THE BOARD OF SUPERVISORS OF THE COUNTY OF STANISLAUS
ACTION AGENDA SUMMARY

DEPT: PUBLIC WORKS

Urgent_____ Routine ✓

CEO Concurs with Recommendation YES____ NO____
(Information Attached)

BOARD AGENDA # *C-1

AGENDA DATE SEPTEMBER 18, 2001

4/5 Vote Required YES____ NO ✓

SUBJECT: APPROVAL OF PROJECT AGREEMENT 2001-02 FOR GROUNDWATER MONITORING AT THE FINK ROAD LANDFILL WITH KLEINFELDER, INC.

STAFF RECOMMENDATIONS:

1. APPROVE THE PROJECT AGREEMENT 2001-02 FOR GROUNDWATER MONITORING AT THE FINK ROAD LANDFILL WITH KLEINFELDER, INC.; AND,

2. AUTHORIZE THE CHAIR OF THE BOARD TO SIGN THE PROJECT AGREEMENT 2001-02.

FISCAL IMPACT: Funding for Project Agreement 2001-02 is available in the Fink Road Landfill budget.

BOARD ACTION AS FOLLOWS: **No.** 2001-715

On motion of Supervisor Simon , **Seconded by Supervisor** Caruso
and approved by the following vote,
Ayes: Supervisors: Blom, Simon, Caruso, and Chair Paul
Noes: Supervisors: None
Excused or Absent: Supervisors: Mayfield
Abstaining: Supervisor: None

1) X **Approved as recommended**
2) _____ **Denied**
3) _____ **Approved as amended**
MOTION:

Christine Ferraro

ATTEST: CHRISTINE FERRARO TALLMAN, Clerk **By: Deputy** **File No.**

DISCUSSION: The Fink Road Landfill site has groundwater monitoring wells that will be monitored by Kleinfelder, Inc. (Consultant). The Consultant shall provide services under the Agreement for Groundwater Monitoring at the Fink Road Landfill in accordance with the adopted Central Valley Regional Water Quality Control Board requirements and Waste Discharge Requirements Order No. 98-184, as set forth in the Proposal and Scope of Services. If approved, Project Agreement 2001-02 with Kleinfelder, Inc., shall not exceed $206,501.00.

POLICY ISSUE: This action is consistent with the Board's policy of providing a safe, healthy community.

STAFFING IMPACT: There is no staffing impact associated with this item.

RG:la
H:\Ron Grider\FinkLandfill-Project-2001-02BOS.wpd

PROJECT NO. 2001-02
(Kleinfelder)

A. TERMS AND CONDITIONS

Except as hereinafter provided, the services provided by the Consultant under this Project shall be subject to the terms and conditions set forth in the MASTER AGREEMENT FOR PROFESSIONAL SERVICES made and entered into by and between the COUNTY OF STANISLAUS ("County") and KLEINFELDER, INC., a California corporation ("Consultant"), on November 23, 1998, as amended by Amendment No. 1 (the "Agreement") approved June 8, 1999 (Resolution No. 1999-428).

B. SCOPE OF WORK

The Consultant shall provide services under the Agreement for groundwater monitoring at the Fink Road Landfill in accordance with the adopted Central Valley Regional Water Quality Control Board requirements and Waste Discharge Requirements Order No. 98-184, as set forth in the Consultant's "Proposal for 2001/2002 Environmental Monitoring Fink Road Landfill Stanislaus County, California," dated June 26, 2001 (the "Proposal"), attached hereto and, by this reference, made a part hereof. The term of Project 2001-02 shall begin July 1, 2001 and end June 30, 2002.

C. COMPENSATION

1. The Consultant shall be compensated for the services provided under this Agreement on a time and materials basis, based on the hours worked by the Consultant's employees or subcontractors, multiplied by the applicable rates set forth in Table 4 of the Consultant's Proposal; provided, however, the Consultant will provide the County 30-days notice before any change in the rate schedule takes effect. In addition to the aforementioned fees, Consultant will be reimbursed for the following expenses, plus any expenses agreed to by the parties as set forth in a Schedule of Rates attached hereto, that are reasonable, necessary and actually incurred by the Consultant in connection with the services:

(a) Any filing fees, permit fees, or other fees paid or advanced by the Consultant.

(b) The cost of any subcontractors, consultants, experts or investigators retained pursuant to Paragraph 1.6 of the Agreement.

(c) Expenses, fees or charges for printing, reproduction or binding of documents at actual costs.

2. The parties hereto acknowledge the maximum amount to be paid by the County for services provided shall not exceed $206,501.00, including, without limitation, the cost of any subcontractors, consultants, experts or investigators retained pursuant

to Paragraph 1.6 of the Agreement.

IN WITNESS WHEREOF, the parties have executed this Project No. 2001-02 on July 1, 2001

COUNTY OF STANISLAUS

By: _____
Pat Paul
Chair of the Board of Supervisors

"County"

KLEINFELDER, INC.

By: _____ 8/2/01
John A. Baker, P.E.
Regional Manager

"Consultant"

Taxpayer Identification No.: 94-1532513

ATTEST: Christine Ferraro Tallman
Clerk of the Board of Supervisors of the
County of Stanislaus, State of California

By: _____
Deputy Clerk

APPROVED AS TO CONTENT:
George Stillman, Director
Department of Public Works

By: _____ 7/9/01
David Nordell
Operations Manager

APPROVED AS TO FORM:
Michael H. Krausnick
County Counsel

By: _____
John P. Doering
Deputy County Counsel

C:\Documents\PW\PW-AGM\FINKROAD\Kleinfelder\KLNF FRLF 2001-02.wpd

KLEINFELDER
An employee owned company

June 26, 2001
File: 23-YP6778

Mr. Ron Grider
Fink Road Landfill
P.O. Box 86
Crows Landing, California 95313

Subject: Fink Road Landfill Environmental Monitoring Revision

Dear Mr. Grider:

As requested by the county, attached is our proposal for conducting environmental monitoring at Fink Road Landfill in 2001/2002 (July 1, 2001 through June 30, 2002). In our proposal, you will find an estimate for standard environmental monitoring, reporting services, and additional tasks associated with special activities occurring at the landfill. If you have any questions or require additional information, please contact me.

Sincerely,

KLEINFELDER, INC.

Timothy Crandall, P.E.
Senior Engineer

TAC:sev

Attachment

23-YP6778\2311P247

PROPOSAL FOR
2001/2002 ENVIRONMENTAL MONITORING
FINK ROAD LANDFILL
STANISLAUS COUNTY, CALIFORNIA

June 26, 2001
Proposal: 23-YP6778

TABLE OF CONTENTS

1 INTRODUCTION

Fink Road Landfill is located 3.5 miles west of Crows Landing in Stanislaus County. The Central Valley Regional Water Quality Control Board (CVRWQCB) adopted Waste Discharge Requirements (WDRs), Order 98-184 (including a Monitoring and Reporting Program), for the facility on September 11, 1998. Monitoring and Reporting Program 98-184 includes several types of monitoring. The types of monitoring and who will perform the monitoring are summarized in Table 1. Additional monitoring includes the landfill gas extraction system performance. As requested by Stanislaus County, this proposal will apply for services from July 1, 2001 to June 30, 2002.

Table 2 shows the current status of environmental monitoring points. The number of sites sampled and the number of tests run is reflected in the monitoring schedule in Table 3. The costs associated with the environmental monitoring and reporting are shown on Table 4. There is no constituent of concern monitoring for the 2001/2002 year. The last year the constituent of concern monitoring took place was in 2000 and the next event will be in 2005.

The following proposed Scope of Services includes the portions of the required monitoring not being performed by Stanislaus County. The information contained in this proposal is subject to the limitations stated in Chapter 6.

2 SCOPE OF SERVICES

2.1. Environmental Monitoring

Tasks described in the following subsections (2.1.1. through 2.1.8.) are required by the Waste Discharge Requirements (WDRs) and can be considered to be standard environmental monitoring services similar to these provided by Kleinfelder during last year.

2.1.1. Leachate Monitoring

Kleinfelder will collect (if liquid is present) and analyze leachate samples from the following points on a quarterly basis:

- LF-3 sump discharge point
- SI-1 sump
- SI-1 impounded leachate
- LF-2 Cell 1 sump discharge point
- LF-2 Cell 2 sump discharge point
- LF-2 Cell 3 sump discharge point
- SI-2 sump
- SI-2 impounded leachate
- LF-3 Cell 3[1]

Upon collection, the samples will be analyzed each quarter for the parameters and constituents listed in Table 3.

2.1.2. Groundwater Monitoring

Kleinfelder will measure the depth to water and will sample the wells located at Fink Road Landfill each quarter, following the protocol described in Appendix A. The samples will be analyzed each quarter for the parameters listed in Table 3. Chromium VI was found in samples from most of the wells during the five-year constituent of concern sampling in 2000. Chromium

[1] *LF-3 Cell 3 scheduled for installation during summer of 2001.*

VI has been added to the list of monitoring parameters for analysis by BC Laboratories using EPA Method 7196.

Table 3 lists the schedule of laboratory analyses for each well, and the duplicate sample during each quarter. Existing WDRs require sampling of constituents of concern every 5 years. The constituents of concern were last sampled in 2000 and are due for sampling in the year 2005. There will be no constituents of concern sampling for 2001 or 2002.

2.1.3. Vadose Zone Monitoring

SI-2: Three lysimeters, DL-23 through DL-25, exist beneath SI-2. Based on historical sampling information, Kleinfelder assumes that up to three samples per quarter will be collected from the lysimeters for analysis.

Landfill 2, Cell 1: Three lysimeters, DL-20 through DL-22, exist beneath Cell No. 1 and SI-2. Based on historical sampling information, Kleinfelder assumes that up to three samples per quarter will be collected from the lysimeters for analysis. Prior to 1996, DL-20, 21 and 22 pressure/vacuum and sample lines were damaged and not able to be sampled. The lines have been repaired and the lysimeters were tested and are functional. It was not possible to determine which lines were associated with what lysimeters; therefore, they have been renamed as DL-20A, DL-21A and DL-22A. DL-22A was determined non-functional after a vacuum could not be retained on the lysimeter. Kleinfelder tested DL-22A and was not able to repair the lysimeter.

Landfill 2, Cell 2: Two lysimeters, DL-26 and DL-27 exist beneath LF-2 Cell No. 2. Kleinfelder assumes that up to 2 samples per quarter will be collected from the lysimeters for analysis.

Landfill 2, Cell 3: This unit has a pan lysimeter, which will be inspected and, if necessary, sampled each quarter if a sample can be obtained. Kleinfelder assumes that up to one sample per quarter will be collected from the lysimeter for analysis.

Landfill 3, Cell 1: Thirteen lysimeters, DL-1 through DL-13, are beneath LF-3, Cell-1. However, DL-4, DL-6, DL-8, and DL-13 are not functional and have been removed from the monitoring network. Three new lysimeters (DL-31, 32, and 33) are scheduled to be installed this summer. Based on historical sampling information, Kleinfelder assumes that eight samples each quarter will be collected from the lysimeters for analysis. It is assumed that the remaining lysimeters will be dry.

Landfill 3, Cell 2: Two lysimeters, DL-28 and DL-29, have been installed beneath LF-3 Cell No. 2. Kleinfelder assumes that up to 2 samples per quarter will be collected from the lysimeters for analysis.

Landfill 3, Cell 3: This cell is scheduled for construction during the summer of 2001 and will be operational soon thereafter. Kleinfelder will begin monitoring the pan lysimeter beneath the sump once waste placement begins.

Background Lysimeters: Four lysimeters, BL-1, BL-2, BL-4, and BL-5 will be inspected each quarter. Kleinfelder assumes that up to two samples each quarter will be collected from the lysimeters for analysis.

Sampling Constituents and Frequency

Samples collected will be analyzed each quarter for the constituents and parameters listed in Table 3. The actual number of constituents analyzed will vary depending upon the volume of sample collected from each lysimeter.

2.1.4. Surface Water Monitoring

Kleinfelder will collect a surface water sample (if surface water is present) at locations S-1, S-2 and S-3. The samples will be analyzed each quarter for the parameters listed in Table 3 if surface runoff is present.

2.1.5. Soil Gas Monitoring

Kleinfelder will conduct soil gas monitoring quarterly. The monitoring will be conducted at three probe nests, one near the scale house and two located west of LF-1. The probe nest near the scale house has shallow and deep probes and the two nests west of LF-1 each have shallow, medium and deep probes.

A Landtec GA-90 landfill gas analyzer will be used to measure probe pressure and percent concentrations of methane, carbon dioxide, and oxygen at the probe locations. A section summarizing the field activities and results will be included in the quarterly and annual monitoring reports.

2.1.6. Resampling

If a groundwater analytical result exceeds Concentration Limits established for a particular constituent, a confirming sample must be collected (resample). For the purpose of costing, Kleinfelder has estimated the cost of resampling two monitoring wells each quarter for the full suite of analytes would be $2,310. The actual number of samples collected will depend upon the analytical results obtained from quarter to quarter. Our cost estimate covers sampling two wells per quarter. If the number of samples exceeds Kleinfelder's estimate, additional budget will be required.

2.1.7. Monitoring Reports

Kleinfelder will prepare four quarterly reports (one following each quarter) for submittal to the CVRWQCB. The fourth report will combine the fourth quarter findings with a summary of the 2001 annual findings. A draft copy of each report will be sent to the county for review. After the county's approval, four copies will be sent to the county and one copy will be sent to CVRWQCB.

The quarterly reports will describe the quarter's activities and will present the analytical results of monitoring in tabular form. The fourth quarter/annual report will compile and analyze the data collected throughout 2001 and will assess whether trends or significant variations appear to exist in the data. The four reports will include Stanislaus County's data on surface water monitoring and lysimeter inspections plus other information proved by Stanislaus County for inclusion in the report.

2.1.8. NPDES Report Assistance

Assist Stanislaus County in preparation of NPDES report due July 1 of 2001. Level of assistance to be determined by Stanislaus County staff.

2.2. Additional Services

As circumstances dictate and as requested by Stanislaus County, Kleinfelder provides other services in addition to environmental monitoring. Subsections 2.2.1. through 2.2.4. describe these services.

2.2.1. Landfill Gas Extraction System Performance Monitoring

Monitoring of the effectiveness of the LF-1 gas extraction system relative to existing groundwater impacts was required by the CVRWQCB. Kleinfelder prepared a Landfill Gas Extraction System Performance Workplan, which describes monitoring activities. Additional monitoring includes the measuring of VOCs in the soil gas from LFG-2 and LFG-3 in the deepest probe. Also, gas samples will be taken from MW-9, since the screen extends above the water table, and analyzed for VOCs. Monitoring of VOCs in BL-4 will increase from semi-annually to quarterly. Estimated costs for this task is shown in Table 4.

2.2.2. Lysimeter Installation Under LF-3 Cell 1

In response to the Board's concern about the non-functional lysimeters beneath LF-3 Cell 1, Kleinfelder proposes to install three lysimeters from the west side of the cell. These lysimeters would be installed during the construction of LF-3 Cell 3. The actual installation would be coordinated after grading has been completed and before the geosynthetic liner is installed. A drill rig will angle-drill from the eastern side of the access road and into the ground underneath Cell 1. The three lysimeters would be added to the monitoring network after installation. Table 4 present the estimated cost for this installation.

2.2.3. Telemetry Equipment Upgrade

Fink Road Landfill monitors sump status, weather conditions, soil moisture, and treatment system flow rates (Geer Road Landfill) using a series of sensors that transmits data by use of a radio to a base station computer located in the landfill office. This system has been operation since 1998. Interference from other transmitters has become a problem over the past year. The interference causes momentary loss of data, which is not desirable. The manufacturer of the telemetry system (Automata) now offers upgraded radios that are less sensitive to interference and offer enhanced error checking capability.

Kleinfelder proposes to improve the telemetry system with upgraded radios. Four stations will be fitted with the new radiós (base station, hill top repeater station, repeater station near SI-2, and SI-1 station) during the 2001/2001 period. Estimated cost for this upgrade is shown on Table 4.

2.2.4. Extension of the Telemetry System to LF-3 Cell 3

Construction of LF-3 Cell 3 adds a new sump that must be monitored for leachate level and pump performance. Kleinfelder proposes to install a liquid level sensor in the sump and link that sensor to the existing telemetry system. Estimated costs for this task are shown on Table 4.

3 SCHEDULE

Groundwater, leachate, vadose zone, surface runoff water and landfill gas monitoring will be performed in July 2001, October 2001, January 2002, and April 2002 for the 2001/2002 monitoring program. The quarterly monitoring reports are due to CVRWQCB by the 30th day of the month following the calendar quarter in which the samples were taken (as noted in tentative WDRs). The installation of the lysimeters will occur after the earthwork grading is complete, but before the placement of the geosynthetic liner for LF 3 Cell 3. The radio update for the automated monitoring equipment will occur periodically during the summer of 2001 (likely as two mobilizations).

4 PROJECT COST ESTIMATE

There are estimated costs of the described scope of work shown in Table 4. These costs are on a time and materials basis. The estimated cost of resampling two monitoring well each quarter for the full suite of analytes would be $2,310. Note that this includes analytical costs for the full suite of constituents. If an abbreviated suite is all that will be required, then the cost will be correspondingly lower.

5 CLIENT RESPONSIBILITIES AND ASSUMPTIONS

- Adequate workspace and access will be provided.
- Monthly sampling of methane from LFG-2 and LFG-3 to be completed by Stanislaus County.
- Water generated during the purging and sampling will be discharged to the ground surface.
- The proposed scope of work and cost estimate are based on collection of leachate, groundwater, vadose zone and surface runoff water samples for the analyses required by Monitoring and Reporting Program 98-184, as described above. If additional leachate or vadose zone samples are collected due to the unexpected presence of fluid at the sampling locations, costs will be covered under a separate Purchase Order issued by Stanislaus County.

6 LIMITATIONS

It should be recognized that definition and evaluation of environmental conditions is a difficult and inexact art based on limited information. Judgments leading to conclusions and recommendations are generally made with and incomplete knowledge of conditions present. Environmental regulations are subject to varying interpretations and frequent changes. No warranty, expressed or implied, is made.

This proposal is based upon the assumption that the site is accessible to the equipment proposed. If weather, access, or site conditions restrict our field operations, we may need to modify our fee estimate. Time spent for difficult site access will be charged on a time-and-expense basis.

If there is a need for any change in the scope of services or schedule described in the proposal, please call us immediately. Changes may require revision of the proposed fee, which will be communicated to you after assessment of the requested changes effect on the fee.

All terms and conditions indicated in this proposal will be considered by both parties to be in effect from the effective date of the signed contract through completion of the project. The proposal will remain in effect for 90 days from the date shown on the proposal and therefore shall be null and void unless a task order has been issued for the work performed.

All information gathered during the study by Kleinfelder is considered confidential and will be released only upon written authorization of the client or as required by law. California law requires a person to inform the state if a situation is encountered that can be considered an immediate endangerment to the public's health or welfare and/or to the environment.

During the course of the performance of Kleinfelder's services, hazardous materials may be discovered. The Client will be solely responsible for notifying all governmental agencies, and the public at large, of the existence, release, treatment or disposal of any hazardous materials observed at the project site, either before or during performance of Kleinfelder's services. Kleinfelder will assume no responsibility or liability whatsoever for any claim, loss of property value, damage, or injury which results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials.

In the absence of continuous observations by Kleinfelder personnel during remediation, we are not able to express a complete opinion regarding the adequacy of the work performed by others.

Table 1
2001/20001 Required Monitoring
Fink Road Landfill

Required Monitoring	To Be Performed By
**Nonhazardous Solid Waste Monitoring	Stanislaus County
**Designated Solid Waste Monitoring	Stanislaus County
**Designated Solid Waste Moisture Content Monitoring	Stanislaus County
**Leachate Monitoring	
1) Monthly Inspection (LCRS)	Stanislaus County
2) Quarterly Synthetic Liner Inspection	Stanislaus County
3) Daily Leachate Discharge Monitoring of SI-1, SI-2 (Rate) and LCRS Sump (Presence)	Stanislaus County
4) Field Parameters	Stanislaus County
5) Monitoring Parameters and Constituents of Concern	Kleinfelder
6) Initial LCRS Sump Sample	Stanislaus County
**LCRS Performance Testing	Stanislaus County
**Surface Water Monitoring	
1) Initital Flows	Stanislaus County
2) Quarterly Flows (when present)	Kleinfelder
**Groundwater Monitoring	Kleinfelder
**Vadose Zone Monitoring	
1) Monthly Inspection	Stanislaus County
2) Quarterly Inspections and Sampling	Kleinfelder
3) Background Sampling	Kleinfelder
**Landfill Gas Extraction System Performance Monitoring	Stanislaus County and Kleinfelder
Reporting (Quarterly and Annual)	Stanislaus County and Kleinfelder

** To be included in either the quarterly or annual reports prepared by Kleinfelder

Table 2
2001/2002 Lysimeter, Monitoring Well and Monitoring Point Status
Fink Road Landfill

Lysimeter	Current Status
DL-1	OK
DL-2	OK
DL-3	OK
DL-4	Non-Functional
DL-5	OK
DL-6	Non-Functional
DL-7	OK
DL-8	Non-Functional
DL-9	OK
DL-10	OK
DL-11	OK
DL-12	OK
DL-13	Non-Functional
DL-14	Decommissioned
DL-15	Decommissioned
DL-16	Decommissioned
DL-17	Decommissioned
DL-18	Decommissioned
DL-19	Decommissioned
DL-20A	OK
DL-21A	OK
DL-22A	Non-Functional
DL-23	OK
DL-24	OK
DL-25	OK
DL-26	OK
DL-27	OK
DL-28	OK
DL-29	OK
DL-30	OK
DL-31	*
DL-32	*
DL-33	*
BL-1	OK
BL-2	OK
BL-3	Decommissioned
BL-4	OK
BL-5	OK
LF-2 Cell 3 pan lysimeter	OK
LF-3 Cell 3 pan lysimeter	**

Monitoring Well	Current Status
MW-9	OK
MW-10	OK
MW-11	OK
MW-12	OK
MW-13	OK
MW-14	OK
MW-15	Decommissioned
MW-16	OK
MW-17	OK
MW-18	OK
MW-19	OK

Monitoring Point	Current Status
LF-2 Cell 1 sump discharge point	OK
LF-2 Cell 2 sump discharge point	OK
LF-2 Cell 3 sump discharge point	OK
LF-3 Cell 1&2 sump discharge point	OK
LF-3 Cell 3 sump discharge point	**
SI-1 sump	OK
SI-1 impounded leachate	OK
SI-2 sump	OK
SI-2 impounded leachate	OK
S-1	OK
S-2	OK
S-3	OK
LFG-1	OK
LFG-2	OK
LFG-3	OK

* To be installed under LF-3 Cell 1 during the summer of 2001

** To be installed during the summer of 2001

KLEINFELDER

Table 3
2001/2002 Monitoring Schedule
Fink Road Landfill

Monitoring Wells	First Quarter July	Second Quarter October	Third Quarter January	Fourth Quarter April
MW-9	a,c,r+	a,c,r+	a,c,r+	a,c,r+
MW-10	a,c,r+	a,c,r+	a,c,r+	a,c,r+
MW-11	a,c,r+	a,c,r+	a,c,r+	a,c,r+
MW-12	a, b,r+	a,c,r+	a, b,r+	a,c,r+
MW-13	a, b,r+	a,c,r+	a, b,r+	a,c,r+
MW-14	a, b,r+	a,c,r+	a, b,r+	a,c,r+
MW-16	a, b	a,c	a, b	a,c
MW-16 dup	a, b	a,c	a, b	a,c
MW-17	a, b	a,c	a, b	a,c
MW-18	a, b	a,c	a, b	a,c
MW-19	a, b	a,c	a, b	a,c
Travel Blank	8260B	8260B	8260B	8260B
Equipment Blank	8260B	8260B	8260B	8260B

Leachate	First Quarter July	Second Quarter October	Third Quarter January	Fourth Quarter April
LF-2 Cell 1 sump discharge point	e,f,g	e,f,h	e,f,g	e,f,h
LF-2 Cell 2 sump discharge point	e,f,g	e,f,h	e,f,g	e,f,h
LF-2 Cell 3 sump discharge point	e,f,g	e,f,h	e,f,g	e,f,h
LF-3 Cell 1&2 sump discharge point	e,f,g	e,f,h	e,f,g	e,f,h
LF-3 Cell 3 sump discharge point	e,f,g	e,f,h	e,f,g	e,f,h
SI-1 sump	e,f,g	e,f,h	e,f,g	e,f,h
SI-1 impounded leachate	e,f,g	e,f,h	e,f,g	e,f,h
SI-2 sump	e,f,g	e,f,h	e,f,g	e,f,h
SI-2 impounded leachate	e,f,g	e,f,h	e,f,g	e,f,h

Lysimeters	First Quarter July	Second Quarter October	Third Quarter January	Fourth Quarter April
Lysimeter (22 samples total)	j,k	j,k,l	j,k	j,k,l

Surface Water	First Quarter July	Second Quarter October	Third Quarter January	Fourth Quarter April
S-1, S-2, and S-3	m,n	m,n	m,n	m,n

LF-1 Performance Evaluation	First Quarter July	Second Quarter October	Third Quarter January	Fourth Quarter April
Gas (LFG-2, LFG-3, MW-9)	o	o	o	o
Vadose Zone (BL-4)	p		p	

Notes:

Monitoring Wells (Table III in MRP 98-184)

a) Field Parameters

b) Monitoring Parameters (w/o EPA 8260)*

c) Monitoring Parameters (w EPA 8260)*

r) Impact Constituents (Al, Ca, Mg, Na)

Leachate (Table II in MRP 98-184)

e) Field Parameters

f) Monitoring Parameters

g) Constituents of Concern (w/o metals & organics)

h) Constituents of Concern

Vadose Zone (Table V in MRP 98-184)

j) Field Parameters

k) Monitoring Parameters

l) Constituents of Concern

Surface Water (Table IV in MRP 98-184)

m) Field Parameters

n) Monitoring Parameter

LF-1 Performance Evaluation (VOCs)

o) Gas Monitoring Parameters

p) Vadose Monitoring Parameters

+ Monitoring for evaulation of WMU corrective action

* Chromium VI added to monitoring parameter list due to detections during 2000

Table 4
2001/2002 Environmental Monitoring Budget
Fink Road Landfill

	Senior	Staff	Tech	Data Entry	Draft	WP			
	P5	P2	T2	T0	C1	A1			
	$ 140	$ 105	$ 80	$ 60	$ 72	$ 60	Materials	Analytical	Total
Standard Environmental Monitoring									
Quarter Sampling (July 2001)	5	28	55	12			$ 1,800	$ 5,614	$ 16,174
Quarter Sampling (October 2001)	5	28	55	12			$ 1,800	$ 28,792	$ 39,352
Quarter Sampling (January 2002)	5	18	55	12			$ 1,800	$ 5,614	$ 15,124
Quarter Sampling (April 2002)	5	18	55	12			$ 1,800	$ 28,792	$ 38,302
Resampling (4 quarters)*		12	32	10		10	$ 800	$ 3,421	$ 9,241
Quarterly Reports (3)	30	120		30	24	42	$ 600	$ -	$ 23,448
Annual Report (2001)	24	80		32	16	32	$ 400	$ -	$ 17,152
NPDES Analysis		20		4	4	6	$ -	$ -	$ 2,988
Additional Services									
Landfill Gas Extraction System Performance Monitoring	5	28	55	12			$ 1,800	$ 4,796	$ 15,356
Lysimeter Installation Under LF-3 Cell 1	8	16			4	2	$ 16,118	$ -	$ 19,326
Telemetry Equipment Upgrade		25					$ 2,882	$ -	$ 5,507
Extension of Telemetry System to LF-3 Cell 3		20					$ 2,430	$ -	$ 4,530
								Total	$ 206,501

Note: Rate Table ZZ2

OICs= Z99

* Assumes resampling two wells for full suite of analyses 4 quarters/year.

KLEINFELDER FIELD PROTOCOL

TABLE OF CONTENTS

KLEINFELDER FIELD PROTOCOL

1 FIELD PREPARATION

Before performing work in the field, environmental staff reviews the scope of work, prepares a health and safety plan, coordinates the work to be done with their supervisor, assembles the necessary sample equipment containers, and checks, calibrates and cleans equipment to be used in the field. Underground Service Alert (USA) is also contacted prior to intrusive subsurface field work for utility clearance. A utility locating firm is sometimes also employed to check the locations.

2 GROUNDWATER MONITORING

2.1. Water Level Measurements

Water level measurements are made in the wells prior to purging and sampling the wells. Measurement protocol is as follows:

1. The water level probe is decontaminated in a trisodium phosphate or non-phosphate detergent wash, followed by a distilled water rinse, prior to use in each well.

2. Water level measurements are made using a conductivity-based water-level meter. Depth-to-water is generally measured from a surveyed mark on the north rim of the PVC well casing.

The water level measurements are converted to elevations using the surveyed casing elevations.

2.2. Groundwater Sampling

Groundwater samples are collected from the monitoring wells at the site. The sampling protocol for each well is as follows:

1. Down-well equipment (pumps, bailers, etc.) is decontaminated by steam cleaning, or by scrubbing in a trisodium-phosphate or non-phosphate detergent wash followed by a

distilled water rinse, prior to use in each well. Bailer cord is replaced prior to use in each well.

2. The depth to groundwater is measured using a conductivity-based water-level meter.

3. The volume of water in gallons standing in the well is calculated by subtracting the depth to groundwater measurement from the depth of the well and multiplying by the appropriate conversion factor (0.16 for 2-inch wells, and 0.65 for 4-inch wells).

4. Three to five well volumes of water are purged from each well using a submersible pump, bladder pump, or Teflon bailer.

5. Physical parameters (pH, electrical conductivity, and temperature) are monitored for stability while purging. The physical parameter measurements are recorded on purge-and-sample logs, along with the time and volume of water purged at each measurement.

6. Samples are collected with a disposable bailer or bladder pump into appropriately prepared bottles provided by the analytical laboratory.

7. Samples for metals analysis are usually filtered in the field at the time of collection.

8. Samples are immediately labeled and placed in an iced sample container. At the end of the day, the samples are delivered to the analytical laboratory under chain-of-custody control.

3 VADOSE ZONE MONITORING

- Prior to conducting lysimeter sampling, the pressure-vacuum equipment is checked and cleaned. A Soil-Moisture hand pump with a pressure-vacuum gage is used to measure residual and implied pressure-vacuum. Nitrogen gas is used to purge the lysimeter system for sampling. An air pump is available as a back up.

- Approximately one week to one month prior to conducting the sampling, the residual pressures at the air-line of each lysimeter are measured and the vacuums reset to manufactured recommended value (usually 50 centibars). The measurements and applied vacuums are noted on a sampling log form. Kleinfelder has found that resetting the lysimeters vacuums before the sampling yields good sample recovery.

- The residual pressures are measured just prior to collecting the sample. The water line is then opened and nitrogen gas applied to the air line until either fluid or air is discharged (for dry lysimeters). The sample is contained in a 1 liter unpreserved bottle and the volume recovered is estimated. The fluid is then poured into appropriate preserved or unpreserved bottles of the requested analysis.

- After the sample is collected, the lysimeter vacuum is reset to the manufacturer's recommended value. The lysimeter is also tested to evaluate potential leaks that may cause vacuum pressure loss.

4 LEACHATE MONITORING

- The leachate riser or wells are first opened and allowed to equilibrate with the atmosphere.

- The leachate elevation is then measured from a set location using a conductivity-based water-level meter. The level is generally measured from a surveyed mark on the north rim of the casing.

- A leachate sample is then collected using a clean, disposable bailer.

- The sample is labeled and immediately stored in an iced cooler pending transport to the analytical laboratory. The sample is logged on a chain-of-custody.

5 SURFACE WATER MONITORING

- Prior to collecting surface water samples, the depth of water is estimated at a designated location in the stream using a staff gage installed by Kleinfelder.

- Surface water samples are collected directly from the stream or surface water using a clean unpreserved plastic bottle or disposable bailer. Care is taken not to disturb the stream bottom and introduce sediment in the sample. The fluid is then poured into appropriate preserved or unpreserved bottles for the requested analysis.

- The sample is labeled and immediately stored in an iced cooler pending transport to the analytical laboratory. The sample is logged on a chain-of-custody.

6 LANDFILL GAS MONITORING

A GA-90 Landtec Infra-red Gas Analyzer is used to monitor methane, carbon dioxide (CO_2), and oxygen (O_2) levels at each probe location. The analyzer is calibrated for methane, CO_2, & O_2 prior to use in the field. Calibration logs are included in this report.

Ambient air measurements of methane, oxygen, carbon dioxide, and barometric pressure are taken at each gas probe location. Those readings are recorded when the instrument is connected to the probe. The valve was opened and probe gas pressure measurements were taken. The probe is then purged for two probe volumes. Readings are then collected at approximately 30 second intervals until a stable reading is obtained. These measurements of methane, oxygen, carbon dioxide, and ambient barometric pressure are then recorded.