieu of covering with other bulky wastes. Broken concrete, asphalt, bricks, concrete blocks and the like could be useful in maintenance and construction of on-site haul roads. The stock-

pile of these items should be placed where it will not interfere with normal operations in the working area, borrow areas of bulky item area. Stockpiles should also be placed so as not to block on-site drainage or on-going working cell operations.

3. Institutional Wastes

Normally, institutional wastes from schools, hospitals and rest homes will be received in the regular collection vehicle loads from contributing municipalities. If, however, large amounts of wastes from institutions are received spearately, they should be handled immediately. Food wastes [redacted] should be spread, compacted and immediately covered with another layer of wastes or a layer of earth cover.

[redacted] shall be accepted at the landfill. Health Department regulations require incineration of [redacted]. If pathogenic wastes are brought to the landfill, the landfill operator shall immediately notify the Department of Health.

4. Flammable Liquid Wastes

Amounts of flammable wastes such as paints, solvents, paint thinners and dry cleaning fluids may be delivered to the landfill. These type wastes shall not be landfilled, as they are classified as hazardous materials. The landfill operator shall reject any loads of wastes coming to the landfill that contain liquid flammable wastes. If the liquid flammables are removed from the load, the remaining wastes can be landfilled, but the liquid flammables should be removed by the party delivering the load. Liquid flammables shall not be stored at the landfill.

Explosives are a special category of flammable wastes. Explosives shall not be accepted for landfilling. If materials of an explosive nature are brought to the landfill, they should be retained at the site in

a safe location away from working areas. The proper law enforcement or safety authorities should be contacted immediately to arrange for proper disposal.

5. Agricultural Wastes

Wastes in this category include pesticide containers, insecticide containers and animal manure from feed lots and/or chicken houses.

(a) Pesticide and Insecticide Containers - these items require special inspection to determine if they are completely clean. All containers shall have been triple-rinsed before being landfilled. Containers shall not be emptied or rinsed at the landfill. Full or partially full containers should be held at the site. The County Health and Agricultural Extension Service authorities should be contacted to make arrangements regarding the proper and safe disposal of these items. Any full or partially full containers temporarily held at the site should be thoroughly inspected for leakage.

Triple-rinsed pesticide, insecticide or herbicide containers may be crushed and covered along with other wastes in the bulky item disposal area.

(b) Animal Manure - if these wastes are in a solid state, they may be placed with regular wastes in the working area and covered immediately. If the wastes are liquid or semi-liquid, they shall not be accepted for landfilling. Persons delivering liquid or semi-liquid animal wastes shall be refused admittance to the landfill.

6. Waste Water Treatment Plant Sludges

Processed, dewatered sludges in solid form may be accepted for landfilling. These sludges may be included with the normal wastes in

the working cell. Liquid and semi-liquid sludges shall not be accepted for landfilling. Persons bringing loads of liquid or semi-liquid sludges shall be advised to contact the Department of Health for instructions for disposal.

Raw sewage sludge and septic tank pumpings shall not be accepted for landfilling. Persons delivering these wastes should be refused admittance, and should be advised to contact the County Health or Sanitation authorities regarding proper disposal.

7. Industrial and Processing Wastes

Many varities of industrial or processing wastes may be received at a landfill. Wastes of these types may range from egg spoilage to liquid and semi-liquid chemical wastes. Procedures for handling and disposal are outlined in the following paragraphs.

(a) Egg Spoilage - this waste should be placed in a separate area away from the working area and other special disposal areas and covered immediately with two feet of earth cover. All egg spoilage disposal should be to a single designated area. This area should be located as far as is practical from other working areas.

The landfill superintendent should reject loads of egg spoilage in the event an improper haul vehicle is being used. All egg spoilage loads must be tightly closed in a proper vehicle to prevent spillage on public roads and at the landfill site.

(b) Sheet Metal, Wood or Plastic - the larger of these items present difficulty when trying to work them in along with the normal wastes. They should therefore be isolated in the bulky item area and covered along with the bulky items at the end of the working day.

(c) Metal and Wood Shavings, Filings and Powders - items of this sort are classified as hazardous wastes and shall not be accepted for landfilling.

(d) Dead Animals and Animal Processing Wastes - large dead animals such as horses and cows or large amounts of chicken processing wastes should be placed in a pit away from working areas and covered with two feet or more of earth. This disposal area should be in the same general location as the egg spoilage disposal area. The surface of the large animal burial area should be frequently re-graded, since the decomposition process will create settlement and the subsequent ponding of water. Smaller dead animals may be placed directly within the normal working area cell.

State Department of Health regulations require than animals that have died as a result of any contagious or infectious disease shall be incinerated. If it is determined that diseased dead animals have been brought to the landfill, the operator shall contact the Health Department for instructions.

(e) Cutting Oils - waste cutting oils are classified as hazardous materials. Material of this nature shall not be accepted for landfilling.

(f) Defective Manufactured Items - these wastes should be placed with the normal working area wastes and covered promptly to reduce the temptation toward scavenging.

The items outlines above are the more common industrial wastes which may be expected. The receipt of certain other liquid, semi-liquid and solid chemical industrial wastes may also be encountered. A great many

of these wastes are likely to be classed as hazardous materials. The wide variety and probable hazardous nature of industrial wastes makes it difficult to recommend specific measures for handling and disposal. If any industrial wastes brought to the landfill are deemed to present special handling, environmental, safety or health hazards, they should be excluded from the landfill. The producing industry and the State Department of Pollution Control and Ecology should be notified so that special handling and disposal procedures may be worked out. The inspection and notification responsibility for these industrial wastes shall lie with the landfill superintendent.

G. MAINTENANCE

(a) On-Site Roads

Haul roads that maintain their load-bearing capacity through all types of weather conditions are essential to the operation of the landfill. The silt soils present at the Lee County Landfill have a high erosion potential. Particular attention should be paid to maintaining spot erosion problems.

A stockpile of surface gravel for new roads should be maintained at the site for repair of trouble spots. A stockpile of selected construction debris may also be used for this purpose.

(b) Litter Control

The quality of a sanitary landfill operation is most often judged by the general public on its appearance. Scattered litter along public roads leading to the site and around the site itself may lead to public condemnation. The County should require by ordinance that all loads, both public and private, shall be suitably covered during transit to

the landfill to prevent scattering. Uncovered loads should not be accepted.

Scattering of litter at the site itself is more difficult to control. A small as possible working area, immediate mixing of earth and compaction, and use of the portable litter fence will help to minimize problems of wind-blown refuse. The portable litter fence should be placed as near the working face as possible with attention to the prevailing winds. Due to the elevated nature of the site, variable direction winds will prevail. In this case, more than one litter fence may be required on certain days.

Litter fences should be cleaned of accumulated litter each day. Time should also be allowed for the general policing of the entire landfill site to remove scattered litter. All refuse collected should be placed in the daily cell prior to application of the daily cover.

(c) Rats

The application of daily cover to refuse and bulky items removes suitable habitat and foot supply for rats, as well as for insects and birds. Rats may occasionally be brought in with refuse. Most often, they are buried along with the refuse. Some may escape infrequently and seek shelter elsewhere. If rats become a problem, a baiting extermination program should be begun. The type program could be most effective with the assistance of a professional exterminator. The State Department of Pollution Control and Ecology can offer valuable advice in the control of rat populations.

(d) Flies

Problems with flies are unlikely with the daily covering of refuse. If fly populations in the summer do become a nuisance, a daily application of insecticide will be necessary. Large fly populations, however, would indicate improper landfill operation. The State Department of Pollution Control and Ecology should be contacted to help determine the cause of the problem and to recommend methods for prevention.

H. EQUIPMENT BREAKDOWN

New dozers for a landfill may be purchased from some dealers with an agreement that a backup machine will be provided the purchaser by the dealer in the event of extended down time. This type agreement would normally only be called upon for repairs requiring several days or weeks. If the equipment breakdown can be expected to require only a day or two for repair, a dozer from the County's road equipment force would be more suitable.

A purchase agreement similar to that mentioned above is not known to be available for the earth scraper. Any extended period of down time during the later landfill phases will require that either a dump truck and loader or another scraper be brought in from the County's road equipment force.

K. FIRES

Burning of wastes at a sanitary landfill is strictly prohibited by the State Solid Waste Code. Fires may, however, may break out due to the delivery of an undetected burning load or due to carelessness of landfill personnel. The daily covering of refuse will prevent fire in a cell from spreading to adjacent cells. A small fire in the working refuse cell may be extinguished by use of the fire extinguishers provided at the site. An extinguisher will be placed on the crawler dozer. Another extinguisher will be available at the site office to deal with small "hot" loads which may be brought in by individuals.

Larger fires in the working cell or in municipal collection vehicles will require special procedures. No water supply will be available at the site for fire protection. A large fire in a working cell could be extinguished by spreading enough cover material over the burning area to completely cut off the oxygen supply. If, however, the underlying refuse is relatively thick and is not adequately compacted, sufficient oxygen may be present to allow the fire to continue to burn even though its surface is completely cut off from the air. The continuing application of additional earth and intense compaction will, however, eventually smother the fire. It is noted that working of a large refuse fire with a dozer is an extremely hazardous proposition and should be avoided if possible.

In view of the extreme hazard in handling a larger refuse fire with earthmoving equipment and since the recommended fire extinguishers will be most ineffective for dealing with larger fires, the following contingency arrangements are suggested:

(a) An arrangement could be proposed between the County and the Marianna Fire Department whereby the Marianna tanker unit would respond to

a major refuse fire at the landfill, or

(b) Lee County could assign a 1,000 gallon tank truck to the site. Such truck should be equipped with a pump and a substantial length of 2" reinforced, flexible hose. A nozzle for the delivery hose could be fashioned so as to deliver a stream of water over a considerable distance.

A burning load in a large packer vehicle should, if detected soon enough, be dumped a good distance away from the working area and in a safe location. It may be possible to extinguish the blaze with the office building fire extinguisher. If not, the burning refuse should be spread with the dozer and smothered with an earth cover. Under no circumstances should the remaining smoldering refuse be placed in the working cell. Only when the last remnants of any embers have been extinguished should the load be transported to the working cell.

PART III - COST OF OPERATIONS AND USER FEES

The construction of the Lee County Sanitary Landfill is to be paid for with funds from a Community Development Block Grant. No annual debt service will result from implementation of the disposal system. The annual system costs will therefore include direct and indirect labor costs, operation and maintenance costs for equipment (including repairs and repair labor), equipment amortization costs, and overhead. The sum of the total annual costs will be used along with the waste volume from Lee County estimated to be handled yearly to determine an equitable system of disposal fees. As part of the financial analysis, receipt of wastes from Forrest City will also be analyzed for impact on disposal costs and user fees.

A. LABOR COSTS

1. Direct Labor Costs

The recommended minimum wage rate for both the Lee County Landfill personnel is $4.00/hour, or roughly $700/month. This rate, along with the recommended hours of operation may be used to compute a yearly direct labor cost.

2 employees x $700/mo. x 12 mos/yr.	$ 16,800/yr.

The above figures do not account for the sixth working day of overtime operations. A full eight hours per week of overtime will be used for computation purposes.

2 employees x $4.00 x 1.5 overtime rate/hr x 8 hrs/day x 1 day/wk x 52 wks/yr	$ 4,992/yr.
Sub-total: Direct Labor Costs	$ 21,792/yr.

2. INDIRECT LABOR COSTS

(a) Social Security Benefits - payments by Lee County on behalf of the landfill employees will amount to 6.13% of the gross wages paid.

Total Yearly Wage Payments	$ 21,792.00
Lee County FICA	x 6.13%
Total County FICA Payments	$ 1,335.85/yr.

(b) Health Insurance - payments on behalf of the Lee County employees amount to approximately $40.00/month.

2 employees x 12 mos/year x $40.00/mo.	$ 960.00
Total Health Insurance Payments	$ 960.00

(c) State Unemployment Insurance Funds - as of January 1, 1978, Lee County began paying 3.1% of an employee's gross wages ($6,000 wage ceiling) to this fund. Both employees will earn more than the $6,000 ceiling.

2 employees x $6,000/ea x 3.1%	$ 372.00/yr.
Total Unemployment Contributions	$ 372.00/yr.
Sub-total: Indirect Labor Costs	$ 2,667.85/yr.
Total Labor Costs	$ 24,459.85/yr.

B. EQUIPMENT OPERATIONS AND MAINTENANCE COSTS (O&M)

For computation purposes, a D-6 Caterpillar crawler dozer will be used; it is expected that any equivalent machine will have similar operating cost characteristics.

D-6 Caterpillar crawler dozer (approx. 140 h.p.), repair and repair labor costs will be included in the hourly operating cost and will be figured at 90% of the hourly depreciation. Consideration will be given to a salvage value of $23,000 at the end of six years. The hourly depreciation rate (HDR) for this machine will be, for 11,232 hours (six years at six hours/day), and a $54,000 depreciable value, equals $4.81/hr.

The various O&M hourly cost factors for the D-6 are computed below:

TABLE TWO
HOURLY COSTS - D-6

Fuel: 8 gph @ $0.50/gal.	$ 4.00/hr.
Engine Oil: 0.04 gph @ $2.15/gal.	0.09/hr.
Transmission Oil: 0.02 gph @ $2.15/gal.	0.04/hr.
Final Drive Lubricant:0.01 gph @ $2.25/gal.	0.02/hr.
Chassis Lubricant: 0.02 lbs/hr. @ $0.50/lb.	0.01/hr.
Filters for Avg. Condition	0.10/hr.
Repairs and Repair Labor, 90% OF HDR	4.81/hr.
Total Hourly Costs	$ 9.07/hr.

Average Yearly O&M Costs, D-6 - $9.07/hr x 6 hrs/day x 6 days/wk x 52 wks/yr. $ 16,979.00/yr.

Rome Towed Scraper - repair and repair labor costs will be the only hourly cost assigned to the towed scraper. Some consumable supplies, however, (hydraulic fluid, grease, etc) will be necessary for operation, but these will be assumed covered by the repair and repair labor hourly cost. The useful life of this machine will be taken as ten years. A salvage value of $8,000 will be assumed at the end of this time. The hourly depreciation rate (HDR) for this machine will be, for 6,240 hours (ten years at avg.

2 hrs/day use) and a $28,000 depreciable value, equal to $4.49/hr.

Repair and repair labor costs, including tires, for the scraper under the proposed operating conditions will be assumed to be 100% of the HDR.

Average Yearly O&M Costs, Scraper = $4.49/hr x 2 hrs/day x 6 days/wk x 52 wks/yr.	$ 2,801.76
Total Equipment O&M Costs	$ 19,780.76/yr.

C. AMORTIZATION COSTS

In order to purchase new equipment at the end of the landfill equipment's useful life, a special amortization fund must be established. Equal amount yearly payments must be made to this fund so that sufficient capital will accumulate to make new equipment purchases. No amortization of the landfill acreage is deemed necessary in view of the lease arrangement.

Table three describes the major facilities requiring amortization, capital costs, salvage value and expected life of use at the Lee County Landfill.

TABLE THREE

Facility	Capital Cost	Expected Life	Salvage Value	Amount Requiring Amortization
D-6 Caterpillar	$77,000	6 yrs.	$23,000	$ 54,000
Towed Scraper	36,000	10 yrs.	8,000	28,000
Office Building	6,500	15 yrs.	-	6,500
Equipment Shed	8,500	15 yrs.	-	8,500

The sinking fund method of amortization will be used in Table Four to compute the annual payment to be made by the County. Payments to the amortization fund will be assumed to accrue interest at the rate of 5% annually. Use of this rate in lieu of the higher rates presently offered

by most banks for long-term deposits will help to partially offset inflation.

TABLE FOUR

Equipment	To Be Amortized	Sinking Fund Factor	Yearly Amortization Payment
D-6	$ 54,000	0.14702-6,5%	$ 7,939.08
Scraper	$ 28,000	0.07950-10,5%	$ 2,226.00
Office Building	$ 6,500	0.04624-15,5%	$ 301.21
Equipment Shed	$ 8,500	0.04634-15,5%	$ 393.89
Total Yearly Amortization Payment			$ 10,860.18

D. OVERHEAD COSTS

1. Landfill Acreage Lease

It is expected that the final lease rate for the property will be roughly $20/acre/year.

$20/ac. x 30 acres = $600/yr.

2. Utilities

The figures shown below are the estimated yearly cost of the utilities to be used at the Lee County facility.

(a) Telephone utility - average monthly bill $25	$ 300.00
(b) Electric utility - average monthly bill $50	$ 600.00
TOTAL UTILITIES	$ 900.00/yr.

3. Equipment Insurance

The figures shown below for insuring the Lee County landfill equipment are rough estimates taken from existing coverages on comparable County equipment.

(a)	D-6 Caterpillar	$ 693.00/yr.
(b)	Towed Scraper	$ 324.00/yr.
(c)	Structures	$ 225.00/yr.
	Total Insurance	$1,242.00/yr.
	TOTAL OVERHEAD COSTS	$2,742.00/yr.

E. SUMMARY OF ANNUAL LANDFILL COSTS

The previously computed annual costs of the Lee County Sanitary Landfill are summarized in the following table.

TABLE FIVE

Total Labor Costs	$ 24,459.85/yr.
Total Equipment O&M Costs	19,780.76/yr.
Total Amortization Costs	10,860.18/yr.
Total Overhead Costs	2,742.00/yr.
TOTAL ANNUAL COST	$ 57,842.79/yr.

F. COMPUTATION OF USER FEES - LEE COUNTY ONLY

1. General

Lee County is currently producing approximately 9,810 tons of solid waste each year (17,922 persons - 1976 estimate x 3.0 lbs/capita/day). Of this amount, only roughly 3,370 tons will actually be received yearly at the Lee County facility by virtue of the existing municipal collection system (Marianna). No means presently exists nor is expected to exist in the near future for collection and transportation of the wastes of rural county residents. Transportation of rural wastes will be the responsibility of individual rural residents, unless private haulers step in to provide this service.

Two alternate points of view exist with respect to disposal user fees. This is due to the fact that rural users will not be contributing to the

landfill anything near the 6,440 tons per year (9,810 - 3,370) estimated to be produced. Many rural residents will certainly transport wastes for disposal to the County's landfill, but the bulk of the waste expected to be received will come from the existing municipal collection system. The two alternate viewpoints as they affect disposal user fees are discussed in the following sections.

2. Viewpoint No. 1

This view holds that all residents of Lee County, both rural and urban, should share equally in the cost of operating the landfill. The recommended equipment for the facility will be more than capable of handling the total estimated waste load of 9,810 tons per year for the entire County. Using the total County per year tonnage as if all wastes were going to the landfill, the annual total cost of the disposal facility may be divided by the annual waste load of the entire County to yield the per ton disposal fee.

$$\text{Disposal User Fee} = \frac{\$\ 57,842.79/\text{year}}{9,810\ \text{tons/year}} = \$5.90/\text{ton}$$

Use of this disposal fee will result in a substantial operating deficit since only 3,370 tons/year is fairly certain to be received from the existing municipal system. The net operating deficit would amount to approximately $38,000/year under the worst condition of no individual or private haulers using the facility. It is evident, however, that a good many individuals and possibly some private haulers will be using the landfill. These users will reduce the amount of the yearly deficit, although use by individuals and private haulers will certainly not eliminate the deficit entirely.

It is recognized that there will be no means of weighing refuse received at the Lee County Landfill. The per ton disposal fee computed

using Viewpoint No. 1 should therefore be translated into per load fees for the various vehicles used by the existing municipal collection system. Two examples of this translation procedure are given in the following paragraphs.

Example for 20 cubic yard packer truck: The basis for computing the per load disposal fee for packer trucks is the fact that the average refuse density in the truck is 500 pounds per cubic yard.

$$\frac{20 \text{ c.y. capacity} \times 500 \text{ lbs/c.y.}}{2{,}000 \text{ lbs/ton}} \times \$5.90/\text{ton} = \$ 29.50/\text{load}$$

Example for 14 cubic yard packer truck: The procedure to be used is exactly as above with a refuse density of 500 pounds per cubic yard.

$$\frac{14 \text{ c.y. capacity} \times 500 \text{ lbs/c.y.}}{2{,}000 \text{ lbs/ton}} \times \$5.90/\text{ton} = \$ 20.65/\text{load}$$

Note that the only variable used above is the capacity of the packer body. The refuse density of 500 pounds/c.y. should be used for all packer models using the landfill. It is recognized, however, that refuse densities vary widely with different type packer bodies. Values as high as 800 lbs/c.y. are obtained in some type packers. The 500 pounds/c.y. value is recommended, as it represents the most common value found in practice. Should it appear that a particular brand of packer is delivering roughly the same amount of refuse as a much larger packer unit, the County should have the unit weighed both empty and full to determine the actual refuse density attained, and thus a more appropriate per load fee.

The per load disposal fee should be calculated for each packer vehicle using the landfill. Each vehicle should be numbered for the County's purposes. The appropriate per load fee for each vehicle should be put on file at the landfill office so that monthly billings may be prepared.

Additional haulers likely to use the County facility include individuals and private haulers. The fees for individuals hauling on either a pickup truck or automobile should be $1.00/load. Private haulers should be charged according to the procedure outlined in the examples if a standard packer is being used. If vehicles other than packers are used by private haulers, the per load fees should be based on type vehicle, haul arrangement (with or without sideboards), and amount of refuse. The setting of fees for this category, private haulers not using a packer truck, should be left to the discretion of Lee County. In some cases, judgements will have to be made by the landfill superintendent as to the appropriate fee to be charged.

Special fees should also be established for deliveries requiring either special handling or special disposal techniques. Examples of such special items could include, but not be limited to, egg spoilage, automobiles or pesticides. Again, the setting of special item fees is best left to the discretion of Lee County.

3. Viewpoint No. 2

This view holds that the bulk of the economic burden of the landfill should be borne by the principal users of the facility, until such time as the numbers of, and revenues from, other principal users are identified. This approach uses the estimated refuse volume expected from the prime facility users. Adequate "break-even" revenue would be therefore more or less assured.

$$\text{Disposal User Fee} = \frac{\$\ 57{,}842.79/\text{year}}{3{,}370\ \text{tons/year}} = \$17.16/\text{ton}$$

The use of this rate also entails computation of per load fees. The procedure used previously will apply, except that the per ton fee

is adjusted to the $17.16/ton figure. An example is given for a 20 c.y. packer vehicle.

$$\frac{\text{20 c.y. capacity x 500 lbs/c.y.}}{\text{2,000 lbs/ton}} = \$17.16/\text{ton} = \$\ 85.80/\text{load}$$

The implementation of this viewpoint would result in an economic hardship for the single user of the facility expected initially. The rate calculated under Viewpoint No. 2 could not realistically be implemented and is given as a demonstration of how "economics of scale" applies to a landfill operation.

4. Analysis of Viewpoints

The lack of an organized rural collection system in Lee County complicates the setting of an equitable fee structure. Implementation of the per ton fee calculated from considering all County residents would mean an annual operating loss of $38,000/year. Setting a per ton fee based only on the prime users of the facility (the "break-even" rate) is not feasible. The only reasonable choice for Lee County is setting of a per ton charge somewhere between the rates previously calculated. The setting of the final fee must be done with regard to the ability of the prime user to meet the rate without undue economic strain on its present sanitation system.

It is noted that a "middle ground" rate will result in an annual operating deficit. Two means of countering this likely deficit are available to Lee County. The first is simply to meet the operating deficits by contributing funds from other areas of the County's budget, either revenue sharing or the general fund. The second is to collect the operating deficit from all rural County residents, regardless of actual use of the disposal facility. This latter approach could be under-

taken by the creation of a County-wide subordinate service district, which excludes municipalities with existing collection and transportation systems. Creation of such a district could be undertaken by virtue of Act 742 of the 71st Arkansas General Assembly.

5. Summary

The decision of what disposal fee to implement in Lee County will be difficult. Three facts concerning the landfill, however, should be noted. First, all the residents of Lee County will ultimately benefit by the landfill; second, the environmental insult of many open dumps as well as common littering will eventually be reduced and possibly eliminated; and third, individual communities may escape the cost of construction and equipping of an independent sanitary landfill by virtue of the County facility.

G. COMPUTATION OF USER FEES - LEE AND ST. FRANCIS COUNTIES

1. Waste Load

(a) Lee County - as previously noted, only a portion of the wastes produced yearly in Lee County will reach the landfill. This is due to the existence of only one organized collection system, that of the city of Marianna. Approximately 3,370 tons per year will be transported to the County facility from Marianna.

(b) St. Francis County - only one organized collection system within a reasonable distance to the landfill is known for St. Francis County, that of Forrest City. The estimated 1976 population of this city is 12,808 persons (U.S. Census Bureau). Using a per capita daily waste generation rate of 4 lbs/capita/day (higher than the Marianna rate due to greater urbanization), would mean that an

additional 9,350 tons of waste per year could go to the Lee County facility.

The total potential waste load for the Lee County Landfill would therefore amount to 12,720 tons per year.

2. Capability for Acceptance

(a) Size - the life expectancy for the 30-acre Lee facility will not be known until the final design for Phase II is complete and the number of users determined. Due, however, to the following factors it is expected that the facility could accept the additional waste from Forrest City with no difficulty.

(i) Terrain of the site is such that there is an abundance of cover material and areas suitable for different types of operations (trench, area, combination). These factors maximize the capacity of the site.

(ii) The possibility of expansion of the initial site exists. The lessor of the 30-acre tract owns an additional 130 acres adjacent to the landfill; terrain and geology are such that expansion would be possible. It is anticipated that the lessor would be in favor of future expansion, provided the landfill is operated in conformance with the State Solid Waste Code.

(b) Equipment and Personnel

One piece of heavy equipment and an operator would be the only additions necessary to handle the additional waste from Forrest City. If a co-operative agreement were worked out between Forrest City and Lee County, the additional crawler dozer could be transferred from the present Forrest City Landfill.

3. Disposal Fee Computation

The additional cost to the Lee County Landfill would be as follows:

Additional Equipment -	D-6 crawler or equivalent O&M cost, approximate	$ 17,000.00/yr.
	Amortization cost, estimated	$ 8,000.00/yr.
Additional Operator -	Direct labor, approx.	$ 10,900.00/yr.
	Indirect labor, approx.	$ 1,350.00/yr.
Total Additional Cost		$ 37,250.00/yr.

The above figures would raise the annual cost of the Lee County Landfill to approximately $95,100.00.

The per ton disposal charge, based on revenues only from Marianna and Forrest City, is computed as follows:

$$\text{Disposal Rate} = \frac{\$\ 95,100.00/\text{yr.}}{12,270\ \text{tons/yr.}} = \$\ 7.48/\text{ton}$$

It is noted that the above rate would be a "break-even" rate, with only the prime users of the facility paying the cost of operation. It is also noted that, unlike the similar computation for only Lee County, the above rate is feasible. Both Forrest City and Marianna are probably paying much more than that equivalent to the above yearly rate for their respective landfills.

In terms of disposal charge per household served, the following computations are given to demonstrate the reasonableness of the $7.48/ton rate:

Forrest City - 12,808 persons = approx. 4,000 households

$7.48/ton x 9,350 tons/yr = $ 69,938.00/yr. disposal charge

$$\text{Equivalent per household charge} = \frac{69,938}{4,000} = \$17.48/\text{yr.}$$

or $1.46/month/household, for disposal only

Marianna - 6,161 persons = approx. 1,925 households

$7.48/ton x 3,370 tons/yr = $ 25,208.00/yr. disposal charge

Equivalent per household charge = $\frac{25,208}{1,925}$ = $ 13.10/yr.

or $ 1.09/month/household, for disposal only

The difference in the above equivalent per household rates results from the differing waste generation rates used for the respective communities.

4. Conclusions

From all of the foregoing rate calculations, the following conclusions are obtained:

(a) Operation of the Lee County facility with only participation of Marianna will be inefficient, and will be a financial loser.

(b) Joint use of the Lee County facility by Marianna and Forrest City would mean equitable and reasonable user fees could be collected to result in a break-even operation.

It is strongly recommended that every effort be made to secure the co-operation and participation of Forrest City in the Lee County Landfill.

Included in the following Appendix "A" is a guide for the computation of user fees. Also included is a standard form which can be used to record deliveries for monthly billings and to account for cash payments by individuals. The form is also to be used by the landfill superintendent to note daily weather conditions and hours of operation. The number of individuals using the landfill per day should be recorded, regardless of whether an individual fee is collected or not.

APPENDIX "A"

-Record Keeping and Assessment of User Fees-

Efficient cost recovery will be a vital part of the Lee County landfill if the facility is to be operated entirely upon disposal revenues. Daily record keeping will be required of the landfill superintendent as to weather conditions, hours of operation and number of compactor trucks, private haulers and individuals using the landfill. To assist in this daily record keeping, a standard form is included in this Appendix.

A. Use of Standard Form

1. Compactor Trucks - as has been previously outlined, each of the existing municipal packer trucks using the County facility should be numbered and assigned a per load fee. The assigned fee should be computed as shown in the examples on either page 42 or 44, depending on the per ton rate adopted by Lee County. The total daily fee for an individual truck can then be computed by simply marking the number of loads made by that truck each day on the form provided.

2. Dump Trucks and Trailers - use of the provided form is the same as above. Per vehicle fees, however, will be determined either by the capacity of the vehicle or by consulting a standard rate schedule which the County may adopt.

3. Individuals Hauling Either by Pickup or Automobile - the economics of the Lee County landfill will depend in part on the number of individual users of the facility. No accurate advance budgeting for the facility will be possible without having a complete record of numbers of individual users and fees collected. The daily recording of numbers of individuals and fees collected should be a prime responsibility of the landfill superintendent.

A minimum of one year's record of individual users and fees collected is recommended before any modification of the per ton disposal fee is considered. Even after the initial year has passed and the appropriate disposal fee change has been implemented, it will remain vitally important to the landfill operation to have complete individual user records. This will be necessary in order to plan for any expansion or modofication of the facility.

LEE COUNTY LANDFILL
DAILY DISPOSAL RECORD

DATE _____

PAGE ____ OF ____

TYPE OF VEHICLE	NUMBER OF LOADS															TOTAL LOADS	FEE PER LOAD	TOTAL FEE
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
COMPACTOR TRUCK NO. _____ C.Y. _____																		
COMPACTOR TRUCK NO. _____ C.Y. _____																		
COMPACTOR TRUCK NO. _____ C.Y. _____																		
COMPACTOR TRUCK NO. _____ C.Y. _____																		
DUMP TRUCK NO. _____ C.Y. _____																		
DUMP TRUCK NO. _____ C.Y. _____																		
DUMP TRUCK NO. _____ C.Y. _____																		
TRAILERS NO. _____ C.Y. _____																		
PICKUP TRUCKS																		
CARS																		
SPECIAL HANDLING ITEM _____																		

FEES: CAR - $1.00 PER LOAD
PICKUP TRUCK - $1.00
COMPACTOR TRUCKS ____ C.Y. X .25 X ____
DUMP TRUCKS AND TRAILERS ____ C.Y. X .10 X ____

TOTALS

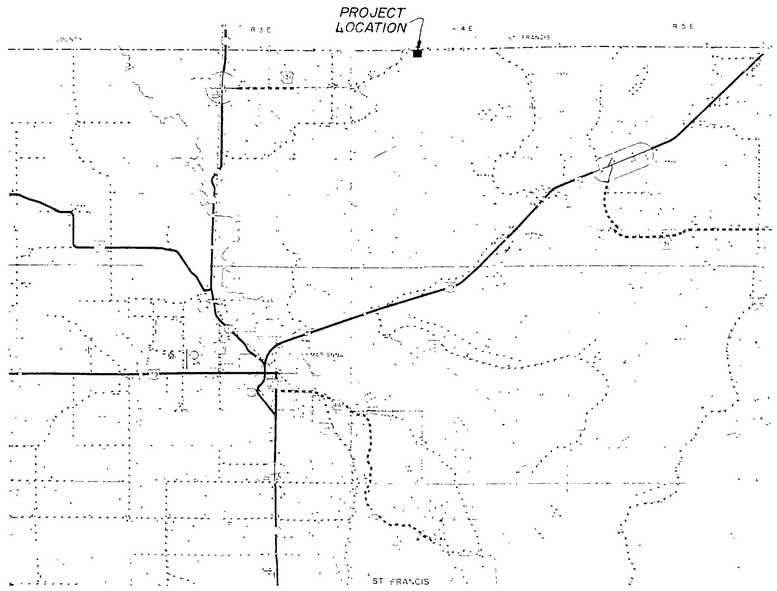
1976 COMMUNITY DEVELOPMENT PROGRAM

BLOCK GRANT NO. B 76-DN-05-0118

LEE COUNTY LANDFILL

LEE COUNTY ARKANSAS

OCTOBER 1978



MAY 8 1979

HODGES VINES FOX ALLEN & ASSOCIATES

PLANNERS ENGINEERS SURVEYORS
3426 OLD CANTRELL ROAD
LITTLE ROCK, ARKANSAS

VOID

ADPCD Solid Waste Division
Date Rec'd. _____ Drawing # 22102
Permit # 156 T.W.I. 34-0033
Entry _____ By _____
☐ Design Drawing ☐ Permit Data
☐ G.W.M. Plan ☐ Construction
☐ Other _____
Supercedes Drawing # _____
☐ _____
☐ Superceded by Drawing # _____
Superceded on Date _____

TBM ELEV. 298.84
R.R. SPIKE IN SOUTH
SIDE OF 20" ELM

TBM - ELEV. 229.93
R.R. SPIKE IN EAST
SIDE OF 16" ELM

EXISTING COUNTY ROAD - (GRAVEL)

LANDFILL CONSTRUCTION ACCESS ROAD

2665.90'

1241.0'

1424.9'

1048.4'

NW COR NE¼ SECTION 5

NE COR NE¼ SECTION 5

DEAD ANIMAL FLAMMABLE WASTE BURIAL AREAS

St Francis Co
Lee Co

APPROXIMATE SITE BOUNDARY

TYPE "A" ROADWAY

TYPE "B" ROADWAY

PROPOSED FENCING

OPERATIONS + STOCKPILE AREA

30'x8' RCP LATERAL

30'x8' RCP LATERAL

30'x8' RCP LATERAL

Δ = 42°-30'
T = 100'
D = 22.2811°
R = 257.17'
L = 190.74'

THICKLY TIMBERED

EXISTING DWELLING

NOT IN THIS CONTRACT

TERRACE LEVEL NO 1

TERRACE LEVEL NO 2

TERRACE LEVEL NO 3

TERRACE LEVEL NO 4

TERRACE LEVEL NO 5

TERRACE LEVEL NO 6

TERRACE LEVEL NO 7

TYPE "B" ROADWAY

TYPE "A" ROADWAY

ROAD DITCHING

BULKY ITEMS DISPOSAL AREA

SWALE DITCHING (TYPICAL)

BASELINE

1+50

2+00

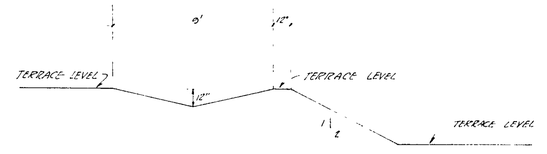
2+50

3+00

3+50

4+00

4+50

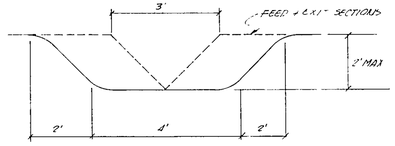


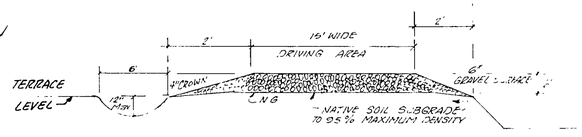
TYPICAL SWALE DITCH W/OUT ROADWAY

PROPOSED FENCE
EXISTING FENCE
275 EXISTING CONTOUR
270 PROPOSED FINISH CONTOUR
280 PROPOSED INTERMEDIATE FINISH CONTOUR
PROPOSED SWALE FLOW

DITCH CHECK DETAIL

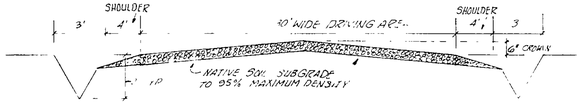
TYPE "A" - PLACE BALED HAY IN TRANS. DITCH SECT PER BELOW
TYPE "B" - PLACE SACKED SAND/CEMENT IN TRANS DITCH SECT. PER BELOW





TYPE "B" ROADWAY W/ SWALE
4" CROWN - 6" GRAVEL SURFACE

NOTE: SWALE DITCHES FOR TERRACE LEVELS TO HAVE 0.10% FALL



TYPE "A" ROADWAY
6" CROWN - 9" GRAVEL SURFACE

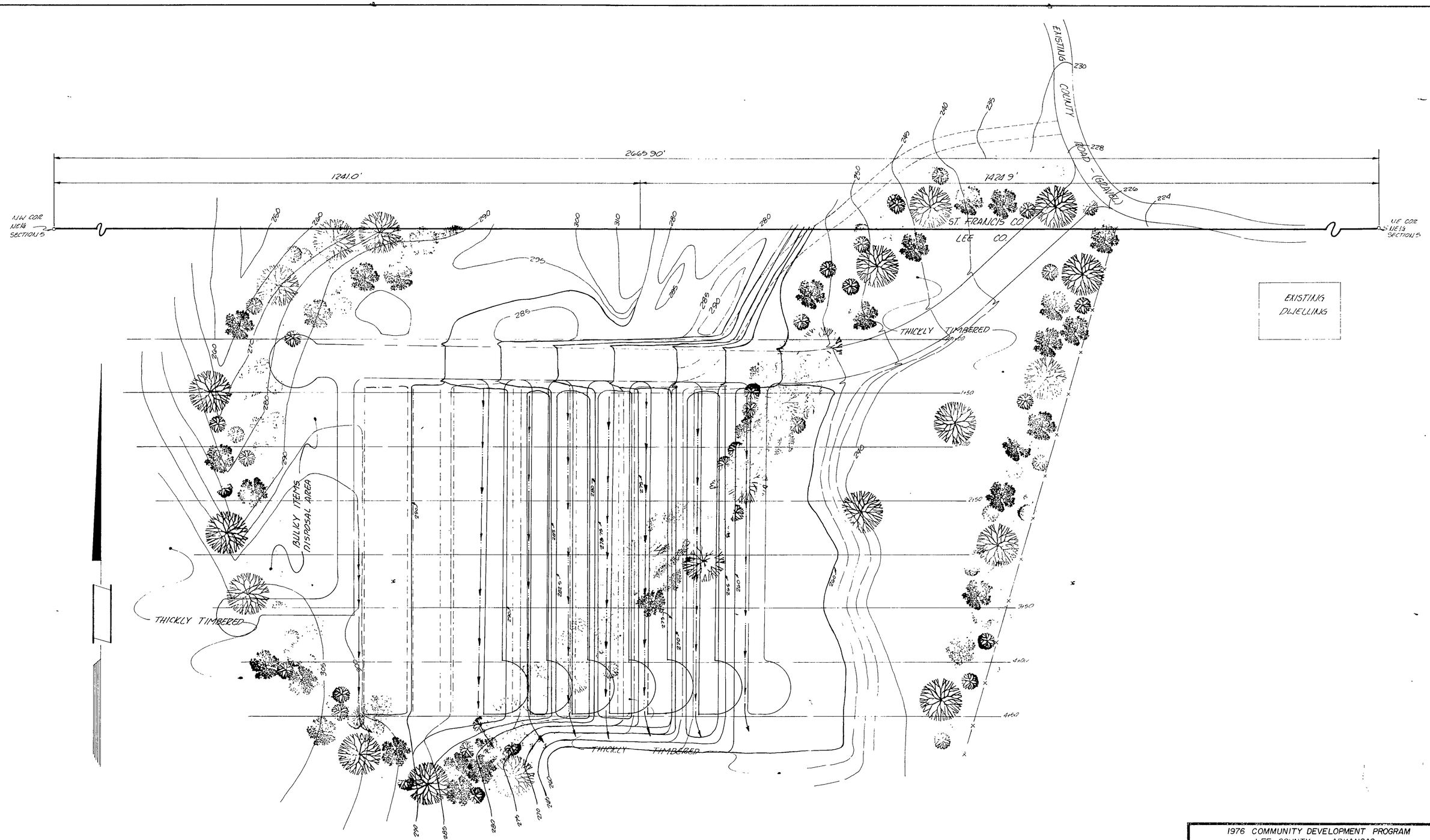
1976 COMMUNITY DEVELOPMENT PROGRAM
LEE COUNTY, ARKANSAS

LEE COUNTY LANDFILL - PHASE I
SITE PREPARATION PLAN

Hodges, Vines, Fox, Allen & Associates
Planners • Engineers • Surveyors
Urban Designers • Management
Economic Feasibility Consultants
P.O. Box 7611 501/664-5000
3426 Old Cantrell Road Little Rock, Arkansas 72217

REVISIONS:	DATE:	BY:
SECURITY FENCE	3-1-79	WLD
ROAD BED	4-6-79	BSC

SCALE: 1" = 40'
DATE: OCT 1978
JOB NO: 18270
DRAWN BY: DLJ
CHECKED BY: WLD
APPROVED BY:
SHEET: 1 OF: 7



1976 COMMUNITY DEVELOPMENT PROGRAM
LEE COUNTY , ARKANSAS

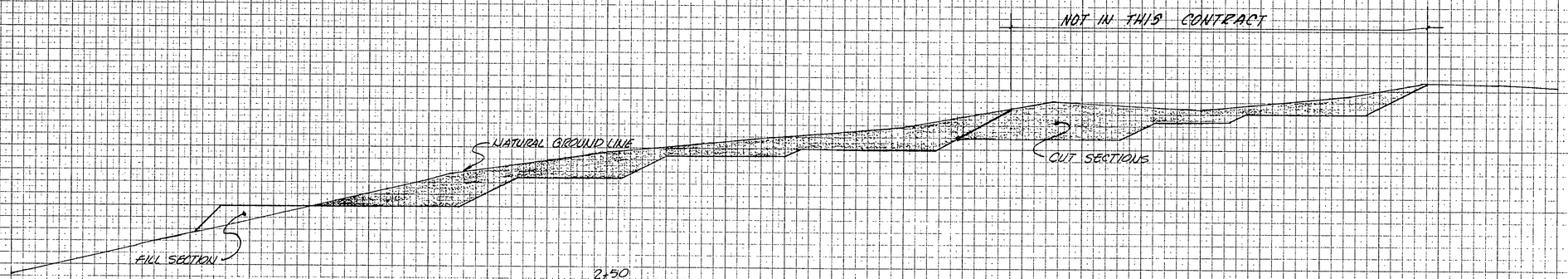
LEE COUNTY LANDFILL - PHASE I
FINISHED LANDFILL ELEVATIONS

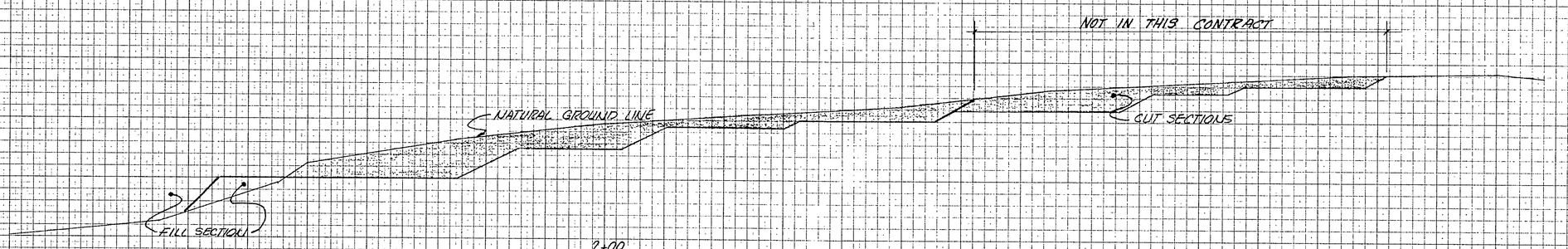
Hodges, Vines, Fox, Allen & Associates
Planners • Engineers • Surveyors
Urban Designers • Management
Economic Feasibility Consultants
P.O. Box 7611 501/664-5000
3426 Old Cantrell Road Little Rock, Arkansas 72217

REVISIONS:	DATE:	BY:	SCALE:	DATE:	JOB NO:
			1"=40'	OCT 1978	18270
			DRAWN BY: DLJ	CHECKED BY: W.L.D.	
			APPROVED BY:	SHEET: 2 OF: 7	

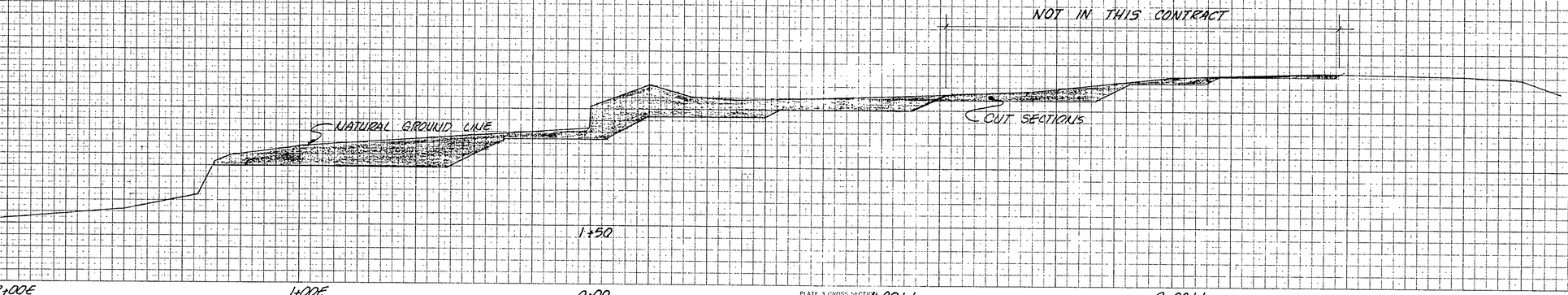
CUT / FILL SECTIONS
SITE PREPARATION
LEE COUNTY, LANDFILL

FINAL SURVEY
SURVEYED
PLOTTED
NOTE BOOK
TEMPLATE
AREAS
AREAS CHECKED
NO.
BY
DATE





NOTE: All site preparation stands shall be 2:1.
See sheets following to finish elevations & stations.
Match above 4 stations for site prop. use typical
for all sections (1+50 to 7+50).



ORIGINAL SURVEY
SURVEYED
PLOTTED
NOTE BOOK
TEMPLATE
AREAS
AREAS CHECKED
NO.
BY
DATE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4418
WILLIAM L. DEAN

2+00E 1+00E 0+00 1+00W 2+00W 3+00W 4+00W

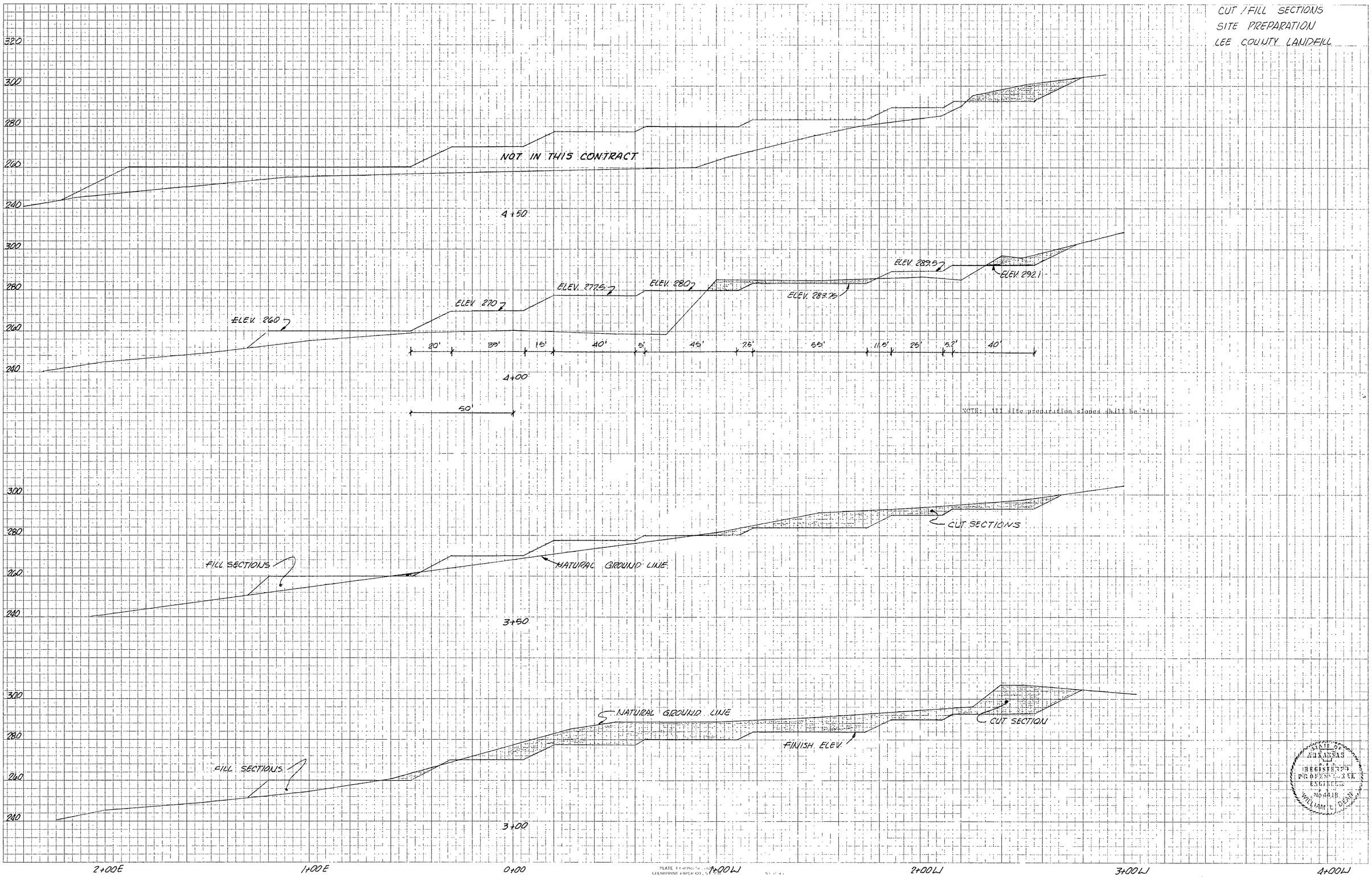
SCALE: 1"= 20' H
1"= 10' V

SHT. 3/7

PLATE 3 CROSS SECTION
CLEARPRINT PAPER CO., STAMFORD, CONN. NO. 1000-3

CUT / FILL SECTIONS
SITE PREPARATION
LEE COUNTY LANDFILL

FINAL SURVEY
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE



ORIGINAL SURVEY
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO 4818
WILLIAM E. DEAN

SCALE: 1" = 20' H
1" = 10' V

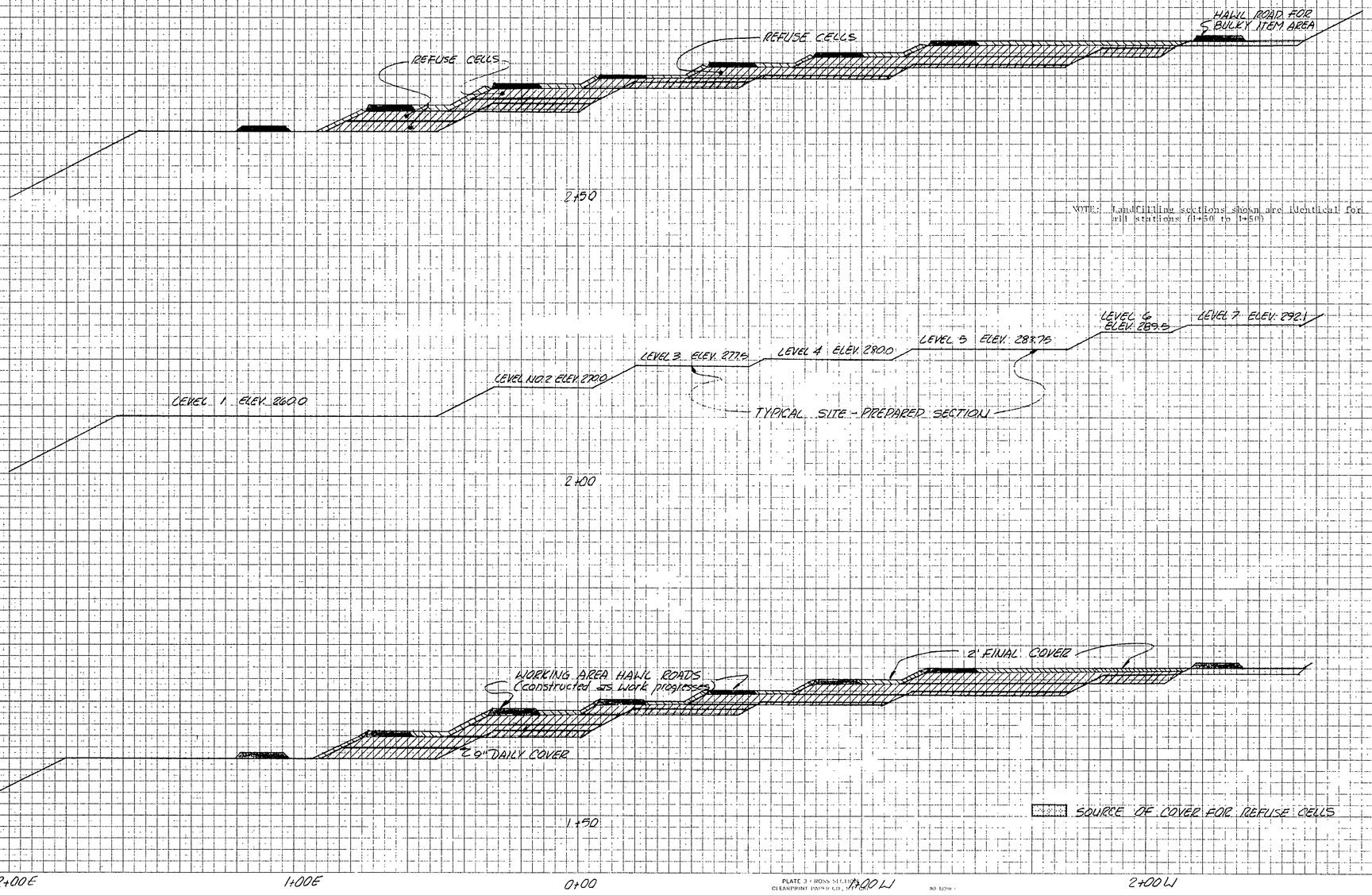
SHT. 4/7

COMPLETED LANDFILL SECTIONS
LEE COUNTY LANDFILL

FINAL SURVEY		BY	DATE
	SURVEYED		
	PLOTTED		
NOTE BOOK	TEMPLATE		
	AREAS		
NO.	AREAS CHECKED		

Finish elevations * (less final " cover)

Level 1	267.50
Level 3	275.00
Level 3	278.75
Level 4	282.50
Level 5	286.25
Level 6	290.00
Level 7	371



NOTE: Landfilling sections shown are identical for all stations (1+50 to 1+50)

ORIGINAL SURVEY		BY	DATE
	SURVEYED		
	PLOTED		
NOTE BOOK	TEMPLATE		
	AREAS		
NO.	AREAS CHECKED		

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
10-4-18
WILLIAM L. DEAN

PLATE 3 (CROSS SECTIONS)
CLEARPRINT PAPER CO., SAN FRANCISCO NO. 1029H

SCALE: 1" = 20' H
1" = 10' V

SHT. 5/7

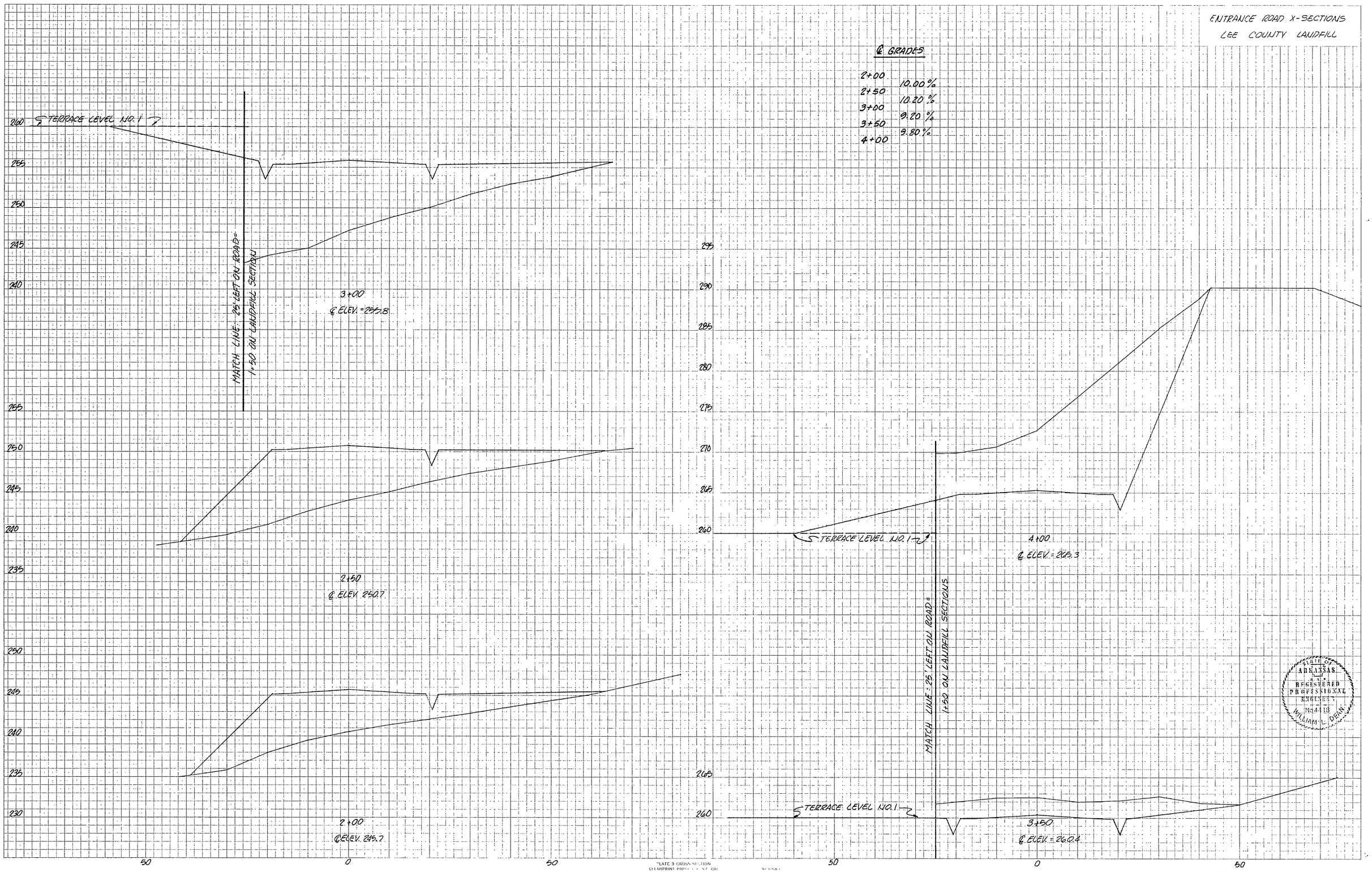
ENTRANCE ROAD X-SECTIONS
LEE COUNTY LANDFILL

FINAL SURVEY		BY	DATE
	SURVEYED		
	PLOTTED		
NOTE BOOK	TEMPLATE		
	AREAS		
NO.	AREAS CHECKED		

ORIGINAL SURVEY		BY	DATE
	SURVEYED		
	PLOTTED		
NOTE BOOK	TEMPLATE		
	AREAS		
NO.	AREAS CHECKED		

℄ GRADES

2+00	10.00 %
2+50	10.20 %
3+00	9.20 %
3+50	9.80 %
4+00	



"LATE 3 CROSS SECTION
CLEARPRINT PAPER CO. S.F. CAL

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4413
WILLIAM L. DEAN

Scale 1" = 10' H
1" = 5' V

SHT. 6/7

ENTRANCE ROAD X-SECTIONS
LEE COUNTY, LANDFILL

NOTE: APPROX. ℄ STA. OF ROAD TO FINAL COVER BORROW AREA = 5+90

TERRACE LEVEL NO. 4

5+50
℄ ELEV. 279.7

MATCH LINE: 25' LEFT ON ROAD = 1+50 ON LANDFILL SECTIONS

TERRACE LEVEL NO. 3

5+00
℄ ELEV. 275.0

TERRACE LEVEL NO. 2

4+50
℄ ELEV. 270.7

℄ GRADES

4+00	10.80 %
4+50	8.60 %
5+00	9.40 %
5+50	9.40 %
6+00	9.00 %
6+50	6.80 %
7+00	5.40 %
7+50	

APPROX. ℄ OF ROAD TO BULKY ITEM AREA

7+50
℄ ELEV. 295.0

TERRACE LEVEL NO. 7

7+00
℄ ELEV. 292.3

MATCH LINE: 25' LEFT ON ROAD = 1+50 ON LANDFILL SECTIONS

TERRACE LEVEL NO. 6

6+50
℄ ELEV. 288.9

TERRACE LEVEL NO. 5

6+00
℄ ELEV. = 284.4

FINAL SURVEY	BY	DATE
SURVEYED		
PLOTTED		
FIELD PLATE		
NOTE BOOK AREAS		
NO. AREAS CHECKED		

ORIGINAL SURVEY	BY	DATE
SURVEYED		
PLOTTED		
FIELD PLATE		
NOTE BOOK AREAS		
NO. AREAS CHECKED		

PLATE 3 CROSS SECTION
(TRACING PAPER TO SCALE)

SCALE 1"=10' H
1"=5' V

SHT 7/7