FLUOR DANIEL ARCS TEAM

Members: Fluor Daniel, Inc.
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July 25, 1994

FDI/ARCS # 2799

U.S. Environmental Protection Agency
Attn: Stacey Bennett, P.E. (6E-SH)
Work Assignment Manager
1445 Ross Avenue, Suite 1000
Dallas, Texas 75202

CONTRACT NO. 68-W9-0013
PRESCORE REPORT
ATHENS LANDFILL #2 (MALAKOFF ROAD)
ATHENS, HENDERSON COUNTY, TEXAS
EPA ID NO. TX 980062352
WORK ASSIGNMENT NO. 25-6JZZ

Dear Ms. Bennett:

Transmitted herewith is the PREscore document and diskette for the referenced site.

The surface water and air pathways were not evaluated due to a lack of targets.

Should you have any questions, please contact either of the undersigned at (214) 450-4100.

Sincerely,

Mark A. McDonnell
ARCS Task Manager

Jonathan M. Stewart
ARCS Project Manager

Attachments

9490942

NPL Characteristics Data Collection Form
Athens Landfill #2 (Malakoff Road) - 07/25/94

Record Information

1. Site Name: Athens Landfill #2 (Malakoff Road)
   (as entered in CERCLIS)

2. Site CERCLIS Number: TXD980062352

3. Site Reviewer: Mark A. McDonnell, Fluor Daniel, Inc.

4. Date: July 1, 1994

5. Site Location: Athens/Henderson County, Texas
   (City/County,State)

6. Congressional District: 1

7. Site Coordinates: Multiple

   Latitude: 32°11'30. Longitude: 095°53'45.

Site Description

1. Setting: Rural

2. Current Owner: Multiple Owners

3. Current Site Status: Inactive

4. Years of Operation: Inactive Site,from and to dates: 1972 to 1979

5. How Initially Identified: Unknown

6. Entity Responsible for Waste Generation:

   - Landfill

7. Site Activities/Waste Deposition:

   - Municipal Landfill
   - Drum/Container Storage
   - Tanks - Above Ground
   - Spill

Waste Description

8. Wastes Deposited or Detected Onsite:

   - Inorganic Chemicals
   - Oily Waste
   - Municipal Waste

Response Actions

9. Response/Removal Actions:

RCRA Information

10. For All Active Facilities, RCRA Site Status:

    - Not Applicable

Demographic Information

11. Workers Present Onsite: No

12. Distance to Nearest Non-Worker Individual: > 10 Feet - 1/4 Mile

13. Residential Population Within 1 Mile: 51.0

14. Residential Population Within 4 Miles: 11500.0

Water Use Information

15. Local Drinking Water Supply Source:

    - Ground Water (within 4 mile distance limit)

16. Total Population Served by Local Drinking Water Supply Source: Not Applic

17. Drinking Water Supply System Type for Local Drinking Water Supply Sources:

- Private

18. Surface Water Adjacent to/Draining Site:

- Stream

HRS DOCUMENTATION RECORD
Athens Landfill #2 (Malakoff Road) - 07/25/94

1. Site Name: Athens Landfill #2 (Malakoff Road)
   (as entered in CERCLIS)

2. Site CERCLIS Number: TXD980062352

3. Site Reviewer: Mark A. McDonnell, Fluor Daniel, Inc.

4. Date: July 1, 1994

5. Site Location: Athens/Henderson County, Texas
   (City/County,State)

6. Congressional District: 1

7. Site Coordinates: Multiple

   Latitude: 32°11'30. Longitude: 095°53'45.

	Score
Ground Water Migration Pathway Score (Sgw)	3.13
Surface Water Migration Pathway Score (Ssw)	0.00
Soil Exposure Pathway Score (Ss)	9.61
Air Migration Pathway Score (Sa)	0.00

Site Score	5.05

NOTE

EPA uses the terms "facility," "site," and "release" interchangeably. The term "facility" is broadly defined in CERCLA to include any area where hazardous substances have "come to be located" (CERCLA Section 109(9)), and the listing process is not intended to define or reflect boundaries of such facilities or releases. Site names, and references to specific parcels or properties, are provided for general identification purposes only. Knowledge regarding the extent of sites will be refined as more information is developed during the RI/FS and even during implementation of the remedy.

GROUND WATER MIGRATION PATHWAY SCORESHEET
Athens Landfill #2 (Malakoff Road) - 07/25/94

GROUND WATER MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release to an Aquifer Aquifer: Carrizo		
1. Observed Release	550	550
2. Potential to Release		
2a. Containment	10	10
2b. Net Precipitation	10	3
2c. Depth to Aquifer	5	5
2d. Travel Time	35	35
2e. Potential to Release [lines 2a(2b+2c+2d)]	500	430
3. Likelihood of Release	550	550
Waste Characteristics		
4. Toxicity/Mobility	*	1.00E+02
5. Hazardous Waste Quantity	*	100
6. Waste Characteristics	100	10
Targets		
7. Nearest Well	50	4.50E+01
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	2.00E+00
8c. Potential Contamination	**	0.00E+00
8d. Population (lines 8a+8b+8c)	**	2.00E+00
9. Resources	5	0.00E+00
10. Wellhead Protection Area	20	0.00E+00
11. Targets (lines 7+8d+9+10)	**	4.70E+01
12. Targets (including overlaying aquifers)	**	4.70E+01
13. Aquifer Score	100	3.13
GROUND WATER MIGRATION PATHWAY SCORE (Sgw)	100	3.13

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
Athens Landfill #2 (Malakoff Road) - 07/25/94

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	0
2. Potential to Release by Overland Flow		
2a. Containment	10	0
2b. Runoff	25	0
2c. Distance to Surface Water	25	25
2d. Potential to Release by Overland Flow [lines 2a(2b+2c)]	500	0
3. Potential to Release by Flood		
3a. Containment (Flood)	10	0
3b. Flood Frequency	50	0
3c. Potential to Release by Flood (lines 3a x 3b)	500	0
4. Potential to Release (lines 2d+3c)	500	0
5. Likelihood of Release	550	0
Waste Characteristics		
6. Toxicity/Persistence	*	0.00E+00
7. Hazardous Waste Quantity	*	0
8. Waste Characteristics	100	0
Targets		
9. Nearest Intake	50	0.00E+00
10. Population		
10a. Level I Concentrations	**	0.00E+00
10b. Level II Concentrations	**	0.00E+00
10c. Potential Contamination	**	0.00E+00
10d. Population (lines 10a+10b+10c)	**	0.00E+00
11. Resources	5	0.00E+00
12. Targets (lines 9+10d+11)	**	0.00E+00
13. DRINKING WATER THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
Athens Landfill #2 (Malakoff Road) - 07/25/94

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
14. Likelihood of Release (same as line 5)	550	0
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	*	0.00E+00
16. Hazardous Waste Quantity	*	0
17. Waste Characteristics	1000	0
Targets		
18. Food Chain Individual	50	0.00E+00
19. Population		
19a. Level I Concentrations	**	0.00E+00
19b. Level II Concentrations	**	0.00E+00
19c. Pot. Human Food Chain Contamination	**	0.00E+00
19d. Population (lines 19a+19b+19c)	**	0.00E+00
20. Targets (lines 18+19d)	**	0.00E+00
21. HUMAN FOOD CHAIN THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
Athens Landfill #2 (Malakoff Road) - 07/25/94

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
22. Likelihood of Release (same as line 5)	550	0
Waste Characteristics		
23. Ecosystem Toxicity/Persistence/Bioacc. 24. Hazardous Waste Quantity 25. Waste Characteristics	* * 1000	0.00E+00 0 0
Targets		
26. Sensitive Environments 26a. Level I Concentrations 26b. Level II Concentrations 26c. Potential Contamination 26d. Sensitive Environments (lines 26a+26b+26c) 27. Targets (line 26d)	 ** ** ** ** **	 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00
28. ENVIRONMENTAL THREAT SCORE	60	0.00
29. WATERSHED SCORE	100	0.00
30. SW: OVERLAND/FLOOD COMPONENT SCORE (Sof)	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SOIL EXPOSURE PATHWAY SCORESHEET
Athens Landfill #2 (Malakoff Road) - 07/25/94

SOIL EXPOSURE PATHWAY Factor Categories & Factors RESIDENT POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
1. Likelihood of Exposure	550	550
Waste Characteristics		
2. Toxicity	*	1.00E+04
3. Hazardous Waste Quantity	*	10
4. Waste Characteristics	100	18
Targets		
5. Resident Individual	50	0.00E+00
6. Resident Population		
6a. Level I Concentrations	**	0.00E+00
6b. Level II Concentrations	**	0.00E+00
6c. Resident Population (lines 6a+6b)	**	0.00E+00
7. Workers	15	0.00E+00
8. Resources	5	5.00E+00
9. Terrestrial Sensitive Environments	***	7.50E+01
10. Targets (lines 5+6c+7+8+9)	**	8.00E+01
11. RESIDENT POPULATION THREAT SCORE	**	7.92E+05

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

SOIL EXPOSURE PATHWAY SCORESHEET
Athens Landfill #2 (Malakoff Road) - 07/25/94

SOIL EXPOSURE PATHWAY Factor Categories & Factors NEARBY POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
12. Attractiveness/Accessibility	100	5.00E+00
13. Area of Contamination	100	1.00E+02
14. Likelihood of Exposure	500	5.00E+01
Waste Characteristics		
15. Toxicity	*	1.00E+04
16. Hazardous Waste Quantity	*	10
17. Waste Characteristics	100	18
Targets		
18. Nearby Individual	1	1.00E+00
19. Population Within 1 Mile	**	4.50E-02
20. Targets (lines 18+19)	**	1.04E+00
21. NEARBY POPULATION THREAT SCORE	**	9.40E+02
SOIL EXPOSURE PATHWAY SCORE (Ss)	100	9.61

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

AIR PATHWAY SCORESHEET
Athens Landfill #2 (Malakoff Road) - 07/25/94

AIR MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	0
2. Potential to Release		
2a. Gas Potential to Release	500	0
2b. Particulate Potential to Release	500	196
2c. Potential to Release	500	196
3. Likelihood of Release	550	196
Waste Characteristics		
4. Toxicity/Mobility	*	2.00E-01
5. Hazardous Waste Quantity	*	100
6. Waste Characteristics	100	2
Targets		
7. Nearest Individual	50	0.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	0.00E+00
8d. Population (lines 8a+8b+8c)	**	0.00E+00
9. Resources	5	0.00E+00
10. Sensitive Environments		
10a. Actual Contamination	***	0.00E+00
10b. Potential Contamination	***	0.00E+00
10c. Sens. Environments(lines 10a+10b)	***	0.00E+00
11. Targets (lines 7+8d+9+10c)	**	0.00E+00
AIR MIGRATION PATHWAY SCORE (Sa)	100	0.00E+00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

WASTE QUANTITY

Athens Landfill #2 (Malakoff Road) - 07/25/94

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: S. Half of Landfill

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID		S. Half of Landfill	
b. Source Type		Landfill	
c. Secondary Source Type		N.A.	
d. Source Vol.(yd3/gal)	Source Area (ft2)	0.00	557568.00
e. Source Volume/Area Value		1.64E+02	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)		0.00E+00	
g. Data Complete?		NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)		0.00E+00	
i. Data Complete?		NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)		1.64E+02	

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Chromium	< 2	NO	7.7E+00	ppm
Cobalt	< 2	NO	3.8E+00	ppm
Manganese	< 2	NO	1.5E+02	ppm

Documentation for Source Type:

The source operated as a permitted municipal landfill (Ref 6., page 1).

Reference: 6

Documentation for Source Hazardous Substances:

During the sampling inspection, Station 20 had levels of chromium, cobalt and manganese above the BBCs (Ref. 4, page 5).

Reference: 4.

Documentation for Source Area:

Southern half of landfill is 0.1 mile x 0.2 mile in area. This is equal to 528 feet times 1,056 feet equals 557,568 square feet (Ref. 4, page 2). Measurements were obtained during reconnaissance.

Reference: 4.

3. SITE HAZARDOUS WASTE QUANTITY SUMMARY

No.	Source ID	Migration Pathways	Vol. or Area Value (2e)	Constituent or Wastestream Value (2f,2h)	Hazardous Waste Qty. Value (2k)
1	S. Half of Landfill	GW-SE-A	1.64E+02	0.00E+00	1.64E+02

4. PATHWAY HAZARDOUS WASTE QUANTITY AND WASTE CHARACTERISTICS SUMMARY TABLE

Migration Pathway	Contaminant Values		HWQVs*	WCVs**
Ground Water	Toxicity/Mobility	1.00E+02	100	10
SW: Overland Flow, DW	Tox./Persistence	0.00E+00	0	0
SW: Overland Flow, HFC	Tox./Persis./Bioacc.	0.00E+00	0	0
SW: Overland Flow, Env	Etox./Persis./Bioacc.	0.00E+00	0	0
SW: GW to SW, DW	Tox./Persistence	1.00E+02	100	10
SW: GW to SW, HFC	Tox./Persis./Bioacc.	5.00E+05	100	56
SW: GW to SW, Env	Etox./Persis./Bioacc.	5.00E+03	100	18
Soil Exposure:Resident	Toxicity	1.00E+04	10	18
Soil Exposure: Nearby	Toxicity	1.00E+04	10	18
Air	Toxicity/Mobility	2.00E-01	100	2

* Hazardous Waste Quantity Factor Values
** Waste Characteristics Factor Category Values

Note: SW = Surface Water
GW = Ground Water
DW = Drinking Water Threat
HFC = Human Food Chain Threat
Env = Environmental Threat

GROUND WATER PATHWAY AQUIFER SUMMARY
Athens Landfill #2 (Malakoff Road) - 07/25/94

No.	Aquifer ID	Type	Overlaying No.	Inter-Connected with	Likelihood of Release	Targets
1	Carrizo	Non K	0	0	550	4.70E+01

Containment

No.	Source ID	HWQ Value	Containment Value
1	S. Half of Landfill	1.64E+02	10
		Containment Factor	10

Documentation for Ground Water Containment, Source S. Half of Landfill:

There is evidence of hazardous substance migration from the source area into the groundwater (Ref. 5, page 11 and 25).

Reference: 5.

Net Precipitation

Net Precipitation (inches) N.A.

Documentation for Net Precipitation:

HRS Figure 3-2 was used to determine net precipitation factor value (Ref. 1, page 51598).

Reference: 1

Aquifer: Carrizo

Type of Aquifer: Non Karst

Overlaying Aquifer: 0

Interconnected with: 0

Documentation for Carrizo Aquifer:

The Carrizo Sand consists of very fine sand and silt and quartz sand in the lower portion (Ref. 3, page 4).

Reference: 3.

OBSERVED RELEASE

No.	Well ID	Well Type	Distance (miles)	Level of Contamination
1	Morris Abandoned	Drinking Water	0.020	Level II
2	Morris Active	Drinking Water	0.020	Level II

Well No.	Hazardous Substance	Concent.	MCL	Cancer	RFD	Units
1	Magnesium	3.0E+04	0.0E+00	0.0E+00	0.0E+00	ppb
2	Zinc	5.5E+01	0.0E+00	0.0E+00	1.1E+04	ppb

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Observed Release Factor 550

Documentation for Well Morris Abandoned:

The Morris residence has two wells. This well is 100 feet southeast of the residence and is abandoned. The population served is two people, but the well is abandoned and there is currently another deeper well operating on the property (Ref. 4, page 2). Complete sampling data are referenced to document the level of contamination (Ref. 5, page 11).

Reference: 4, 5.

Documentation for Well Morris Active:

The Morris residence has two wells. This well is 100 feet south of the residence and is active. The population served is two people (Ref. 4, page 2). Complete sampling data are referenced to document the level of contamination (Ref. 5, page 25).

Reference: 4, 5.

Documentation for Well Offsite Carrizo:

Within the 1 to 2 mile distance ring, there are 2 wells in the Carrizo serving 5 people (Ref. 4, page 6).

Reference: 4.

POTENTIAL TO RELEASE

Containment

Containment Factor	10	

Net Precipitation

Net Precipitation Factor	3	

Depth to Aquifer

A. Depth of Hazardous Substances	15.00	feet

Documentation for Depth of Hazardous Substances:

The maximum depth of excavation for the landfill trenches is 15 feet (Ref. 6, page 1).

Reference: 6.

B. Depth to Aquifer from Surface	17.00	feet

Documentation for Depth to Aquifer from Surface :

The depth to the aquifer was observed as a result of borings taken at the site (Ref. 7, page 2).

Reference: 7.

C. Depth to Aquifer (B - A)	2.00	feet
Depth to Aquifer Factor	5	

Travel Time

Are All Layers Karst? NO

Documentation for Karst Layers:

The soils encountered clayey sands and sandy clays (Ref. 7, page 1). No karst layers are present.

Reference: 7.

Thickness of Layer(s) with Lowest Conductivity 10.00 feet

Documentation for Thickness of Layers with Lowest Conductivity:

The underlying soils are sandy clay and clayey sand with some silty sand (Ref 7, page 2). HRS Figure 3-6 states that the conductivity is 10-6 cm/sec (Ref. 1, page 51601).

Reference: 1, 7.

Hydraulic Conductivity (cm/sec) 1.0E-06

Documentation for Hydraulic Conductivity:

The underlying soils are sandy clay and clayey sand with some silty sand (Ref. 7, page 2). HRS Figure 3-6 states that the conductivity is 10-6 cm/sec (Ref. 1, page 51601).

Reference: 1, 7.

GROUND WATER PATHWAY LIKELIHOOD OF RELEASE Carrizo AQUIFER
Athens Landfill #2 (Malakoff Road) - 07/25/94

Travel Time Factor	35

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Potential to Release Factor	430

GROUND WATER PATHWAY WASTE CHARACTERISTICS
Athens Landfill #2 (Malakoff Road) - 07/25/94

Source: 1 S. Half of Landfill

Source Hazardous Waste Quantity Value: 163.99

Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value
Chromium	10000	1.00E-02	1.00E+02
Cobalt	1	1.00E-02	1.00E-02
Manganese	10000	1.00E-02	1.00E+02

Hazardous Substances Found in an Observed Release

Well No.	Observed Release Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value
1	Magnesium	100	1.00E+00	1.00E+02
2	Zinc	10	1.00E+00	1.00E+01

Toxicity/Mobility Value from Source Hazardous Substances:	1.00E+02
Toxicity/Mobility Value from Observed Release Hazardous Substances:	1.00E+01
Toxicity/Mobility Factor:	1.00E+02
Sum of Source Hazardous Waste Quantity Values:	1.64E+02
Hazardous Waste Quantity Factor:	100
Waste Characteristics Factor Category:	10

Population by Well

No.	Well ID	Sample Type	Distance (miles)	Level of Contamination	Population
1	Morris Abandoned	Drinking Water	0.020	Level II	0.00
2	Morris Active	Drinking Water	0.020	Level II	2.00

Well No.	Hazardous Substance	Concent.	MCL	Cancer	RFD	Units
1	Magnesium	3.0E+04	0.0E+00	0.0E+00	0.0E+00	ppb
2	Zinc	5.5E+01	0.0E+00	0.0E+00	1.1E+04	ppb

Documentation for Well Morris Abandoned:

The Morris residence has two wells. This well is 100 feet southeast of the residence and is abandoned. The population served is two people, but the well is abandoned and there is currently another deeper well operating on the property (Ref. 4, page 2). Complete sampling data are referenced to document the level of contamination (Ref. 5, page 11).

Reference: 4, 5.

Documentation for Well Morris Active:

The Morris residence has two wells. This well is 100 feet south of the residence and is active. The population served is two people (Ref. 4, page 2). Complete sampling data are referenced to document the level of contamination (Ref. 5, page 25).

Reference: 4, 5.

Documentation for Well Offsite Carrizo:

Within the 1 to 2 mile distance ring, there are 2 wells in the Carrizo serving 5 people (Ref. 4, page 6).

Reference: 4.

Level I Population Factor:	0.00
Level II Population Factor:	2.00

Potential Contamination by Distance Category

Distance Category (miles)	Population	Value
> 0 to 1/4	0.0	0.00E+00
> 1/4 to 1/2	0.0	0.00E+00
> 1/2 to 1	0.0	0.00E+00
> 1 to 2	0.0	0.00E+00
> 2 to 3	0.0	0.00E+00
> 3 to 4	0.0	0.00E+00

Potential Contamination Factor: 0.000

Nearest Well

Well: 2 Morris Active
Level of Contamination: Level II
Distance in miles: 0.02

Nearest Well Factor: 4.50E+01

Resources

Resource Use: NO

Resource Factor: 0.00E+00

Documentation for Resources:

No resources identified (Ref. 1, page 7).

Reference: 1.

Wellhead Protection Area

No wellhead protection area

Wellhead Protection Area Factor: 0.00E+00

Documentation for Wellhead Protection Area:

There are no wellhead protection areas in the county (Ref. 8, page 1).

Reference: 8.

THE SURFACE WATER PATHWAY WAS NOT EVALUATED FOR THIS PREscore.
THEREFORE, PAGES 27-51 WERE OMITTED.

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT LIKELIHOOD OF EXPOSURE
Athens Landfill #2 (Malakoff Road) - 07/25/94

Likelihood of Exposure

No.	Source ID	Level of Contamination
1	S. Half of Landfill	Level II

Likelihood of Exposure Factor: 550

Documentation for Area of Contamination, Source S. Half of Landfill:

Southern half of the landfill is 0.1 mile by 0.2 mile in area. This is equal to 528 feet times 1,056 feet equals 557,568 square feet (Ref. 8, page 3).

Reference: 8.

Source No.	Hazardous Substance	Depth (ft.)	Concent.	Cancer	RFD	Units
1	Chromium	< 2	7.7E+00	0.0E+00	2.9E+03	ppm
1	Cobalt	< 2	3.8E+00	0.0E+00	0.0E+00	ppm
1	Manganese	< 2	1.5E+02	0.0E+00	5.8E+04	ppm

Documentation for Source S. Half of Landfill, Contaminants:

During the sampling inspection, Station 20 had levels of chromium, cobalt and manganese above the BBCs (Ref. 4, page 5).

Reference: 4.

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
Athens Landfill #2 (Malakoff Road) - 07/25/94

Source: 1 S. Half of Landfill

Source Hazardous Waste Quantity Value: 16.40

Hazardous Substance	Toxicity Value
Chromium	10000
Cobalt	1
Manganese	10000

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
Athens Landfill #2 (Malakoff Road) - 07/25/94

Toxicity Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	1.64E+01
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

Targets

Level I Population:	2.0	Value:	0.00

Documentation for Level I Population:

There are 2 residents at the Morris home within 200 feet of the observed contamination (Ref. 9, page 8).

Reference: 9.

Level II Population:	0.0	Value:	0.00
Workers:	0.0	Value:	0.00

Documentation for Workers:

There are no onsite workers, only the residents at the Morris house (Ref. 9, page 8).

Reference: 9.

Resident Individual:	Potentia	Value:	0.00
Resources:	YES	Value:	5.00

Documentation for Resources:

There is commercial livestock production on top of the landfill (Ref. 9, page 8).

Reference: 9.

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT TARGETS
Athens Landfill #2 (Malakoff Road) - 07/25/94

Terrestial Sensitive Environment	Value
Terestrial Habitat	75

Terrestrial Sensitive Environments Factor: 75.00

Documentation for Terrestrial Environment Terestrial Habitat:

The area of the source is a terrestrial sensitive environment (Ref. 1, page 51648 and Ref. 10, page 1, 2, 3, and 4).

Reference: 1, 10.

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT LIKELIHOOD OF EXPOSURE
Athens Landfill #2 (Malakoff Road) - 07/25/94

Likelihood of Exposure

No.	Source ID	Level of Contamination	Attractiveness/ Accessibility	Area of Contam. (sq. feet)
1	S. Half of Landfill	Level II	5	557568

Highest Attractiveness/Accessibility Value: 5
Sum of Eligible Areas Of Contamination (sq. feet): 557568
Area of Contamination Value: 100

Likelihood of Exposure Factor Category: 50

Documentation for Attractiveness/Accessibility, Source S. Half of Landfill:

The area of observed contamination is surrounded by a maintained fence (Ref. 4, page 2).

Reference: 4.

Source No.	Hazardous Substance	Depth (ft.)	Concent.	Cancer	RFD	Units
1	Chromium	< 2	7.7E+00	0.0E+00	2.9E+03	ppm
1	Cobalt	< 2	3.8E+00	0.0E+00	0.0E+00	ppm
1	Manganese	< 2	1.5E+02	0.0E+00	5.8E+04	ppm

Documentation for Source S. Half of Landfill, Contaminants:

During the sampling inspection, Station 20 had levels of chromium, cobalt and manganese above the BBCs (Ref. 4, page 5).

Reference: 4.

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
Athens Landfill #2 (Malakoff Road) - 07/25/94

Source: 1 S. Half of Landfill

Source Hazardous Waste Quantity Value: 16.40

Hazardous Substance	Toxicity Value
Chromium	10000
Cobalt	1
Manganese	10000

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
Athens Landfill #2 (Malakoff Road) - 07/25/94

Toxicity Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	1.64E+01
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT TARGETS
Athens Landfill #2 (Malakoff Road) - 07/25/94

Nearby Individual

Population within 1/4 mile: 2.0

Nearby Individual Value: 1.0

Population Within 1 Mile

Travel Distance Category	Number of People	Value
> 0 to 1/4 mile	2.0	0.0
> 1/4 to 1/2 mile	6.0	0.0
> 1/2 to 1 mile	43.0	0.0
	Population Within 1 Mile Factor:	0.0

Documentation for Population > 0 to 1/4 mile Distance Category:

The only residents within 1/4 mile of the site are the 2 people at the Morris residence (Ref. 9, page 8).

Reference: 9.

Documentation for Population > 1/4 to 1/2 mile Distance Category:

Population is from a topographic map house count (Ref. 11, page 2) multiplied by 2.57 persons per household (Ref. 12, page 498).

Reference: 11, 12.

Documentation for Population > 1/2 to 1 mile Distance Category:

Population derived from GEMS program printout (Ref. 13, page 2).

Reference: 13.

DUE TO A LACK OF TARGETS, THE AIR PATHWAY WOULD NOT IMPACT THE SCORE. AS A RESULT, THIS PATHWAY WAS NOT EVALUATED. THEREFORE, PAGES 63-75 WERE OMITTED.

REFERENCES

Athens Landfill #2 (Malakoff Road) - 07/05/94

1. U.S. Environmental Protection Agency, Final Rule Hazard Ranking System FR 51532-51667. December 14, 1990.

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3. P.T. Flawn, Bureau of Economic Geology, University of Texas at Austin, "Geologic Atlas of Texas". Tyler Sheet, March 1965.

4. M.A. McDonnell, et al, Fluor Daniel, Inc., "Revised Site Inspection Report for Athens Landfill #2 (Malakoff Road)". June 1994, Figure 2B, Table 3, Table 4A, and Table 4B.

5. D.G. Ayers, United States Environmental Protection Agency, Houston Branch. "Laboratory Results for City of Athens Landfill - Malakoff Road". August 17, 1993.

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10. Texas Parka and Wildlife Department. "Texas Threatened and Endangered Species". January 1992.

11. U.S. Geological Survey, 7.5-minute topographic maps of Texas: Mallard Hill, 1984.

12. U.S. Department of Commerce. "County and City Data Book, 1988". Page 498.

13. Fluor Daniel, Inc. "GEMS COmputer Printout of Census Data", April, 1993.

14. Fluor Daniel Inc. "Site Reconnaissance Photographs for Athens #2 Landfill". May 5 and 6, 1993. Photograph 14.

REFERENCE 1

01 001

12-14-90
Vol. 55 No. 241

federal register

Friday
December 14, 1990

Book 2

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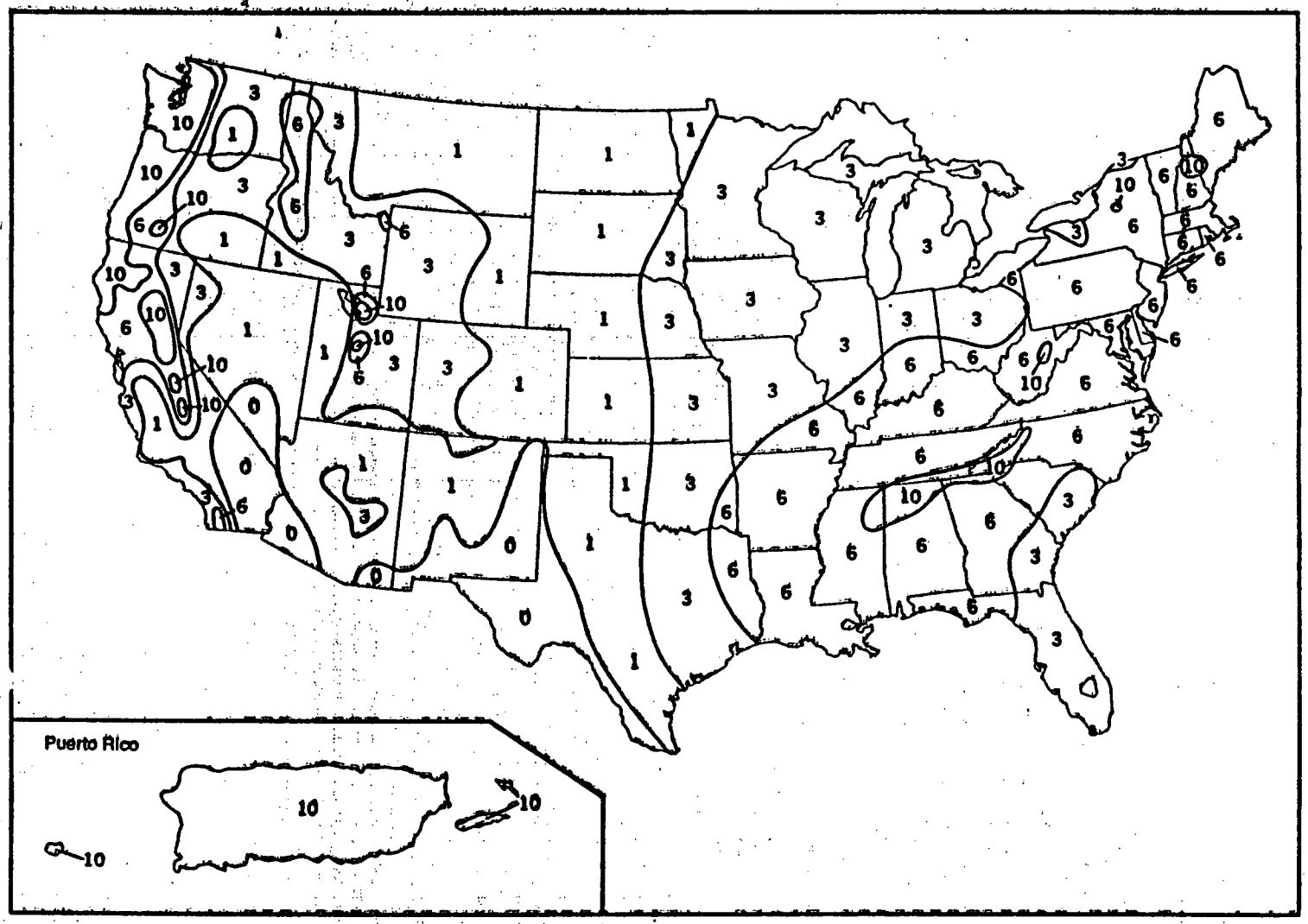

FIGURE 3-2
NET PRECIPITATION FACTOR VALUES

01 003

TABLE 3-6.—HYDRAULIC CONDUCTIVITY OF GEOLOGIC MATERIALS

Type of material	Assigned hydraulic conductivity [a] (cm/sec)
Clay; low permeability till (compact unfractured till); shale; unfractured metamorphic and igneous rocks	10^{-8}
Silt; loesses; silty clays; sediments that are predominantly silts; moderately permeable till (fine-grained, unconsolidated till, or compact till with some fractures); low permeability limestones and dolomites (no karst); low permeability sandstone; low permeability fractured igneous and metamorphic rocks	10^{-6}
Sands; sandy silts; sediments that are predominantly sand; highly permeable till (coarse-grained, unconsolidated or compact and highly fractured); peat; moderately permeable limestones and dolomites (no karst); moderately permeable sandstone; moderately permeable fractured igneous and metamorphic rocks	10^{-4}
Gravel; clean sand; highly permeable fractured igneous and metamorphic rocks; permeable basalt; karst limestones and dolomites	10^{-2}

[a] Do not round to nearest integer.

TABLE 3-7.—TRAVEL TIME FACTOR VALUES [a]

Hydraulic conductivity (cm/sec)	Thickness of lowest hydraulic conductivity layer(s) [b] (feet)			
	Greater than 3 to 5	Greater than 5 to 100	Greater than 100 to 500	Greater than 500
Greater than or equal to 10^{-3}	35	35	35	25
Less than 10^{-3} to 10^{-5}	35	25	15	15
Less than 10^{-5} to 10^{-7}	15	15	5	5
Less than 10^{-7}	5	5	1	1

[a] If depth to aquifer is 10 feet or less or if, for the interval being evaluated, all layers that underlie a portion of the sources at the site are karst, assign a value of 35.

[b] Consider only layers at least 3 feet thick. Do not consider layers or portions of layers within the first 10 feet of the depth to the aquifer.

Determine travel time only at locations within 2 miles of the sources at the site, except: if observed ground water contamination attributable to sources at the site extends more than 2 miles beyond these sources, use any location within the limits of this observed ground water contamination when evaluating the travel time factor for any aquifer that does not have an observed release. If the necessary subsurface geologic information is available at multiple locations, evaluate the travel time factor at each location. Use the location having the highest travel time factor value to assign the factor value for the aquifer. Enter this value in Table 3-1.

3.1.2.5 *Calculation of potential to release factor value.* Sum the factor values for net precipitation, depth to aquifer, and travel time, and multiply this sum by the factor value for containment. Assign this product as the potential to release factor value for the aquifer. Enter this value in Table 3-1.

3.1.3 *Calculation of likelihood of release factor category value.* If an observed release is established for an aquifer, assign the observed release factor value of 550 as the likelihood of release factor category value for that aquifer. Otherwise, assign the potential to release factor value for that aquifer as the likelihood of release value. Enter the value assigned in Table 3-1.

3.2 *Waste characteristics.* Evaluate the waste characteristics factor category for an aquifer based on two factors: toxicity/mobility and hazardous waste quantity. Evaluate only those hazardous substances available to migrate from the sources at the site to ground water. Such hazardous substances include:

- Hazardous substances that meet the criteria for an observed release to ground water.
- All hazardous substances associated with a source that has a ground water containment factor value greater than 0 (see sections 2.2.2, 2.2.3, and 3.1.2.1).

3.2.1 *Toxicity/mobility.* For each hazardous substance, assign a toxicity factor value, a mobility factor value, and a combined toxicity/mobility factor value as specified in the following sections. Select the toxicity/mobility factor value for the aquifer being evaluated as specified in section 3.2.1.3.

3.2.1.1 *Toxicity.* Assign a toxicity factor value to each hazardous substance as specified in Section 2.4.1.1.

3.2.1.2 *Mobility.* Assign a mobility factor value to each hazardous substance for the aquifer being evaluated as follows:

- For any hazardous substance that meets the criteria for an observed release by chemical analysis to one or more aquifers underlying the sources at the site, regardless of the aquifer being evaluated, assign a mobility factor value of 1.
- For any hazardous substance that does not meet the criteria for an observed release by chemical analysis to at least one of the aquifers, assign that hazardous substance a mobility factor value from Table 3-8 for the aquifer being evaluated, based on its water solubility and distribution coefficient (K_d).
- If the hazardous substance cannot be assigned a mobility factor value because data on its water solubility or distribution coefficient are not available, use other hazardous substances for which information is available in evaluating the pathway.

TABLE 3-8.—GROUND WATER MOBILITY FACTOR VALUES [a]

Water solubility (mg/l)	Distribution coefficient (K_d) (ml/g)			
	Karst [c]	≤ 10	> 10 to 1,000	> 1,000
Present as liquid [b]	1	1	0.01	0.0001
Greater than 100	1	1	0.01	0.0001
Greater than 1 to 100	0.2	0.2	0.002	2×10^{-5}
Greater than 0.01 to 1	0.002	0.002	2×10^{-5}	2×10^{-7}
Less than or equal to 0.01	2×10^{-5}	2×10^{-5}	2×10^{-7}	2×10^{-9}

[a] Do not round to nearest integer.

[b] Use if the hazardous substance is present or deposited as a liquid.

[c] Use if the entire interval from the source to the aquifer being evaluated is karst.

n = Number of terrestrial sensitive environments meeting section 5.1.3 criteria.

Because the pathway score based solely on terrestrial sensitive environments is limited to a maximum of 60, determine the value for the terrestrial sensitive environments factor as follows:

TABLE 5-5.—TERRESTRIAL SENSITIVE ENVIRONMENTS RATING VALUES

Terrestrial sensitive environments	Assigned value
Terrestrial critical habitat[a] for Federal designated endangered or threatened species	100
National Park	
Designated Federal Wilderness Area	
National Monument	
Terrestrial habitat known to be used by Federal designated or proposed threatened or endangered species	75
National Preserve (terrestrial)	
National or State Terrestrial Wildlife Refuge	
Federal land designated for protection of natural ecosystems	
Administratively proposed Federal Wilderness Area	
Terrestrial areas utilized for breeding by large or dense aggregations of animals[b]	
Terrestrial habitat known to be used by State designated endangered or threatened species	50
Terrestrial habitat known to be used by species under review as to its Federal designated endangered or threatened status	
State lands designated for wildlife or game management	25
State designated Natural Areas	
Particular areas, relatively small in size, important to maintenance of unique biotic communities	

[a] Critical habitat as defined in 50 CFR 424.02.
[b] Limit to vertebrate species.

• Multiply the values assigned to the resident population threat for likelihood of exposure (LE), waste characteristics (WC), and ES. Divide the product by 82,500.

–If the result is 60 or less, assign the value ES as the terrestrial sensitive environments factor value.

–If the result exceeds 60, calculate a value EC as follows:

$$EC = \frac{(60)\ (82{,}500)}{(LE)\ (WC)}$$

Assign the value EC as the terrestrial sensitive environments factor value. Do not round this value to the nearest interger.

Enter the value assigned for the terrestrial sensitive environments factor in Table 5-1.

5.1.3.6 *Calculation of resident population targets factor category value.* Sum the values for the resident individual, resident population, workers, resources, and terrestrial sensitive environments factors. Do not round to the nearest integer. Assign this sum as the targets factor category value for the resident population threat. Enter this value in Table 5-1.

5.1.4 *Calculation of resident population threat score.* Multiply the values for likelihood of exposure, waste characteristics, and targets for the resident population threat, and round the product to the nearest integer. Assign this product as the resident population threat score. Enter this score in Table 5-1.

5.2 *Nearby population threat.* Include in the nearby population only those individuals who live or attend school within a 1-mile travel distance of an area of observed contamination at the site and who do not meet the criteria for resident individual as specified in section 5.1.3.

Do not consider areas of observed contamination that have an attractiveness/accessibility factor value of 0 (see section 5.2.1.1) in evaluating the nearby population threat.

5.2.1 *Likelihood of exposure.* Evaluate two factors for the likelihood of exposure factor category for the nearby population threat: attractiveness/accessibility and area of contamination.

5.2.1.1. *Attractiveness/accessibility.* Assign a value for attractiveness/accessibility from Table 5-6 to each area of observed contamination, excluding any land used for residences. Select the highest value assigned to the areas evaluated and use it as the value for the attractiveness/accessibility factor. Enter this value in Table 5-1.

5.2.1.2 *Area of contamination.* Evaluate area of contamination based on the total area of the areas of observed contamination at the site. Count only the area(s) that meet the criteria in section 5.0.1 and that receive an attractiveness/accessibility value greater than 0. Assign a value to this factor from Table 5-7. Enter this value in Table 5-1.

TABLE 5-6.—ATTRACTIVENESS/ ACCESSIBILITY VALUES

Area of observed contamination	Assigned value
Designated recreational area	100
Regularly used for public recreation (for example, fishing, hiking, softball)	75
Accessible and unique recreational area (for example, vacant lots in urban area)	75
Moderately accessible (may have some access improvements—for example, gravel road), with some public recreation use	50
Slightly accessible (for example, extremely rural area with no road improvement), with some public recreation use	25
Accessible, with no public recreation use	10
Surrounded by maintained fence or combination of maintained fence and natural barriers	5
Physically inaccessible to public, with no evidence of public recreation use	0

TABLE 5-7.—AREA OF CONTAMINATION FACTOR VALUES

Total area of the areas of observed contamination (square feet)	Assigned value
Less than or equal to 5,000	5
Greater than 5,000 to 125,000	20
Greater than 125,000 to 250,000	40
Greater than 250,000 to 375,000	60
Greater than 375,000 to 500,000	80
Greater than 500,000	100

5.2.1.3 *Likelihood of exposure factor category value.* Assign a value from Table 5-8 to the likelihood of exposure factor category, based on the values assigned to the attractiveness/accessibility and area of contamination factors. Enter this value in Table 5-1.

TABLE 5-8.—NEARBY POPULATION LIKELIHOOD OF EXPOSURE FACTOR VALUES

Area of contamination factor value	Attractiveness/accessibility factor value						
	100	75	50	25	10	5	0
100	500	500	375	250	125	50	0
80	500	375	250	125	50	25	0
60	375	250	125	50	25	5	0
40	250	125	50	25	5	5	0
20	125	50	25	5	5	5	0
5	50	25	5	5	5	5	0

5.2.2 *Waste characteristics.* Evaluate waste characteristics based on two factors: toxicity and hazardous waste quantity. Evaluate only those hazardous substances that meet the criteria for observed contamination (see section 5.0.1) at areas that can be assigned an attractiveness/accessibility factor value greater than 0.

5.2.2.1 *Toxicity.* Assign a toxicity factor value as specified in section 2.4.1.1 to each hazardous substance meeting the criteria in section 5.2.2. Use the hazardous substance with the highest toxicity factor value to assign the value to the toxicity factor for the nearby population threat. Enter this value in Table 5-1.

5.2.2.2 *Hazardous waste quantity.* Assign a value to the hazardous waste quantity factor as specified in section 5.1.2.2, except: consider only those areas of observed contamination that can be assigned an attractiveness/accessibility factor value greater than 0. Enter the value assigned in Table 5-1.

5.2.2.3 *Calculation of waste characteristics factor category value.* Multiply the toxicity and hazardous waste quantity factor values, subject to a maximum product of 1×10^8. Based on this product, assign a value from Table 2-7 (section 2.4.3.1) to the waste characteristics factor category. Enter this value in Table 5-1.

5.2.3 *Targets.* Evaluate the targets factory category for the nearby population threat based on two factors: nearby individual and population within a 1-mile travel distance from the site.

5.2.3.1 *Nearby individual.* If one or mor persons meet the section 5.1.3 criteria for a

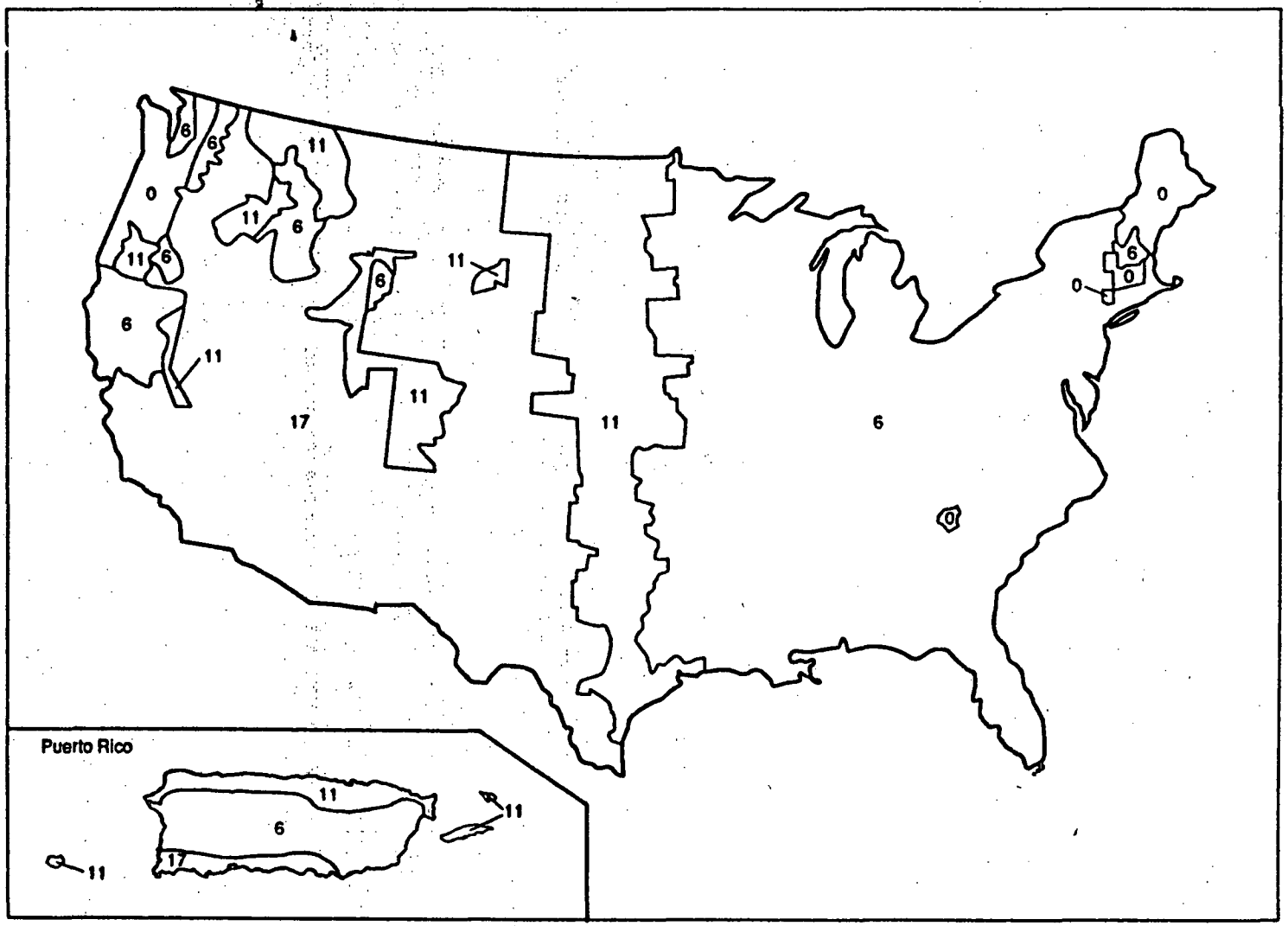

FIGURE 6-2
PARTICULATE MIGRATION POTENTIAL FACTOR VALUES

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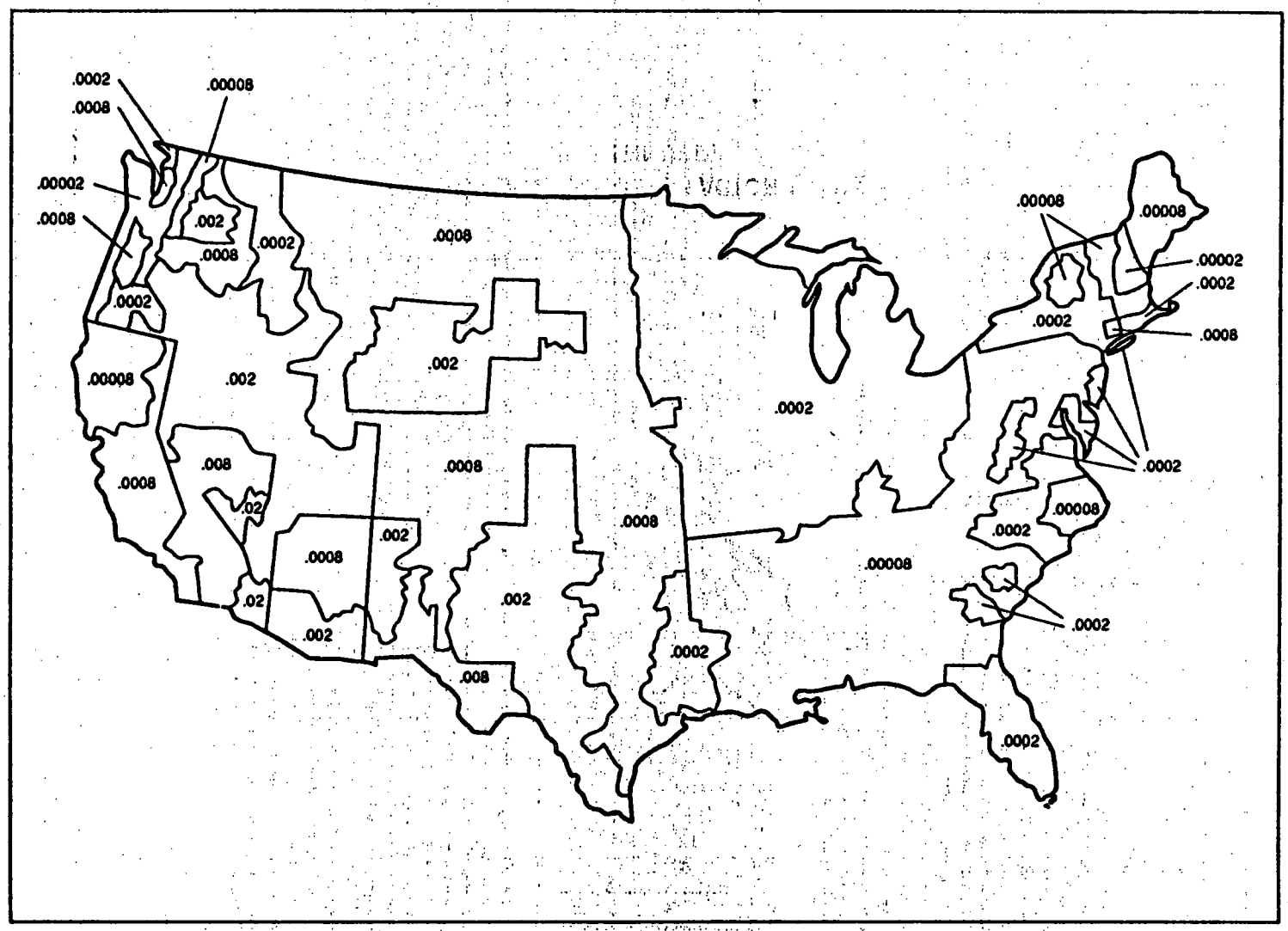

[a] Do not round to nearest integer.

FIGURE 6-3
PARTICULATE MOBILITY FACTOR VALUES[a]

01006

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TABLE 3-12.—DISTANCE-WEIGHTED POPULATION VALUES FOR POTENTIAL CONTAMINATION FACTOR FOR GROUND WATER MIGRATION PATHWAY [a]

Distance category (miles)	Number of people within the distance category												
	0	1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,001 to 3,000,000
Other Than Karst [b]:													
0 to ¼	0	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455
Greater than ¼ to ½	0	2	11	33	102	324	1,013	3,233	10,122	32,325	101,213	323,243	1,012,122
Greater than ½ to 1	0	1	5	17	52	167	523	1,669	5,224	16,684	52,239	166,835	522,385
Greater than 1 to 2	0	0.7	3	10	30	94	294	939	2,939	9,385	29,384	93,845	293,842
Greater than 2 to 3	0	0.5	2	7	21	68	212	678	2,122	6,778	21,222	67,777	212,219
Greater than 3 to 4	0	0.3	1	4	13	42	131	417	1,306	4,171	13,060	41,709	130,596
Karst [c]:													
0 to ¼	0	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455
Greater than ¼ to ½	0	2	11	33	102	324	1,013	3,233	10,122	32,325	101,213	323,243	1,012,122
Greater than ½ to 1	0	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227
Greater than 1 to 2	0	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227
Greater than 2 to 3	0	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227
Greater than 3 to 4	0	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227

[a] Round the number of people present within a distance category to nearest integer. Do not round the assigned distance-weighted population value to nearest integer.
[b] Use for all aquifers, except karst aquifers underlying any portion of the sources at the site.
[c] Use only for karst aquifers underlying any portion of the sources at the site.

–Assign a distance-weighted population value for each distance category based on the number of people included within the distance category.

• Use the "Other Than Karst" portion of Table 3-12 for the remainder of the population served by points of withdrawal subject to potential contamination.

–For this portion of the population, determine the number of people included within each "Other Than Karst" distance category in Table 3-12.

–Assign a distance-weighted population value for each distance category based on the number of people included within the distance category.

Calculate the value for the potential contamination factor (PC) as follows:

$$PC = \frac{1}{10} \sum_{i=1}^{n} (W_i + K_i)$$

where:

W_i = Distance-weighted population from "Other Than Karst" portion of Table 3-12 for distance category i.

K_i = Distance-weighted population from "Karst" portion of Table 3-12 for distance category i.

n = Number of distance categories.

If PC is less than 1, do not round it to the nearest integer; if PC is 1 or more, round to the nearest integer. Enter this value in Table 3-1.

3.3.2.5 *Calculation of population factor value.* Sum the factor values for Level I concentrations, Level II concentrations, and potential contamination. Do not round this sum to the nearest integer. Assign this sum as the population factor value for the aquifer. Enter this value in Table 3-1.

3.3.3 *Resources.* To evaluate the resources factor, select the highest value specified below that applies for the aquifer being evaluated. Assign this value as the resources factor value for the aquifer. Enter this value in Table 3-1.

Assign a resources value of 5 if water drawn from any target well for the aquifer being evaluated or overlying aquifers (as specified in section 3.0) is used for one or more of the following purposes:

• Irrigation (5-acre minimum) of commercial food crops or commercial forage crops.

• Watering of commercial livestock.

• Ingredient in commercial food preparation.

• Supply for commercial aquaculture.

• Supply for a major or designated water recreation area, excluding drinking water use.

Assign a resources value of 5 if no drinking water wells are within the target distance limit, but the water in the aquifer being evaluated or any overlying aquifers (as specified in section 3.0) is usable for drinking water purposes.

Assign a resources value of 0 if none of the above applies.

3.3.4 *Wellhead Protection Area.* Evaluate the Wellhead Protection Area factor based on Wellhead Protection Areas designated according to section 1428 of the Safe Drinking Water Act, as amended. Consider only those Wellhead Protection Areas applicable to the aquifer being evaluated or overlying aquifers (as specified in section 3.0). Select the highest value below that applies. Assign it as the value for the Wellhead Protection Area factor for the aquifer being evaluated. Enter this value in Table 3-1.

Assign a value of 20 if either of the following criteria applies for the aquifer being evaluated or overlying aquifers:

• A source with a ground water containment factor value greater than 0 lies, either partially or fully, within or above the designated Wellhead Protection Area.

• Observed ground water contamination attributable to the sources at the site lies, either partially or fully, within the designated Wellhead Protection Area.

If neither criterion applies, assign a value of 5, if, within the target distance limit, there is a designated Wellhead Protection Area applicable to the aquifer being evaluated or overlying aquifers.

Assign a value of 0 if none of the above applies.

3.3.5 *Calculation of targets factor category value.* Sum the factor values for nearest well, population, resources, and Wellhead Protection Area. Do not round this sum to the nearest integer. Use this sum as the targets factor category value for the aquifer. Enter this value in Table 3-1.

3.4 *Ground water migration score for an aquifer.* For the aquifer being evaluated, multiply the factor category values for likelihood of release, waste characteristics, and targets, and round the product to the nearest integer. Then divide by 82,500. Assign the resulting value, subject to a maximum value of 100, as the ground water migration pathway score for the aquifer. Enter this score in Table 3-1.

3.5 *Calculation of ground water migration pathway score.* Calculate a ground water migration score for each aquifer underlying the sources at the site, as appropriate. Assign the highest ground water migration score for an aquifer as the ground water migration pathway score (S_{gw}) for the site. Enter this score in Table 3-1.

4.0 *Surface Water Migration Pathway.*

4.0.1 *Migration components.* Evaluate the surface water migration pathway based on two migration components:

• Overland/flood migration to surface water (see section 4.1).

• Ground water to surface water migration (see section 4.2).

Evaluate each component based on the same three threats: drinking water threat, human food chain threat, and environmental threat.

Score one or both components, considering their relative importance. If only one component is scored, assign its score as the surface water migration pathway score. If

REFERENCE 2

Jonathan Stewart Floor

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 27 1993

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

MEMORANDUM

SUBJECT: Superfund Chemical Data Matrix (SCDM)
March 1993 Version - Revised Tables

FROM: Janet Grubbs, Chief
Site Assessment Branch

TO: Site Assessment Section Chiefs
Regions I-X

Attached are revised tables for the March 1993 version of SCDM which was sent to you earlier this month. The revised tables contain two significant changes. First, cesium and strontium have been added to the tables. These elements were missing from the earlier submittal. Second, the tables now properly show only one entry for the following radionuclides: radium 226, radon 222, uranium 233, uranium 234, and uranium 235. The previously submitted version had two distinct entries for these radionuclides. In addition to reporting the correct values for these radionuclides, SCDM had been incorrectly listing a second entry with the values for the parent element.

Following the correction of these tables, we have encountered some additional errors in SCDM. The discussion below is intended to serve as a correction for these errors.

1. SCDM on pages 13 and 27 lists the reference for MCLs and MCLGs with a date of 1990. The correct date is 1992.

2. Page B-22 does not provide a cancer screening concentration for chromium in the air pathway. However, page B-23 does provide a value of 8.3E-08 mg/m3 for chromium (VI). According to the text on page 2 of SCDM, if the oxidation state of chromium is not known, it is assumed that the most toxic member of the class is present. Therefore, the cancer screening concentration for chromium (VI) should be included in the table under the entry for chromium on page B-22.

3. In the page reports (Appendix A), SCDM incorrectly transfers the numerical value for the drinking water MCL in mg/l to the value for MCL in pCi/l under the radionuclide

APR 27 1993

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benchmark column. The drinking water MCLs are correct; the radioactive benchmarks should be deleted.

4. Appendix A provides radionuclide benchmarks for the following elements which are not radioactive: antimony, barium, beryllium, cadmium, chromium, copper, fluorine, iron, lead, manganese, nickel, selenium, silver, sodium, thallium, vanadium, and zinc. All of these elements do have radioactive isotopes, but the radioactive isotopes are not included in SCDM. Therefore, the radioactive benchmarks do not apply to the elements listed in SCDM. The benchmarks will be removed from the next update of SCDM.

5. The following MCLs should be included in SCDM, 5 pCi/l for radium 226 and 300 pCi/l for radon 222.

In our effort to provide the Regions with useful and accurate information, we will continue to provide corrections when necessary. Please continue to notify us when you discover problems with SCDM, and we will work to solve those problems in a timely manner. Questions or comments on SCDM may be directed to Greg Reesor at (703) 603-9017.

cc: SAB Section Chiefs
S. Lee
L. Zaragoza
D. Bennett
G. Reesor

Attachments

APR 27 1993

REFERENCE 3

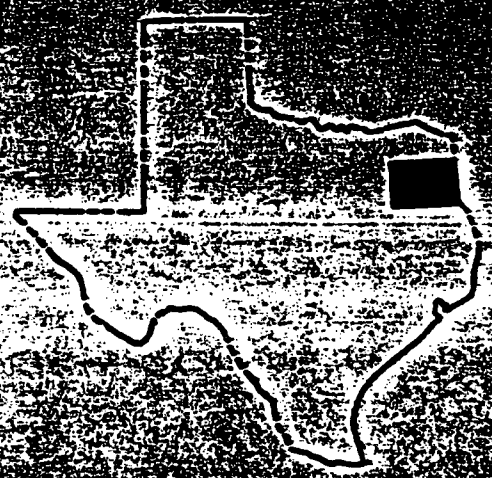
03 001

BUREAU OF ECONOMIC GEOLOGY
THE UNIVERSITY OF TEXAS AT AUSTIN
AUSTIN, TEXAS 78712
PETER T. FLAWN, Director

GEOLOGIC ATLAS OF TEXAS

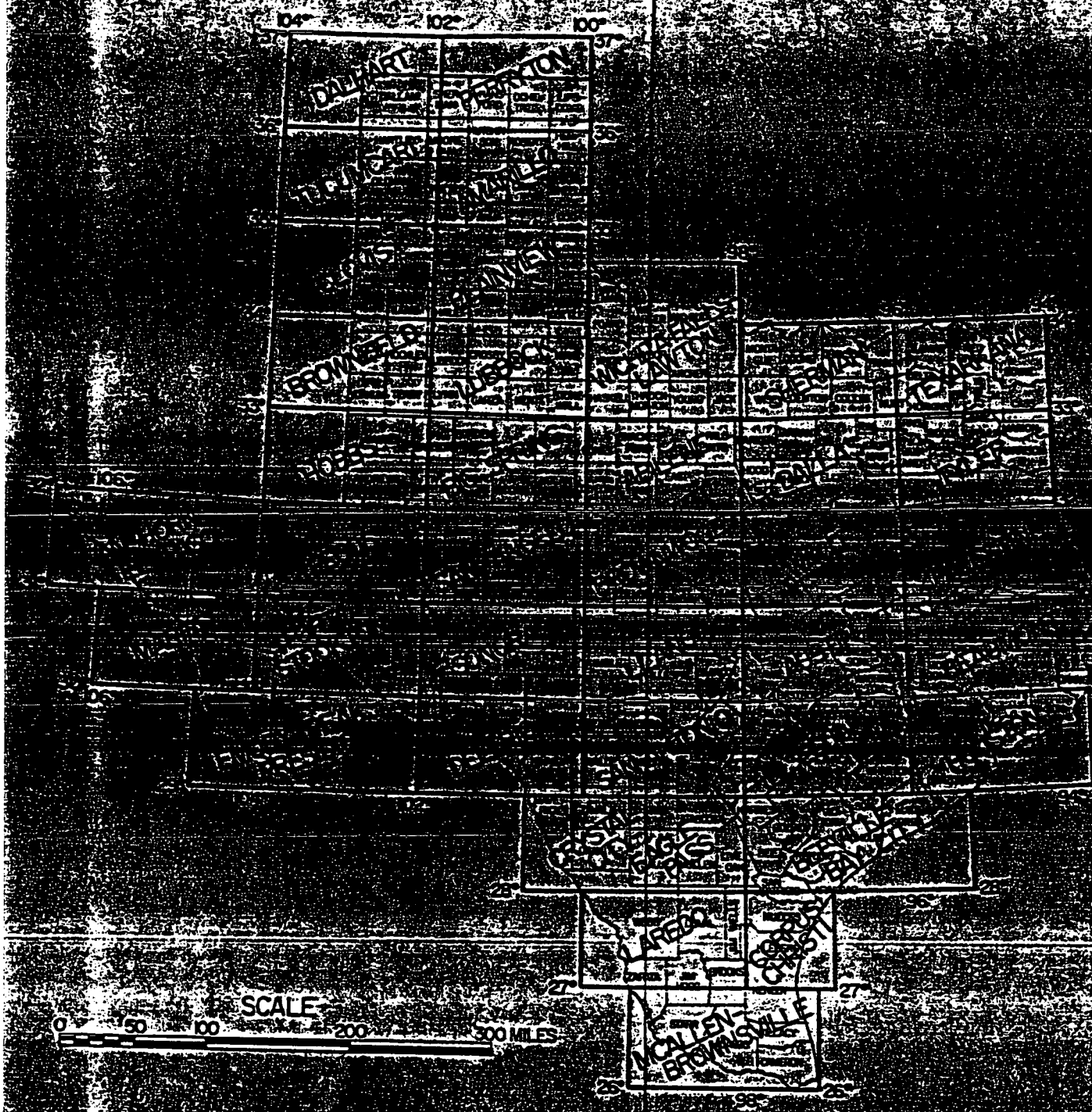
Tyler Sheet

Scale 1:250,000



March 1965

03 002



GEOLOGIC ATLAS OF TEXAS

INDEX MAP

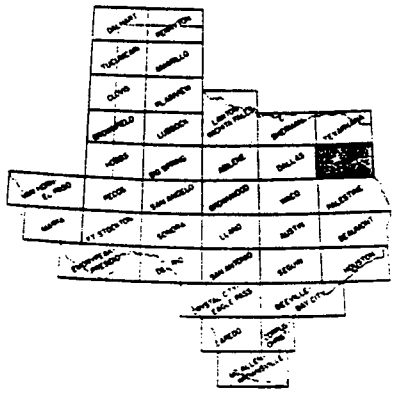
SITE

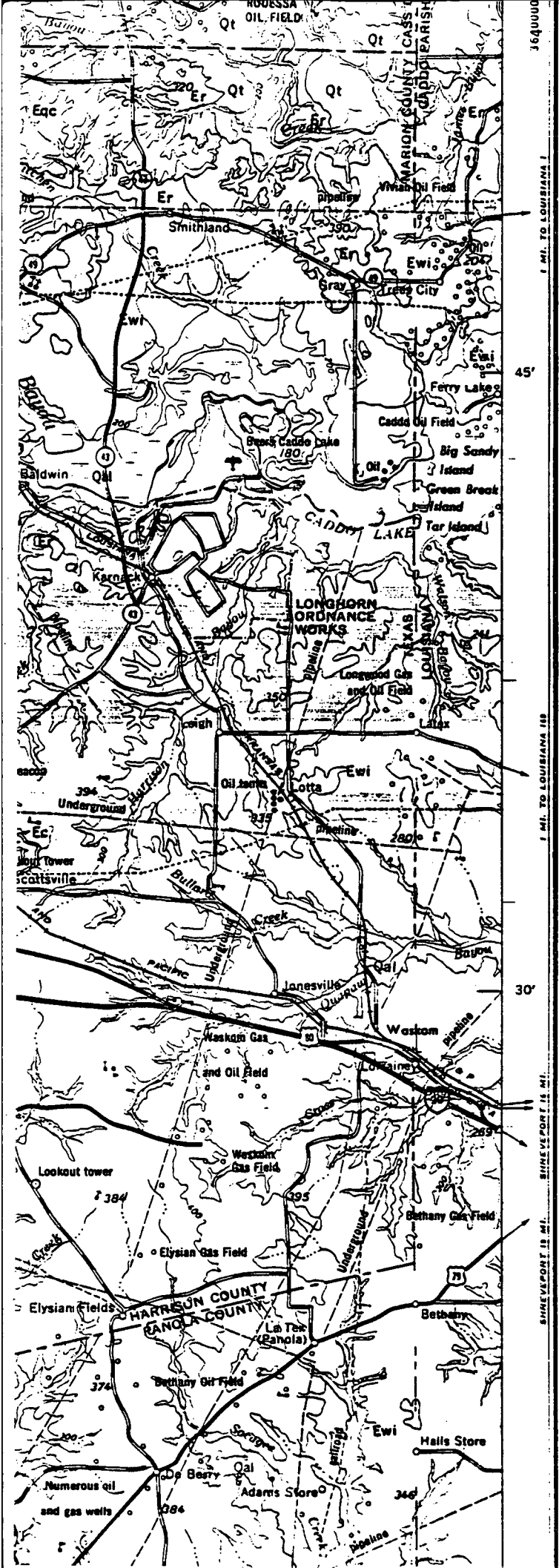
Prepared by the Army Map Service (AMTV), Corps of Engineers, U.S. Army, Washington, D.C. Compiled in 1955 by photogrammetric methods and from USGS quadrangles, 1:62,500, 1939-51. Planimetric detail revised by photo-planimetric methods. Horizontal and vertical control by USGS, USC&GS and USCE. Map field checked 1955. Limited revision by U.S. Geological Survey 1963.

Roads revised to 1974

03 003

LOCATION MAP





Quartz sand, fine to medium grained, light gray to brownish gray, slightly cohesive from silt and clay matrix, massive, locally cross-bedded, interbeds of sandy clay more abundant upward, locally carbonaceous; weathers various shades of light gray, at base hard, brown, ferruginous sandstone; lower part 170± feet thick, upper part absent. Locally includes Tyler Greensand Member. Etg, quartz-glauconite greensand, grayish green, massive, locally cross-bedded; weathers dark reddish brown, abundant ironstone concretions

63 004

Ew

Weches Formation

Glauconite and quartz sand, grayish green to grayish olive green, thin bedded, locally cross-bedded to lenticular, clay interbeds light brown to moderate light gray, silty, muscovitic, thin bedded; weathers moderate to dark reddish brown, locally forms limonitic and sideritic iron ore and clay ironstone concretions; marine megafossils in southern part; 35± feet thick, range 0–70 feet

Eqc

Queen City Sand

Quartz sand, fine grained to locally medium grained, light gray to brownish gray, locally carbonaceous, and clay, gray to brown, silty, slightly lignitic, sand most abundant to west; weathers red and white mottled, ironstone concretions and ledges common; local beds of glauconite-quartz greensand, cross-bedded, weathers to ferruginous ledges and rubble; 100–400 feet thick, thins southeastward

Er

Reklaw Formation

Upper 100± feet, clay, brownish black to brownish gray, silty, muscovitic, carbonaceous, laminated, interbeds of moderate reddish-brown clay; weathers light brown, ironstone concretions common; a few marine fossils. Lower 15± feet, quartz sand, fine to very fine grained, grayish green, glauconitic, argillaceous, massive, locally cross-bedded; weathers moderate brown to dark yellowish orange with clay ironstone ledges and rubble; fossils, clay ironstone, and clay decrease northward

Eocene

TERTIARY

Ec

Carrizo Sand

Upper part, very fine sand, silt, clayey silt, silty clay, medium to dark gray, carbonaceous; weathers moderate yellowish brown to dark reddish brown, indurated ledges of dark brownish-gray ironstone common. Lower part, quartz sand, fine to medium grained, light brownish gray, weakly cohesive, massive, locally cross-bedded; weathers light gray to various shades of red. Thickness 20–100 feet

Ewi

Wilcox Group undivided

Mostly silty and sandy clay, various shades of gray, local beds of clay, lignite, silt, and quartz sand, in part carbonaceous, laminated to massive, locally cross-bedded, weathers to various shades of gray, brown, yellow, and red. Calcareous siltstone and ironstone concretions common; abundant plant fossils, a few marine fossils in southeastern part; 500–1,000 feet thick.

E

Eocene rocks undivided

Reklaw Formation, Carrizo Sand, Wilcox Group, and Midway Group on Brooks dome not separately shown

Ewp

Wills Point Formation

Clay, medium bluish gray, greenish gray, grayish green, brownish gray, silt increases upward, laminated to locally massive, glauconitic near base, rough calcareous siltstone concretions common in upper part, locally lignitic in upper part, thin bed of rosette limestone near middle; weathers medium gray to yellowish gray; fossiliferous; 500± feet thick

Ek

Kincaid Formation

Clay, medium gray to dark gray, greenish gray, brownish gray, glauconitic, calcareous, selenitic, locally silty or sandy, locally phosphatic near base, thin beds of limestone in upper part, gray, hard, detrital; weathers medium gray; fossiliferous; 130± feet thick

Kke

Kemp Clay

Clay, dark gray to bluish gray, calcareous, silty, glauconitic, calcareous concretions common; weathers dark greenish gray and black; upper part only crops out

Ku

Upper Cretaceous rocks undivided

Navarro Group, Taylor Group, and Austin Chalk on Brooks dome not separately shown

Upper Cretaceous

CRETACEOUS

REFERENCE 4

04 001

REVISED SITE INSPECTION REPORT
FOR
ATHENS LANDFILL #2 (MALAKOFF ROAD)
EPA IDENTIFICATION NUMBER TXD980062352
ATHENS, HENDERSON COUNTY, TEXAS
WORK ASSIGNMENT NUMBER 25-6JZZ

CONTRACT NUMBER 68-W9-0013

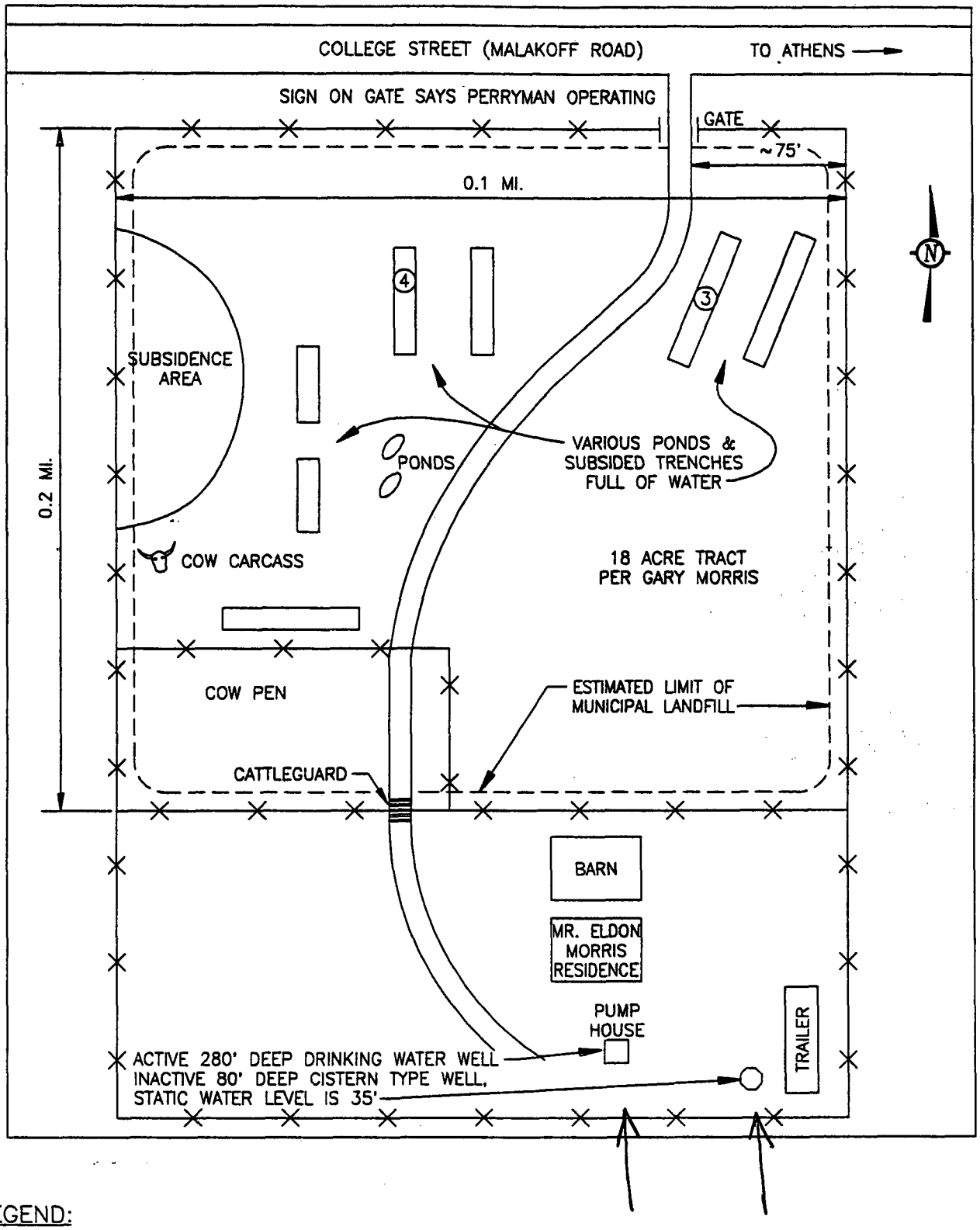
Approved by: _____ _____
EPA Project Manager Date

Approved by: _____ _____
Project Manager Date

Approved by: _____ _____
Technical Reviewer Date

Approved by: Mark McDonnell 6/27/94
Task Manager Date

04 002



LEGEND:

- STRUCTURE
- ROAD
- FENCE
- CISTERN TYPE WELL
- (3) PHOTO LOCATIONS

NOT TO SCALE

FLUOR DANIEL

FIGURE 2B
SITE SKETCH
CITY OF ATHENS (MALAKOFF ROAD)
SOUTHERN HALF OF THE SITE
ATHENS, TEXAS

CAD FILE No. FIG-2B

TABLE 3
HAZARDOUS WASTE QUANTITY

Athens Landfill #2

SOURCE	QUANTITY	VOLUME/ AREA
Northern Area	Unknown	270,072 ft^2
Southern Area	Unknown	557,568 ft^2
Fuel Tank Area	Unknown	2,000 ft^2
Black Stained Area	Unknown	1,200 ft^2
Drum Disposal Area	Unknown	2,000 ft^2
Small Oily Sludge Pond	Unkown	450 ft^2
Sludge Pond Runoff Area	Unknown	3,000 ft^2

TABLE 4A
INORGANIC SOIL ANALYTICAL RESULTS
NORTHERN PART OF SITE

Site Name and Code: City of Athens Landfill
Case Number: 20298
Concentrations: in milligrams per kilogram (mg/kg)
Compiled by: Fluor Daniel

		Inorganic Traffic No																						
		Sample I.D	MFM176		Background		MFM167		MFM168		MFM169		MFM170		MFM171		MFM172		MFM173		MFM174		MFM175	
		Matrix	SOIL		benchmark		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
		Percent Solids	89.8		Concentration		88.1		88.9		90.2		84.8		89.4		80.8		86.4		91.1		88.6	
		Location and or Sample Description	14 Background				5		6		7		8		9		10		11		12		13	
COMPOUND NAME	**CAS NO.**	**CLASS**	**Concentration**	**Q**	**Concentration**		**Concentration**	**Q**	**Concentration**	**Q**	**Concentration**	**Q**	**Concentration**	**Q**	**Concentration**	**Q**	**Concentration**	**Q**	**Concentration**	**Q**	**Concentration**	**Q**	**Concentration**	**Q**
ALUMINUM	7429-90-5	INO	14100		42300		11000		8650		8790		5980		3990		5230		5770		3300		3930	
ANTIMONY	7440-36-0	INO			–																			
ARSENIC	7440-38-2	INO	2.8		8.4		1.4	J	1.2	J	1.1		1.9		2		1.6		1.7		1.9		1.2	
BARIUM	7440-39-3	INO	78		234		79.1		91.2		48.7		48		130		71.2		68.5		49.4		33.9	
BERYLLIUM	7440-41-7	INO			–																			
CADMIUM	7440-43-9	INO			–								1.1		1.2									
CALCIUM	7440-70-2	INO	1090		3270		1200		1200		889		955		8740		998		1280		409		409	
CHROMIUM	7440-47-3	INO	13.6	J	40.8		24.1	J	10.3	J	8.6	J	8.8	J	10	J	7.6	J	8.3	J	5.4	J	5.4	J
COBALT	7440-48-4	INO	5.8		17.4		5.1		4.8		6.4		3.4		1.9		2.9		2		1.5		1.3	
COPPER	7440-50-8	INO	8.7		26.1		9.6		11.2		4.1		7.2		30.7		14.2		17		8		9	
IRON	7439-89-6	INO	29400		88200		14900		14100		9970		12000		10200		8940		7400		7140		6430	
LEAD	7439-92-1	INO	8.9	J	26.7		598	J	599	J	9.7	J	15.6	J	232	J	34.7	J	67.1	J	62	J	49.9	
MAGNESIUM	7439-95-4	INO	1380		4140		1690		1560		1450		987		429		808		813		428		546	
MANGANESE	7439-96-5	INO	70.6	J	211.8		32	J	30.7	J	20.6	J	59.4	J	153	J	36.7	J	29.2	J	20.9	J	19.8	
MERCURY	7439-97-6	INO			–										0.39								0.05	
NICKEL	7440-02-0	INO	13	J	39		20.5	J	8.5	J	9.1	J	4.6	J					4.7	J	6	J	3.7	
POTASSIUM	7440-09-7	INO	774		2322		697		608		531		648		279		473		593		237		318	
SELENIUM	7782-49-2	INO			–				0.14	J					0.21	J	0.3	J	2.3	J				
SILVER	7440-22-4	INO			–										1.1	J								
SODIUM	7440-23-5	INO	172		516		61.5		128															
THALLIUM	7440-28-0	INO			–																			
VANADIUM	7440-62-2	INO	24		72		15.8		13.3		13.2		13.2		16.5		10.8		11.9		7.4		8.4	
ZINC	7440-66-6	INO	38.7	J	116.1		308	J	257	J	32.1	J	38.1	J	227	J	210	J	190	J	53.5	J	68.2	J

LEGEND
INO - Inorganic
Q - Analytical results' Qualifier (listed below).
B - Analyte was detected above the CRDL but below 5X Blank Concentration.
J - The associated value is an estimated quantity.
R - Data for analyte is unusable.
U - The material was analyzed for but was not detected above the level of the associated value.
UJ - The material was analyzed for but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

04004

TABLE 4B
INORGANIC SOIL ANALYTICAL RESULTS
SOUTHERN PART OF SITE

Site Name and Code: City of Athens Landfill
Case Number: 20298
Concentrations: in milligrams per kilogram (mg/kg)
Compiled by: Fluor Daniel

		Inorganic Traffic No.														
		Sample I.D	MFM165		Background		MFM161		MFM162		MFM163		MFM164		MFM166	
		Matrix	SOIL		Benchmark		SOIL		SOIL		SOIL		SOIL		SOIL	
		Percent Solids	94.8		Concentration		86.1		88.2		84.3		85.8		94.3	
		Location and or Sample Description	19 Background				15		16		17		18		20	
COMPOUND NAME	CAS NO.	CLASS	Concentration	Q	Concentration	Q	Concentration	Q	Concentration	Q	Concentration	Q	Concentration	Q	Concentration	Q
ALUMINUM	7429-90-5	INO	1870		5610		9980		10700		13600		12700		2780	
ANTIMONY	7440-36-0	INO														
ARSENIC	7440-38-2	INO					2.6		2.8		1.9					
BARIUM	7440-39-3	INO					76		75.4		105				32.2	
BERYLLIUM	7440-41-7	INO														
CADMIUM	7440-43-9	INO														
CALCIUM	7440-70-2	INO									1060		1030		166	J
CHROMIUM	7440-47-3	INO	2.5	J	7.5		9.3	J	11.9	J	13.4	J	14.6	J	7.7	J
COBALT	7440-48-4	INO	0.53	J	1.59		7.3		7		9.7		10.7		3.8	J
COPPER	7440-50-8	INO					5.3		4.1		5.7		6.4			
IRON	7439-89-6	INO	1650		4950		31000		25300		23000		31100		3830	
LEAD	7439-92-1	INO	3.2	J	9.6		9.8	J	10.9	J	11.7	J	8.4	J	5.4	J
MAGNESIUM	7439-95-4	INO	128		38.4		1340		1500		2210		3280		161	
MANGANESE	7439-96-5	INO	38.4	J	115.2		93	J	178	J	151	J	313	J	147	J
MERCURY	7439-97-6	INO														
NICKEL	7440-02-0	INO					12.6	J	17.9	J	23.7	J	27.7	J		
POTASSIUM	7440-09-7	INO					401		518		686		587		218	
SELENIUM	7782-49-2	INO							0.12	J						
SILVER	7440-22-4	INO														
SODIUM	7440-23-5	INO											296			
THALLIUM	7440-28-0	INO														
VANADIUM	7440-62-2	INO	3.5		76.2		16.2		19.2		24.2		25.4		7.4	
ZINC	7440-66-6	INO	5.9	J	17.7		35.5	J	36	J	46.3	J	55.2	J	7.8	J

LEGEND
INO - Inorganic
Q - Analytical results' Qualifier (listed below).
B - Analyte was detected above the CRDL but below 5X Blank Concentration.
J - The associated value is an estimated quantity.
R - Data for analyte is unusable.
U - The material was analyzed for but was not detected above the level of the associated value.
UJ - The material was analyzed for but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

04005

Distance (Miles)	#Wells/Pop.	Aquifer	Depth (Feet)
0 to 1	3/7.71	Wilcox	80, 280, 240
1 to 2	4/10.28	Wilcox Carrizo	732, 465, 42 27
2 to 3	3/7.71	Wilcox	150, 205, 386
3 to 4	6/15.42	Wilcox	794, 800, 859 590, 445, 365

There are two ground water wells adjacent to the southern half of the site. Both wells are on the property of Mr. Morris; one is active. The depth of the inactive well is approximately 80 feet below the surface with a static water level of 35 feet. The depth of the active well is approximately 280 feet below the surface. The third well within a 1-mile radius of the site is located at the Meredith residence 0.45 mile east of the site on Malakoff Road (Ref 9, p. 1-12). There are 2.57 persons per household in Henderson County (Ref. 10, p. 2).

The municipal drinking water supply for the City of Athens is Lake Athens. The city also owns two wells (approximately 600 feet deep) which are used as a backup supply (Ref. 11). These two wells are approximately 3 miles from the site. There are no wellhead protection areas in the vicinity of the City of Athens (Ref. 12).

3.3 Sample Locations

Both of the Morris wells were sampled during the sampling inspection. An upgradient background drinking water well (Meredith residence) located 0.45 miles east of the site was also sampled as part of the sampling inspection. A summary of the ground water samples collected is presented in Table 2.

3.4 Analytical Results

One inorganic analyte of concern exceeded BBCs detected in the background drinking water sample. Zinc was reported at 55 ppb in the sample collected at Station DW03

REFERENCE 5

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE RD.
HOUSTON, TEXAS 77099

05002

MEMORANDUM

DATE: August 17, 1993

SUBJECT: Laboratory Results for City of Athens Landfill - Malakoff Road

FROM: Diana G. Ayers, Chief, Houston Branch; 6E-H

TO: Ragan Broyles, Chief, Surveillance Branch; 6E-S

ATTN: Stacey Bennett; 6E-SH

Attached are the analytical results for the subject site. Five water samples were received on July 16, 1993 to be analyzed for ABNs, VOAs, pesticides, PCBs, metals, and cyanide. The laboratory numbers assigned to these samples are 3TFADW4201 through 3TFADW4205.

This is a final report.

Attachments

Recycled/Recyclable
Printed with Soy/Canola Ink on paper that contains at least 50% recycled fiber

05 001

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE RD.
HOUSTON, TEXAS 77099

MEMORANDUM

DATE: August 17, 1993

SUBJECT: Notice of Intent to Dispose of Samples

FROM: Diana G. Ayers, Chief, Houston Branch; 6E-H

TO: Ragan Broyles, Chief,
Surveillance Branch; 6E-S

The Houston Laboratory is required to dispose of all hazardous wastes we generate in a manner consistent with RCRA regulations. This includes all samples received for analysis provided we find them to contain contaminants which classify them as RCRA hazardous wastes. In addition, any samples found to contain PCBs must be disposed of according to TCSA regulations.

I have included this memorandum in the final analytical report to serve as notice to the program that we have completed all analysis. If we have any of the original sample remaining after analysis is complete we will dispose of it within 90 days. Please note that even though original sample may be left over, it does not mean that a reanalysis of the sample may be requested since the sample has most likely exceeded its holding time and any subsequent analysis may not be valid.

If you have a need to hold these samples in custody longer than 90 days, please sign below and return this memorandum to me within the next 30 days. Also, state briefly your need to hold these samples in custody.

Thank you for your cooperation in this request.

CITY OF ATHENS LANDFILL - MALAKOFF ROAD (3TFADW42)

Facility Name

Program Manager Date

Recycled/Recyclable
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE RD.
HOUSTON, TEXAS 77099

05003

MEMORANDUM

Date: August 12, 1993

From: Michael Daggett, Chief
Organic Section; 6E-HO

To: Diana Ayers, Chief
Houston Branch; 6E-H

Subject: Organic Analysis of Athens Landfill Malakoff-Road.

Attached are the organic results for samples 3TFADW42-01 thru 3TFADW42-05. These samples were analyzed for ABNs, VOAs pesticides and PCBs. There were no target compounds detected in these samples.

This is a final report.

Recycled/Recyclable
Printed with Soy/Canola Ink on paper that contains at least 50% recycled fiber

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE RD.
HOUSTON, TEXAS 77099

05 004

MEMORANDUM

Date: August 16, 1993

Subject: Laboratory Results for Athens Landfill - Malakoff Rd.

From: David C. Stockton, Chief, Inorganic Lab Section, 6E-HI

To: Diana G. Ayers, Chief, Houston Branch, 6E-H

Attached are laboratory results for the subject site. Five (5) water samples were received on 7-16-93 to be analyzed for metals. The laboratory numbers assigned were 3TFDW4201 through 05. This is a final report.

Attachments (5)

Recycled/Recyclable
Printed with Soy/Canola Ink on paper that contains at least 50% recycled fiber

August 17, 1993

05 005

U.S. Environmental Protection Agency

Houston Branch Management System

Report for Sample Number 3TFADW4201

Source: ATHENS LANDFILL - MALAKOFF RD

Site Description: STA # DW-01

Date/Time Received: 7/16/93 11:15

Date/Time Collected: 7/15/93 7:20

Sample Type: DW

Date Completed: 8/16/93

Comments:

Parameter	Description	Section	Status	Report Date
ABN	ACID/BASE NEUTRALS	ORGANIC	COMPLETE	8/16/93
HSL	HAZARDOUS SUBSTANCE LIST	METALS	COMPLETE	8/16/93
PCB	POLYCHLORINATED BIPHENYLS	ORGANIC	COMPLETE	8/16/93
PES	PESTICIDES	ORGANIC	COMPLETE	8/16/93
VOA	VOLATILE ORGANIC ANALYSIS	ORGANIC	COMPLETE	8/16/93

05006

 Attachment: 1

ORGANIC ANALYSIS DATA

6E-HL Sample NO: 3TFADW42-01 Date Reported: 09-Aug-93

Analyst: M. HUMPHREY Sample Type: WATER

SEMI-VOLATILE COMPOUNDS BY METHOD 625

units: ug/L units: ug/L

Compound Name	Results*	Det Limits	Compound Name	Results*	Det Limits
Acenaphthene	ND	2	2,4-Dinitrophenol	ND	30
Acenaphthylene	ND	2	2,4-Dinitrotoluene	ND	6
Anthracene	ND	2	2,6-Dinitrotoluene	ND	6
Benzidine	ND	20	4,6-Dinitro-2-Methylphenol	ND	20
Benzoic Acid	ND	10	Di-n-Butylphthalate	ND	2
Benzo(a)Anthracene	ND	8	Di-n-Octyl Phthalate	ND	4
Benzo(a)Pyrene	ND	8	Fluoranthene	ND	2
Benzo(b)Fluoranthene	ND	8	Fluorene	ND	2
Benzo(g,h,i)Perylene	ND	8	Hexachlorobenzene	ND	2
Benzo(k)Fluoranthene	ND	8	Hexachlorobutadiene	ND	5
Benzyl Alcohol	ND	4	Hexachlorocyclopentadiene	ND	10
bis(2-Chloroethoxy)Methane	ND	2	Hexachloroethane	ND	3
bis(2-Chloroethyl) Ether	ND	2	Indeno(1,2,3-cd) Pyrene	ND	8
bis(2-chloroisopropyl)Ether	ND	2	Isophorone	ND	4
bis-(2-Ethylhexyl)Phthalate	ND	4	2-Methylnaphthalene	ND	2
4-Bromophenylphenyl Ether	ND	8	2-Methylphenol	ND	6
Butylbenzylphthalate	ND	4	4-Methylphenol	ND	6
Carbazole	ND	10	Naphthalene	ND	2
4-Chloroaniline	ND	4	2-Nitroaniline	ND	8
2-Chloronaphthalene	ND	2	3-Nitroaniline	ND	8
2-Chlorophenol	ND	4	4-Nitroaniline	ND	8
4-Chlorophenylphenyl Ether	ND	8	Nitrobenzene	ND	2
4-Chloro-3-Methylphenol	ND	8	2-Nitrophenol	ND	10
Chrysene	ND	8	4-Nitrophenol	ND	13
Dibenzofuran	ND	2	N-Nitrosodiphenylamine	ND	4
Dibenzo(a,h)Anthracene	ND	8	N-Nitroso-Di-n-Propylamine	ND	6
1,2-Dichlorobenzene	ND	3	Pentachlorophenol	ND	15
1,3-Dichlorobenzene	ND	3	Phenanthrene	ND	2
1,4-Dichlorobenzene	ND	3	Phenol	ND	4
3,3'-Dichlorobenzidine	ND	10	Pyrene	ND	2
2,4-Dichlorophenol	ND	6	1,2,4-Trichlorobenzene	ND	3
Diethylphthalate	ND	2	2,4,5-Trichlorophenol	ND	6
2,4-Dimethylphenol	ND	6	2,4,6-Trichlorophenol	ND	6
DimethylPhthalate	ND	2			

(*) ND = Not detected above the listed detection limit. (*) ND = Not detected above the listed detection limit.

Analyst Notes: _____

05 007

Attachment: 1

ORGANIC ANALYSIS DATA

6E-HL Sample NO:3TFADW42-01

Date Reported: 09-Aug-93

Analyst: M. HUMPHREY

Matrix: WATER

TENTATIVELY IDENTIFIED SEMI-VOLATILE COMPOUNDS BY METHOD 625

units: ug/L

RT (min)	CAS #	COMPOUND NAME (*)	Estimated Concentration (**)
		No ABN TIC's detected in this sample.	

(*) ANALYSTS NOTE: The compounds listed are tentatively identified by the best match with the NIH/EPA/Wiley mass spectral data base or by manual interpretation. Standards were not available for confirmation or quantitation.

(**) Estimated concentration is based on a Response Factor of 1.0 to the nearest internal standard.

05 008

 Attachment: 1

ORGANIC ANALYSIS DATA

6E-HL SAMPLE NO: 3TFADW42-01 DATE REPORTED: 10-Aug-93

ANALYST: F. Edward O'Neill SAMPLE TYPE: water

VOLATILE COMPOUNDS BY METHOD 624 units: ug/L

CAS#	Compound Name	Results*	Det Limits
67-64-1	acetone	ND	5
107-02-8	acrolein	ND	100
107-13-1	acrylonitrile	ND	100
71-43-2	benzene	ND	2
75-27-4	bromodichloromethane	ND	2
75-25-2	bromoform	ND	2
74-83-9	bromomethane	ND	5
78-93-3	2-butanone	ND	5
75-15-0	carbon disulfide	ND	5
56-23-5	carbon tetrachloride	ND	2
108-90-7	chlorobenzene	ND	2
75-00-3	chloroethane	ND	5
67-66-3	chloroform	ND	2
74-87-3	chloromethane	ND	5
124-48-1	dibromochloromethane	ND	2
75-34-3	1,1-dichloroethane	ND	2
107-06-2	1,2-dichloroethane	ND	2
75-35-4	1,1-dichloroethene	ND	2
156-59-2	cis-1,2-dichloroethene	ND	2
156-60-5	trans-1,2-dichloroethene	ND	2
78-87-5	1,2-dichloropropane	ND	2
10061-01-5	cis-1,3-dichloropropene	ND	2
10061-02-6	trans-1,3-dichloropropene	ND	2
100-41-4	ethylbenzene	ND	5
519-78-6	2-hexanone	ND	5
75-09-2	methylene chloride	ND	5
108-10-1	4-methyl-2-pentanone	ND	5
100-42-5	styrene	ND	5
79-34-5	1,1,2,2-tetrachloroethane	ND	2
127-18-4	tetrachloroethene	ND	2
108-88-3	toluene	ND	5
71-55-6	1,1,1-trichloroethane	ND	2
79-00-5	1,1,2-trichloroethane	ND	2
79-01-6	trichloroethene	ND	2
75-01-4	vinyl chloride	ND	5
108-38-3	m- and/or (CAS# 106-42-3)p-xylene	ND	5
95-47-6	o-xylene	ND	5

(*) ND = Not detected above the listed detection limit.

05009

 Attachment: 1

ORGANIC ANALYSIS DATA

6E-HL SAMPLE NO: 3TFADW42-01 DATE REPORTED: 10-Aug-93

ANALYST: F. Edward O'Neill SAMPLE TYPE: water

TENTATIVELY IDENTIFIED VOLATILE COMPOUNDS BY METHOD 624

(min) RT	CAS#	COMPOUND NAME *	ug/L EST. CONC.
		No VOA TIC's detected in this sample.	

* ANALYSTS NOTE - THE COMPOUNDS LISTED ARE TENTATIVELY IDENTIFIED BY THE BEST MATCH WITH THE NIH/EPA/WILEY MASS SPECTRAL DATA BASE OR BY MANUAL INTERPRETATION. STANDARDS WERE NOT AVAILABLE FOR CONFIRMATION OR QUANTITATION.

**Estimated concentration is based on a RF of 1.0 to internal standard

05 010

Attachment 1

PESTICIDE/PCB ANALYSIS

GES-HL SAMPLE NO.: 3TFADW42-01 DATE REPORTED: 8 / 9/1993

SAMPLE TYPE: WATER ATHENS LANDFILL-MALAKOFF ROAD

ANALYST: LARRY STRECK

CAS#		UG/L (PPB)
319-84-6	alpha-BHC	ND DL=< 0.05
319-85-7	beta-BHC	ND DL=< 0.05
319-86-8	delta-BHC	ND DL=< 0.05
58-89-9	gamma-BHC (Lindane)	ND DL=< 0.05
76-44-8	Heptachlor	ND DL=< 0.05
309-00-2	Aldrin	ND DL=< 0.05
1024-57-3	Heptachlor epoxide	ND DL=< 0.05
959-98-8	Endosulfan I	ND DL=< 0.05
60-57-1	Dieldrin	ND DL=< 0.10
72-55-9	4,4'-DDE	ND DL=< 0.10
72-20-8	Endrin	ND DL=< 0.10
33213-65-9	Endosulfan II	ND DL=< 0.10
72-54-8	4,4'-DDD	ND DL=< 0.10
7421-93-4	Endrin aldehyde	ND DL=< 0.10
53494-70-5	Endrin ketone	ND DL=< 0.10
1031-07-8	Endosulfan sulfate	ND DL=< 0.10
50-29-3	4,4'-DDT	ND DL=< 0.10
72-43-5	Methoxychlor	ND DL=< 0.50
5103-71-9	alpha-Chlordane	ND DL=< 0.05
5103-74-2	gamma-Chlordane	ND DL=< 0.05
8001-35-2	Toxaphene	ND DL=< 5.00
12674-11-2	Aroclor-1016	ND DL=< 1.00
11104-28-2	Aroclor-1221	ND DL=< 2.00
11141-16-5	Aroclor-1232	ND DL=< 1.00
53469-21-9	Aroclor-1242	ND DL=< 1.00
12672-29-6	Aroclor-1248	ND DL=< 1.00
11097-69-1	Aroclor-1254	ND DL=< 1.00
11096-82-5	Aroclor-1260	ND DL=< 1.00

ND DL = NOT DETECTED, DETECTION LIMIT

05 011

US EPA HOUSTON BRANCH

SAMPLE #:	3TFADW42-01	DATE RECEIVED:	16-Jul-93
SOURCE:	ATHENS LANDFILL MALAKOFF ROAD		
TYPE:	AQUEOUS	DATE REPORTED:	16-Aug-93
ANALYSTS:	RC, LC, JL		

PARAMETER	CONCENTRATION	DETECTION LIMIT <=	UNITS
ALUMINUM	ND	100	UG/L
ANTIMONY	ND	60	UG/L
ARSENIC	ND	5.8	UG/L
BARIUM	172	10	UG/L
BERYLLIUM	ND	5	UG/L
CADMIUM	ND	5	UG/L
CALCIUM	126000	150	UG/L
CHROMIUM	ND	10	UG/L
COBALT	ND	20	UG/L
COPPER	ND	20	UG/L
IRON	ND	25	UG/L
LEAD	ND	3.3	UG/L
MAGNESIUM	29600	150	UG/L
MANGANESE	ND	5	UG/L
MERCURY	ND	0.2	UG/L
NICKEL	ND	20	UG/L
POTASSIUM	2370	1000	UG/L
SELENIUM	ND	12	UG/L
SILVER	ND	10	UG/L
SODIUM	87100	500	UG/L
THALLIUM	ND	20	UG/L
VANADIUM	ND	30	UG/L
ZINC	ND	20	UG/L

ND: LESS THAN DETECTION LIMIT

August 17, 1993

05 012

U.S. Environmental Protection Agency

Houston Branch Management System

Report for Sample Number 3TFADW4202

Source: ATHENS LANDFILL - MALAKOFF RD

Site Description: STA # DW-02

Date/Time Received: 7/16/93 11:15

Date/Time Collected: 7/15/93 7:20

Sample Type: DW

Date Completed: 8/16/93

Comments:

Parameter	Description	Section	Status	Report Date
ABN	ACID/BASE NEUTRALS	ORGANIC	COMPLETE	8/16/93
HSL	HAZARDOUS SUBSTANCE LIST	METALS	COMPLETE	8/16/93
PCB	POLYCHLORINATED BIPHENYLS	ORGANIC	COMPLETE	8/16/93
PES	PESTICIDES	ORGANIC	COMPLETE	8/16/93
VOA	VOLATILE ORGANIC ANALYSIS	ORGANIC	COMPLETE	8/16/93

05 013

Attachment: 2

ORGANIC ANALYSIS DATA

6E-HL Sample NO: 3TFADW42-02

Date Reported: 09-Aug-93

Analyst: M. HUMPHREY

Sample Type: WATER

SEMI-VOLATILE COMPOUNDS BY METHOD 625

units: ug/L

Compound Name	Results*	Det Limits
Acenaphthene	ND	2
Acenaphthylene	ND	2
Anthracene	ND	2
Benzidine	ND	20
Benzoic Acid	ND	10
Benzo(a)Anthracene	ND	8
Benzo(a)Pyrene	ND	8
Benzo(b)Fluoranthene	ND	8
Benzo(g,h,i)Perylene	ND	8
Benzo(k)Fluoranthene	ND	8
Benzyl Alcohol	ND	4
bis(2-Chloroethoxy)Methane	ND	2
bis(2-Chloroethyl) Ether	ND	2
bis(2-chloroisopropyl)Ether	ND	2
bis-(2-Ethylhexyl)Phthalate	ND	4
4-Bromophenylphenyl Ether	ND	8
Butylbenzylphthalate	ND	4
Carbazole	ND	10
4-Chloroaniline	ND	4
2-Chloronaphthalene	ND	2
2-Chlorophenol	ND	4
4-Chlorophenylphenyl Ether	ND	8
4-Chloro-3-Methylphenol	ND	8
Chrysene	ND	8
Dibenzofuran	ND	2
Dibenzo(a,h)Anthracene	ND	8
1,2-Dichlorobenzene	ND	3
1,3-Dichlorobenzene	ND	3
1,4-Dichlorobenzene	ND	3
3,3'-Dichlorobenzidine	ND	10
2,4-Dichlorophenol	ND	6
Diethylphthalate	ND	2
2,4-Dimethylphenol	ND	6
DimethylPhthalate	ND	2

units: ug/L

Compound Name	Results*	Det Limits
2,4-Dinitrophenol	ND	30
2,4-Dinitrotoluene	ND	6
2,6-Dinitrotoluene	ND	6
4,6-Dinitro-2-Methylphenol	ND	20
Di-n-Butylphthalate	ND	2
Di-n-Octyl Phthalate	ND	4
Fluoranthene	ND	2
Fluorene	ND	2
Hexachlorobenzene	ND	2
Hexachlorobutadiene	ND	5
Hexachlorocyclopentadiene	ND	10
Hexachloroethane	ND	3
Indeno(1,2,3-cd) Pyrene	ND	8
Isophorone	ND	4
2-Methylnaphthalene	ND	2
2-Methylphenol	ND	6
4-Methylphenol	ND	6
Naphthalene	ND	2
2-Nitroaniline	ND	8
3-Nitroaniline	ND	8
4-Nitroaniline	ND	8
Nitrobenzene	ND	2
2-Nitrophenol	ND	10
4-Nitrophenol	ND	13
N-Nitrosodiphenylamine	ND	4
N-Nitroso-Di-n-Propylamine	ND	6
Pentachlorophenol	ND	15
Phenanthrene	ND	2
Phenol	ND	4
Pyrene	ND	2
1,2,4-Trichlorobenzene	ND	3
2,4,5-Trichlorophenol	ND	6
2,4,6-Trichlorophenol	ND	6

(*) ND = Not detected above the listed detection limit.

(*) ND = Not detected above the listed detection limit.

Analyst Notes: _____

05014

Attachment: 2

ORGANIC ANALYSIS DATA

6E-HL Sample NO:3TFADW42-02

Date Reported: 09-Aug-93

Analyst: M. HUMPHREY

Matrix: WATER

TENTATIVELY IDENTIFIED SEMI-VOLATILE COMPOUNDS BY METHOD 625

units: ug/L

RT (min)	CAS #	COMPOUND NAME (*)	Estimated Concentration (**)
		No ABN TIC's detected in this sample.	

(*) ANALYSTS NOTE: The compounds listed are tentatively identified by the best match with the NIH/EPA/Wiley mass spectral data base or by manual interpretation. Standards were not available for confirmation or quantitation.

(**) Estimated concentration is based on a Response Factor of 1.0 to the nearest internal standard.

05 015

 Attachment: 2

ORGANIC ANALYSIS DATA

6E-HL SAMPLE NO: 3TFADW42-02 DATE REPORTED: 10-Aug-93

ANALYST: F. Edward O'Neill SAMPLE TYPE: water

VOLATILE COMPOUNDS BY METHOD 624 units: ug/L

CAS#	Compound Name	Results*	Det Limits
67-64-1	acetone	ND	5
107-02-8	acrolein	ND	100
107-13-1	acrylonitrile	ND	100
71-43-2	benzene	ND	2
75-27-4	bromodichloromethane	ND	2
75-25-2	bromoform	ND	2
74-83-9	bromomethane	ND	5
78-93-3	2-butanone	ND	5
75-15-0	carbon disulfide	ND	5
56-23-5	carbon tetrachloride	ND	2
108-90-7	chlorobenzene	ND	2
75-00-3	chloroethane	ND	5
67-66-3	chloroform	ND	2
74-87-3	chloromethane	ND	5
124-48-1	dibromochloromethane	ND	2
75-34-3	1,1-dichloroethane	ND	2
107-06-2	1,2-dichloroethane	ND	2
75-35-4	1,1-dichloroethene	ND	2
156-59-2	cis-1,2-dichloroethene	ND	2
156-60-5	trans-1,2-dichloroethene	ND	2
78-87-5	1,2-dichloropropane	ND	2
10061-01-5	cis-1,3-dichloropropene	ND	2
10061-02-6	trans-1,3-dichloropropene	ND	2
100-41-4	ethylbenzene	ND	5
519-78-6	2-hexanone	ND	5
75-09-2	methylene chloride	ND	5
108-10-1	4-methyl-2-pentanone	ND	5
100-42-5	styrene	ND	5
79-34-5	1,1,2,2-tetrachloroethane	ND	2
127-18-4	tetrachloroethene	ND	2
108-88-3	toluene	ND	5
71-55-6	1,1,1-trichloroethane	ND	2
79-00-5	1,1,2-trichloroethane	ND	2
79-01-6	trichloroethene	ND	2
75-01-4	vinyl chloride	ND	5
108-38-3	m- and/or (CAS# 106-42-3)p-xylene	ND	5
95-47-6	o-xylene	ND	5

(*) ND = Not detected above the listed detection limit.

05 016

 Attachment: 2

ORGANIC ANALYSIS DATA

6E-HL SAMPLE NO: 3TFADW42-02 DATE REPORTED: 10-Aug-93

ANALYST: F. Edward O'Neill SAMPLE TYPE: water

TENTATIVELY IDENTIFIED VOLATILE COMPOUNDS BY METHOD 624

(min) RT	CAS#	COMPOUND NAME *	ug/L EST. CONC.
		No VOA TIC's detected in this sample.	

* ANALYSTS NOTE - THE COMPOUNDS LISTED ARE TENTATIVELY IDENTIFIED BY THE BEST MATCH WITH THE NIH/EPA/WILEY MASS SPECTRAL DATA BASE OR BY MANUAL INTERPRETATION. STANDARDS WERE NOT AVAILABLE FOR CONFIRMATION OR QUANTITATION.

**Estimated concentration is based on a RF of 1.0 to internal standard

05017

Attachment 2

PESTICIDE/PCB ANALYSIS

6ES-HL SAMPLE NO.: 3TFADW42-02 DATE REPORTED: 8 / 9/1993

SAMPLE TYPE: WATER ATHENS LANDFILL-MALAKOFF ROAD

ANALYST: LARRY STRECK

CAS#		UG/L (PPB)
319-84-6	alpha-BHC	ND DL=< 0.05
319-85-7	beta-BHC	ND DL=< 0.05
319-86-8	delta-BHC	ND DL=< 0.05
58-89-9	gamma-BHC (Lindane)	ND DL=< 0.05
76-44-8	Heptachlor	ND DL=< 0.05
309-00-2	Aldrin	ND DL=< 0.05
1024-57-3	Heptachlor epoxide	ND DL=< 0.05
959-98-8	Endosulfan I	ND DL=< 0.05
60-57-1	Dieldrin	ND DL=< 0.10
72-55-9	4,4'-DDE	ND DL=< 0.10
72-20-8	Endrin	ND DL=< 0.10
33213-65-9	Endosulfan II	ND DL=< 0.10
72-54-8	4,4'-DDD	ND DL=< 0.10
7421-93-4	Endrin aldehyde	ND DL=< 0.10
53494-70-5	Endrin ketone	ND DL=< 0.10
1031-07-8	Endosulfan sulfate	ND DL=< 0.10
50-29-3	4,4'-DDT	ND DL=< 0.10
72-43-5	Methoxychlor	ND DL=< 0.50
5103-71-9	alpha-Chlordane	ND DL=< 0.05
5103-74-2	gamma-Chlordane	ND DL=< 0.05
8001-35-2	Toxaphene	ND DL=< 5.00
12674-11-2	Aroclor-1016	ND DL=< 1.00
11104-28-2	Aroclor-1221	ND DL=< 2.00
11141-16-5	Aroclor-1232	ND DL=< 1.00
53469-21-9	Aroclor-1242	ND DL=< 1.00
12672-29-6	Aroclor-1248	ND DL=< 1.00
11097-69-1	Aroclor-1254	ND DL=< 1.00
11096-82-5	Aroclor-1260	ND DL=< 1.00

ND DL = NOT DETECTED, DETECTION LIMIT

05018

US EPA HOUSTON BRANCH

SAMPLE #:	3TFADW42-02	DATE	
SOURCE:	ATHENS LANDFILL MALAKOFF ROAD	RECEIVED:	16-Jul-93
TYPE:	AQUEOUS	DATE	
ANALYSTS:	RC, LC, JL	REPORTED:	16-Aug-93

PARAMETER	CONCENTRATION	DETECTION LIMIT <=	UNITS
ALUMINUM	ND	100	UG/L
ANTIMONY	ND	60	UG/L
ARSENIC	ND	5.8	UG/L
BARIUM	166	10	UG/L
BERYLLIUM	ND	5	UG/L
CADMIUM	ND	5	UG/L
CALCIUM	122000	150	UG/L
CHROMIUM	ND	10	UG/L
COBALT	ND	20	UG/L
COPPER	ND	20	UG/L
IRON	ND	25	UG/L
LEAD	ND	3.3	UG/L
MAGNESIUM	28900	150	UG/L
MANGANESE	ND	5	UG/L
MERCURY	ND	0.2	UG/L
NICKEL	ND	20	UG/L
POTASSIUM	2790	1000	UG/L
SELENIUM	ND	12	UG/L
SILVER	ND	10	UG/L
SODIUM	84400	500	UG/L
THALLIUM	ND	20	UG/L
VANADIUM	ND	30	UG/L
ZINC	ND	20	UG/L

ND: LESS THAN DETECTION LIMIT

August 17, 1993

05 019

U.S. Environmental Protection Agency

Houston Branch Management System

Report for Sample Number 3TFADW4203

Source: ATHENS LANDFILL - MALAKOFF RD

Site Description: STA # DW-03

Date/Time Received: 7/16/93 11:15

Date/Time Collected: 7/15/93 7:58

Sample Type: DW

Date Completed: 8/16/93

Comments:

Parameter	Description	Section	Status	Report Date
ABN	ACID/BASE NEUTRALS	ORGANIC	COMPLETE	8/16/93
HSL	HAZARDOUS SUBSTANCE LIST	METALS	COMPLETE	8/16/93
PCB	POLYCHLORINATED BIPHENYLS	ORGANIC	COMPLETE	8/16/93
PES	PESTICIDES	ORGANIC	COMPLETE	8/16/93
VOA	VOLATILE ORGANIC ANALYSIS	ORGANIC	COMPLETE	8/16/93

05 020

 Attachment: 3

ORGANIC ANALYSIS DATA

6E-HL Sample NO: 3TFADW42-03 Date Reported: 09-Aug-93

Analyst: M. HUMPHREY Sample Type: WATER

SEMI-VOLATILE COMPOUNDS BY METHOD 625

units: ug/L units: ug/L

Compound Name	Results*	Det Limits	Compound Name	Results*	Det Limits
Acenaphthene	ND	2	2,4-Dinitrophenol	ND	30
Acenaphthylene	ND	2	2,4-Dinitrotoluene	ND	6
Anthracene	ND	2	2,6-Dinitrotoluene	ND	6
Benzidine	ND	20	4,6-Dinitro-2-Methylphenol	ND	20
Benzoic Acid	ND	10	Di-n-Butylphthalate	ND	2
Benzo(a)Anthracene	ND	8	Di-n-Octyl Phthalate	ND	4
Benzo(a)Pyrene	ND	8	Fluoranthene	ND	2
Benzo(b)Fluoranthene	ND	8	Fluorene	ND	2
Benzo(g,h,i)Perylene	ND	8	Hexachlorobenzene	ND	2
Benzo(k)Fluoranthene	ND	8	Hexachlorobutadiene	ND	5
Benzyl Alcohol	ND	4	Hexachlorocyclopentadiene	ND	10
bis(2-Chloroethoxy)Methane	ND	2	Hexachloroethane	ND	3
bis(2-Chloroethyl) Ether	ND	2	Indeno(1,2,3-cd) Pyrene	ND	8
bis(2-chloroisopropyl)Ether	ND	2	Isophorone	ND	4
bis-(2-Ethylhexyl)Phthalate	ND	4	2-Methylnaphthalene	ND	2
4-Bromophenylphenyl Ether	ND	8	2-Methylphenol	ND	6
Butylbenzylphthalate	ND	4	4-Methylphenol	ND	6
Carbazole	ND	10	Naphthalene	ND	2
4-Chloroaniline	ND	4	2-Nitroaniline	ND	8
2-Chloronaphthalene	ND	2	3-Nitroaniline	ND	8
2-Chlorophenol	ND	4	4-Nitroaniline	ND	8
4-Chlorophenylphenyl Ether	ND	8	Nitrobenzene	ND	2
4-Chloro-3-Methylphenol	ND	8	2-Nitrophenol	ND	10
Chrysene	ND	8	4-Nitrophenol	ND	13
Dibenzofuran	ND	2	N-Nitrosodiphenylamine	ND	4
Dibenzo(a,h)Anthracene	ND	8	N-Nitroso-Di-n-Propylamine	ND	6
1,2-Dichlorobenzene	ND	3	Pentachlorophenol	ND	15
1,3-Dichlorobenzene	ND	3	Phenanthrene	ND	2
1,4-Dichlorobenzene	ND	3	Phenol	ND	4
3,3'-Dichlorobenzidine	ND	10	Pyrene	ND	2
2,4-Dichlorophenol	ND	6	1,2,4-Trichlorobenzene	ND	3
Diethylphthalate	ND	2	2,4,5-Trichlorophenol	ND	6
2,4-Dimethylphenol	ND	6	2,4,6-Trichlorophenol	ND	6
DimethylPhthalate	ND	2			

(*) ND = Not detected above the listed detection limit. (*) ND = Not detected above the listed detection limit.

Analyst Notes: _____

05 021

Attachment: 3

ORGANIC ANALYSIS DATA

6E-HL Sample NO:3TFADW42-03

Date Reported: 09-Aug-93

Analyst: M. HUMPHREY

Matrix: WATER

TENTATIVELY IDENTIFIED SEMI-VOLATILE COMPOUNDS BY METHOD 625

units: ug/L

RT (min)	CAS #	COMPOUND NAME (*)	Estimated Concentration (**)
		No ABN TIC's detected in this sample.	

(*) ANALYSTS NOTE: The compounds listed are tentatively identified by the best match with the NIH/EPA/Wiley mass spectral data base or by manual interpretation. Standards were not available for confirmation or quantitation.

(**) Estimated concentration is based on a Response Factor of 1.0 to the nearest internal standard.

ORGANIC ANALYSIS DATA

6E-HL SAMPLE NO: 3TFADW42-03 DATE REPORTED: 10-Aug-93

ANALYST: F. Edward O'Neill SAMPLE TYPE: water

VOLATILE COMPOUNDS BY METHOD 624 units: ug/L

CAS#	Compound Name	Results*	Det Limits
67-64-1	acetone	ND	5
107-02-8	acrolein	ND	100
107-13-1	acrylonitrile	ND	100
71-43-2	benzene	ND	2
75-27-4	bromodichloromethane	ND	2
75-25-2	bromoform	ND	2
74-83-9	bromomethane	ND	5
78-93-3	2-butanone	ND	5
75-15-0	carbon disulfide	ND	5
56-23-5	carbon tetrachloride	ND	2
108-90-7	chlorobenzene	ND	2
75-00-3	chloroethane	ND	5
67-66-3	chloroform	ND	2
74-87-3	chloromethane	ND	5
124-48-1	dibromochloromethane	ND	2
75-34-3	1,1-dichloroethane	ND	2
107-06-2	1,2-dichloroethane	ND	2
75-35-4	1,1-dichloroethene	ND	2
156-59-2	cis-1,2-dichloroethene	ND	2
156-60-5	trans-1,2-dichloroethene	ND	2
78-87-5	1,2-dichloropropane	ND	2
10061-01-5	cis-1,3-dichloropropene	ND	2
10061-02-6	trans-1,3-dichloropropene	ND	2
100-41-4	ethylbenzene	ND	5
519-78-6	2-hexanone	ND	5
75-09-2	methylene chloride	ND	5
108-10-1	4-methyl-2-pentanone	ND	5
100-42-5	styrene	ND	5
79-34-5	1,1,2,2-tetrachloroethane	ND	2
127-18-4	tetrachloroethene	ND	2
108-88-3	toluene	ND	5
71-55-6	1,1,1-trichloroethane	ND	2
79-00-5	1,1,2-trichloroethane	ND	2
79-01-6	trichloroethene	ND	2
75-01-4	vinyl chloride	ND	5
108-38-3	m- and/or (CAS# 106-42-3)p-xylene	ND	5
95-47-6	o-xylene	ND	5

(*) ND = Not detected above the listed detection limit.

05 023

 Attachment: 3

ORGANIC ANALYSIS DATA

6E-HL SAMPLE NO: 3TFADW42-03 DATE REPORTED: 10-Aug-93

ANALYST: F. Edward O'Neill SAMPLE TYPE: water

TENTATIVELY IDENTIFIED VOLATILE COMPOUNDS BY METHOD 624

(min) RT	CAS#	COMPOUND NAME *	ug/L EST. CONC.
		No VOA TIC's detected in this sample.	

* ANALYSTS NOTE - THE COMPOUNDS LISTED ARE TENTATIVELY IDENTIFIED BY THE BEST MATCH WITH THE NIH/EPA/WILEY MASS SPECTRAL DATA BASE OR BY MANUAL INTERPRETATION. STANDARDS WERE NOT AVAILABLE FOR CONFIRMATION OR QUANTITATION.

**Estimated concentration is based on a RF of 1.0 to internal standard

05 024

PESTICIDE/PCB ANALYSIS

SES-ML SAMPLE NO.: FYFA2K40-03 DATE REPORTED: 8 / 9/1993

SAMPLE TYPE: WATER ATHENS LANDFILL-MALAKOFF ROAD

ANALYST: LARRY STRECK

CAS#		UG/L (PPB)
319-84-6	alpha-BHC	ND DL=< 0.05
319-85-7	beta-BHC	ND DL=< 0.05
319-86-8	delta-BHC	ND DL=< 0.05
58-89-9	gamma-BHC (Lindane)	ND DL=< 0.05
76-44-8	Heptachlor	ND DL=< 0.05
309-00-2	Aldrin	ND DL=< 0.05
1024-57-3	Heptachlor epoxide	ND DL=< 0.05
959-98-8	Endosulfan I	ND DL=< 0.05
60-57-1	Dieldrin	ND DL=< 0.10
72-55-9	4,4'-DDE	ND DL=< 0.10
72-20-8	Endrin	ND DL=< 0.10
33213-65-9	Endosulfan II	ND DL=< 0.10
72-54-8	4,4'-DDD	ND DL=< 0.10
7421-93-4	Endrin aldehyde	ND DL=< 0.10
53494-70-5	Endrin ketone	ND DL=< 0.10
1031-07-8	Endosulfan sulfate	ND DL=< 0.10
50-29-3	4,4'-DDT	ND DL=< 0.10
72-43-5	Methoxychlor	ND DL=< 0.50
5103-71-9	alpha-Chlordane	ND DL=< 0.05
5103-74-2	gamma-Chlordane	ND DL=< 0.05
8001-35-2	Toxaphene	ND DL=< 5.00
12674-11-2	Aroclor-1016	ND DL=< 1.00
11104-28-2	Aroclor-1221	ND DL=< 2.00
11141-16-5	Aroclor-1232	ND DL=< 1.00
53469-21-9	Aroclor-1242	ND DL=< 1.00
12672-29-6	Aroclor-1248	ND DL=< 1.00
11097-69-1	Aroclor-1254	ND DL=< 1.00
11096-82-5	Aroclor-1260	ND DL=< 1.00

ND DL = NOT DETECTED, DETECTION LIMIT

05 025

US EPA HOUSTON BRANCH

SAMPLE #:	3TFADW42-03	DATE RECEIVED:	16-Jul-93
SOURCE:	ATHENS LANDFILL MALAKOFF ROAD		
TYPE:	AQUEOUS	DATE REPORTED:	16-Aug-93
ANALYSTS:	RC, LC, JL		

PARAMETER	CONCENTRATION	DETECTION LIMIT <=	UNITS
ALUMINUM	ND	100	UG/L
ANTIMONY	ND	60	UG/L
ARSENIC	ND	5.8	UG/L
BARIUM	39	10	UG/L
BERYLLIUM	ND	5	UG/L
CADMIUM	ND	5	UG/L
CALCIUM	4440	150	UG/L
CHROMIUM	ND	10	UG/L
COBALT	ND	20	UG/L
COPPER	ND	20	UG/L
IRON	ND	25	UG/L
LEAD	ND	3.3	UG/L
MAGNESIUM	731	150	UG/L
MANGANESE	19	5	UG/L
MERCURY	ND	0.2	UG/L
NICKEL	ND	20	UG/L
POTASSIUM	ND	1000	UG/L
SELENIUM	ND	12	UG/L
SILVER	ND	10	UG/L
SODIUM	57800	500	UG/L
THALLIUM	ND	20	UG/L
VANADIUM	ND	30	UG/L
ZINC	55	20	UG/L

ND: LESS THAN DETECTION LIMIT

05 026

August 17, 1993

U.S. Environmental Protection Agency

Houston Branch Management System

Report for Sample Number 3TFADW4204

Source: ATHENS LANDFILL - MALAKOFF RD

Site Description: STA # DW-04

Date/Time Received: 7/16/93 11:15

Date/Time Collected: 7/15/93 8:35

Sample Type: DW

Date Completed: 8/16/93

Comments:

Parameter	Description	Section	Status	Report Date
ABN	ACID/BASE NEUTRALS	ORGANIC	COMPLETE	8/16/93
HSL	HAZARDOUS SUBSTANCE LIST	METALS	COMPLETE	8/16/93
PCB	POLYCHLORINATED BIPHENYLS	ORGANIC	COMPLETE	8/16/93
PES	PESTICIDES	ORGANIC	COMPLETE	8/16/93
VOA	VOLATILE ORGANIC ANALYSIS	ORGANIC	COMPLETE	8/16/93

05 027

Attachment: 4

ORGANIC ANALYSIS DATA

6E-HL Sample NO: 3TFADW42-04

Date Reported: 09-Aug-93

Analyst: M. HUMPHREY

Sample Type: WATER

SEMI-VOLATILE COMPOUNDS BY METHOD 625

units: ug/L

units: ug/L

Compound Name	Results*	Det Limits	Compound Name	Results*	Det Limits
Acenaphthene	ND	2	2,4-Dinitrophenol	ND	30
Acenaphthylene	ND	2	2,4-Dinitrotoluene	ND	6
Anthracene	ND	2	2,6-Dinitrotoluene	ND	6
Benzidine	ND	20	4,6-Dinitro-2-Methylphenol	ND	20
Benzoic Acid	ND	10	Di-n-Butylphthalate	ND	2
Benzo(a)Anthracene	ND	8	Di-n-Octyl Phthalate	ND	4
Benzo(a)Pyrene	ND	8	Fluoranthene	ND	2
Benzo(b)Fluoranthene	ND	8	Fluorene	ND	2
Benzo(g,h,i)Perylene	ND	8	Hexachlorobenzene	ND	2
Benzo(k)Fluoranthene	ND	8	Hexachlorobutadiene	ND	5
Benzyl Alcohol	ND	4	Hexachlorocyclopentadiene	ND	10
bis(2-Chloroethoxy)Methane	ND	2	Hexachloroethane	ND	3
bis(2-Chloroethyl) Ether	ND	2	Indeno(1,2,3-cd) Pyrene	ND	8
bis(2-chloroisopropyl)Ether	ND	2	Isophorone	ND	4
bis-(2-Ethylhexyl)Phthalate	ND	4	2-Methylnaphthalene	ND	2
4-Bromophenylphenyl Ether	ND	8	2-Methylphenol	ND	6
Butylbenzylphthalate	ND	4	4-Methylphenol	ND	6
Carbazole	ND	10	Naphthalene	ND	2
4-Chloroaniline	ND	4	2-Nitroaniline	ND	8
2-Chloronaphthalene	ND	2	3-Nitroaniline	ND	8
2-Chlorophenol	ND	4	4-Nitroaniline	ND	8
4-Chlorophenylphenyl Ether	ND	8	Nitrobenzene	ND	2
4-Chloro-3-Methylphenol	ND	8	2-Nitrophenol	ND	10
Chrysene	ND	8	4-Nitrophenol	ND	13
Dibenzofuran	ND	2	N-Nitrosodiphenylamine	ND	4
Dibenzo(a,h)Anthracene	ND	8	N-Nitroso-Di-n-Propylamine	ND	6
1,2-Dichlorobenzene	ND	3	Pentachlorophenol	ND	15
1,3-Dichlorobenzene	ND	3	Phenanthrene	ND	2
1,4-Dichlorobenzene	ND	3	Phenol	ND	4
3,3'-Dichlorobenzidine	ND	10	Pyrene	ND	2
2,4-Dichlorophenol	ND	6	1,2,4-Trichlorobenzene	ND	3
Diethylphthalate	ND	2	2,4,5-Trichlorophenol	ND	6
2,4-Dimethylphenol	ND	6	2,4,6-Trichlorophenol	ND	6
DimethylPhthalate	ND	2			

(*) ND = Not detected above the listed detection limit.

(*) ND = Not detected above the listed detection limit.

Analyst Notes: _____

ORGANIC ANALYSIS DATA

6E-HL Sample NO:3TFADW42-04

Date Reported: 09-Aug-93

Analyst: M. HUMPHREY

Matrix: WATER

TENTATIVELY IDENTIFIED SEMI-VOLATILE COMPOUNDS BY METHOD 625

units: ug/L

RT (min)	CAS #	COMPOUND NAME (*)	Estimated Concentration (**)
		No ABN TIC's detected in this sample.	

(*) ANALYSTS NOTE: The compounds listed are tentatively identified by the best match with the NIH/EPA/Wiley mass spectral data base or by manual interpretation. Standards were not available for confirmation or quantitation.

(**) Estimated concentration is based on a Response Factor of 1.0 to the nearest internal standard.

05 029

 Attachment: 4

ORGANIC ANALYSIS DATA

6E-HL SAMPLE NO: 3TFADW42-04 DATE REPORTED: 10-Aug-93

ANALYST: F. Edward O'Neill SAMPLE TYPE: water

VOLATILE COMPOUNDS BY METHOD 624 units: ug/L

CAS#	Compound Name	Results*	Det Limits
67-64-1	acetone	ND	5
107-02-8	acrolein	ND	100
107-13-1	acrylonitrile	ND	100
71-43-2	benzene	ND	2
75-27-4	bromodichloromethane	ND	2
75-25-2	bromoform	ND	2
74-83-9	bromomethane	ND	5
78-93-3	2-butanone	ND	5
75-15-0	carbon disulfide	ND	5
56-23-5	carbon tetrachloride	ND	2
108-90-7	chlorobenzene	ND	2
75-00-3	chloroethane	ND	5
67-66-3	chloroform	ND	2
74-87-3	chloromethane	ND	5
124-48-1	dibromochloromethane	ND	2
75-34-3	1,1-dichloroethane	ND	2
107-06-2	1,2-dichloroethane	ND	2
75-35-4	1,1-dichloroethene	ND	2
156-59-2	cis-1,2-dichloroethene	ND	2
156-60-5	trans-1,2-dichloroethene	ND	2
78-87-5	1,2-dichloropropane	ND	2
10061-01-5	cis-1,3-dichloropropene	ND	2
10061-02-6	trans-1,3-dichloropropene	ND	2
100-41-4	ethylbenzene	ND	5
519-78-6	2-hexanone	ND	5
75-09-2	methylene chloride	ND	5
108-10-1	4-methyl-2-pentanone	ND	5
100-42-5	styrene	ND	5
79-34-5	1,1,2,2-tetrachloroethane	ND	2
127-18-4	tetrachloroethene	ND	2
108-88-3	toluene	ND	5
71-55-6	1,1,1-trichloroethane	ND	2
79-00-5	1,1,2-trichloroethane	ND	2
79-01-6	trichloroethene	ND	2
75-01-4	vinyl chloride	ND	5
108-38-3	m- and/or (CAS# 106-42-3)p-xylene	ND	5
95-47-6	o-xylene	ND	5

(*) ND = Not detected above the listed detection limit.

05 030

 Attachment: 4

ORGANIC ANALYSIS DATA

6E-HL SAMPLE NO: 3TFADW42-04 DATE REPORTED: 10-Aug-93

ANALYST: F. Edward O'Neill SAMPLE TYPE: water

TENTATIVELY IDENTIFIED VOLATILE COMPOUNDS BY METHOD 624

(min) RT	CAS#	COMPOUND NAME *	ug/L EST. CONC.
		No VOA TIC's detected in this sample.	

* ANALYSTS NOTE - THE COMPOUNDS LISTED ARE TENTATIVELY IDENTIFIED BY THE BEST MATCH WITH THE NIH/EPA/WILEY MASS SPECTRAL DATA BASE OR BY MANUAL INTERPRETATION. STANDARDS WERE NOT AVAILABLE FOR CONFIRMATION OR QUANTITATION.

**Estimated concentration is based on a RF of 1.0 to internal standard

05031

Attachment 4

PESTICIDE/PCB ANALYSIS

6ES-HL SAMPLE NO.: 3TFADW42-04 DATE REPORTED: 8 / 9/1993

SAMPLE TYPE: WATER ATHENS LANDFILL-MALAKOFF ROAD

ANALYST: LARRY STRECK

CAS#		UG/L (PPB)
319-84-6	alpha-BHC	ND DL=< 0.05
319-85-7	beta-BHC	ND DL=< 0.05
319-86-8	delta-BHC	ND DL=< 0.05
58-89-9	gamma-BHC (Lindane)	ND DL=< 0.05
76-44-8	Heptachlor	ND DL=< 0.05
309-00-2	Aldrin	ND DL=< 0.05
1024-57-3	Heptachlor epoxide	ND DL=< 0.05
959-98-8	Endosulfan I	ND DL=< 0.05
60-57-1	Dieldrin	ND DL=< 0.10
72-55-9	4,4'-DDE	ND DL=< 0.10
72-20-8	Endrin	ND DL=< 0.10
33213-65-9	Endosulfan II	ND DL=< 0.10
72-54-8	4,4'-DDD	ND DL=< 0.10
7421-93-4	Endrin aldehyde	ND DL=< 0.10
53494-70-5	Endrin ketone	ND DL=< 0.10
1031-07-8	Endosulfan sulfate	ND DL=< 0.10
50-29-3	4,4'-DDT	ND DL=< 0.10
72-43-5	Methoxychlor	ND DL=< 0.50
5103-71-9	alpha-Chlordane	ND DL=< 0.05
5103-74-2	gamma-Chlordane	ND DL=< 0.05
8001-35-2	Toxaphene	ND DL=< 5.00
12674-11-2	Aroclor-1016	ND DL=< 1.00
11104-28-2	Aroclor-1221	ND DL=< 2.00
11141-16-5	Aroclor-1232	ND DL=< 1.00
53469-21-9	Aroclor-1242	ND DL=< 1.00
12672-29-6	Aroclor-1248	ND DL=< 1.00
11097-69-1	Aroclor-1254	ND DL=< 1.00
11096-82-5	Aroclor-1260	ND DL=< 1.00

ND DL = NOT DETECTED, DETECTION LIMIT

05 032

US EPA HOUSTON BRANCH

SAMPLE #:	3TFADW42-04	DATE	
SOURCE:	ATHENS LANDFILL MALAKOFF ROAD	RECEIVED:	16-Jul-93
TYPE:	AQUEOUS	DATE	
ANALYSTS:	RC, LC, JL	REPORTED:	16-Aug-93

PARAMETER	CONCENTRATION	DETECTION LIMIT <=	UNITS
ALUMINUM	116	100	UG/L
ANTIMONY	ND	60	UG/L
ARSENIC	ND	5.8	UG/L
BARIUM	137	10	UG/L
BERYLLIUM	ND	5	UG/L
CADMIUM	ND	5	UG/L
CALCIUM	14100	150	UG/L
CHROMIUM	ND	10	UG/L
COBALT	ND	20	UG/L
COPPER	ND	20	UG/L
IRON	66	25	UG/L
LEAD	ND	3.3	UG/L
MAGNESIUM	3100	150	UG/L
MANGANESE	16	5	UG/L
MERCURY	ND	0.2	UG/L
NICKEL	ND	20	UG/L
POTASSIUM	3160	1000	UG/L
SELENIUM	ND	12	UG/L
SILVER	ND	10	UG/L
SODIUM	35400	500	UG/L
THALLIUM	ND	20	UG/L
VANADIUM	ND	30	UG/L
ZINC	ND	20	UG/L

ND: LESS THAN DETECTION LIMIT

05033

August 17, 1993

U.S. Environmental Protection Agency

Houston Branch Management System

Report for Sample Number 3TFADW4205

Source: ATHENS LANDFILL - MALAKOFF RD

Site Description: STA # L-21

Date/Time Received: 7/16/93 11:15

Date/Time Collected: 7/15/93 8:25

Sample Type: DW

Date Completed: 8/16/93

Comments:

Parameter	Description	Section	Status	Report Date
ABN	ACID/BASE NEUTRALS	ORGANIC	COMPLETE	8/16/93
HSL	HAZARDOUS SUBSTANCE LIST	METALS	COMPLETE	8/16/93
PCB	POLYCHLORINATED BIPHENYLS	ORGANIC	COMPLETE	8/16/93
PES	PESTICIDES	ORGANIC	COMPLETE	8/16/93
VOA	VOLATILE ORGANIC ANALYSIS	ORGANIC	COMPLETE	8/16/93

05034

 Attachment: 5

ORGANIC ANALYSIS DATA

6E-HL Sample NO: 3TFADW42-05 Date Reported: 09-Aug-93

Analyst: M. HUMPHREY Sample Type: WATER

SEMI-VOLATILE COMPOUNDS BY METHOD 625

units: ug/L units: ug/L

Compound Name	Results*	Det Limits	Compound Name	Results*	Det Limits
Acenaphthene	ND	2	2,4-Dinitrophenol	ND	30
Acenaphthylene	ND	2	2,4-Dinitrotoluene	ND	6
Anthracene	ND	2	2,6-Dinitrotoluene	ND	6
Benzidine	ND	20	4,6-Dinitro-2-Methylphenol	ND	20
Benzoic Acid	ND	10	Di-n-Butylphthalate	ND	2
Benzo(a)Anthracene	ND	8	Di-n-Octyl Phthalate	ND	4
Benzo(a)Pyrene	ND	8	Fluoranthene	ND	2
Benzo(b)Fluoranthene	ND	8	Fluorene	ND	2
Benzo(g,h,i)Perylene	ND	8	Hexachlorobenzene	ND	2
Benzo(k)Fluoranthene	ND	8	Hexachlorobutadiene	ND	5
Benzyl Alcohol	ND	4	Hexachlorocyclopentadiene	ND	10
bis(2-Chloroethoxy)Methane	ND	2	Hexachloroethane	ND	3
bis(2-Chloroethyl) Ether	ND	2	Indeno(1,2,3-cd) Pyrene	ND	8
bis(2-chloroisopropyl)Ether	ND	2	Isophorone	ND	4
bis-(2-Ethylhexyl)Phthalate	ND	4	2-Methylnaphthalene	ND	2
4-Bromophenylphenyl Ether	ND	8	2-Methylphenol	ND	6
Butylbenzylphthalate	ND	4	4-Methylphenol	ND	6
Carbazole	ND	10	Naphthalene	ND	2
4-Chloroaniline	ND	4	2-Nitroaniline	ND	8
2-Chloronaphthalene	ND	2	3-Nitroaniline	ND	8
2-Chlorophenol	ND	4	4-Nitroaniline	ND	8
4-Chlorophenylphenyl Ether	ND	8	Nitrobenzene	ND	2
4-Chloro-3-Methylphenol	ND	8	2-Nitrophenol	ND	10
Chrysene	ND	8	4-Nitrophenol	ND	13
Dibenzofuran	ND	2	N-Nitrosodiphenylamine	ND	4
Dibenzo(a,h)Anthracene	ND	8	N-Nitroso-Di-n-Propylamine	ND	6
1,2-Dichlorobenzene	ND	3	Pentachlorophenol	ND	15
1,3-Dichlorobenzene	ND	3	Phenanthrene	ND	2
1,4-Dichlorobenzene	ND	3	Phenol	ND	4
3,3'-Dichlorobenzidine	ND	10	Pyrene	ND	2
2,4-Dichlorophenol	ND	6	1,2,4-Trichlorobenzene	ND	3
Diethylphthalate	ND	2	2,4,5-Trichlorophenol	ND	6
2,4-Dimethylphenol	ND	6	2,4,6-Trichlorophenol	ND	6
DimethylPhthalate	ND	2			

(*) ND = Not detected above the listed detection limit. (*) ND = Not detected above the listed detection limit.

Analyst Notes: _____

05 035

Attachment: 5

ORGANIC ANALYSIS DATA

6E-HL Sample NO:3TFADW42-05

Date Reported: 09-Aug-93

Analyst: M. HUMPHREY

Matrix: WATER

TENTATIVELY IDENTIFIED SEMI-VOLATILE COMPOUNDS BY METHOD 625

units: ug/L

RT (min)	CAS #	COMPOUND NAME (*)	Estimated Concentration (**)
		No ABN TIC's detected in this sample.	

(*) ANALYSTS NOTE: The compounds listed are tentatively identified by the best match with the NIH/EPA/Wiley mass spectral data base or by manual interpretation. Standards were not available for confirmation or quantitation.

(**) Estimated concentration is based on a Response Factor of 1.0 to the nearest internal standard.

05036

 Attachment: 5

ORGANIC ANALYSIS DATA

6E-HL SAMPLE NO: 3TFADW42-05 DATE REPORTED: 10-Aug-93

ANALYST: F. Edward O'Neill SAMPLE TYPE: water

VOLATILE COMPOUNDS BY METHOD 624 units: ug/L

CAS#	Compound Name	Results*	Det Limits
67-64-1	acetone	ND	5
107-02-8	acrolein	ND	100
107-13-1	acrylonitrile	ND	100
71-43-2	benzene	ND	2
75-27-4	bromodichloromethane	ND	2
75-25-2	bromoform	ND	2
74-83-9	bromomethane	ND	5
78-93-3	2-butanone	ND	5
75-15-0	carbon disulfide	ND	5
56-23-5	carbon tetrachloride	ND	2
108-90-7	chlorobenzene	ND	2
75-00-3	chloroethane	ND	5
67-66-3	chloroform	ND	2
74-87-3	chloromethane	ND	5
124-48-1	dibromochloromethane	ND	2
75-34-3	1,1-dichloroethane	ND	2
107-06-2	1,2-dichloroethane	ND	2
75-35-4	1,1-dichloroethene	ND	2
156-59-2	cis-1,2-dichloroethene	ND	2
156-60-5	trans-1,2-dichloroethene	ND	2
78-87-5	1,2-dichloropropane	ND	2
10061-01-5	cis-1,3-dichloropropene	ND	2
10061-02-6	trans-1,3-dichloropropene	ND	2
100-41-4	ethylbenzene	ND	5
519-78-6	2-hexanone	ND	5
75-09-2	methylene chloride	ND	5
108-10-1	4-methyl-2-pentanone	ND	5
100-42-5	styrene	ND	5
79-34-5	1,1,2,2-tetrachloroethane	ND	2
127-18-4	tetrachloroethene	ND	2
108-88-3	toluene	ND	5
71-55-6	1,1,1-trichloroethane	ND	2
79-00-5	1,1,2-trichloroethane	ND	2
79-01-6	trichloroethene	ND	2
75-01-4	vinyl chloride	ND	5
108-38-3	m- and/or (CAS# 106-42-3)p-xylene	ND	5
95-47-6	o-xylene	ND	5

(*) ND = Not detected above the listed detection limit.

 Attachment: 5

ORGANIC ANALYSIS DATA

05 037

6E-HL SAMPLE NO: 3TFADW42-05 DATE REPORTED: 10-Aug-93

ANALYST: F. Edward O'Neill SAMPLE TYPE: water

TENTATIVELY IDENTIFIED VOLATILE COMPOUNDS BY METHOD 624

(min) RT	CAS#	COMPOUND NAME *	ug/L EST. CONC.
		No VOA TIC's detected in this sample.	

* ANALYSTS NOTE - THE COMPOUNDS LISTED ARE TENTATIVELY IDENTIFIED BY THE BEST MATCH WITH THE NIH/EPA/WILEY MASS SPECTRAL DATA BASE OR BY MANUAL INTERPRETATION. STANDARDS WERE NOT AVAILABLE FOR CONFIRMATION OR QUANTITATION.

**Estimated concentration is based on a RF of 1.0 to internal standard

05038

PESTICIDE/PCB ANALYSIS

6ES-HL SAMPLE NO.: 3TFADW42-05 DATE REPORTED: 8 / 9/1993

SAMPLE TYPE: WATER ATHENS LANDFILL-MALAKOFF ROAD

ANALYST: LARRY STRECK

CAS#		UG/L (PPB)
319-84-6	alpha-BHC	ND DL=< 0.05
319-85-7	beta-BHC	ND DL=< 0.05
319-86-8	delta-BHC	ND DL=< 0.05
58-89-9	gamma-BHC (Lindane)	ND DL=< 0.05
76-44-8	Heptachlor	ND DL=< 0.05
309-00-2	Aldrin	ND DL=< 0.05
1024-57-3	Heptachlor epoxide	ND DL=< 0.05
959-98-8	Endosulfan I	ND DL=< 0.05
60-57-1	Dieldrin	ND DL=< 0.10
72-55-9	4,4'-DDE	ND DL=< 0.10
72-20-8	Endrin	ND DL=< 0.10
33213-65-9	Endosulfan II	ND DL=< 0.10
72-54-8	4,4'-DDD	ND DL=< 0.10
7421-93-4	Endrin aldehyde	ND DL=< 0.10
53494-70-5	Endrin ketone	ND DL=< 0.10
1031-07-8	Endosulfan sulfate	ND DL=< 0.10
50-29-3	4,4'-DDT	ND DL= 0.11
72-43-5	Methoxychlor	ND DL=< 0.50
5103-71-9	alpha-Chlordane	ND DL=< 0.05
5103-74-2	gamma-Chlordane	ND DL=< 0.05
8001-35-2	Toxaphene	ND DL=< 5.00
12674-11-2	Aroclor-1016	ND DL=< 1.00
11104-28-2	Aroclor-1221	ND DL=< 2.00
11141-16-5	Aroclor-1232	ND DL=< 1.00
53469-21-9	Aroclor-1242	ND DL=< 1.00
12672-29-6	Aroclor-1248	ND DL=< 1.00
11097-69-1	Aroclor-1254	ND DL=< 1.00
11096-82-5	Aroclor-1260	ND DL=< 1.00

ND DL = NOT DETECTED, DETECTION LIMIT

05 039

US EPA HOUSTON BRANCH

SAMPLE #:	3TFADW42-05	DATE RECEIVED:	16-Jul-93
SOURCE:	ATHENS LANDFILL MALAKOFF ROAD		
TYPE:	AQUEOUS	DATE REPORTED:	16-Aug-93
ANALYSTS:	RC, LC, JL		

PARAMETER	CONCENTRATION	DETECTION LIMIT <=	UNITS
ALUMINUM	ND	100	UG/L
ANTIMONY	ND	60	UG/L
ARSENIC	ND	5.8	UG/L
BARIUM	ND	10	UG/L
BERYLLIUM	ND	5	UG/L
CADMIUM	ND	5	UG/L
CALCIUM	ND	150	UG/L
CHROMIUM	ND	10	UG/L
COBALT	ND	20	UG/L
COPPER	ND	20	UG/L
IRON	ND	25	UG/L
LEAD	ND	3.3	UG/L
MAGNESIUM	ND	150	UG/L
MANGANESE	ND	5	UG/L
MERCURY	ND	0.2	UG/L
NICKEL	ND	20	UG/L
POTASSIUM	ND	1000	UG/L
SELENIUM	ND	12	UG/L
SILVER	ND	10	UG/L
SODIUM	ND	500	UG/L
THALLIUM	ND	20	UG/L
VANADIUM	ND	30	UG/L
ZINC	ND	20	UG/L

ND: LESS THAN DETECTION LIMIT

REFERENCE 6

06 00[illegible]

INSPECTION REPORT

MUNICIPAL SOLID WASTE DISPOSAL SITE

TEXAS DEPARTMENT OF HEALTH RESOURCES

1. ~~Permit~~ (or Application) No. 263 Classification I Region [illegible]
Site Operator (per A-4.38, Regs.) City
Site Owner City
2. Site Location: County Henderson City Athens
Directions to Site Old Malakoff Road
Coordinates: N 32°11.25' W 95°54.00' Name of Site Athens
Area Served City and County Population 11,000±
3. Official(s) Responsible for Site Operation Tommy Smith, Mayor, Evelyn Cain,
Ci City Administrator
4. Officials Contacted During Inspection None
5. Persons Participating in Inspection N. L. Roussawill, Sanitation Supr.
6. Purpose of Inspection: Routine X Site Evaluation ____ Compliance Schedule ____
Complaint By: Other ____
7. Date of Last Inspection 11-4-76 Date of Last Correspondence 11-16-76
8. Land Use Within One Mile pasture, timber, homes
9. Description of Site and Operation: Trench X Area ____ Other ____
Maximum Depth of Excavation 15' Soil Characteristics clay type
10. Size of Site (Acres) 14 Remaining (Acres) 5 (Years) 1-2 years
11. Distance and Direction to: Public Road next to N Water Well 1/2 mi.
Stream next to site Airport 2 miles Residence 1 mi. Business 1 mi.
12. Refuse Collection By: City X County ____ Contractor ____ Individuals Y
13. Date of Inspection 9-20-77 TDHR Representative(s) Victor O. Cain, Jr., R.S.
Date of Next Inspection 4-78
14. Findings

Access

F-2.10 A. Is adequate all-weather access to an unloading area provided? . . . . . Yes
C-5.2 B. Are waste materials scattered along the route to the disposal site creating a problem? . . . . . No
C-4.1 C. Are collection vehicles maintained in a sanitary condition? . . . . . Yes

Security

F-2.2 D. Is the site provided with a suitable fence? Yes Lockable gates? . . . . Yes
Has an alternate means of access control been approved by the Department? —
Does the alternate means provide adequate control? . . . . . —

Water Pollution

E-3.3e(5)E. Is solid waste deposited within 500 feet of a drinking water source (water supply well No, intake of water treatment plant No, or raw water intake for a public water system No)? . . . . . No

TDHR 5/77

06 002

F-2.4 F. Is solid waste placed in uncontained water? No Explain --

F-2.4 G. Is lining of excavations or disposal areas required? . . . . . No
If so, the site operator notifies the Department of liner completion prior to [illegible] . . . . . --
Is site [illegible] to receive solid waste? . . . . . Yes

F-2.4 H. [illegible] --
[illegible]

F-2.4 I. Can surface [illegible] enter working [illegible] . . . . . No

F-2.4 J. Is water [illegible] has been in contact with solid waste being discharged from the site? No Is discharge authorized by TWQB? . . . . . --

Operational Standards

F-2.1 K. Is inadequate fire protection provided? . . . . . Yes
Method? . . . . . Earth

F-2.2 L. Is unloading of waste confined to as small an area as practical? . . . . Yes

F-2.2 M. Is an attendant on duty when site is open? . . . . . Yes
Are adequate signs posted for internal control when attendant is not on duty? . . . . . Yes

F-2.3 N. Is blowing waste confined satisfactorily? . . . . . Yes
Controls --

O. Hazardous, Mixed and Special Wastes:

F-2.5a Are water or waste water treatment plant sludges or grease trap wastes accepted? No If yes, type --
Are disposal procedures adequate? . . . . . --

F-2.5b Are dead animals or slaughterhouse wastes accepted? Yes Disposal procedures adequate? . . . . . Yes

F-2.5c,d Are significant amounts of TWQB Class I industrial solid wastes accepted? No
If so, has approval been obtained from the Department? . . . . . --
Is operation compliant with Department's approval requirements? . . . . . Yes

F-2.6 Are hazardous wastes (EPA List) accepted? No Specify kind --
If so, has approval been obtained from the Department? -- Are pesticide containers that have not been rendered unusable covered upon receipt? . . . . . --

F-2.7 & D-3 P. Adequate provisions for: bulky items? . . . . . OK
brush and construction-demolition wastes? . . . OK

F-2.8 Q. Burning observed or in evidence? No Is burning authorized by TACB? . --

F-2.9 R. Fly population: heavy ____ Medium ____ Light X None ____
Evidence of rodents? No Birds? No

F-2.11 S. Is salvaging allowed? Yes Is it adequately controlled? . . . . . Yes

F-2.11 T. Is scavenging occurring? (Explain in comments) . . . . . No

F-2.13 U. Is cover adequate and applied at required frequency? . . . . . Yes
Are closed sections of the landfill properly maintained? . . . . . Yes

F-2.14 V. Is ponded water a source of obnoxious odors? . . . . . No

Permit Requirements

E-2 W. If site is not permitted, was the site in operation prior to October 16, 1974. Yes X No ____

E-2.2 X. Is site in compliance with permit special provisions? . . . . . --
If no, explain in comments.

TDHR 5/77

06 003

15. Improvements since previous inspection: _____

16. Summary of non-compliance: _____

17. Comments (use additional sheets if necessary): _____

Operation Considered To Be: Satisfactory _____ Unsatisfactory _____

18. Recommendations (use additional sheets if necessary): _____

19. Action Requested of Central Office: _____

20. Unclassified sites: Where the site operator has not been officially notified of the required type of operation (by letter or by issuance of a permit) state type operation recommended and justification. Type _____ Reasons (screening, traffic, etc.) _____

Have these conditions changed since previous inspection? _____

(Please attach copies of letter originated by Regional Office)

Inspected By Victor O. Cain, Jr., R.S. Date 9-20-77

Approved By W. T. Ballard, P.E. Date 9/26/77

TDEH 5/77

REFERENCE 7

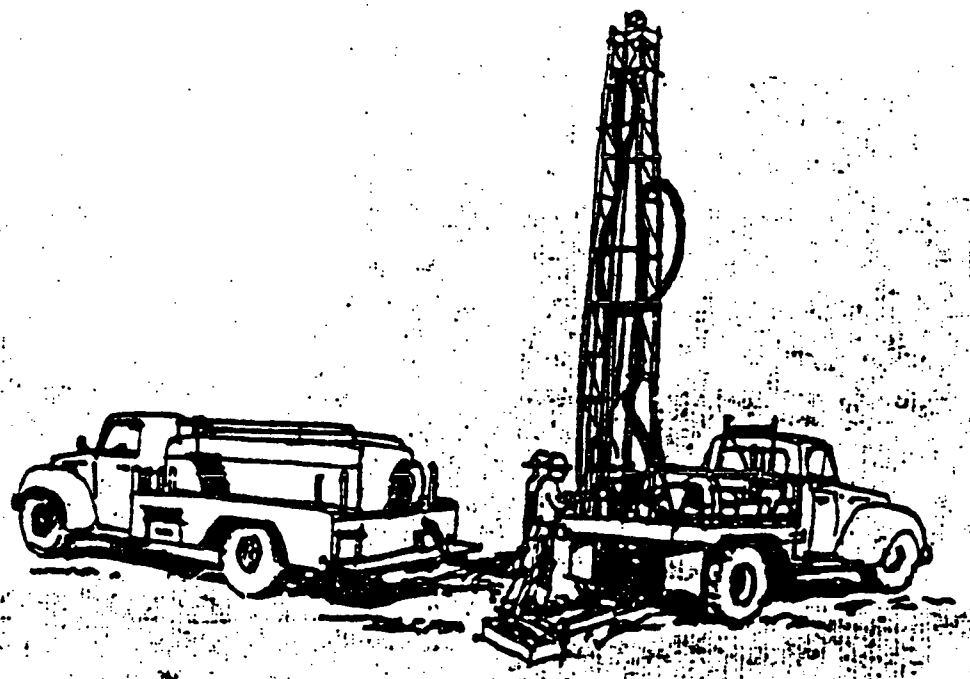
07001

FOUNDATION INVESTIGATION & REPORT

SOLID WASTE DISPOSAL SITE

FOR

THE CITY OF ATHENS, TEXAS



RECEIVED

EAST TEXAS TESTING LABORATORY, INC.

TYLER, TEXAS

of 21.0 to 26.0 feet. This water appears to be trapped by the underlying glauconitic clay at a depth of from 26.0 to 28.0 feet. This water was observed to a depth of 16.5 feet after completion of the drilling operation.

As seen from the Summary of Test Results, most of the soils encountered could be classed as silty to clayey sands (SM-SC) to sandy clays (CL) of slight to moderate plasticity. The glauconitic clay layers, located at the greater depths, appear to be well consolidated and could be classed as very stiff, according to the Key to Soil Classification and Symbols, which is made a part of this report.

CONCLUSIONS AND RECOMMENDATIONS:

The presence of the stiff glauconitic clay layers, observed at a depth of from 22.0 to 28.0 feet in each of the borings, as well as the gray to yellow silty clay (CH) observed in the open excavation from 18.0 to 25.0 feet, indicate that a suitable impermeable clay stratum exists at the bottom of the proposed fill site, which would preclude the movement of water through the fill to any underlying ground water sources. Boring No. 2 indicates, however, that excavation should not progress beyond the 25.0 foot depth in that particular area, until it is ascertained that the clay layer extends to a greater depth than the 27.0 feet encountered.

Because some seepage water will be encountered, as indicated by Boring No. 1, it is suggested that bleeder

REFERENCE 8

FLUOR DANIEL, INC.

RECORD OF TELEPHONE COMMUNICATION

DATE: May 7, 1993

TIME: 10:30 a.m.

PERSON CONTACTED: Mr. David Terry

AGENCY: Texas Water Commission, Austin, Texas

PHONE NUMBER: (512) 463-8266

I spoke to Mr. Terry today. He informed me that there are no wellhead protection areas in the county.

Mark McDonnell

M.M.

REFERENCE 9

09 001

CITY OF ATHENS #1, #2
SITE RECONNAISSANCE
NOTEBOOK
FLUOR DANIEL INC

SITE INSPECTION
PROJECT

BOORUM & PEASE
B&P

Composition Book • 9¾ in. x 7½ in.

Available As:

Item No.	Sheets	Ruling
09-9130	60	College Ruled & Margin
09-9132	60	College Ruled & Margin & Paged
09-9134	100	College Ruled & Margin

ESSELTE

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09002

City of Athens, Site Reconnaissance
Mark A. McDonnell Joan Koeniger
May 5 Wednesday 1993 Fluor Daniel

10:35 AM arrived in Athens and went to city Hall on pinkerton St to meet w/ Don Herriage. Asst City Manager.

Danny Holloway

Leroy Sims owner area on both sides on city water sewer and sanitary. N. pinkerton Road fill per Don Herriage. Mr Herriage took us on a tour of the fill. One mile creek.

10:45am to Noon Mr Herriage took us to N pinkerton Road Location. Property now owned by Mr. Leroy Sims. Landfill is located at 0.7 mi N. of City Hall on Right Hand Side of Road. Area is heavily over grown with trees and vegetation. Limits of land fill are unknown.

Noon to 1 lunch

1:00 Met with Danny Holloway Athens Sanitation Department Mr. Holloway Said that

09 003

Wed May 5, 1993 M. McDonnell Jeank

the Malakoff Rd Location is on both sides of College St., being the N side, sewage treatment plant side, and south side, _____ operating company.

1:45 photo 24 Looking North Down Pinkerton Road at south end of Fill.

1:50 photo 23 Looking across site northeast across overgrown fill.
Brown colored
Leachate and rain runoff goes north along road to 1 mile creek. Suggest further investigation. Cows and pigs on land on right (E.) side of Pinkerton.

1:55 Photo 22 21 20 Shot of sidewall of fill looking east from pinkerton Rd. Directly adjacent to road.

Runoff has scoured and exposed trash along roadsides.

Wed May 5, 1993 M. McDonnell Jeank.

One mile creek forms Northern edge of the Pinkerton Rd. Landfill. Trash and runoff from fill ends up in the creek.

Photo 19 2:07 pm. Pigs observed on Pinkerton Road Looking S. on Road at 1 mile creek crossing.

Fill material is also on West side of the road south of the gate entrance as well. 2:15 pm left for Sand Flat Road location.

Directions to Sand Flat Road: From the intersection of Pinkerton & Corsicana go west along Kaufman/175 cutoff for 4.8 miles. Turn Right on CR 3918 and then left on CR 3914 1.0 mile. Entrance to site is on the right 6 ft chain link fence w 3 strand barbed wire double swing gate.

Exact fill location is marked by Black X, on topo map Stockard quad. Cross Larue Branch to get to get up the hill. Site is well vegetated and repaired and reseeded annually by Athens Sanitation Dept per Don Herriage. See photos

09 005

Wed May 5, 1993 M. McDonnell
Jean Koenigsberger Fluor Daniel

3:15 Photos 18 to 10 include panoramic of cap looking south plus various shots of cap at X_1 including 2 shots from crest. taken at 3:00 to 3:15. Cap and vegetation well maintained and in good shape.

X_2 cap is in good shape. 4 photos 9, 8, 7, 6 3:30 2 looking south and two looking north from X_2 crest.

Sample well to the south owned by city at 455 T. All other houses in immediate vicinity are vacant per Danny Holloway. To the North there are no houses.

City well is 0.3 mi south of entrance gate see photo # 5 gate taken at 3:40. Photo 4 and 3 are of well. Field decision made to sample here need pumping/sampling strategy.

3:45 left to go to Malakoff Rd Location.

Wed May 5, 1993 M. McDonnell
Jean ~~Kerrigan~~ Fluor Daniel

From I-75 take Corsicana out of town and left at HCFCA training road sign (green sign on left).

Right on C. Get accurate directions later

Arrived 4:00 pm at Malakoff Rd Site.

Photo 2 and 1 on west edge of property looking south across property. Used for regional fire training area.

Start Camera #2 4:15 pm.

Shots 24 to 18 various shots of Fire training facilities.

4:30 photos 17 to 9 of Buried, empty, leakers drums on ~~south~~ North edge of mowed area. Liquid and solid contents Discovered pits small and lagoons with oily contents. Will sketch, characterize and photo Tomorrow a.m.

09 007

Mark A. McDonnell Jean Koeninger
Wed May 5, 1993.

5:00 left Malakoff site and drove west looking for water wells. Nearest ~~[illegible]~~ 0.75 miles take left go 0.35 mi to house and trailer these wells will likely be downgradient wells at 471T.
Nearest well to North is at residence visible from site entrance. Nearest to east is new log home being constructed along Malakoff Road.

Log cabin and potential upgradient well is 0.45 miles to east but creek aquitard is present, aquifer discontinuity.

0.25 miles south of 466T has potential upgradient well also

Directions to site, take malakoff/College St.

M. McDonnell

Mark McDonell, Jean Koeninger, Fluor Daniel
Thur May 6, 1993.

Directions to Malakoff Rd. Take 31 Corsicana
west from town to AARON St and go left.
(Gary's Paint & Body Shop) Go south on AARON
to Malakoff Rd College St and go Right 1.55 miles
to Perryman Operating Company Inc. E.O Fisher Unit well #

8:20 Stopped at Gary's Paint & Body Shop
Mr. Herriage told us yesterday that
the owners of the property S. of Malakoff Rd
were here.

Gary Morris his dad lives on property.
Owner is Eldon Morris 677-3648
Gary can get us on the property. Colon cancer
Land fill contents have sunk 1 to 5
little or no cover. Access through
Perryman gate. Has a 80 to 90 ft well
which became unusable due to parasites and
675-8778 677-2668 Gary.
excessive sediment. This was his
domestic well and he had to put
in a 300' well and. There is no soil cover
and we will verify this. Mr. Morris
Several cows have died drinking low
spot leachate but not sure.

09009

Mark McDonnell Jean Koeninger Fluor Daniel
Thursday May 6, 1993

Met with Eldon Morris. Cows have drank water from sinkholes. Land fill fences do not extend South of fenceline at middle of property.

Photo 8 and 7 of cistern type well. Looking south and down. 9:30 am. W.L. ~ 35' deep in cistern.

Photo 6 and 5 looking west and down at deep well outlet. Photo 4 and 3 looking NW at cows grazing, not fill area but they are also kept next door on fill area

Panoramic #15 looking north from point ① on map.
Panoramic #14 9:40 looking due north at differential settlement and overall subsidence, trash tires and debris at surface but no proper cap.

Photos 2 and 1 at 9:50 looking ~~south~~ north at ③ and 4 at trench settlement

10:00 am now at fill area N. of Malakoff
10:15 camera #3 Photo slab looking west and buses from slab looking east. 24 & 23

09 010

Mark A. McDonnell Jean Koenigen
Fluor Daniel May 6, 1993

Photo 22 from slab N. to Drums past boats. 10:15

Panoramic #13 looking NE 10:15 am off edge of drop off some drums empty some full of solids leakers and see map.

Pan #12 10:30 looking ~~[illegible]~~ North m.m from point on map.

in critem.

Photo 21 to 16 successive photos of unknown oily/chemical sludge full of water orange/yellow color & route of entry see map location

Pan #11 10:45 looking N.E. N.m.m. at lower elevation stained area

Photo ~~14~~ ~~11:00~~ 10:45 m.m. looking West to Black Stained Area
Photo 13 ~~11:00~~ 10:45 m.m. looking east looking at 14 drums
photo 12, 11, 10 of drums
contents unknown.

9 photos left.

Pan #10 looking West Across entire Site. ~~11:00~~ 10:50 m.m. am.

Photo #9 ~~11:15~~ 11:00 m.m am looking S. at 10 drums.
Photo #8 of distillate drums & algae. (2)
looking N. 11:00.

09 011

Mark A. McDonnell Jean Koenigsberg
Floor Daniel May 6, 1993

Photo #7 11:05 am of fuel tank storage
and stained area black. Looking SE

Malakoff College Rd Site Done for now
Eat lunch & go By Don Herriages Office to
pick up his files.

12:40 Went by Don's Office to go through
files. Left them to be copied with
Secretary, took with us.

1:15 Waylon Padgett 677 6603 is fire chief to
contact per Don Herriage.

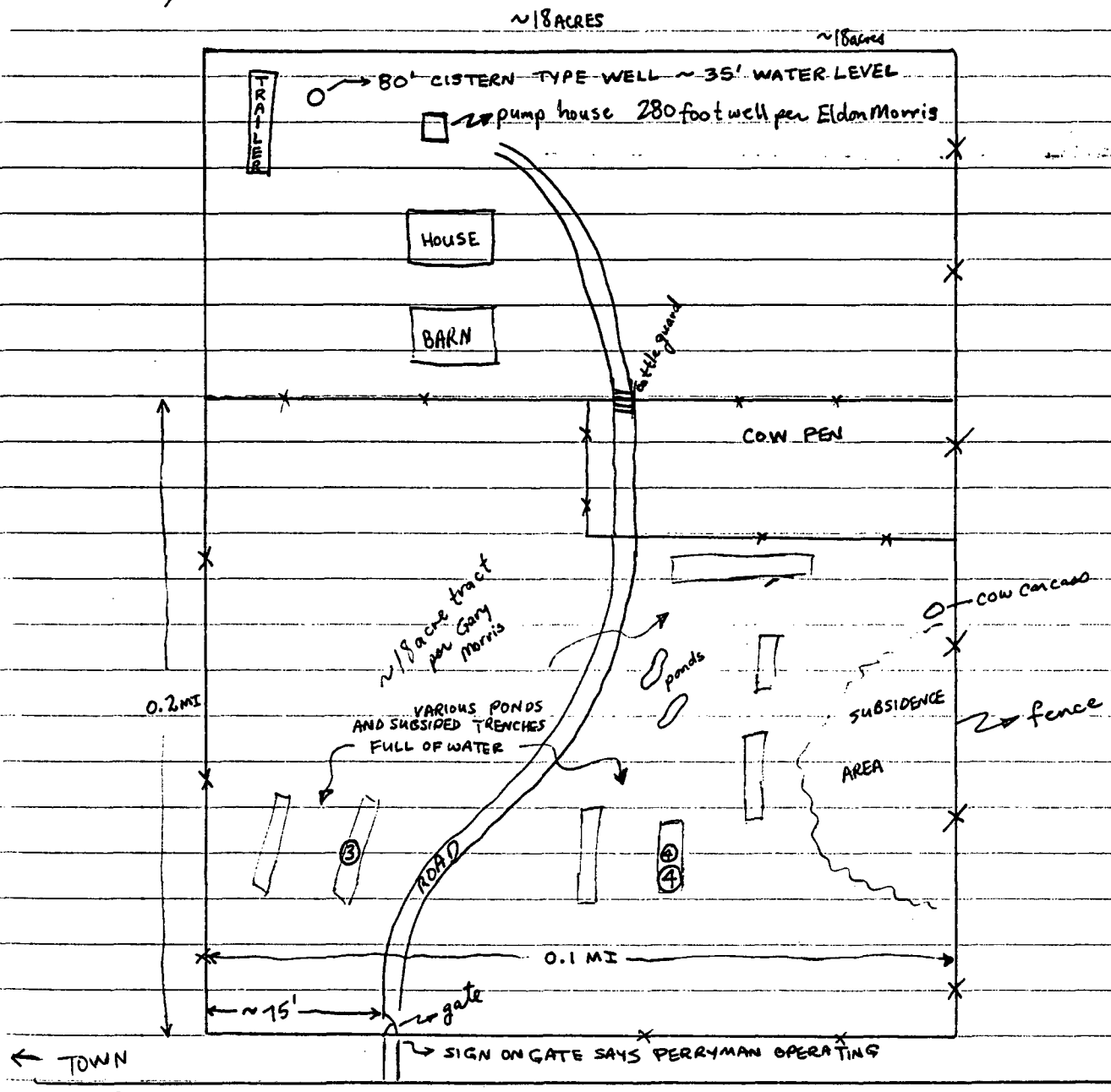
Need drawing City of Athens
Sanitary Landfill
Closure Plan
Phase II
Velvin & Weeks
June '89
JOB 1169

[illegible]

← TOWN
C

Mark A. McDonnell, Jean Koenigs
Fluor Daniel May 6, 1993 THUR

This is a sketch of Malakoff Rd-College St site ~~north~~ south of of Road. ③ ④ photolocations



09013

Mark A. McDonnell Jean Koenniger
May 6, 1993 Thur Athens Site Recons

675-8778 677-2668

Gary's Paint & Body

FOREIGN & DOMESTIC CARS
BOAT REPAIR

GARY MORRIS
OWNER

911 W. CORSICANA
ATHENS, TEXAS 75751

REFERENCE 10

10 001

TEXAS THREATENED AND ENDANGERED SPECIES
January, 1992

ANIMALS
In 1973 the Texas legislature authorized the Texas Parks and Wildlife Department to establish a list of endangered animals in the state. Endangered species are those species which the Executive Director of the Texas Parks and Wildlife Department has named as being "threatened with statewide extinction". Threatened species are those species which the TPW Commission has determined are likely to become endangered in the future. Laws and regulations pertaining to endangered or threatened animal species are contained in Chapters 67 and 68 of the Texas Parks and Wildlife (TPW) Code and Sections 65.171 - 65.184 of Title 31 of the Texas Administrative Code (T.A.C.).

PLANTS
In 1988 the Texas legislature authorized the Department to establish a list of threatened and endangered plant species for the state. An endangered plant is one that is "in danger of extinction throughout all or a significant portion of its range". A threatened plant is one which is likely to become endangered within the foreseeable future. Laws and regulations pertaining to endangered or threatened plant species are contained in Chapter 88 of the TPW Code and Sections 69.01 - 69.14 of the T.A.C.

REGULATIONS
TPWD regulations prohibit the taking, possessior transportation, or sale of any of the animal specie designated by state law as endangered or threate without the issuance of a permit. State laws an regulations prohibit commerce in threatened an endangered plants and the collection of listed plan species from public land without a permit issued b TPWD. In addition, some species listed as threatene or endangered under state law are also listed unde federal regulations. These animals are provide additional protection by the U.S. Fish and Wildli Service.

LISTING AND RECOVERY
Listing and recovery of endangered species in Texas i coordinated by the Resource Protection Division. Th Department's Legal Division is responsible for th issuance of permits for the handling of listed specie The following pages list those species which have bee designated as threatened or endangered in Texas. Th range of the species within the state can be reference by the map of Texas natural regions below:

COMMON NAME	SCIENTIFIC NAME	STATE STATUS	FEDERAL STATUS	ECOREGIONS OF OCCURRENCE
***REPTILES				
			10 002	
Turtles				
LOGGERHEAD SEA TURTLE	CARETTA CARETTA	E	LT	12
GREEN TURTLE	CHELONIA MYDAS	T	LT	12
HAWKSBILL SEA TURTLE	ERETMOCHELYS IMBRICATA	E	LE	12
HAWKSBILL SEA TURTLE	ERETMOCHELYS IMBRICATA IMBRICATA	E	LE	12
KEMP'S RIDLEY SEA TURTLE	LEPIDOCHELYS KEMPII	E	LE	12
ALLIGATOR SNAPPING TURTLE	MACROCLEMYS TEMMINCKII	T	C2	1-4
LEATHERBACK SEA TURTLE	DERMOCHELYS CORIACEA	E	LE	12
CHIHUAHUAN MUD TURTLE	KINOSTERNON HIRTIPES MURRAYI	E	C2	11
TEXAS TORTOISE	GOPHERUS BERLANDIERI	T		4-6
Lizards				
RETICULATED GECKO	COLEONYX RETICULATUS	T	3C	11
RETICULATE COLLARED LIZARD	CROTAPHYTUS RETICULATUS	T	C2	6
TEXAS HORNED LIZARD	PHRYNOSOMA CORNUTUM	T	C2	2-11
MOUNTAIN SHORT-HORNED LIZARD	PHRYNOSOMA DOUGLASSII HERNANDESI	T		11
Snakes				
NORTHERN SCARLET SNAKE	CEMOPHORA COCCINEA COPEI	T		1,4
TEXAS SCARLET SNAKE	CEMOPHORA COCCINEA LINERI	T		4-6
BLACK-STRIPED SNAKE	CONIOPHANES IMPERIALIS	T		6
INDIGO SNAKE	DRYMARCHON CORAIS	T		4-7
SPECKLED RACER	DRYMOBIUS MARGARITIFERUS	E		6
NORTHERN CAT-EYED SNAKE	LEPTODEIRA SEPTENTRIONALIS SEPTENTRIONALIS	E		4
BRAZOS WATER SNAKE	NERODIA HARTERI HARTERI	T	C2	2,9
CONCHO WATER SNAKE	NERODIA HARTERI PAUCIMACULATA	E	LT	8,9
SMOOTH GREEN SNAKE	OPHEODRYS VERNALIS	E		4
LOUISIANA PINE SNAKE	PITUOPHIS MELANOLEUCUS RUTHVENI	E	C2	1
BIG BEND BLACKHEAD SNAKE	TANTILLA RUBRA	T		7,11
TEXAS LYRE SNAKE	TRIMORPHODON BISCUTATUS VILKINSONI	T		11
TIMBER RATTLESNAKE	CROTALUS HORRIDUS	T		1-4
***AMPHIBIANS				
Salamanders				
SAN MARCOS SALAMANDER	EURYCEA NANA	T	LT	7
COMAL BLIND SALAMANDER	EURYCEA TRIDENTIFERA	T	C2	7
TEXAS BLIND SALAMANDER	TYPHLOMOLGE RATHBUNI	E	LE	7
BLANCO BLIND SALAMANDER	TYPHLOMOLGE ROBUSTA	E	C2	7
BLACK-SPOTTED NEWT	NOTOPHTHALMUS MERIDIONALIS	E	C2	4,5,6
RIO GRANDE LESSER SIREN	SIREN INTERMEDIA TEXANA	E	C2	4,5,6
Frogs				
HOUSTON TOAD	BUFO HOUSTONENSIS	E	LE	2,4
MEXICAN TREEFROG	SMILISCA BAUDINII	T		6
WHITE-LIPPED FROG	LEPTODACTYLUS FRAGILIS	E		6
SHEEP FROG	HYPOPACHUS VARIOLOSUS	T		5,6
MEXICAN BURROWING TOAD	RHINOPHRYNUS DORSALIS	T		6
***FISHES				
Large River Fish				
SHOVELNOSE STURGEON	SCAPHIRHYNCHUS PLATORYNCHUS	E		1
PADDLEFISH	POLYODON SPATHULA	E	C2	1
Minnows				
MEXICAN STONEROLLER	CAMPOSTOMA ORNATUM	T	C2	11
DEVIL'S RIVER MINNOW	DIONDA DIABOLI	T	PT	7
RIO GRANDE CHUB	GILA PANDORA	T		11
CHIHUAHUA SHINER	NOTROPIS CHIHUAHUA	T	C2	11
BLUEHEAD SHINER	NOTROPIS HUBBSI	T		1
BLUNTNOSE SHINER	NOTROPIS SIMUS	E		(11)*
PHANTOM SHINER	NOTROPIS ORCA	E	3A	(6,7,11)
PROSERPINE SHINER	CYPRINELLA PROSERPINA	T	C2	7,11
Suckers				
BLUE SUCKER	CYCLEPTUS ELONGATUS	T	C2	1-4,6,7
CREEK CHUBSUCKER	ERIMYZON OBLONGUS	T		1
Catfish				
WIDEMOUTH BLINDCAT	SATAN EURYSTOMUS	T	C2	7
TOOTHLESS BLINDCAT	TROGLOGLANIS PATTERSONI	T	C2	7
Killifishes				
LEON SPRINGS PUPFISH	CYPRINODON BOVINUS	E	LE	11
COMANCHE SPRINGS PUPFISH	CYPRINODON ELEGANS	E	LE	11
CONCHOS PUPFISH	CYPRINODON EXIMIUS	T	C2	11
PECOS PUPFISH	CYPRINODON PECOSENSIS	T	C1	11

COMMON NAME	SCIENTIFIC NAME	STATE STATUS	FEDERAL STATUS	ECOREGIONS OF OCCURRENCE
				10 & 003
***MAMMALS				
Bats				
MEXICAN LONG-NOSED BAT	LEPTONYCTERIS NIVALIS	E	LE	11
SOUTHERN YELLOW BAT	LASIURUS EGA	T		6
SPOTTED BAT	EUDERMA MACULATUM	T	C2	11
EASTERN BIG-EARED BAT	PLECOTUS RAFINESQUII	T	C2	1
Rodents				
TEXAS KANGAROO RAT	DIPODOMYS ELATOR	T	C2	9
COUE'S RICE RAT	ORYZOMYS COUESI	T	C2	6
PALO DURO MOUSE	PEROMYSCUS TRUEI COMANCHE	T	C2	10
Marine Mammals				
GERVAIS' BEAKED WHALE	MESOPLODON EUROPAEUS	T		12
GOOSE-BEAKED WHALE	ZIPHIUS CAVIROSTRIS	T		12
PYGMY SPERM WHALE	KOGIA BREVICEPS	T		12
DWARF SPERM WHALE	KOGIA SIMUS	T		12
SPERM WHALE	PHYSETER CATODON	E	LE	12
ATLANTIC SPOTTED DOLPHIN	STENELLA PLAGIODON	T		12
ROUGH-TOOTHED DOLPHIN	STENO BREDANENSIS	T		12
KILLER WHALE	ORCINUS ORCA	T		12
FALSE KILLER WHALE	PSEUDORCA CRASSIDENS	T		12
SHORT-FINNED PILOT WHALE	GLOBICEPHALA MACRORHYNCHUS	T		12
PYGMY KILLER WHALE	PERESA ATTENUATA	T		12
FINBACK WHALE	BALAENOPTERA PHYSALUS	E	LE	12
BLUE WHALE	BALAENOPTERA MUSCULUS	E	LE	12
BLACK RIGHT WHALE	EUBALAENA GLACIALIS	E	LE	12
MANATEE	TRICHECHUS MANATUS	E	LE	(4,12)
Carnivores				
RED WOLF	CANIS RUFUS	E	LE	(1-4,7)**
GRAY WOLF	CANIS LUPUS	E	LE	(6-11)
MEXICAN WOLF	CANIS LUPUS BAILEYI	E	LE	(11)
BLACK BEAR	URSUS AMERICANUS	E		(1,2,4,6-8),11
LOUISIANA BLACK BEAR	URSUS AMERICANUS LUTEOLUS	E	LT	(1)
COATI	NASUA NASUA	E		4,6,7,11
BLACK-FOOTED FERRET	MUSTELA NIGRIPES	E	LE	(9-11)**
OCELOT	FELIS PARDALIS	E	LE	(4),6
MARGAY	FELIS WIEDII	E	LE	(6)
JAGUARUNDI	FELIS YAGOUAROUNDI	E	LE	(4),6
JAGUAR	PANTHERA ONCA	E	LE	(6,11)
***BIRDS				
Waterbirds				
BROWN PELICAN	PELECANUS OCCIDENTALIS	E	LE	4
REDDISH EGRET	EGRETTA RUFESCENS	T	C2	4
WHITE-FACED IBIS	PLEGADIS CHIHI	T	C2	2-11
WOOD STORK	MYCTERIA AMERICANA	T		1,2,4,6
WHOOPING CRANE	GRUS AMERICANA	E	LE	4
Raptors				
AMERICAN SWALLOW-TAILED KITE	ELANOIDES FORFICATUS	T	3C	1,4
BALD EAGLE	HALIAEETUS LEUCOCEPHALUS	E	LE	1-4,7-11
COMMON BLACK-HAWK	BUTEOGALLUS ANTHRACINUS	T		6,11
NORTHERN GRAY HAWK	BUTEO NITIDUS MAXIMUS	T	C2	6
WHITE-TAILED HAWK	BUTEO ALBICAUDATUS	T		4-6
ZONE-TAILED HAWK	BUTEO ALBONOTATUS	T		6,7
NORTHERN APLOMADO FALCON	FALCO FEMORALIS SEPTENTRIONALIS	E	LE	6
AMERICAN PEREGRINE FALCON	FALCO PEREGRINUS ANATUM	E	LE	7-11
ARCTIC PEREGRINE FALCON	FALCO PEREGRINUS TUNDRIUS	T	LT	4
FERRUGINOUS PYGMY-OWL	GLAUCIDIUM BRASILIANUM	T	C2	6
Shorebirds				
PIPING PLOVER	CHARADRIUS MELODUS	T	LT	4
ESKIMO CURLEW	NUMENIUS BOREALIS	E	LE	4
ROSEATE TERN	STERNA DOUGALLII		LT	4
INTERIOR LEAST TERN	STERNA ANTILLARUM ATHALASSOS	E	LE	6,9
SOOTY TERN	STERNA FUSCATA	T		4
Upland Birds				
ATTWATER'S PRAIRIE-CHICKEN	TYMPANUCHUS CUPIDO ATTWATERI	E	LE	4
Woodpeckers				
RED-COCKADED WOODPECKER	PICOIDES BOREALIS	E	LE	1
IVORY-BILLED WOODPECKER	CAMPEPHILUS PRINCIPALIS	E	LE	(1)
Songbirds				
NORTHERN BEARDLESS-TYRANNULET	CAMPTOSTOMA IMBERBE	T		6
ROSE-THROATED BECARD	PACHYRAMPHUS AGLAIAE	T		6
BLACK-CAPPED VIREO	VIREO ATRICAPILLUS	E	LE	7,11
BACHMAN'S WARBLER	VERMIVORA BACHMANII		LE	(1)
TROPICAL PARULA	PARULA PITIAYUMI NIGRILORA	T	C2	6
GOLDEN-CHEEKED WARBLER	DENDROICA CHRYSOPARIA	E	LE	7
BACHMAN'S SPARROW	AIMOPHILA AESTIVALIS	T	C2	1
TEXAS BOTTERI'S SPARROW	AIMOPHILA BOTTERII TEXANA	T	C2	4

COMMON NAME	SCIENTIFIC NAME	STATE STATUS	FEDERAL STATUS	ECOREGIONS OF OCCURRENCE
(Fishes, cont.)				
Livebearers				
BIG BEND GAMBUSIA	GAMBUSIA GAIGEI	E	LE	11
SAN MARCOS GAMBUSIA	GAMBUSIA GEORGEI	E	LE	(7)*
CLEAR CREEK GAMBUSIA	GAMBUSIA HETEROCHIR	E	LE	8
PECOS GAMBUSIA	GAMBUSIA NOBILIS	E	LE	11
BLOTCHED GAMBUSIA	GAMBUSIA SENILIS	E	C2	(7,11)**
Perches				
FOUNTAIN DARTER	ETHEOSTOMA FONTICOLA	E	LE	7
RIO GRANDE DARTER	ETHEOSTOMA GRAHAMI	T	C2	7,11
BLACKSIDE DARTER	PERCINA MACULATA	T		1
Coastal Fishes				
OPPOSUM PIPEFISH	MICROPHIS BRACHYURUS	T		12
RIVER GOBY	AWAOUS TAJASICA	T		4,6,12
BLACKFIN GOBY	GOBIONELLUS ATRIPINNIS	E		6,12
***INVERTEBRATES				
Spiders				
TOOTH CAVE PSEUDOSCORPION	MICROCREAGRIS TEXANA		LE	7
TOOTH CAVE SPIDER	NEOLEPTONETA MYOPICA		LE	7
BEE CREEK CAVE HARVESTMAN	TEXELLA REDDELLI		LE	7
Insects				
TOOTH CAVE GROUND BEETLE	RHADINE PERSEPHONE		LE	7
KRETSCHMARR CAVE MOLD BEETLE	TEXAMAUROPS REDDELLI		LE	7
TOOTH CAVE BLIND ROVE BEETLE	CYLINDROPSIS SP 1		LE	7
***PLANTS				
Cacti				
TOBUSCH FISHHOOK CACTUS	ANCISTROCACTUS TOBUSCHII	E	LE	7
NELLIE CORY CACTUS	CORYPHANTHA MINIMA	E	LE	11
BUNCHED CORY CACTUS	CORYPHANTHA RAMILLOSA	T	LT	11
SNEED PINCUSHION CACTUS	CORYPHANTHA SNEEDII VAR SNEEDII	E	LE	11
LLOYD'S HEDGEHOG CACTUS	ECHINOCEREUS LLOYDII	E	LE	11
BLACK LACE CACTUS	ECHINOCEREUS REICHENBACHII VAR ALBERTII	E	LE	4-6
DAVIS' GREEN PITAYA	ECHINOCEREUS VIRIDIFLORUS VAR DAVISII	E	LE	11
CHISOS HEDGEHOG CACTUS	ECHINOCEREUS CHISOENSIS VAR CHISOENSIS	T	LT	11
LLOYD'S MARIPOSA CACTUS	NEOLLOYDIA MARIPOSENSIS	T	LT	11
Trees, Shrubs, and Sub-shrubs				
HINCKLEY'S OAK	QUERCUS HINCKLEYI	T	LT	11
JOHNSTON'S FRANKENIA	FRANKENIA JOHNSTONII	E	LE	6
TEXAS SNOWBELLS	STYRAX TEXANA	E	LE	7
Wildflowers				
ASHY DOGWEED	THYMOPHYLLA TEPHROLEUCA	E	LE	6
PRAIRIE DAWN	HYMENOXYS TEXANA	E	LE	4
TERLINGUA CREEK CAT'S-EYE	CRYPTANTHA CRASSIPES		LE	11
WHITE BLADDERPOD	LESQUERELLA PALLIDA	E	LE	1
WALKER'S MANIOC	MANIHOT WALKERAE		LE	6
SLENDER RUSH-PEA	HOFFMANNSEGGIA TENELLA	E	LE	4,6
MCKITTRICK PENNYROYAL	HEDEOMA APICULATUM	T	LT	11
TEXAS POPPY-MALLOW	CALLIRHOE SCABRIUSCULA	E	LE	9
LARGE-FRUITED SAND VERBENA	ABRONIA MACROCARPA	E	LE	2
TEXAS TRAILING PHLOX	PHLOX NIVALIS SSP TEXENSIS		LE	1
Grasses and Grass-like Plants				
TEXAS WILD-RICE	ZIZANIA TEXANA	E	LE	7
LITTLE AGUJA PONDWEED	POTAMOGETON CLYSTOCARPUS		LE	11
Orchids				
NAVASOTA LADIES'-TRESSES	SPIRANTHES PARKSII	E	LE	1-2

10 004

KEY:

State Status - E=Endangered, T=Threatened
Federal Status - LE=Listed Endangered, LT=Listed Threatened
PE=Proposed Endangered, PT=Proposed Threatened
C1=Candidate Species (category 1 - awaiting listing)
C2=Candidate Species (category 2 - awaiting more information)
3A=Removed from list due to extinction
3B=Removed from list due to taxonomic change
3C=Removed from list because of abundance
Ecoregion - ( )=Species extirpated from ecoregion
*=Species extinct
**=Species extinct in the wild (except some experimental populations)

In 1983, the Texas Legislature created the Special Nongame and Endangered Species Conservation Fund. This fund may be used for nongame wildlife and endangered species research and conservation, habitat acquisition and development, and dissemination of information pertaining to these species. Money for the fund is obtained through private donations and sale of nongame wildlife art prints, decals and stamps. For more information on the fund or endangered species call 1-800-792-1112 or 512-448-4311.

REFERENCE 11

11 001

FLUOR DANIEL

CALCULATIONS and SKETCHES

DATE 6/27/94
CONT. NO. 066.35324
BY McDonnell CHK'D
SHEET NO. 1

ATHENS MALAKOFF ROAD

SURFACE WATER PATHWAY

ATTACHED MAP: MALLARD HILL QUADRANGLE

TEXAS HENDERSON COUNTY

7.5 MINUTE SERIES TOPOGRAPHIC

U.S. DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

1984 SCALE 1:24,000

Surface water flows by overland flow over the site into an intermittent unnamed creek along the east side of the landfill. Water flows north 1/4 mile to Walnut Creek. WC is an intermittent stream which flows WSW for over 7 miles.

Ref. Mallard Hill TOPO

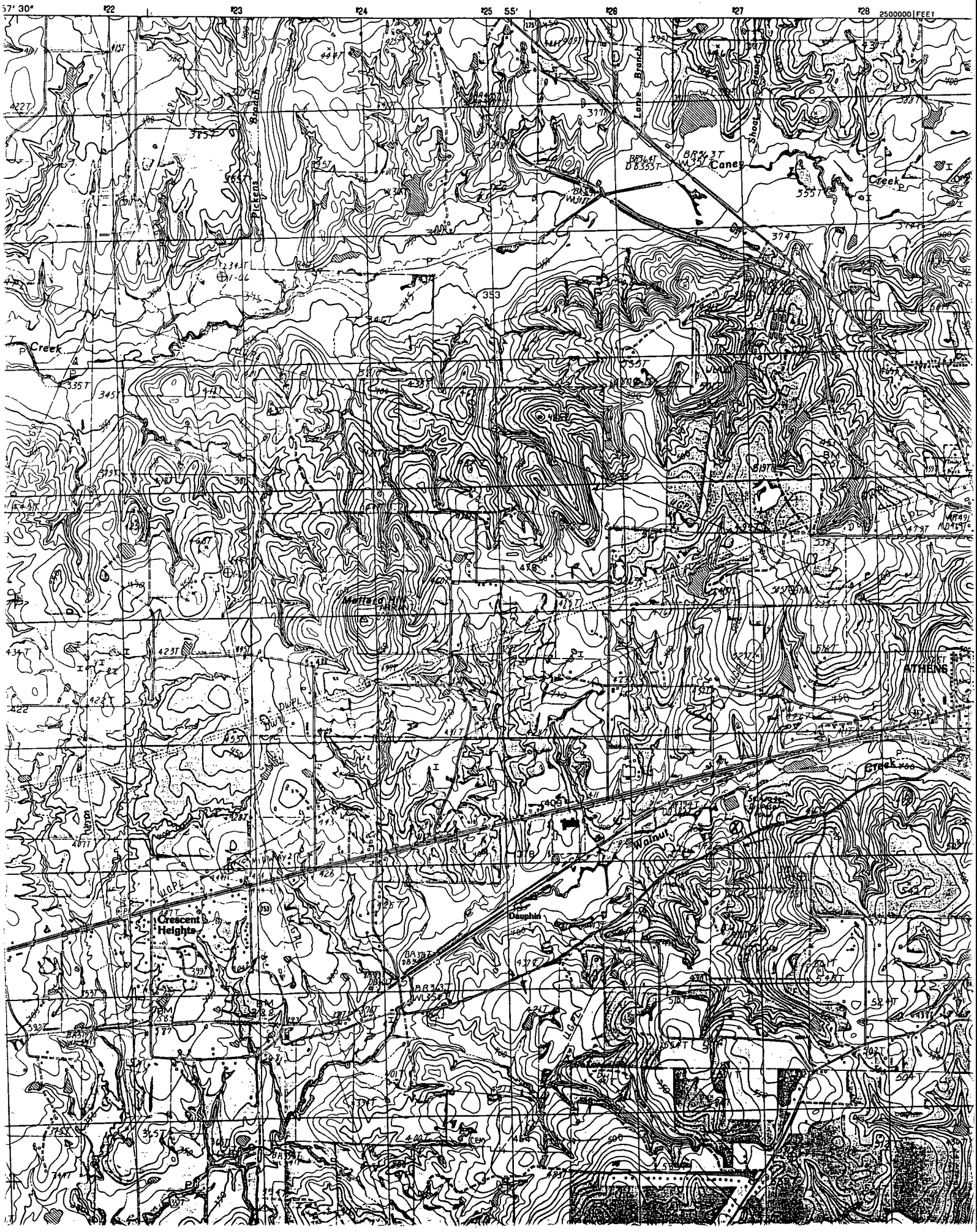
MW	gals/mol
16	C_1 6.40
30	C_2 9.67
44	C_3 10.44
58	iC_4 12.40
58	C_4 11.95
72	iC_5 13.88
72	C_5 13.74
86	iC_6 15.5
86	C_6 15.59
100	iC_7 17.2
100	C_7 17.49
114	C_8 19.41
28	$C_2^=$ 9.64
42	$C_3^=$ 9.67

MISC

MW	gals/mol
44	CO_2 8.47
34	H_2S 5.18
28	N_2 4.16
2	H_2 3.38

FORM E-050 REV. 6/88
PRINTED IN U.S.A.

MALLARD HILL QUADRANG
TEXAS–HENDERSON CO
7.5 MINUTE SERIES (TOPOGR



REFERENCE 12

A Statistical Abstract Supplement

12 001

County and City Data Book

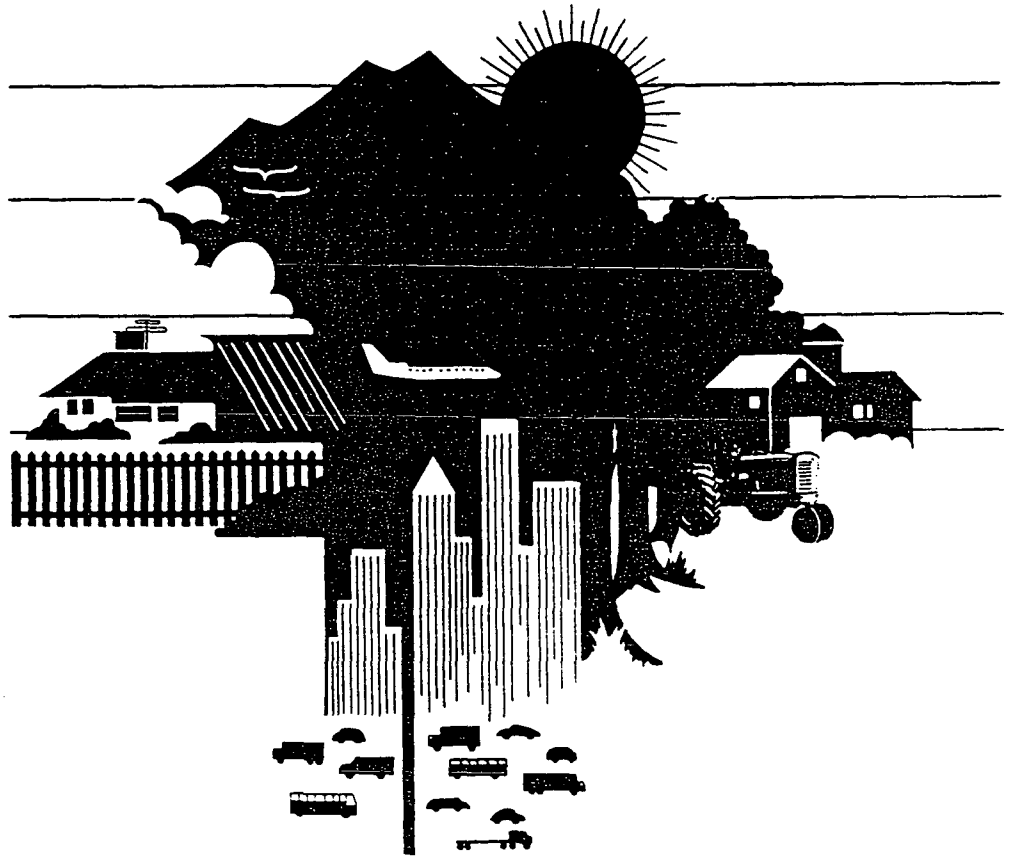
1988

States

Counties

Cities of 25,000 or More

Places of 2,500 or More



U.S. Department of Commerce

C. William Verity, Secretary
Donna C. Tuttle, Deputy Secretary
Robert Ortner, Under Secretary for Economic Affairs

BUREAU OF THE CENSUS
John G. Keane, Director

12 002

County	Population characteristics—Con.												Households					
	1984—Con.									1980			1985			1980		
	Percent—									Percent—							Percent—	
	Under 5 years	5 to 14 years	15 to 24 years	25 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 to 74 years	75 years and over	American Indian, Eskimo, and Aleut	Asian and Pacific Islander	Hispanic[1]	Number	Percent change, 1980-1985	Persons per household	Number	Female family householder[2]	One-person[3]
	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
TEXAS—Con.																		
Falls	S	S	S	S	S	S	S	S	S	.14	.12	9.42	6 800	-1.8	2.53	6 920	10.6	29.5
Fannin	6.9	14.2	11.9	11.5	12.0	10.0	11.7	12.0	9.9	.25	.11	1.33	9 300	.8	2.54	9 267	6.8	25.2
Fayette	S	S	S	S	S	S	S	S	S	.14	.06	5.14	7 900	5.4	2.56	7 487	5.7	26.0
Fisher	S	S	S	S	S	S	S	S	S	.17	.10	18.79	2 100	-4.7	2.67	2 204	4.4	23.9
Floyd	S	S	S	S	S	S	S	S	S	.23	.12	33.89	3 100	-6.4	2.88	3 307	5.2	20.4
Foard	S	S	S	S	S	S	S	S	S	.19	.09	11.03	700	-14.4	2.48	860	7.1	28.0
Fort Bend	10.9	18.4	13.0	25.0	16.2	7.4	5.1	2.5	1.5	.21	2.85	20.37	57 600	44.5	3.15	39 840	6.8	12.0
Franklin	S	S	S	S	S	S	S	S	S	.26	.15	1.13	2 700	4.0	2.59	2 616	5.0	22.0
Freestone	S	S	S	S	S	S	S	S	S	.15	.24	2.03	6 400	14.9	2.58	5 608	8.3	26.0
Frio	S	S	S	S	S	S	S	S	S	.17	.12	68.39	4 100	1.6	3.48	4 041	10.4	18.1
Gaines	S	S	S	S	S	S	S	S	S	.23	.13	30.63	4 500	8.0	3.23	4 190	5.0	16.9
Galveston	8.4	15.1	16.9	18.5	13.1	9.9	8.9	5.7	3.4	.27	.90	12.02	77 400	11.7	2.72	69 284	10.5	21.3
Garza	S	S	S	S	S	S	S	S	S	.41	.24	24.33	1 900	5.3	2.80	1 842	7.7	19.7
Gillespie	S	S	S	S	S	S	S	S	S	.14	.03	10.04	6 200	18.0	2.44	5 219	5.5	22.3
Glasscock	S	S	S	S	S	S	S	S	S	.15	.08	28.83	400	-9.3	3.48	387	2.1	15.2
Goliad	S	S	S	S	S	S	S	S	S	.08	.08	35.61	1 900	8.5	2.91	1 777	6.2	20.4
Gonzales	S	S	S	S	S	S	S	S	S	.08	.07	28.80	6 600	10.9	2.78	5 949	9.1	24.7
Gray	9.8	13.3	14.2	15.1	11.7	10.5	10.3	8.7	6.3	.59	.33	4.41	10 500	3.1	2.53	10 224	5.8	22.7
Grayson	7.4	14.6	14.5	15.1	13.2	9.4	10.3	8.7	6.8	.70	.21	1.50	36 800	8.4	2.56	33 972	8.3	23.2
Gregg	8.5	15.2	16.6	17.3	13.1	9.4	8.8	6.4	4.7	.36	.39	2.02	41 200	14.7	2.67	35 884	9.0	21.8
Grimes	S	S	S	S	S	S	S	S	S	.03	.10	9.07	5 800	20.3	2.86	4 857	11.5	23.8
Guadalupe	7.6	15.7	16.0	15.9	14.1	10.1	9.2	6.7	4.6	.24	.45	25.42	19 000	21.1	2.83	15 733	8.3	18.4
Hale	9.8	17.2	17.0	14.3	11.5	10.0	8.2	7.0	5.0	.24	.26	33.74	12 400	.5	2.91	12 385	6.9	18.9
Hall	S	S	S	S	S	S	S	S	S	.13	.07	15.05	2 000	-7.2	2.36	2 175	4.9	27.8
Hamilton	S	S	S	S	S	S	S	S	S	.16	.19	2.13	3 300	-4.7	2.34	3 423	4.8	27.1
Hansford	S	S	S	S	S	S	S	S	S	.40	.24	11.95	2 400	6.0	2.71	2 269	4.8	20.9
Hardeman	S	S	S	S	S	S	S	S	S	.44	.08	8.01	2 400	-2.7	2.62	2 476	6.1	27.0
Hardin	8.7	17.5	14.4	17.2	13.2	9.6	8.9	6.4	4.1	.10	.09	1.40	14 700	7.2	2.89	13 727	7.4	18.6
Harris	8.8	14.9	18.4	22.9	14.0	8.6	6.5	3.6	2.2	.22	1.92	15.32	1 035 800	19.1	2.67	869 882	10.0	24.3
Harrison	9.1	16.9	14.7	15.3	13.5	9.1	8.6	7.3	5.5	.18	.12	1.53	19 900	10.5	2.83	18 049	10.7	21.6
Hartley	S	S	S	S	S	S	S	S	S	.20	.03	4.46	1 300	-6.4	2.73	1 361	3.9	14.6
Haskell	S	S	S	S	S	S	S	S	S	.22	.16	15.47	2 900	-3.6	2.48	2 981	5.0	24.1
Hays	6.4	13.3	32.6	15.1	10.8	7.0	7.1	4.7	2.9	.20	.30	30.51	18 700	48.4	2.78	12 583	6.9	20.1
Hemphill	S	S	S	S	S	S	S	S	S	.49	.11	10.28	1 800	-3.6	2.94	1 837	4.5	18.7
Henderson	6.8	13.8	13.4	12.0	11.6	11.2	14.8	10.8	5.6	.22	.14	1.45	20 000	24.1	2.57	16 087	6.8	20.3
Hidalgo	9.6	21.6	17.9	15.1	11.4	8.0	7.8	5.4	3.2	.10	.15	81.28	99 800	31.6	3.54	75 816	12.1	13.3
Hill	7.8	13.7	13.0	12.5	11.0	9.4	11.9	11.9	8.8	.18	.16	5.65	10 500	8.9	2.52	9 683	7.3	26.1
Hockley	11.2	19.2	17.4	16.0	12.1	7.5	6.7	6.2	3.6	.31	.05	27.03	7 800	4.4	3.11	7 522	5.7	17.5
Hood	7.3	13.8	13.0	16.1	12.2	10.8	12.9	9.4	4.5	.34	.20	2.68	9 700	43.6	2.60	6 759	5.0	17.2
Hopkins	8.1	14.3	15.2	14.8	13.2	8.6	9.6	9.4	6.8	.14	.11	1.57	10 900	14.2	2.60	9 528	7.5	22.3
Houston	7.7	13.6	12.7	15.6	11.4	10.9	10.1	10.1	7.8	.16	.11	3.63	7 500	4.7	2.62	7 204	10.6	24.9
Howard	7.8	15.4	16.3	13.3	12.2	11.2	12.5	6.9	4.6	.36	.49	21.05	13 300	11.4	2.62	11 965	7.8	21.9
Hudspeth	S	S	S	S	S	S	S	S	S	.44	.15	58.25	700	-9.9	3.41	822	7.9	15.0
Hunt	7.6	14.3	17.2	14.4	13.1	10.4	9.5	7.8	5.6	.31	.28	2.39	24 600	20.8	2.58	20 331	7.7	23.8
Hutchinson	9.8	15.4	13.1	18.4	11.1	9.3	10.3	8.2	4.3	.83	.33	4.80	10 200	3.4	2.72	9 837	4.8	20.0
Irion	S	S	S	S	S	S	S	S	S	.14	-	18.54	700	36.8	2.82	507	4.5	22.1
Jack	S	S	S	S	S	S	S	S	S	.45	.18	1.31	2 900	-.1	2.61	2 894	4.7	23.7
Jackson	S	S	S	S	S	S	S	S	S	.08	.04	18.68	4 600	-.8	2.88	4 685	8.0	20.7
Jasper	8.1	17.3	14.6	13.8	12.4	9.8	9.9	8.3	5.8	.10	.07	1.24	11 100	4.0	2.87	10 708	8.1	19.5
Jeff Davis	S	S	S	S	S	S	S	S	S	.18	.06	47.18	600	5.9	2.79	592	5.9	22.0
Jefferson	8.5	14.5	17.4	16.8	11.5	9.6	10.0	7.0	4.7	.18	1.06	4.10	91 700	1.6	2.71	90 245	10.6	22.2
Jim Hogg	S	S	S	S	S	S	S	S	S	-	.02	90.54	1 600	1.9	3.41	1 564	11.9	14.9
Jim Wells	10.6	19.0	16.3	15.7	11.6	8.5	8.3	6.4	3.6	.10	.11	67.18	12 300	10.2	3.25	11 165	9.4	16.1
Johnson	8.5	16.9	15.3	16.3	15.2	9.1	7.9	6.0	4.8	.19	.20	4.10	29 900	29.2	2.89	23 122	6.7	17.2
Jones	S	S	S	S	S	S	S	S	S	.24	.34	14.66	6 800	6.4	2.62	6 367	6.4	23.7
Karnes	S	S	S	S	S	S	S	S	S	.07	.12	42.99	4 400	-3.2	3.00	4 522	9.2	20.6
Kaufman	8.2	16.7	13.3	15.9	13.4	10.5	8.5	7.8	5.8	.17	.22	4.24	16 700	26.9	2.84	13 154	9.5	20.6
Kendall	S	S	S	S	S	S	S	S	S	.24	.19	13.22	5 000	32.7	2.67	3 801	6.4	20.1
Kenedy	S	S	S	S	S	S	S	S	S	.74	-	82.87	200	13.1	3.18	169	3.6	18.9
Kent	S	S	S	S	S	S	S	S	S	-	.09	7.77	400	1.9	2.60	431	3.0	20.4
Kerr	6.6	11.8	11.9	12.4	10.3	10.0	13.3	13.8	9.8	.22	.23	13.47	13 800	23.6	2.42	11 171	7.2	23.6
Kimble	S	S	S	S	S	S	S	S	S	.05	.02	17.40	1 700	10.9	2.39	1 564	7.0	24.1
King	S	S	S	S	S	S	S	S	S	.24	-	9.65	100	-5.6	2.75	154	2.6	20.8
Kinney	S	S	S	S	S	S	S	S	S	.53	.13	57.48	800	7.9	2.90	771	7.5	21.0
Kleberg	9.7	16.3	23.1	18.4	9.7	8.2	7.1	4.4	3.1	.22	1.41	52.19	11 000	7.3	2.95	10 280	9.3	19.3
Knox	S	S	S	S	S	S	S	S	S	.11	.08	17.70	2 100	4.5	2.52	2 042	6.5	24.2
Lamar	7.1	15.3	16.5	12.0	13.4	9.2	10.1	9.3	7.1	.51	.22	.90	16 800	6.7	2.62	15 710	9.6	24.5
Lamb	S	S	S	S	S	S	S	S	S	.29	.10	30.39	5 800	-9.0	2.88	6 408	6.2	19.8
Lampasas	S	S	S	S	S	S	S	S	S	.24	.84	10.70	5 400	22.9	2.50	4 414	7.0	23.1
La Salle	S	S	S	S	S	S	S	S	S	.07	.11	73.70	1 900	11.0	2.96	1 726	10.6	20.8
Lavaca	S	S	S	S	S	S	S	S	S	.17	.18	6.92	6 800	-5.0	2.66	7 150	6.9	25.1
Lee	S	S	S	S	S	S	S	S	S	.24	.18	6.02	4 700	21.4	2.77	3 856	6.3	22.8

[1]Hispanic persons may be of any race. [2]No spouse present. [3]Householder living alone.

REFERENCE 13

13001

COVERAGE

STATE	COUNTY	STATE NAME	COUNTY NAME
48	213	Texas	Henderson Co

CENTER POINT AT STATE : 48 Texas

COUNTY : 213 Henderson Co

REGION OF THE COUNTRY

Zipcode found: 75751 at a distance of 4.3 Km

STATE	CITY NAME	FIPSCODE	LATITUDE	LONGITUDE
TX	ATHENS	48213	32:11:30	95:53:45

13 002

CENSUS DATA

Athens City Landfill (Malakoff Road)

LATITUDE 32:11:30 LONGITUDE 95:53:45 1990 POPULATION

MI	0.00-0.25	0.25-0.50	0.50-1.00	1.00-2.00	2.00-3.00	3.00-4.00	SECTOR TOTALS
S 1	0	0	0	0	0	0	0
S 2	0	0	43	4,214	1,765	5,470	11,492
S 3	0	0	0	0	0	0	0
S 4	0	0	0	0	0	0	0
RING TOTALS	0	0	43	4,214	1,765	5,470	11,492

STAR STATION

WBAN NUMBER	STATION NAME	LATITUDE	LONGITUDE	PERIOD OF RECORD	DISTANCE (km)
13972	TYLER/POUNDS TX	32.3667	95.4000	1950-1954	50.5
13960	DALLAS/LOVE TX	32.8500	96.8500	1967-1971	115.5
03927	FT WORTH/REGIONAL TX	32.9000	97.0333	1957-1971	132.4
13959	WACO TX	31.6167	97.2167	1969-1973	140.0
93987	LUFKIN/ANGELINA CO TX	31.2333	94.7500	1967-1971	151.9
13923	SHERMAN/PERRIN TX	33.7167	96.6667	1966-1976	184.0
13957	SHREVEPORT LA	32.4667	93.8167	1970-1974	197.6

13003

U.S. SOIL DATA

STATE : TEXAS

LATITUDE : 32:11:30 LONGITUDE : 95:53:45

THE STATION IS INSIDE H.U. 12030107

GROUND WATER ZONE	:	10			
RUNOFF SOIL TYPE	:	2			
EROSION	:	1.1210E-03			CM/MONTH
DEPTH TO GROUND WATER BETWEEN	:	3.0480E+02	AND	1.5240E+03	
FIELD CAPACITY FOR TOP SOIL	:	7.2000E-02			
EFFECTIVE POROSITY BETWEEN	:	2.0000E-02	AND	3.0000E-01	
SEEPAGE TO GROUNDWATER BETWEEN	:	4.6330E+03	AND	1.3900E+04	CM/MONTH
DISTANCE TO DRINKING WELL	:	2.8000E+04			CM

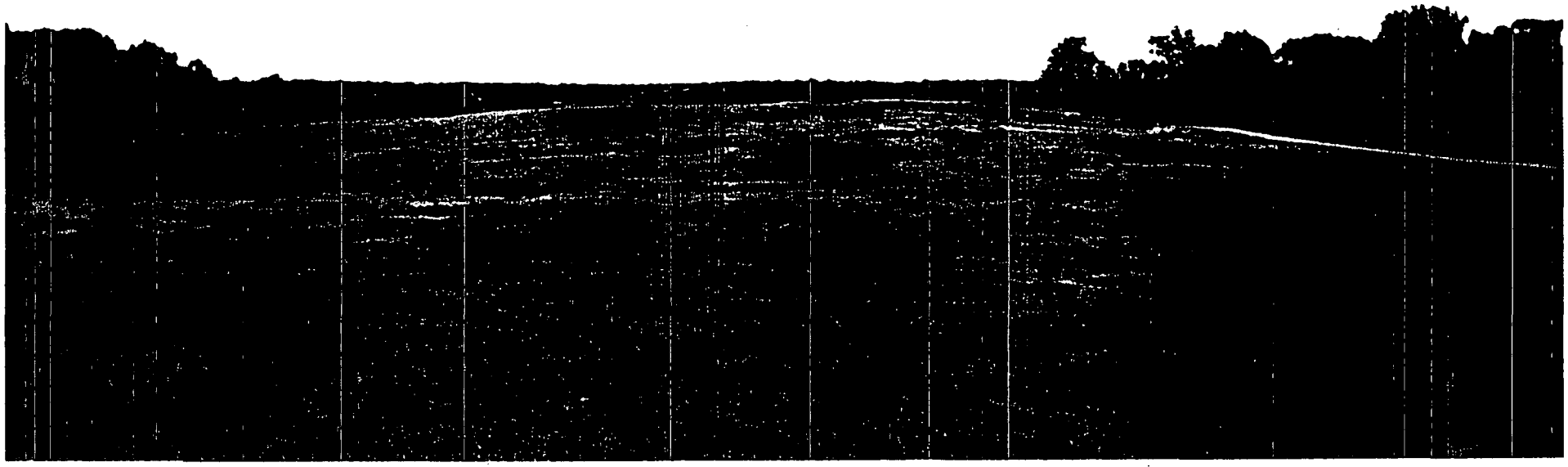
13004

U.S. CITY

STATE	PLACE NAME	FIPSCODE	LATITUDE	LONGITUDE
TX	ATHENS	48213	32:11:30	95:53:45

1305

REFERENCE 14



Panoramic Photograph Number 14 looking north at grass cover of south half of Athens Landfill, Malakoff Road. Photo taken on May 6, 1993 at 9:40 a.m. by Mr. Mark McDonnell of Fluor Daniel, Inc. and witnessed by Ms. Jean Koeninger of Fluor Daniel, Inc.

14 001

Site Name: City of Athens Landfill CERCLIS #980626352

Photographer/Witness Mark A. McDonnell/Jean Koeninger

Date May 6, 1993 Time 9:40 a.m. Direction North

Description Southern half of the site. View of former landfill area exhibiting differential settlement of trenches and water ponding.

Page 6

Pull to Open

Pull to Open

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Athens Landfill #2
(Malakoff Road)
TXD 980062352
PREscore

CAUTION
FLOPPY DISK ENCLOSED
Do not bend or fold
AVOID EXPOSURE TO ALL MAGNETIC FIELDS

from KEITH WESTBERRY
FLUOR DANIEL, INC.
12750 MERIT DR., Suite 300, LB-169
DALLAS, TX 75251

FIRST CLASS MAIL

to LONNIE ROSS (USEPA Region VI)

PRE SCORE FOR ATHENS CITY LF #2

FLOPPY DISK MAILER

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