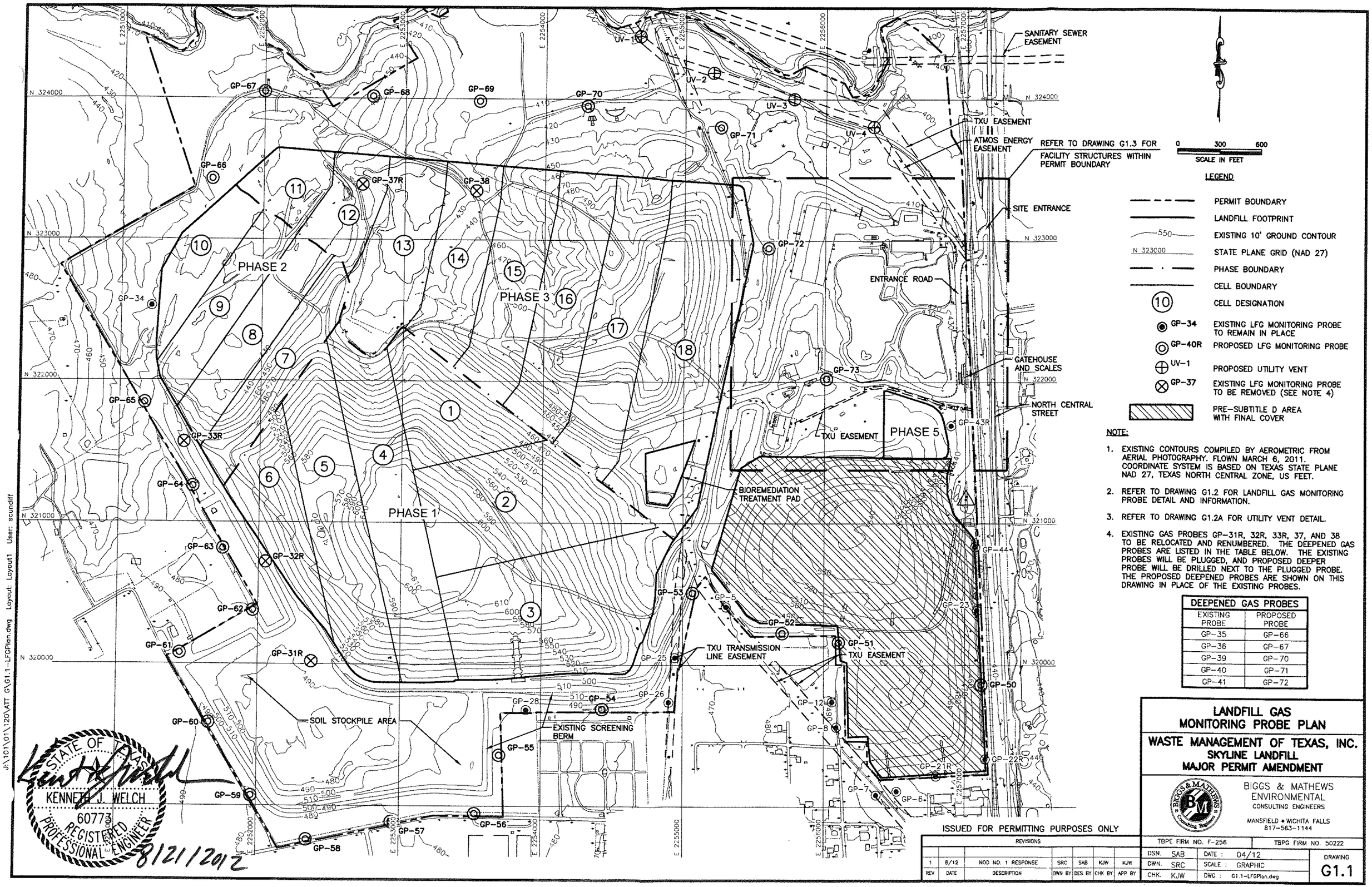
SKYLINE LANDFILL

APPENDIX G1
LANDFILL GAS MONITORING PROBE LOCATIONS AND DETAILS

30 TAC §330.371



REFER TO DRAWING G1.3 FOR FACILITY STRUCTURES WITHIN PERMIT BOUNDARY

0 300 600
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- LANDFILL FOOTPRINT
- 550 EXISTING 10' GROUND CONTOUR
- N 323000 STATE PLANE GRID (NAD 27)
- PHASE BOUNDARY
- CELL BOUNDARY
- (10) CELL DESIGNATION
- GP-34 EXISTING LFG MONITORING PROBE TO REMAIN IN PLACE
- GP-40R PROPOSED LFG MONITORING PROBE
- UV-1 PROPOSED UTILITY VENT
- GP-37 EXISTING LFG MONITORING PROBE TO BE REMOVED (SEE NOTE 4)
- PRE-SUBTITLE D AREA WITH FINAL COVER

NOTE:

1. EXISTING CONTOURS COMPILED BY AEROMETRIC FROM AERIAL PHOTOGRAPHY. FLOWN MARCH 6, 2011. COORDINATE SYSTEM IS BASED ON TEXAS STATE PLANE NAD 27, TEXAS NORTH CENTRAL ZONE, US FEET.
2. REFER TO DRAWING G1.2 FOR LANDFILL GAS MONITORING PROBE DETAIL AND INFORMATION.
3. REFER TO DRAWING G1.2A FOR UTILITY VENT DETAIL.
4. EXISTING GAS PROBES GP-31R, 32R, 33R, 37, AND 38 TO BE RELOCATED AND RENUMBERED. THE DEEPENED GAS PROBES ARE LISTED IN THE TABLE BELOW. THE EXISTING PROBES WILL BE PLUGGED, AND PROPOSED DEEPER PROBE WILL BE DRILLED NEXT TO THE PLUGGED PROBE. THE PROPOSED DEEPENED PROBES ARE SHOWN ON THIS DRAWING IN PLACE OF THE EXISTING PROBES.

DEEPENED GAS PROBES	
EXISTING PROBE	PROPOSED PROBE
GP-35	GP-66
GP-36	GP-67
GP-39	GP-70
GP-40	GP-71
GP-41	GP-72

STATE OF TEXAS
KENNETH J. WELCH
60773
REGISTERED PROFESSIONAL ENGINEER
8/21/2012

ISSUED FOR PERMITTING PURPOSES ONLY

LANDFILL GAS MONITORING PROBE PLAN

WASTE MANAGEMENT OF TEXAS, INC.
SKYLINE LANDFILL
MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD • WICHITA FALLS
817-563-1144

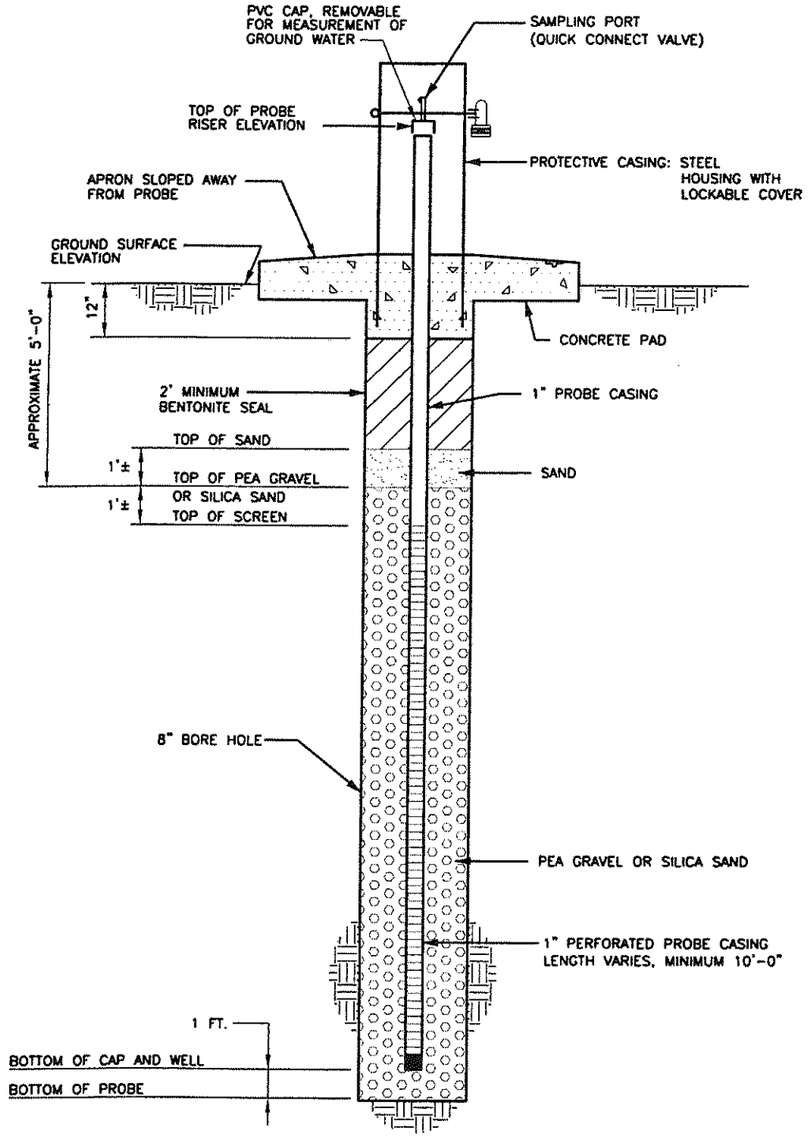
TBPE FIRM NO. F-256 TBPG FIRM NO. 50222

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	8/12	NOD NO. 1 RESPONSE	SRC	SAB	KJW	KJW

DSN. SAB DATE : 04/12
DWN. SRC SCALE : GRAPHIC
CHK. KJW DWG : G1.1-LFGPlan.dwg

DRAWING G1.1

J:\101\01\120\ATT G\G1.1-LFGPlan.dwg Layout: Layout1 User: scundiff



MONITORING PROBE DETAILS (MP-1)
G1.2

GAS MONITORING PROBE INFORMATION (REFER TO NOTES 1-5)						ADDITIONAL INFORMATION (REFER TO NOTES 6-8)		
GAS PROBE	GROUND ELEVATION (FT-MSL)	PROBE DEPTH (FT-BGS)	BOTTOM OF PROBE ELEVATION (FT-MSL)	NORTHING	EASTING	BOTTOM OF WASTE ELEVATION (FT-MSL)	TOP OF UNWEATHERED TAYLOR ELEVATION (FT-MSL)	LOWEST GROUNDWATER ELEVATION (FT-MSL)
EXISTING GAS MONITORING PROBES						EXISTING GAS MONITORING PROBES		
GP-5	479.8	40.0	439.8	320411	2255306	410	447	455
GP-6	463.2	26.0	437.2	319112	2256522	410	434	435.6
GP-7	473.1	36.0	437.1	319084	2256373	410	434	436
GP-8	491.2	46.0	445.2	319562	2256089	410	440	447
GP-12	490.0	84.0	406.0	319742	2256058	410	440	447
GP-21R	450.1	45.0	405.1	319218	2256802	410	438	435
GP-22R	451.9	45.0	406.9	319338	2257146	410	434	435
GP-23	448.6	42.6	406.0	320387	2257085	410	438	443
GP-25	478.9	45.0	433.9	320052	2254947	444	400	457
GP-26	479.3	35.0	444.3	319737	2254903	444	440	457.9
GP-28	487.8	30.0	437.8	319681	2253895	444	446	465
GP-34	431.8	25.0	406.8	322528	2251214	424	421	413
GP-43R	447.4	26.0	421.4	321692	2256900	410	442	442
GP-44	441.5	21.5	420.0	320837	2257071	410	442	443.8
PROPOSED GAS MONITORING PROBE INFORMATION						PROPOSED GAS MONITORING PROBE INFORMATION		
GP-50	451	41	410.0	319862	2257116	410	434	435
GP-51	490	80	410.0	320160	2256104	410	446	447
GP-52	488	78	410.0	320226	2255702	410	446	453.7
GP-53	478	76	402.0	320508	2255069	402	444	457
GP-54	477	37	440.0	319687	2254428	444	442	461
GP-55	489	49	440.0	319361	2253708	444	444	466
GP-56	486	46	440.0	318948	2253537	444	440	467
GP-57	479	49	430.0	318888	2252944	442	430	466
GP-58	473	33	440.0	318761	2252357	442	440	456
GP-59	479	39	440.0	319071	2251961	442	441	452
GP-60	489	49	440.0	319587	2251654	440	441	442
GP-61	493	63	430.0	320078	2251444	436	442	430
GP-62	478	44	434.0	320380	2251963	436	442	430
GP-63	471	51	420.0	320817	2251743	430	436	423.6
GP-64	468	44	424.0	321255	2251524	426	430	436
GP-65	450	26	424.0	321844	2251175	426	432	432
GP-66	425.8	41.8	384.0	323430	2251631	384	415	388
GP-67	417.5	33.5	384.0	324048	2251999	384	405	393
GP-68	455.6	71.6	384.0	324016	2252766	384	416	405
GP-69	408.0	24.0	380.0	323983	2253532	384	380	397
GP-70	415.6	31.6	384.0	323951	2254298	384	388	395.9
GP-71	430.2	46.2	384.0	323800	2255252	384	408	413
GP-72	433.6	49.6	384.0	322947	2255594	384	418	DRY
GP-73	462.2	68.2	394.0	322023	2256012	394	451	447.1

NOTES

1. ALL SIZES AND DIMENSIONS ARE APPROXIMATE.
2. REFER TO APPENDIX G3 FOR INSTALLATION LOGS OF EXISTING PROBES GP-5, 6, 7, 8, 21R, 22R, 25, 26, 28, 34, 43R, AND 44.
3. BASED ON LANDFILL GAS MANAGEMENT PLAN INCLUDED IN PERMIT 42-C, EXISTING GAS PROBES HAVE BEEN DESIGNED TO MONITOR THE UNSATURATED ZONE BENEATH THE GROUND SURFACE AND ELEVATION OF THE BASE OF THE NEAREST WASTE PLACEMENT.
4. DUE TO AVAILABILITY OF INSTALLATION LOGS, THE BOTTOM OF PROBE ELEVATIONS FOR EXISTING GAS PROBES GP-12 AND 23 ESTIMATED TO BE CONSISTENT WITH GP-21R AND 22R BASED ON ELEVATION OF THE BASE OF THE NEAREST WASTE PLACEMENT.
5. EACH PROPOSED GAS PROBE IS DESIGNED TO MONITOR THE SOIL STRATA ABOVE: 1) THE LOWEST GROUNDWATER LEVEL AT THE MONITORING POINT, 2) THE TOP OF THE UNWEATHERED TAYLOR ELEVATION AT THE MONITORING POINT, AND 3) THE LOWEST CURRENT OR PLANNED FUTURE ELEVATION OF WASTE WITHIN 1,000 FEET.
6. DUE TO LOCATION ALONG SOUTHWEST PORTION OF THE PERMIT BOUNDARY, BOTTOM OF WASTE ELEVATIONS FOR LANDFILL GAS MONITORING PROBES GP-55 THROUGH GP-61 BASED ON LOWEST WASTE ELEVATION WITHIN 1,000 FEET OF THE POINT ON THE LANDFILL FOOTPRINT THAT IS CLOSEST TO THESE GAS PROBES. FOR REMAINING PROBES, BOTTOM OF WASTE ELEVATIONS BASED ON LOWEST WASTE ELEVATION WITHIN 1,000 FEET OF THE MONITORING PROBE.
7. TOP OF UNWEATHERED TAYLOR ELEVATION FOR EACH MONITORING PROBE ESTIMATED FROM INFORMATION PROVIDED IN ATTACHMENT E. APPENDIX E3, DRAWING E3-8 (STRUCTURAL CONTOUR MAP-TOP OF THE UNWEATHERED TAYLOR).
8. LOWEST GROUNDWATER ELEVATION FOR EACH MONITORING PROBE ESTIMATED FROM INFORMATION PROVIDED IN ATTACHMENT E, APPENDIX E7 (HISTORICAL GROUNWATER DATA).

STATE OF TEXAS
KENNETH J. WELCH
60773
REGISTERED
PROFESSIONAL ENGINEER
8/21/2012

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REVISIONS							
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	
1	8/12	NOD NO. 1 RESPONSE	SRC	SAB	KJW	KJW	

MONITORING PROBE DETAIL

WASTE MANAGEMENT OF TEXAS, INC.
SKYLINE LANDFILL
MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD • WICHITA FALLS
817-563-1144
TBPE FIRM NO. F-256 TBPG FIRM NO. 50222

DSN. SAB DATE : 04/12
DWN. SRC SCALE : GRAPHIC
CHK. KJW DWG : G1.2_ProbeDetail.dwg
DRAWING G1.2

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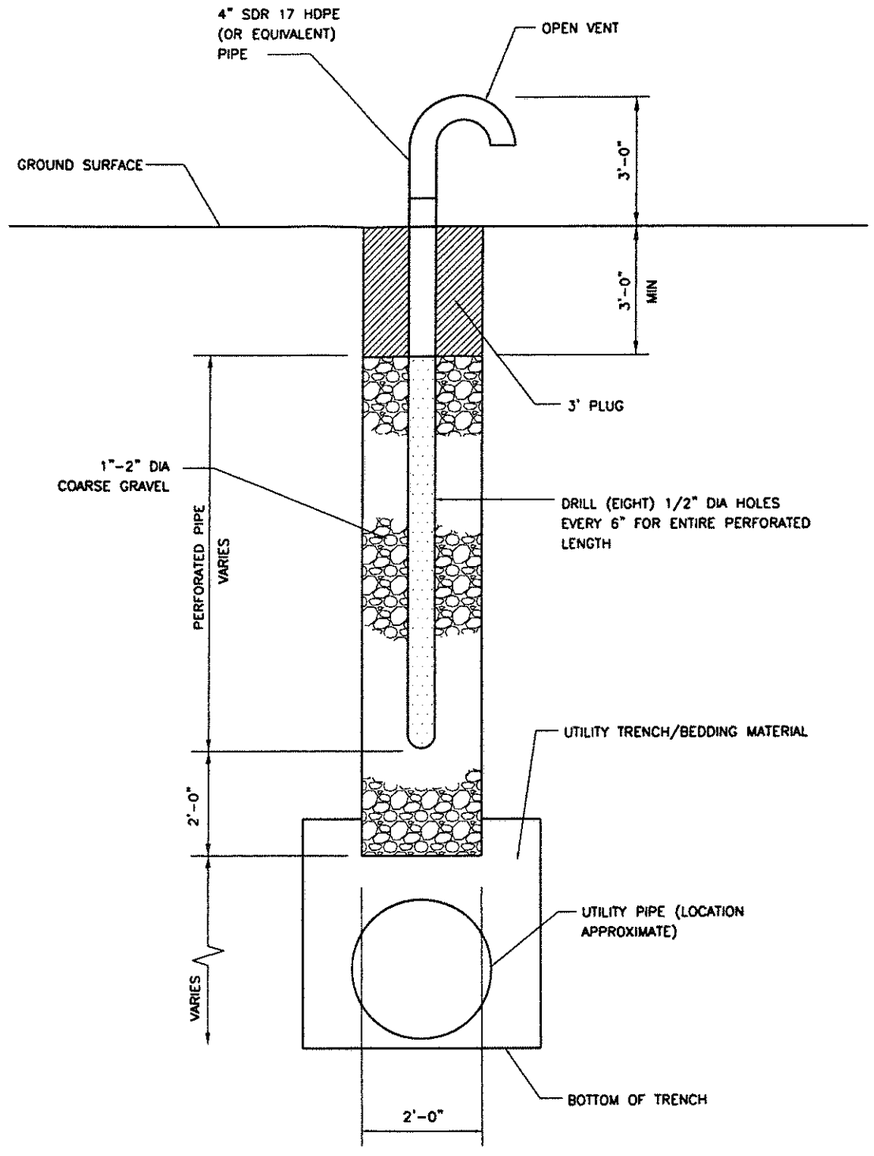

UTILITY VENT (TYPICAL) UV1
NTS G1.2A

ALL SIZES AND DIMENSIONS ARE APPROXIMATE.

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STATE OF TEXAS
KENNETH J. WELCH
60773
REGISTERED
PROFESSIONAL ENGINEER
9/21/2012

UTILITY VENT DETAIL

WASTE MANAGEMENT OF TEXAS, INC.
SKYLINE LANDFILL
MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD • WICHITA FALLS
817-563-1144
TBPE FIRM NO. F-256 TBPG FIRM NO. 50222

DSN. SAB	DATE : 08/12	DRAWING	
DWN. SRC	SCALE : GRAPHIC	G1.2A	
CHK. KJW	DWG : G1.2_ProbeDetail.dwg		

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0 100 200
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- LANDFILL FOOTPRINT
- 550 EXISTING 2' GROUND CONTOUR
- N 323000 STATE PLANE GRID (NAD 27)
- CONCRETE PAVEMENT
- RAILROAD TRACK
- FENCELINE
- POWER POLE
- LIGHT POLE
- POST

NOTES:

1. EXISTING CONTOURS COMPILED BY AEROMETRIC FROM AERIAL PHOTOGRAPHY. FLOWN MARCH 6, 2011. COORDINATE SYSTEM IS BASED ON TEXAS STATE PLANE NAD 27, TEXAS NORTH CENTRAL ZONE, US FEET.
2. ENCLOSED STRUCTURES INCLUDE GATEHOUSE, LANDFILL OFFICE AND MAINTENANCE BUILDING, STORAGE BUILDING, POWERWASH BUILDING, LANDFILL GAS TO ENERGY FACILITY BUILDING, HAULING COMPANY OFFICE AND MAINTENANCE BUILDING, AND HAULING COMPANY TRAINING BUILDING. ALL ENCLOSED STRUCTURES HAVE PERMANENT GAS MONITORS.

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8/21/2012

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REVISIONS						
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1	8/12	NOD NO. 1 RESPONSE	SRC	SAB	KJW	KJW

STRUCTURES WITHIN PERMIT BOUNDARY

WASTE MANAGEMENT OF TEXAS, INC.
SKYLINE LANDFILL
MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD • WICHITA FALLS
817-563-1144

TBPE FIRM NO. F-256 | TBPG FIRM NO. 50222

DSN. SAB | DATE : 04/12
DWN. SRC | SCALE : GRAPHIC
CHK. KJW | DWG : G1.3-WasteSchem.dwg

DRAWING G1.3

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0 500 1000
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- LANDFILL FOOTPRINT
- 1/4 MILE PERMIT BOUNDARY RADIUS
- PRE-SUBTITLE D AREA WITH FINAL COVER
- LFG MONITORING PROBE LOCATION (PROPOSED NETWORK)

NOTES:

1. AERIAL PHOTOGRAPH PROVIDED BY AERO-METRIC FROM AERIAL PHOTOGRAPHY FLOWN MARCH 6, 2011.

STATE OF TEXAS
KENNETH J. WELCH
60773
REGISTERED
PROFESSIONAL ENGINEER
8/21/2012

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REVISIONS						
1	8/12	NOD NO. 1 RESPONSE	SRC	SAB	KJW	KJW
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

STRUCTURES WITHIN 1/4 MILE OF PERMIT BOUNDARY

WASTE MANAGEMENT OF TEXAS, INC. SKYLINE LANDFILL MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD • WICHITA FALLS
817-563-1144

TBPE FIRM NO. F-256 | TBPG FIRM NO. 50222

DSN. SAB	DATE : 04/12	DRAWING
DWN. SRC	SCALE : GRAPHIC	G1.4
CHK. KJW	DWG : G1.4-QuartMileStruct.dwg	

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SKYLINE LANDFILL

APPENDIX G2
REPORTING AND RECORDING FORMS

30 TAC §330.371

SKYLINE LANDFILL MSW 0042-D
LANDFILL GAS MONITORING REPORT

INSTRUMENTATION INFORMATION

Combustible Gas Instrument Type: _____ Serial No: _____
Pressure Instrument Type: _____ Serial No: _____
Water Level Instrument Type: _____ Serial No: _____

Field calibration ~~report. Results are in tolerance with +/- 3 % of~~is in accordance with instrument manufacturers' recommended procedures within factory calibration tolerances.

	Time/Date	Methane	CO2	O2	Balance
Factory Calibration					
Field Calibration					

ADDITIONAL INFORMATION

Weather Conditions: _____
Barometric Pressure: _____ Temperature: _____
Sampling Date: _____ Sampler: _____
Time: Start: _____ Finish: _____

ON-SITE STRUCTURES

ON-SITE STRUCTURE	*Verify if Continuous LFG Alarm is Operational*	*Continuous LFG Alarm Activated (LEL>25%) During ~~Previous~~ This Quarter*	*Continuous LFG Alarm have current calibration sticker; date on sticker*
	Circle One	*Circle One*	*Circle One*
Gate House	Yes No	Yes No	Yes No Date:
Landfill Maintenance ~~(LF)~~	Yes No	Yes No	Yes No Date:
~~LFM~~ Landfill Office	Yes No	Yes No	Yes No Date:
Power Wash Build	Yes No	Yes No	Yes No Date:
LFG-to-Energy Facility	Yes No	Yes No	Yes No Date:
Container Shop Office	Yes No	Yes No	Yes No Date:
Hauling ~~Mgr. Office~~Maintenance	Yes No	Yes No	Yes No Date:
~~Haul Shop Mgr.~~Hauling Office	Yes No	Yes No	Yes No Date:
~~Barn~~ Hauling Training	Yes No	Yes No	Yes No Date:
Storage Building	Yes No	Yes No	Yes No Date:

Tornado Shelter (Landfill) test quarterly for methane concentrations? Yes No

SKYLINE LANDFILL MSW 0042-D
LANDFILL GAS MONITORING REPORT

GAS PROBES

PROBE #	SURFACE ELEV.	BOTTOM ELEV.	TIME SAMPLED	STATIC PRESSURE	% CH_4	% LEL[2]	% O_2 (0pt.)[4]	DEPTH TO WATER	WATER ELEV.	PROBE INTEGRITY VERIFIED
	Ft-msl	Ft-msl		"w.c.[1]	0-100	0-100	0-100		Ft-msl	YES/NO[3]
5										
6										
7										
8										
12										
21R										
22R										
23										
25										
26										
28										
~~31RR~~										
~~31RR-A~~										
~~32RR~~										
~~32RR-A~~										
~~33RR~~										
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72										
73										

1 *"w.c.-inches Water Column*
2 *% LEL=(20) X (observed % methane)- Note: Record>100% in LEL column if % methane is <>5%*
3 Note any problems with the probes in the general comments section above.
~~3~~4 Optional

GENERAL COMMENTS:

Sampler: _____

Company: _____

Date: _____

Gas Operations Mgr: _____

Landfill Site Mgr: _____

SKYLINE LANDFILL

APPENDIX G3
INSTALLATION INFORMATION
AND TCEQ PERMIT MODIFICATION APPROVALS –
EXISTING LANDFILL GAS MONITORING PROBES

30 TAC §330.371

INSTALLATION OF LFG MONITORING PROBES
GMP 5

(COPY OF SOIL BOREHOLE LOG)

INSTALLED: FEBRUARY 1989
INSTALLED BY: TEAM CONSULTANTS, INC.

SOIL BOREHOLE LOG

SITE NAME AND LOCATION

Gas Detection Probe Installation
Skyline Sanitary Landfill
Ferris, Texas

DRILLING METHOD: Hollow Stem Auger

SAMPLING METHOD: Bag samples of cuttings

BORING NO. P-5

SHEET 1 OF 2

					DRILLING START TIME	DRILLING FINISH TIME
WATER LEVEL	Dry					
TIME						
DATE	2/28				DATE	DATE
CASING DEPTH					2/28/89	

DATUM ELEVATION

DRILL RIG B-52

ANGLE BEARING

SAMPLE HAMMER TORQUE FT.-LBS

SURFACE CONDITIONS

DRILLING CONTR. TEAM Consultants, Inc.
Arlington, Texas

DEPTH IN FEET (ELEVATION)	BLOWS/6 IN. ON SAMPLER (RECOVERY)	SYMBOL	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	TEST RESULTS: WATER CONTENT %	LIQUID LIMIT %	PLASTIC LIMIT %	SPECIFIC GRAVITY	OTHER TESTS
2		A	Tan clay w/occasional calcareous nodules (fill)								
4		A	Dark brown silty clay w/some tan calcareous clay and occasional calcareous nodules (CH)								
6		A	Tan and light gray clay w/occasional calcareous nodules and iron stains								
8		A									
10		A									
12		A									
14		A									
16		A									
18		A									
20		A									
22		A									
24		A									
26		A									
28		A	(CH)								
			Continued								

LOGGED BY BM

DATE 2/28/89 CHK'D BY SRW

SL02560

PLATE 8

SOIL BOREHOLE LOG

SITE NAME AND LOCATION

Gas Detection Probe Installation
Skyline Sanitary Landfill
Ferris, Texas

DRILLING METHOD: Hollow Stem Auger

SAMPLING METHOD: Bag samples of cuttings

BORING NO. P-5

SHEET 2 OF 2

					DRILLING START	DRILLING FINISH
WATER LEVEL	Dry				TIME	TIME
TIME						
DATE	2/28				DATE	DATE
CASING DEPTH					2/28/89	

DATUM ELEVATION

DRILL RIG B-52 SURFACE CONDITIONS

ANGLE BEARING

SAMPLE HAMMER TORQUE FT.-LBS

DRILLING CONTR. TEAM Consultants, Inc. Arlington, Texas

SL02561

DEPTH IN FEET (ELEVATION)	BLOWS/6 IN. ON SAMPLER (RECOVERY)	SYMBOL	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	TEST RESULTS: WATER CONTENT %	LIQUID LIMIT %	PLASTIC LIMIT %	SPECIFIC GRAVITY	OTHER TESTS (PP*)
30		A	Tan and light gray clay w/occasional calcareous nodules and iron stains								
32		A									
		A									
34		A									
36		A	(CH)								
		A	Tan and gray clay w/shale seams, calcareous nodules and iron stains								
38		A	(CH)								
		U	Gray shale								4.5+
40											
			Note: Boring was observed to be dry upon completion. Upon completion a gas detection probe was installed in this boring.								
42											
44											
46											
48											
50											

* Pocket Penetrometer

LOGGED BY BM

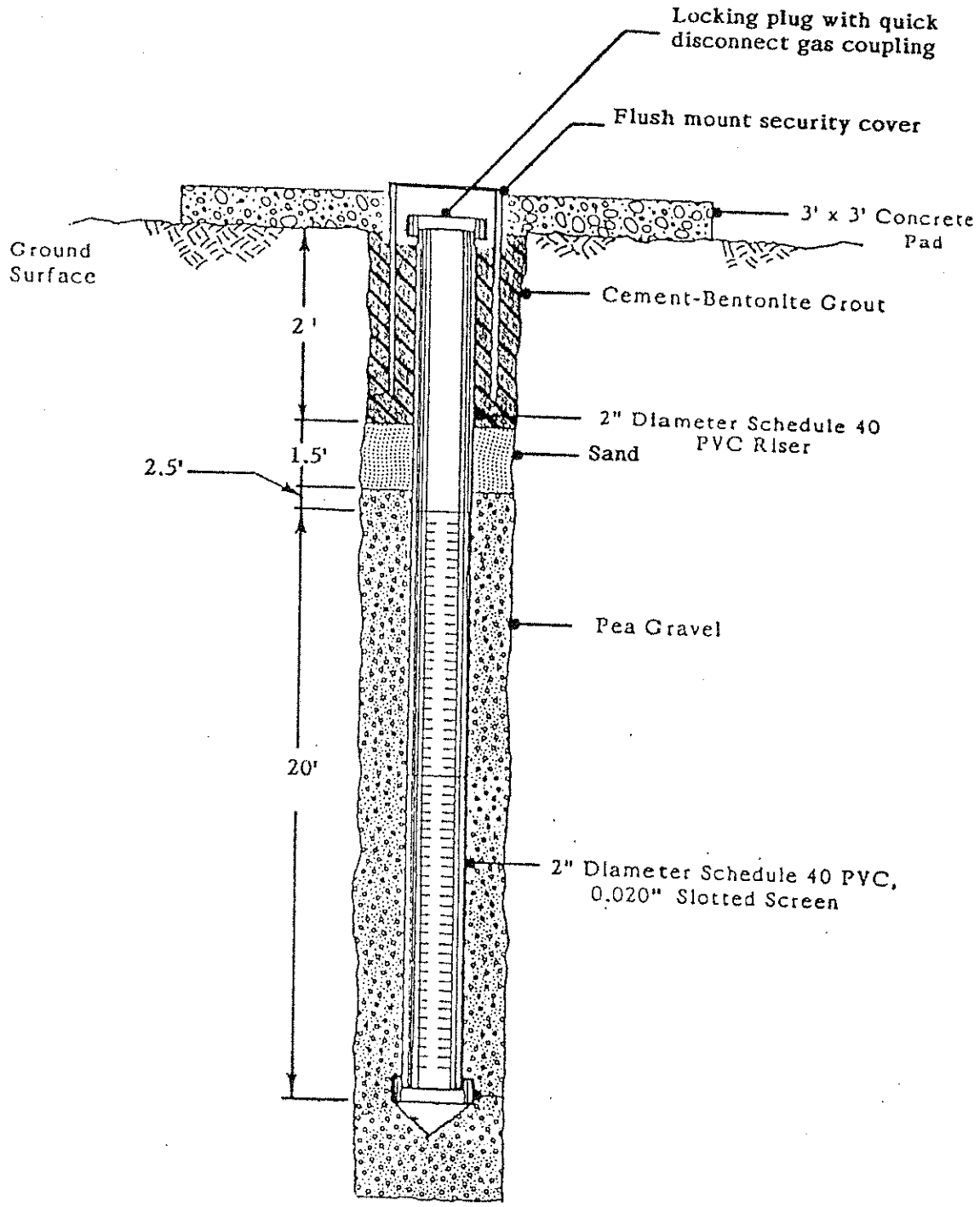
DATE 2/28/89 CHK'D BY SRW

PLATE 9

INSTALLATION OF LFG MONITORING PROBES
GMP 6, 7, 8

(COPY OF SOIL BOREHOLE LOG)

INSTALLED: OCTOBER 1991
INSTALLED BY: TEAM CONSULTANTS, INC.



Probe Number: GP-6

PROBE INSTALLATION DETAIL

TEAM

PLATE 16

Probe No. GP-6

Boring No. X-Ref: GP-6

LANDFILL GAS MONITORING PROBE CONSTRUCTION SUMMARY

Survey Coords: N 319112.3338
E 2256520.9904

Elevation Ground Level 463.2

Top of Casing 462.92

SITE NAME Skyline Landfill

LOCATION Ferris, Texas

Drilling Summary:

Total Depth 26.0'
Borehole Diameter 7.75"
Casing Stick-up Height:
Driller Bill McGuire
Water Well License #02763M
Rig Mobil B-52
Bit(s) Carbide Cutter Head
Drilling Fluid None
Protective Casing Flush Mounted Cover

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	10/8/91	0900	10/8/91	1100
Geophys.Logging:				
Casing:				
Filter Placement:	10/8/91	1100	10/8/91	1130
Cementing:	10/8/91	1100	10/8/91	1200
Development:				

Probe Design & Speicifications:

Basis: Geologic Log ____ Geophysical Log ____
Casing String (s): C = Casing S = Screen.

Depth	String(s)	Elevation
Sur. - 6	C1	462.9 - 456.9
6' - 26'	S2	456.9 - 436.9
____ - ____		____ - ____
____ - ____		____ - ____
____ - ____		____ - ____

Casing: C1 Two inch threaded flush joint Schedule 40 PVC
C2

Screen: S1 Two inch threaded flush joint .020" machine slotted
S2

Filter Pack: 1/4" to 3/8" washed pea gravel and fine sand(100% Passing #20 and < 2% Passing No. 200)

Grout Seal: Cement-Bentonite Grout

Bentonite Seal: N/A

Probe Development Comments:

SUPERVISED BY Walter C. Hunt/Bill McGuire

DATE

G3.4

PLATE 10

SOIL BOREHOLE LOG

SITE NAME AND LOCATION

Skyline Sanitary Landfill
Ferris, Texas

DRILLING METHOD: Hollow Stem Auger

SAMPLING METHOD: Undisturbed

BORING NO. GP-6

SHEET 1 OF 1

DRILLING

	START	FINISH
TIME	0900	1200
DATE	10/8/91	10/8/91

WATER LEVEL				
TIME				
DATE				
CASING DEPTH				

DATUM ELEVATION 463.2

DRILL RIG Mobil B-52

ANGLE BEARING

SAMPLE HAMMER TORQUE 350 FT.-LBS

SURFACE CONDITIONS

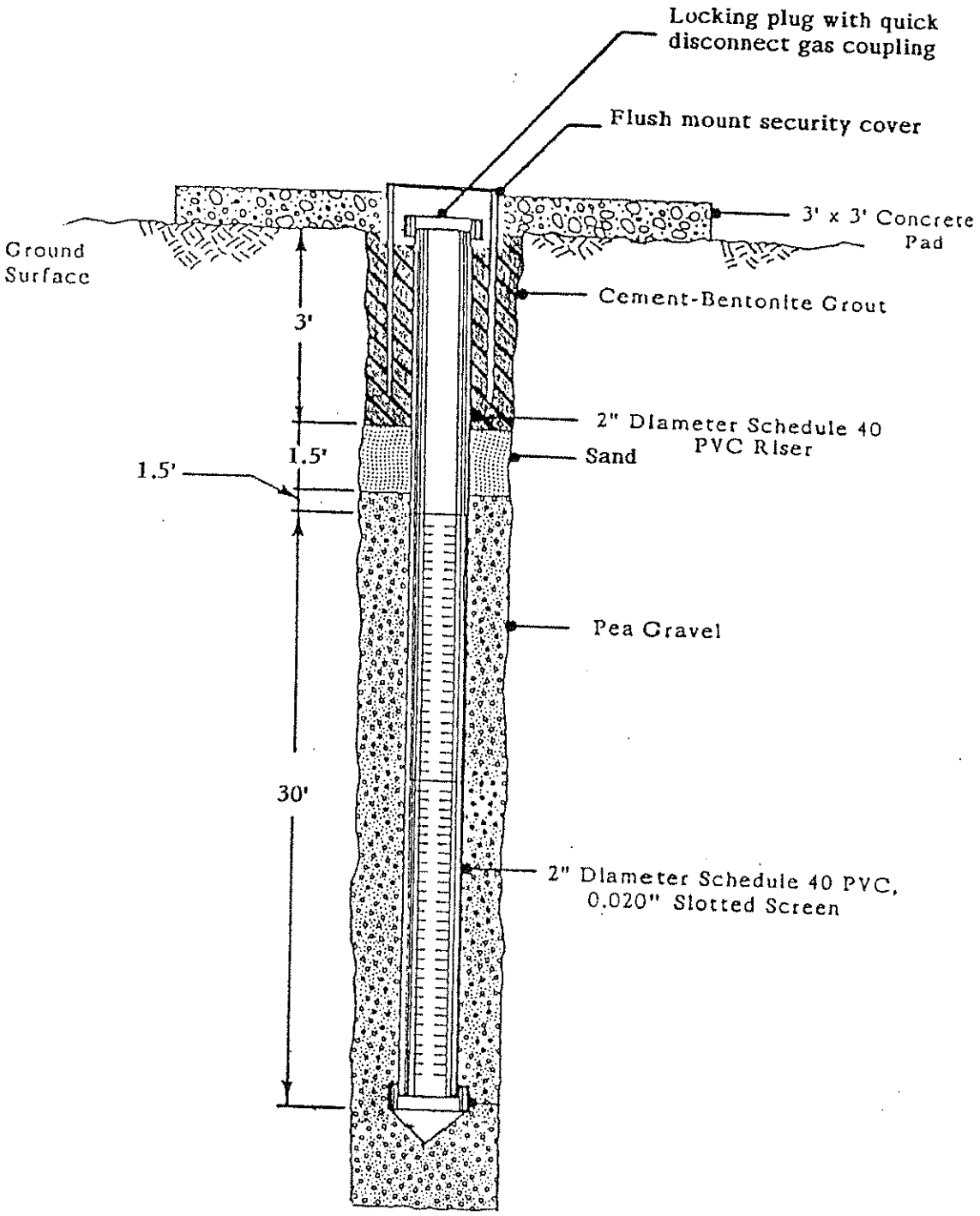
DRILLING CONTR. TEAM Consultants, Inc.

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SYMBOL	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	Hand Pen	CASING TYPE	BLOWS/FOOT ON CASING	TEST RESULTS: WATER CONTENT %	LIQUID LIMIT %	PLASTIC LIMIT %	SPCIFIC GRAVITY	OTHER TESTS
0		UD	Dark brown clay with occasional gravel and brick (CH)	4.5+							
5		UD	Tan, occasional gray clay with small calcareous noudules	4.5+							
10		UD		4.5+							
15		UD	- blocky (CH)	4.5+							
20		UD	Dark gray marl - 2 inch tan seam								
25		UD	(Ozan Formation)								
30			NOTE: End of boring at 26.0'								
35											
40											
45											
50											
55											
60											
65											
70											

LOGGED BY S.C.

DATE 10/8/91 CHK'D BY W. Hunt

PLATE 2



Probe Number: **GP-7**

PROBE INSTALLATION DETAIL

TEAM

PLATE 17

Probe No. GP-7

Boring No. X-Ref: GP-7

LANDFILL GAS MONITORING PROBE CONSTRUCTION SUMMARY

Survey Coords: N 319107.9613
E 2256340.9607

Elevation Ground Level 473.1
Top of Casing 472.9

SITE NAME Skyline Landfill
LOCATION Ferris, Texas

Drilling Summary:

Total Depth 36.0'
Borehole Diameter 7.75"
Casing Stick-up Height:
Driller Bill McGuire
Water Well License #02763M
Rig Mobil B-52
Bit(s) Carbide Cutter Head
Drilling Fluid None
Protective Casing Flush Mounted Cover

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	10/8/91	1300	10/8/91	1630
Geophys. Logging:				
Casing:				
Filter Placement:	10/8/91	1630	10/8/91	1730
Cementing:	10/9/91	1400	10/9/91	1500
Development:				

Probe Design & Speicifications:

Basis: Geologic Log ___ Geophysical Log ___
Casing String (s): C = Casing S = Screen.

Depth	String(s)	Elevation
Sur. - 6'	C1	472.9 - 466.9
6' - 36'	S2	466.9 - 436.9
-		-
-		-
-		-

Casing: C1 Two inch threaded flush joint Schedule 40 PVC
C2

Screen: S1 Two inch threaded flush joint .020" machine slotted
S2

Filter Pack: 1/4" to 3/8" washed pea gravel and fine sand(100% Passing #20 and < 2% Passing No. 200)

Grout Seal: Cement-Bentonite Grout

Bentonite Seal: N/A

Probe Development Comments:

SUPERVISED BY Walter C. Hunt/Bill McGuire

DATE

G3-7

PLATE 11

SOIL BOREHOLE LOG

SITE NAME AND LOCATION

Skyline Sanitary Landfill
Ferris, Texas

DRILLING METHOD: Hollow Stem Auger

SAMPLING METHOD: Undisturbed

BORING NO. GP-7

SHEET 1 OF 1

	DRILLING START	DRILLING FINISH
WATER LEVEL		
TIME	1300	1730
DATE	10/8/91	10/8/91
CASING DEPTH		

DATUM ELEVATION 473.1

DRILL RIG Mobil B-52

SURFACE CONDITIONS

ANGLE BEARING

SAMPLE HAMMER TORQUE 350 FT.-LBS

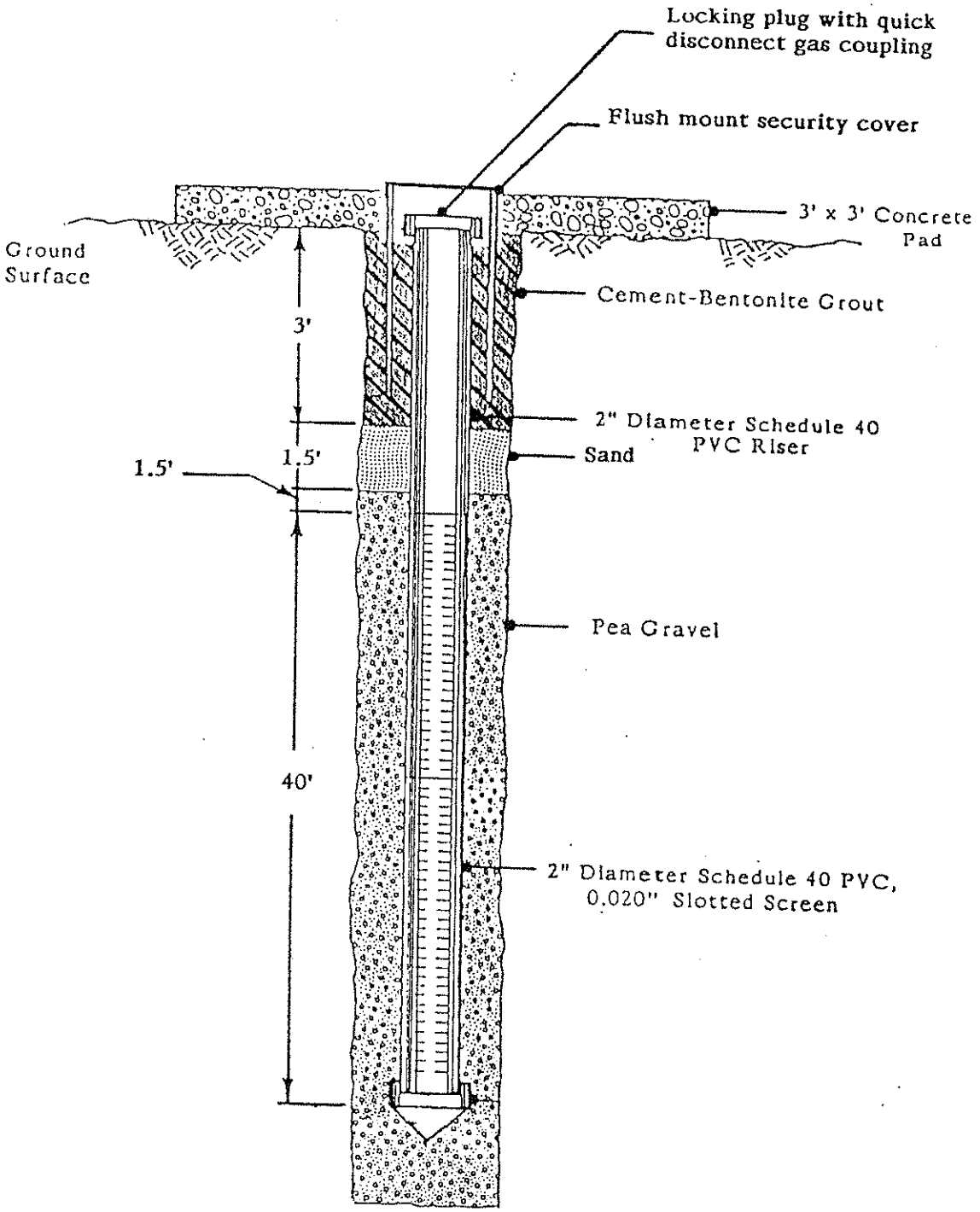
DRILLING CONTR. TEAM Consultants, Inc.

DEPTH IN FEET (ELEVATION)	BLOWS/6 IN ON SAMPLER (RECOVERY)	SYMBOL	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	Hand Pen	CASING TYPE	BLOWS/FOOT ON CASING	TEST RESULTS: WATER CONTENT %	LIQUID LIMIT %	PLASTIC LIMIT %	SPECIFIC GRAVITY	OTHER TESTS
0		UD	Dark brown clay with occasional brick fragments	4.5+							
5		UD	- tan, occasional brown clay	4.5+							
10		UD		4.5+							
15		UD	- tan and gray blocky	4.5+							
20		UD	- selenite crystals (CH)	4.5+							
25		UD	Dark gray marl with occasional thin tan seams - tan seam								
30		UD	- decrease in tan seams								
35		UD	(Ozan Formation)								
40			NOTE: End of boring at 36.0'								
45											
50											
55											
60											
65											
70											

LOGGED BY S.C.

DATE 10/8/91 CHK'D BY W. Hunt

PLATE 3



Probe Number: GP-8

PROBE INSTALLATION DETAIL

TEAM

Probe No. GP-8

Boring No. X-Ref: GP-8

LANDFILL GAS MONITORING PROBE CONSTRUCTION SUMMARY

Survey Coords: N 319561.9557
E 2256088.9334

Elevation Ground Level 491.2

Top of Casing 491.0

SITE NAME Skyline Landfill

LOCATION Ferris, Texas

Drilling Summary:

Total Depth 46.0'
Borehole Diameter 7.75"
Casing Stick-up Height:
Driller Bill McGuire
Water Well License #02763M
Rig Mobil B-52
Bit(s) Carbide Cutter Head
Drilling Fluid None
Protective Casing Flush Mounted Cover

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	10/9/91	0830	10/9/91	1300
Geophys. Logging:				
Casing:				
Filter Placement:	10/9/91	1300	10/9/91	1330
Cementing:	10/9/91	1300	10/9/91	1400
Development:				

Probe Design & Speicifications:

Basis: Geologic Log ____ Geophysical Log ____
Casing String (s): C = Casing S = Screen.

Depth	String(s)	Elevation
Sur. - 6'	C1	491.0 - 485.0
6' - 46'	S2	485.0 - 445.0
-		-
-		-
-		-

Casing: C1 Two inch threaded flush joint Schedule 40 PVC
C2

Screen: S1 Two inch threaded flush joint .020" machine slotted
S2

Filter Pack: 1/4" to 3/8" washed pea gravel and fine sand(100% Passing #20 and < 2% Passing No. 200)

Grout Seal: Cement-Bentonite Grout

Bentonite Seal: N/A

Probe Development Comments:

SUPERVISED BY Walter C. Hunt/Bill McGuire

DATE

G3-10

PLATE 12

SOIL BOREHOLE LOG

SITE NAME AND LOCATION

Skyline Sanitary Landfill
Ferris, Texas

DRILLING METHOD: Hollow Stem Auger

SAMPLING METHOD: Undisturbed

BORING NO. GP-8

SHEET 1 OF 1

WATER LEVEL	
TIME	
DATE	
CASING DEPTH	

DRILLING: START TIME 0830 DATE 10/9/91; FINISH TIME 1400 DATE 10/9/91

DATUM ELEVATION 491.2

DRILL RIG Mobil. B-52

ANGLE BEARING

SAMPLE HAMMER TORQUE 350 FT.-LBS

SURFACE CONDITIONS

DRILLING CONTR TEAM Consultants, Inc.

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SYMBOL	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	Hand Pen	CASING TYPE	BLOWS/FOOT ON CASING	TEST RESULTS: WATER CONTENT %	LIQUID LIMIT %	PLASTIC LIMIT %	SPCIFIC GRAVITY	OTHER TESTS
0		UD	Dark brown clay with occasional gravel (CH)	4.5+							
5		UD	- Tan and brown clay	28							
10		UD	- blocky, occasional iron stains	4.5+							
15		UD		4.5+							
20		UD		4.5+							
25		UD		4.5+							
30		UD	- tan and gray	4.5+							
35		UD	- increase in gray (CH)	4.5+							
40		UD	Dark gray marl								
45		UD	(Ozan Formation)								
50			NOTE: End of boring at 46.0'								
55											
60											
65											
70											

LOGGED BY S.C.

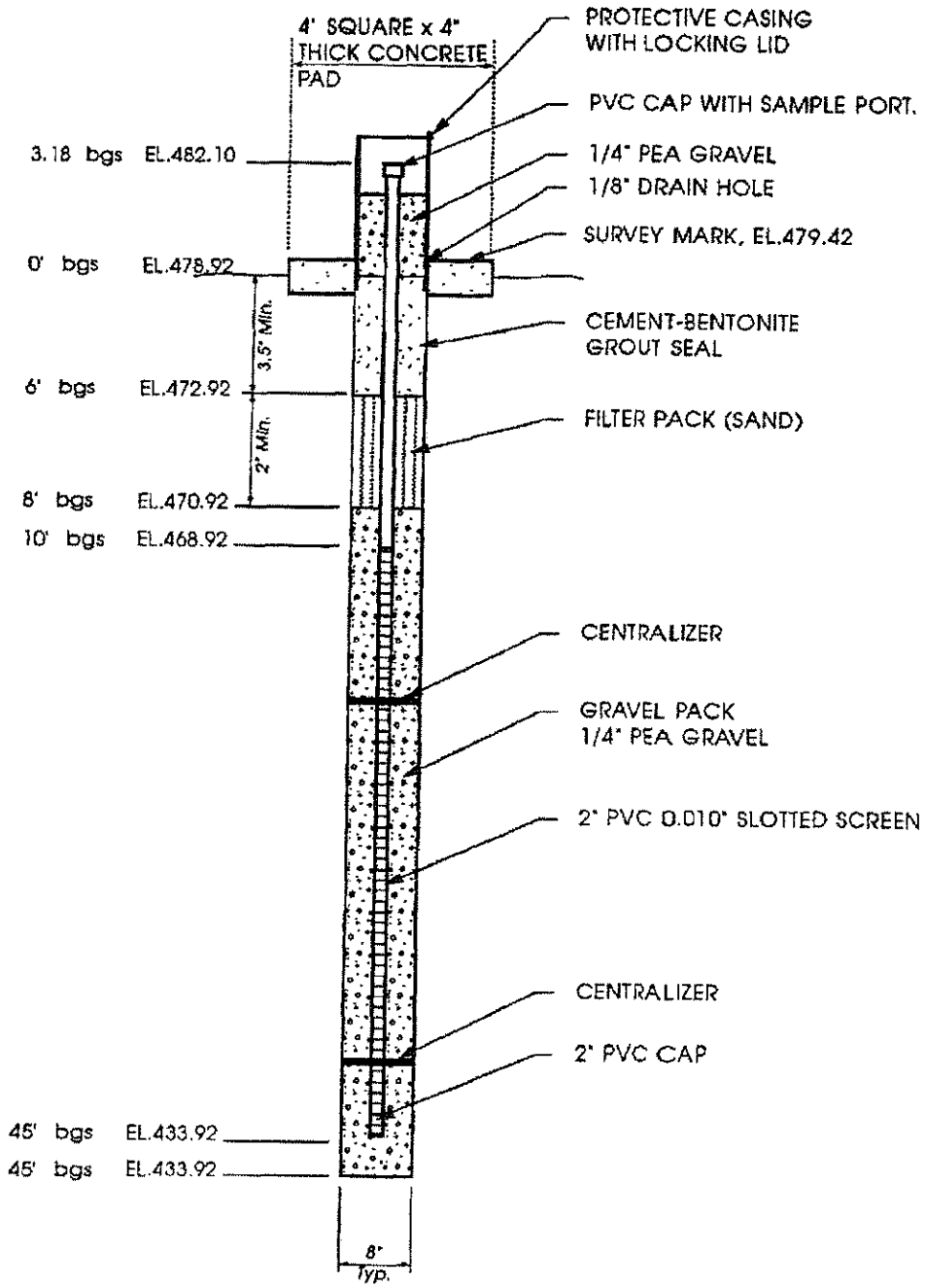
DATE 10/9/91 CHK'D BY W. Hunt

PLATE 4

INSTALLATION OF LFG MONITORING PROBES
GMP 25, 26, 28, 34, 44

(COPY OF SOIL BOREHOLE LOG)

INSTALLED: JUNE 1995
INSTALLED BY: MCGUIRE DRILLING CO., INC.



GAS PROBE INSTALLATION

Skyline Landfill & Recycling Center

GAS PROBE 25

BLACK & VEATCH

8/17/95 26288.100

McGuire Drilling Co., Inc.
2406 Rochelle Rd.
Irving, Texas 75062
(214) 255-9129

Log of Boring 1 GP25

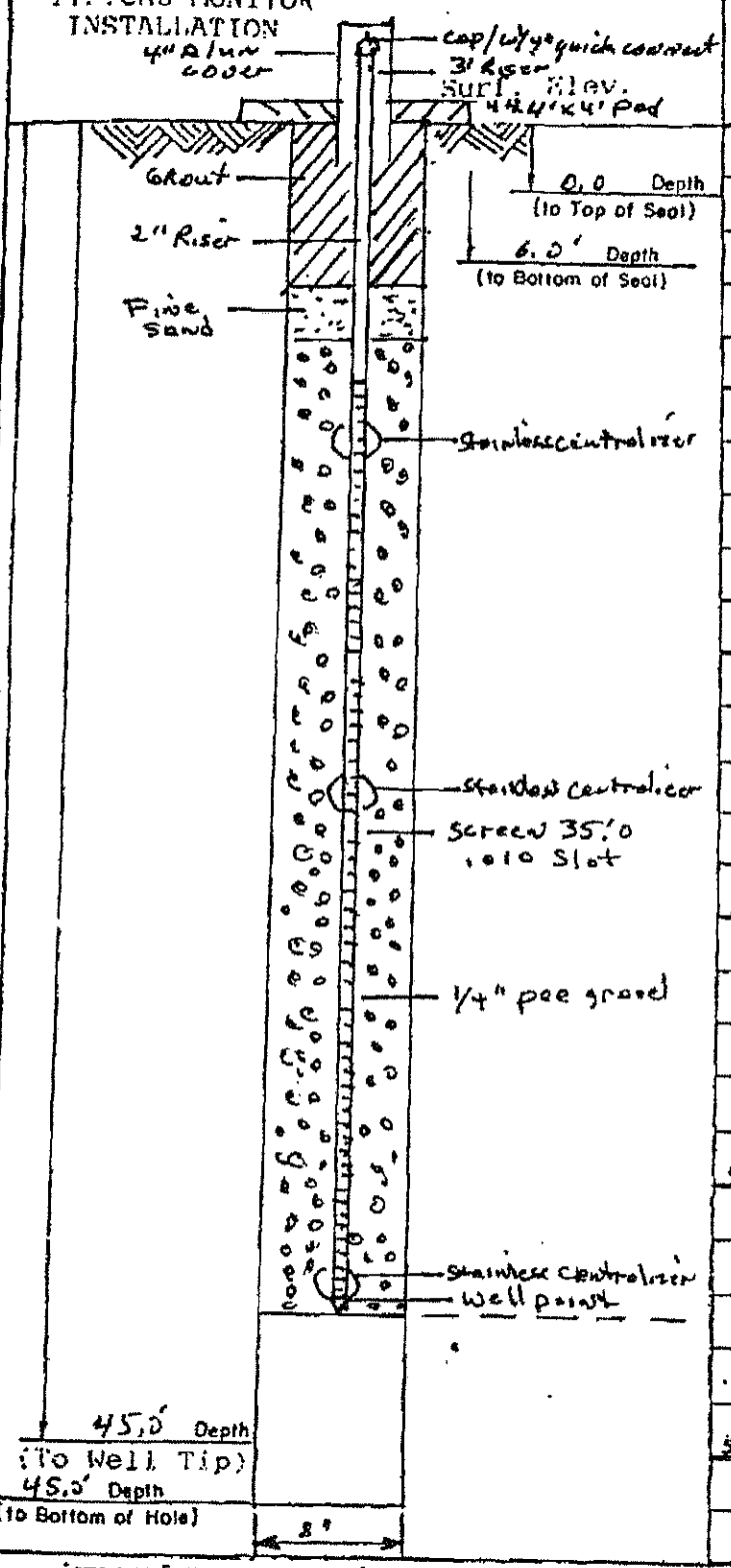
Project: WMI Skyline SIF (60c Prob)

Location: Ferris, Texas

Type: Auger Log

Surface Elevation:

TYPICAL MONITOR INSTALLATION



Feet (Depth)	Samples (Symbol)	STRATUM DESCRIPTION
		Gray Clay
		w/occ cal nod
		Tan & gray
		w/occ FE staining
10		Tan, increasing
		-occ light gray
		FE staining increasing
20		
		-occ Dark gray
		-increasing gray (light)
30		
40		-occ Dark gray w/FE staining
		Dark Gray Clay (marl)
		TD. 45.0'
50		

Completion Depth: 45.0'

Date: 6/16/95

Water Observations:

LOG OF BORING GAS PROBE GP-25

WASTE MANAGEMENT OF TEXAS
MSW Permit 42-C
Dallas & Ellis County, Texas

TYPE OF BORING: HSA

LOCATION: T+47 53+49

ELEVATION: Top Pipe 482.10 Ground 478.92

DEPTH, FT.	SYMBOL	SAMPLES	SOIL DESCRIPTION
			Firm to stiff, dark brown CLAY.
			Occasional calcareous nodules.
5			
			7' (CH)
			Firm to very stiff, tan and gray CLAY (Weathered Taylor) with occasional iron staining.
10			
			Occasional light gray.
15			
			Increased iron staining.
20			
			Occasional gray.
25			
30			
			Increased light gray.
35			

7/28/95 26286.110

LOG OF BORING GAS PROBE GP-25 (cont.)

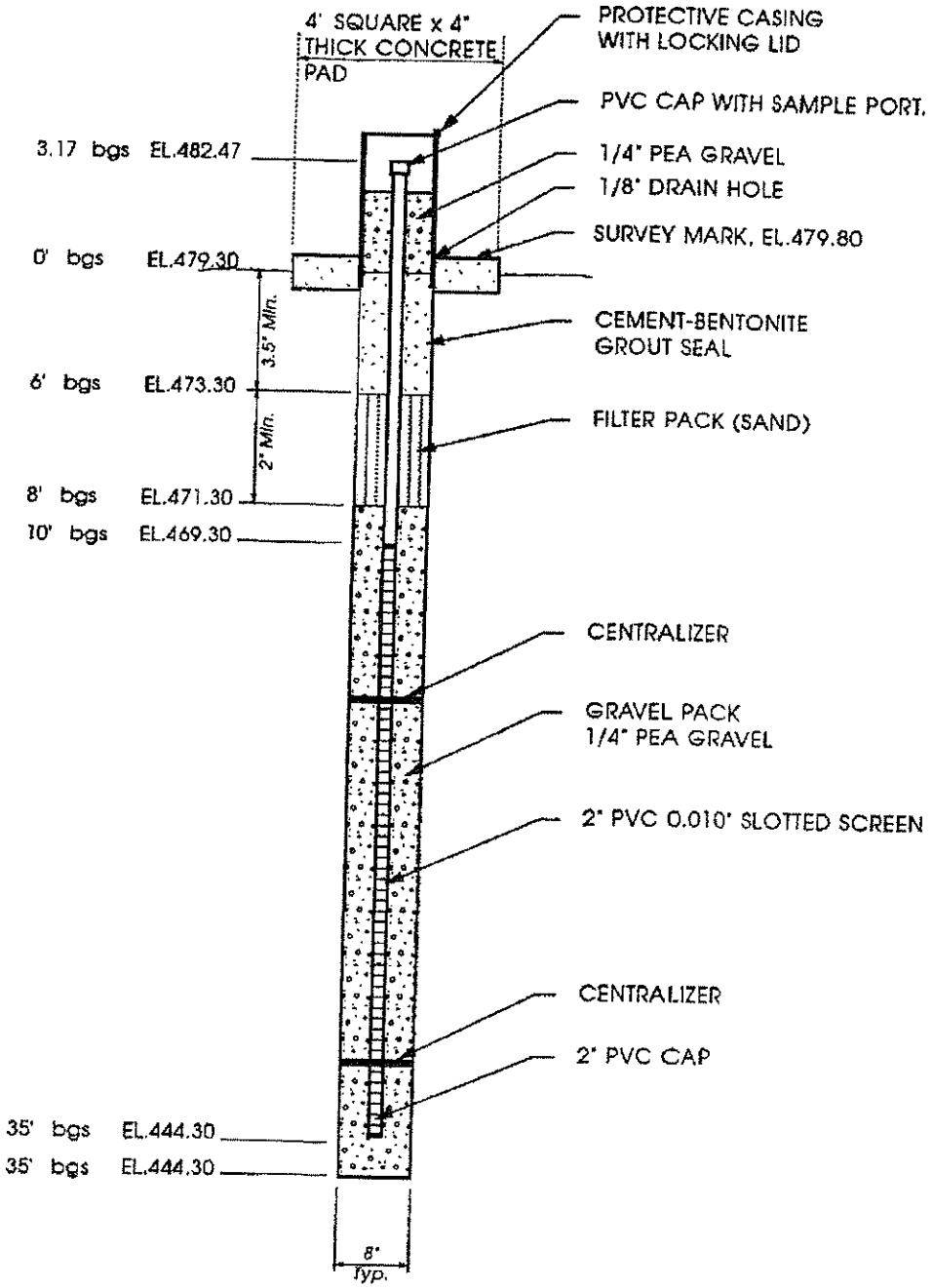
WASTE MANAGEMENT OF TEXAS
MSW Permit 42-C
Dallas & Ellis County, Texas

TYPE OF BORING: HSA | LOCATION:

DEPTH, FT.	SYMBOL	SAMPLES	SOIL DESCRIPTION	ELEVATION:
40			Occasional dark gray and iron staining.	
			42'	(CH)
			Hard, dark gray CLAY (Taylor Marl).	
45			*Total Depth 45'*	(CH)
50				
55				
60				
65				
70				

Notes:

7/28/95 26286.110



GAS PROBE INSTALLATION

Skyline Landfill & Recycling Center

GAS PROBE 26

BLACK & VEATCH

8/17/95 26286.100

McGuire Drilling Co., Inc.
2406 Rochelle Rd.
Irving, Texas 75062
(214) 255-9129

Log of Boring

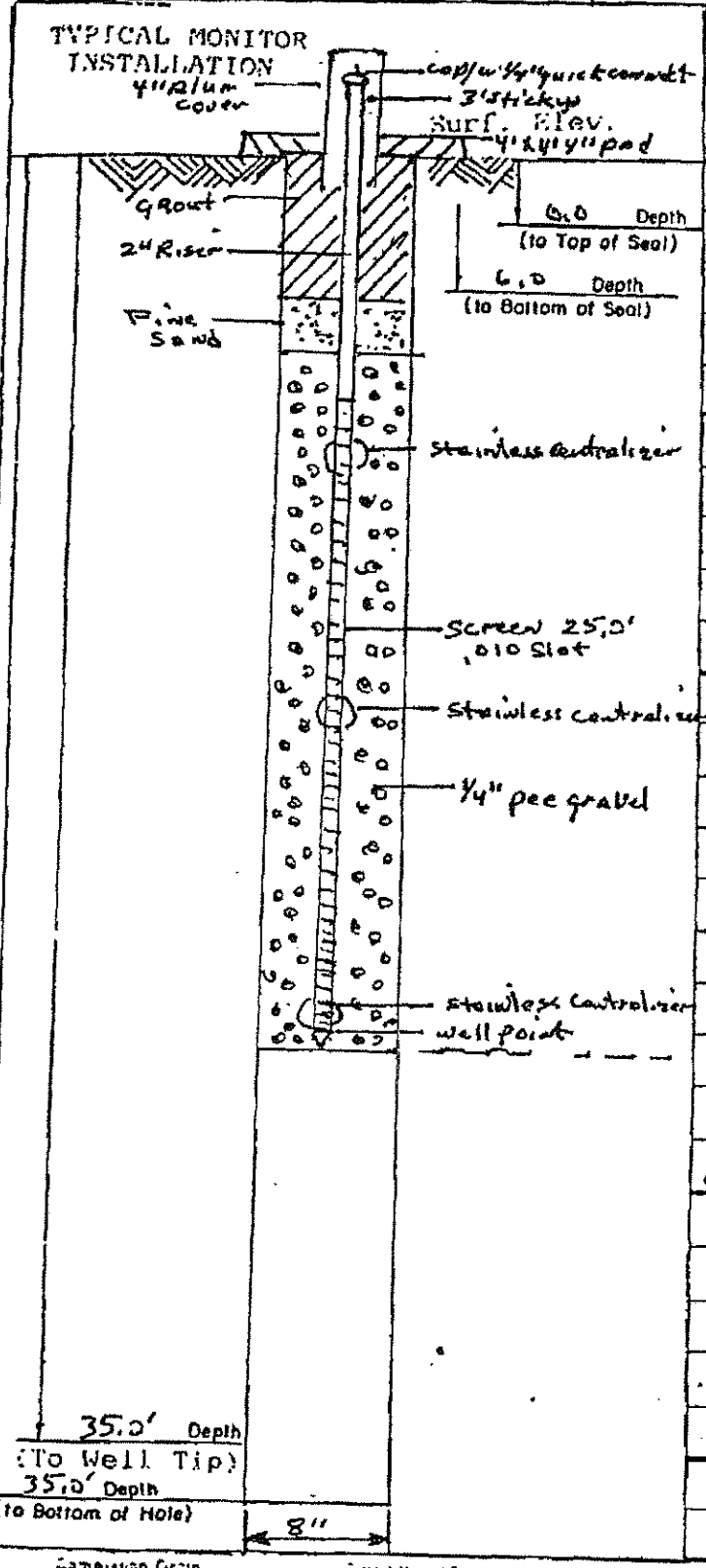
Number GP 26

Project: WMI Skyline SIF (Gas Prob)

Location: Ferris Tex

Type: Auger Log

Surface Elevation:



STRATUM DESCRIPTION

Gray Clay w/occ cal nods

Tan/gray w/occ FeStaining

-increasing light gray

-occ Dark gray

Dark Gray Clay (marl)

T.D. 35.0'

Completion Depth: 35.0'

Date: 6/15/95

Water Observations:

LOG OF BORING GAS PROBE GP-26

WASTE MANAGEMENT OF TEXAS
MSW Permit 42-C
Dallas & Ellis County, Texas

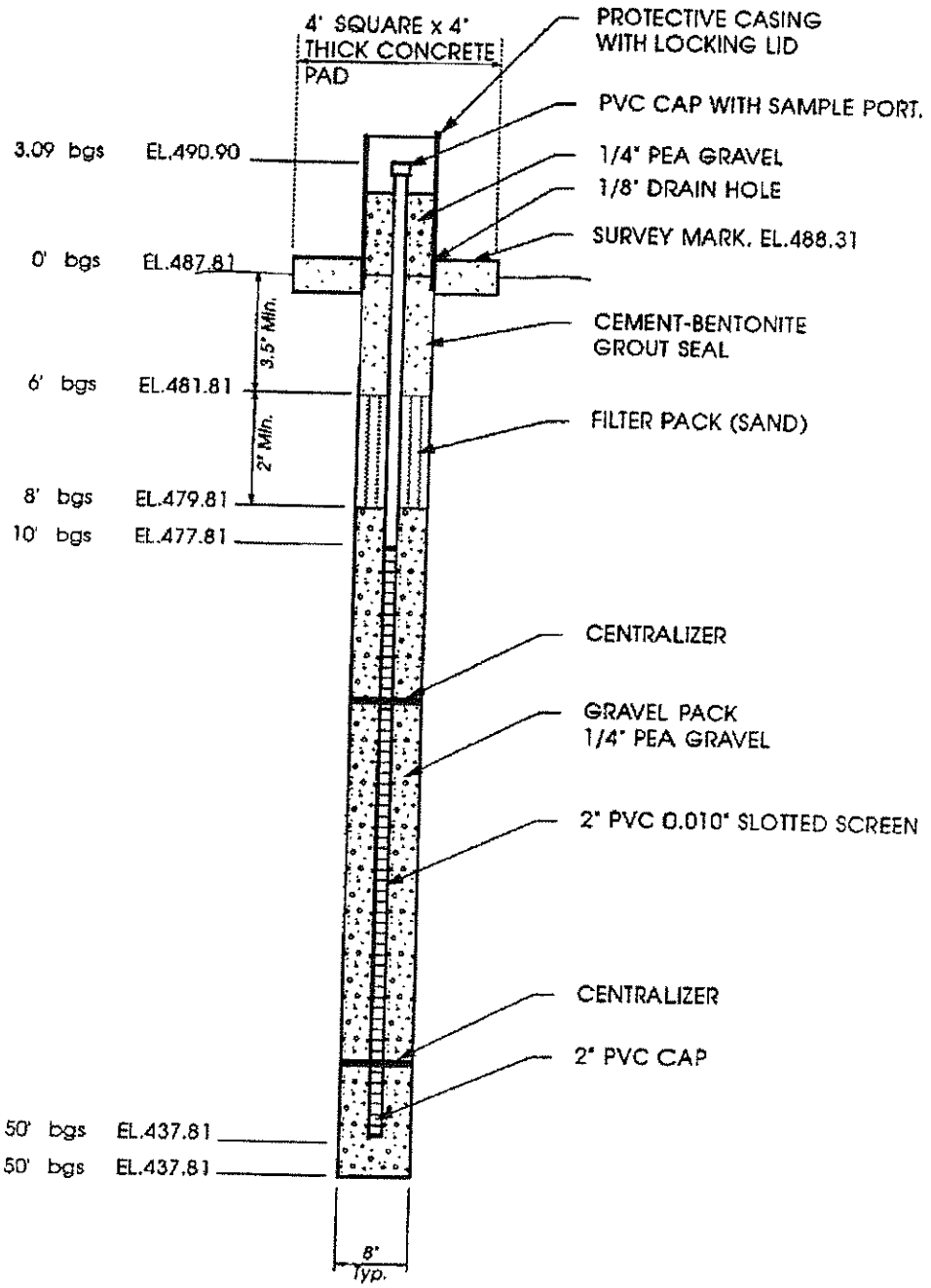
TYPE OF BORING: HSA

LOCATION: T+02 56+64

ELEVATION: Top Pipe 482.47, Ground 479.30

DEPTH, FT.	SYMBOL	SAMPLES	SOIL DESCRIPTION
			Firm to stiff, dark brown CLAY.
5			
			8' (CH)
			Firm to very stiff, tan and gray CLAY (Weathered Taylor) with occasional iron staining.
10			
			Increasing light gray.
15			
20			
25			Occasional dark gray.
			29' (CH)
30			Hard, dark gray CLAY (Taylor Marl).
35			*Total Depth 35'* (CH)

7/28/95 26286.110



GAS PROBE INSTALLATION

Skyline Landfill & Recycling Center

GAS PROBE 28

BLACK & VEATCH

8/17/95 26286.100

McGuire Drilling Co., Inc.
2406 Rochelle Rd.
Irving, Texas 75062
(214) 255-9129

Log of Boring

Number GP 28

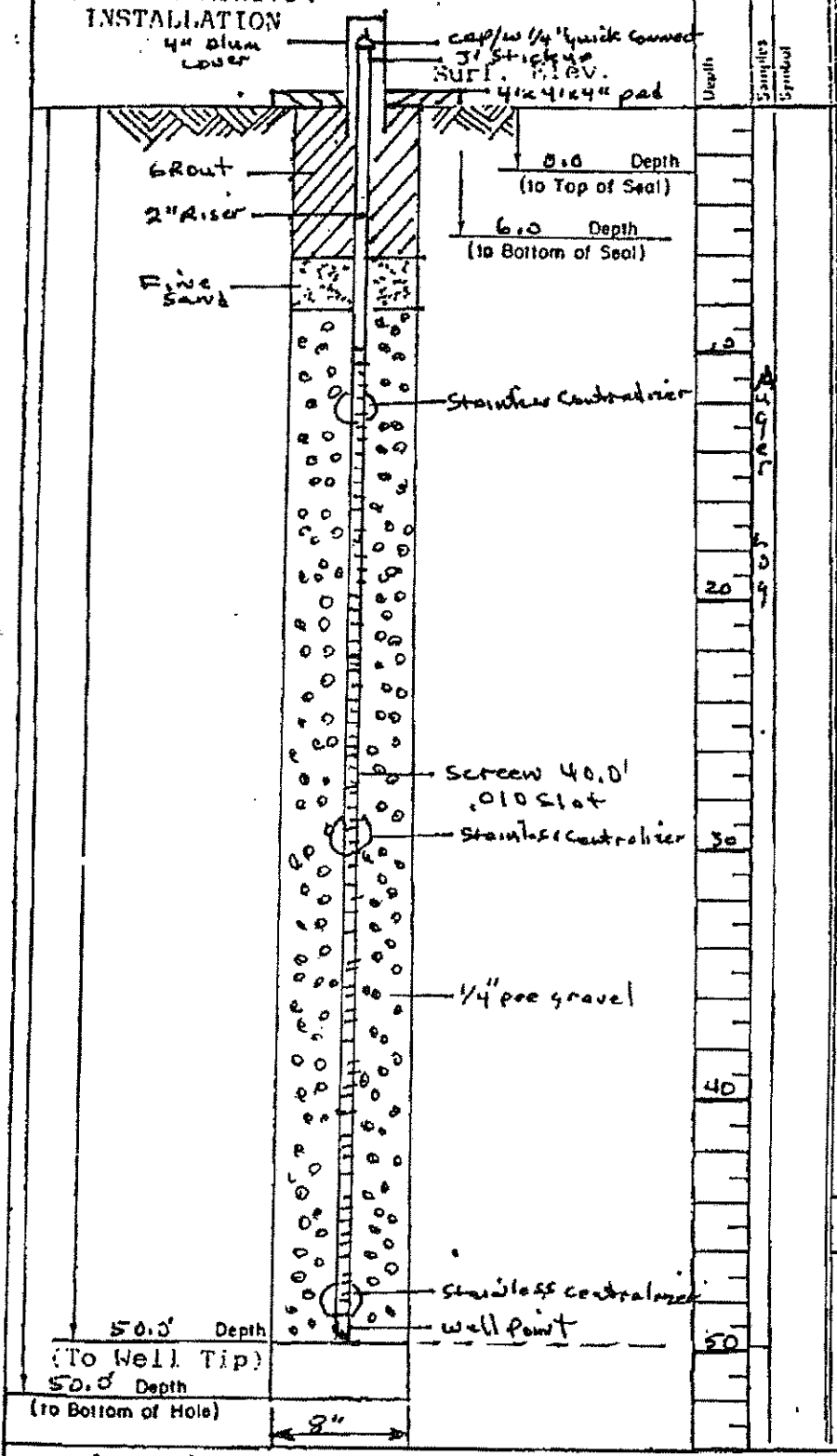
Project: WMI Skyline SIF (Gas Prob)

Location: Ferris, Tex.

Type: Auger Log

Surface Elevation:

TYPICAL MONITOR INSTALLATION



STRATUM DESCRIPTION

Gray clay

TAN w/occ cal nods

Tan/gray w/occ FE staining w/occ cal inclusions

Light gray w/FE staining

Tan/gray

FE staining

occ Dark gray Hard

Dark Gray clay (marl)

T.D. 50.0'

Completion Depth	Date	Water Observations
50.0	6/7/95	

LOG OF BORING GAS PROBE GP-28

WASTE MANAGEMENT OF TEXAS
MSW Permit 42-C
Dallas & Ellis County, Texas

TYPE OF BORING: HSA

LOCATION: I+94 57+20

ELEVATION: Top Pipe 490.90 Ground 487.81

DEPTH, FT.	SYMBOL	SAMPLES	SOIL DESCRIPTION
			Firm to stiff, dark brown CLAY.
3'			(CH)
			Firm to very stiff, tan and gray CLAY (Weathered Taylor) with iron stains and occasional selenite crystals.
5			
10			
			Occasional light gray and iron staining.
15			
20			
			Tan and light gray.
25			
30			
			Iron staining.
35			

7/26/95 26286.110

LOG OF BORING GAS PROBE GP-28 (cont.)

WASTE MANAGEMENT OF TEXAS
MSW Permit 42-C
Dallas & Ellis County, Texas

TYPE OF BORING: HSA

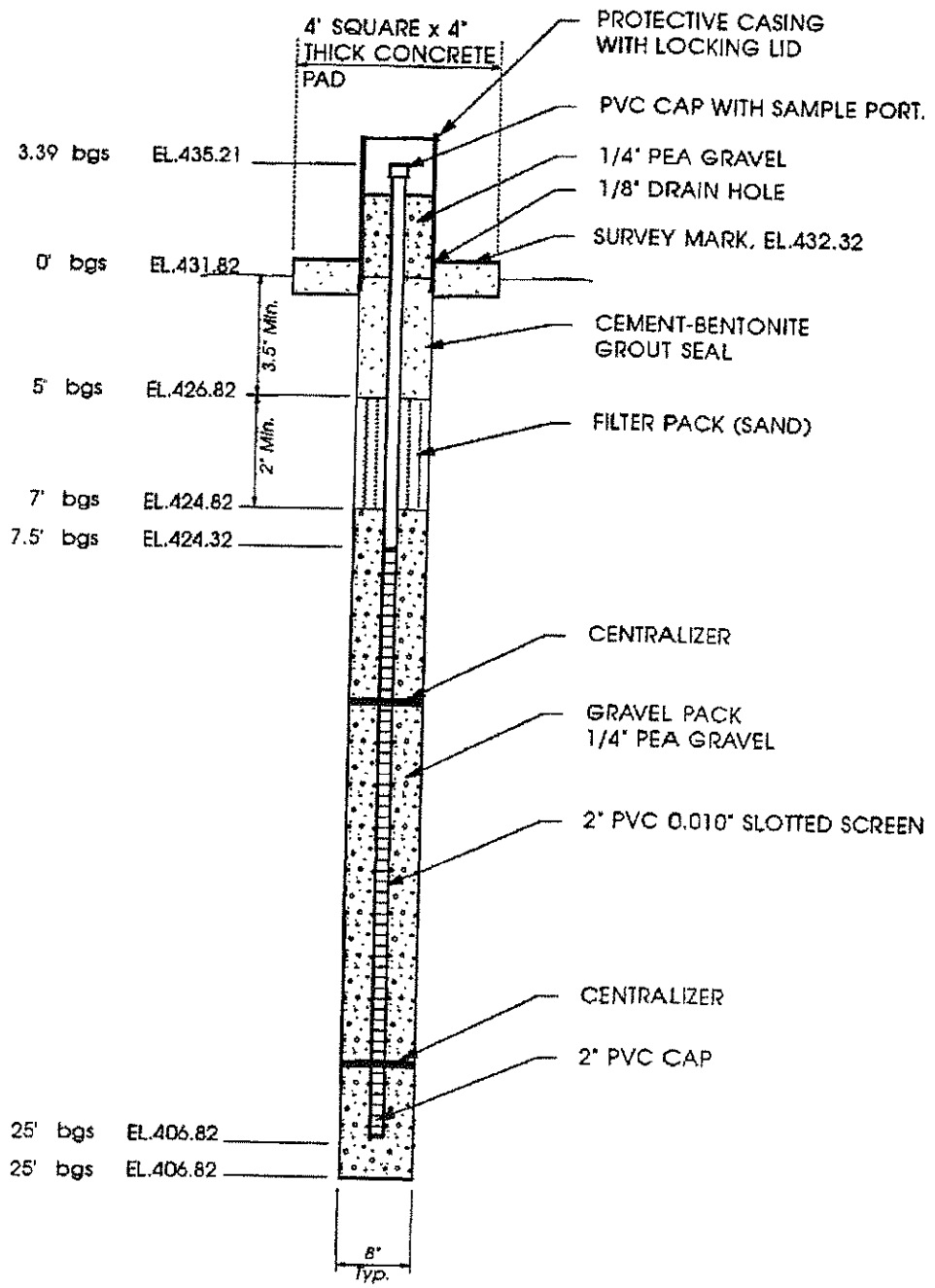
LOCATION:

ELEVATION:

DEPTH, FT.	SYMBOL	SAMPLES	SOIL DESCRIPTION	
40			Occasional dark gray.	
45			*46'*	(CH)
			Hard, dark gray CLAY (Taylor Marl).	
50			*Total Depth 50'*	(CH)
55				
60				
65				
70				

Notes:

7/28/95 2626A.110



GAS PROBE INSTALLATION

Skyline Landfill & Recycling Center

GAS PROBE 34

BLACK & VEATCH

8/17/95 26286.100

McGuire Drilling Co., Inc.
2406 Rochelle Rd.
Irving, Texas 75062
(214) 255-9129

Log of Boring

Number GP34

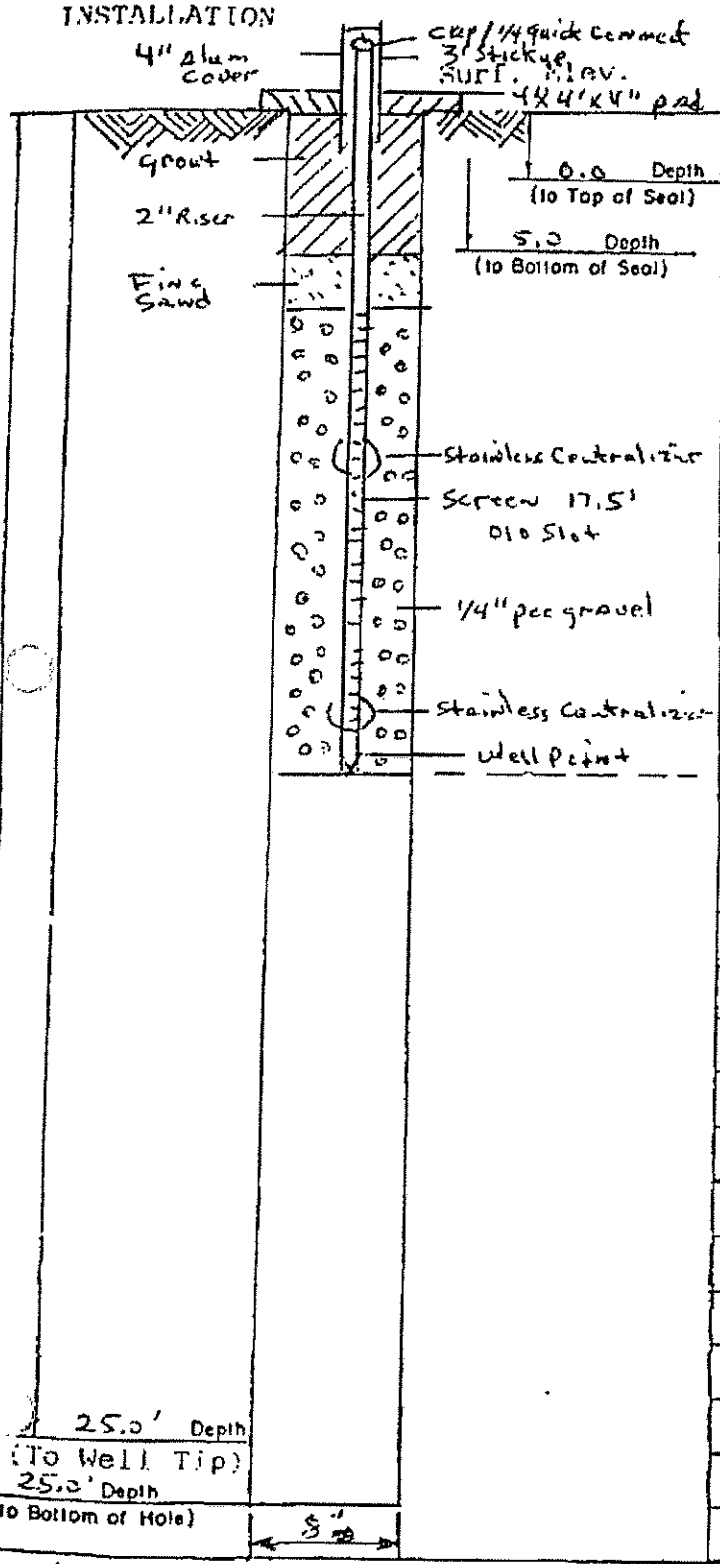
Project: WMI Skyline SIF (Gas Rob)

Location: Ferris Tex

Type: Auger Log

Surface Elevation:

TYPICAL MONITOR INSTALLATION



Depth	Stratum Description
	Gray Clay Light tan w/ iron staining weathered marl
10	occ Light gray
	occ Dark gray
20	Dark Gray Clay (marl)
	T.D. 25.0'
30	

Completion Depth	Date	Water Observations
25.0'	4/25/95	

LOG OF BORING GAS PROBE GP-34

WASTE MANAGEMENT OF TEXAS
MSW Permit 42-C
Dallas & Ellis County, Texas

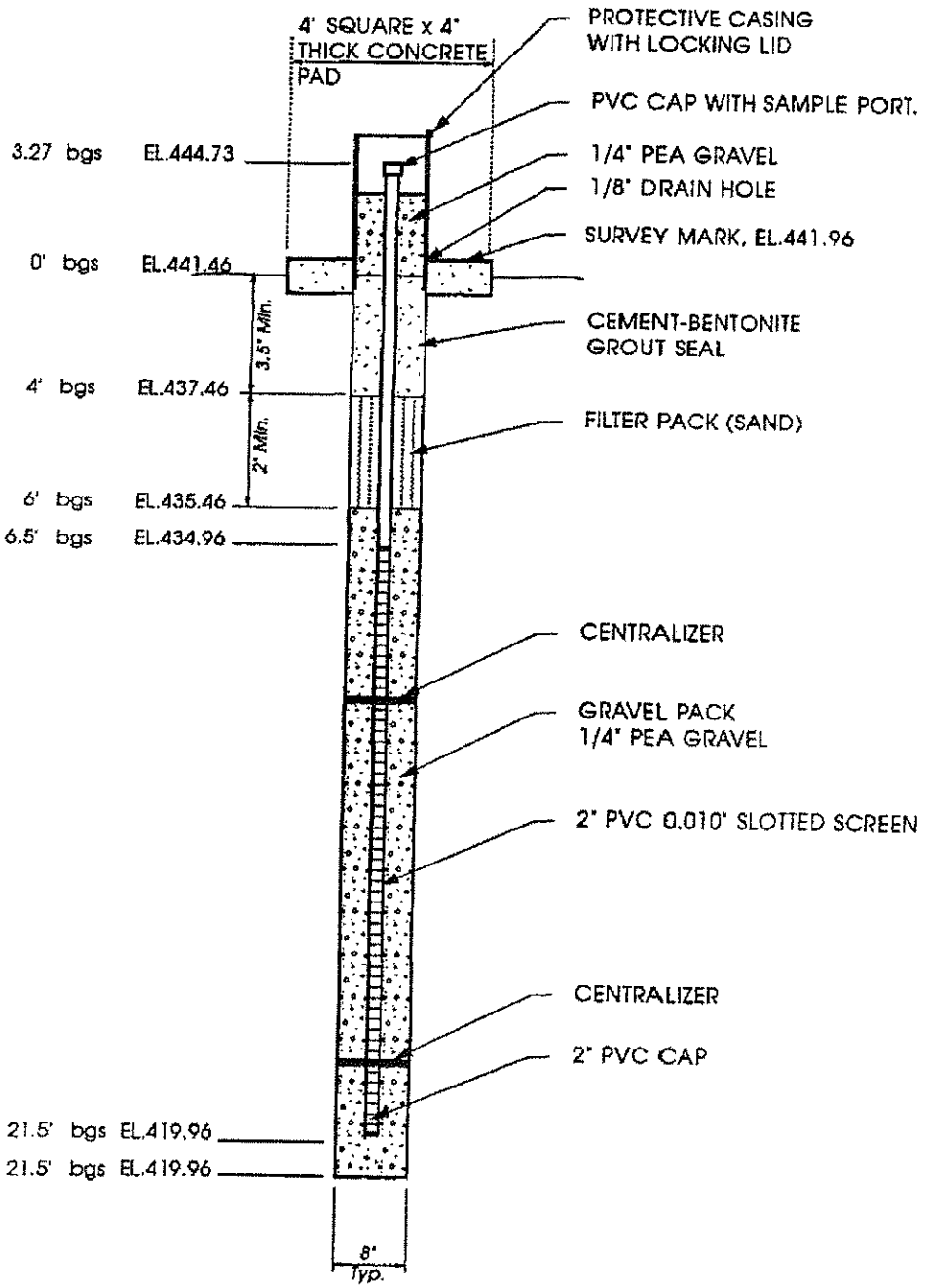
TYPE OF BORING: HSA

LOCATION: III+14 28+72

ELEVATION: Top Pipe 435.21 Ground 431.82

DEPTH, FT.	SYMBOL	SAMPLES	SOIL DESCRIPTION
			Firm to stiff, dark brown CLAY.
			2' (CH)
			Firm to very stiff, tan and gray CLAY (Weathered Taylor) with occasional iron staining.
5			
10			Occasional light gray.
15			Occasional dark gray.
			17' (CH)
			Hard, dark gray CLAY (Taylor Marl).
20			
25			*Total Depth 25'* (CH)
30			
35			

7/28/95 26266.110



GAS PROBE INSTALLATION

Skyline Landfill & Recycling Center

GAS PROBE 44

BLACK & VEATCH

8/17/95 26286.100

McGuire Drilling Co., Inc.
2406 Rochelle Rd.
Irving, Texas 75062
(214) 255-9129

Log of Boring

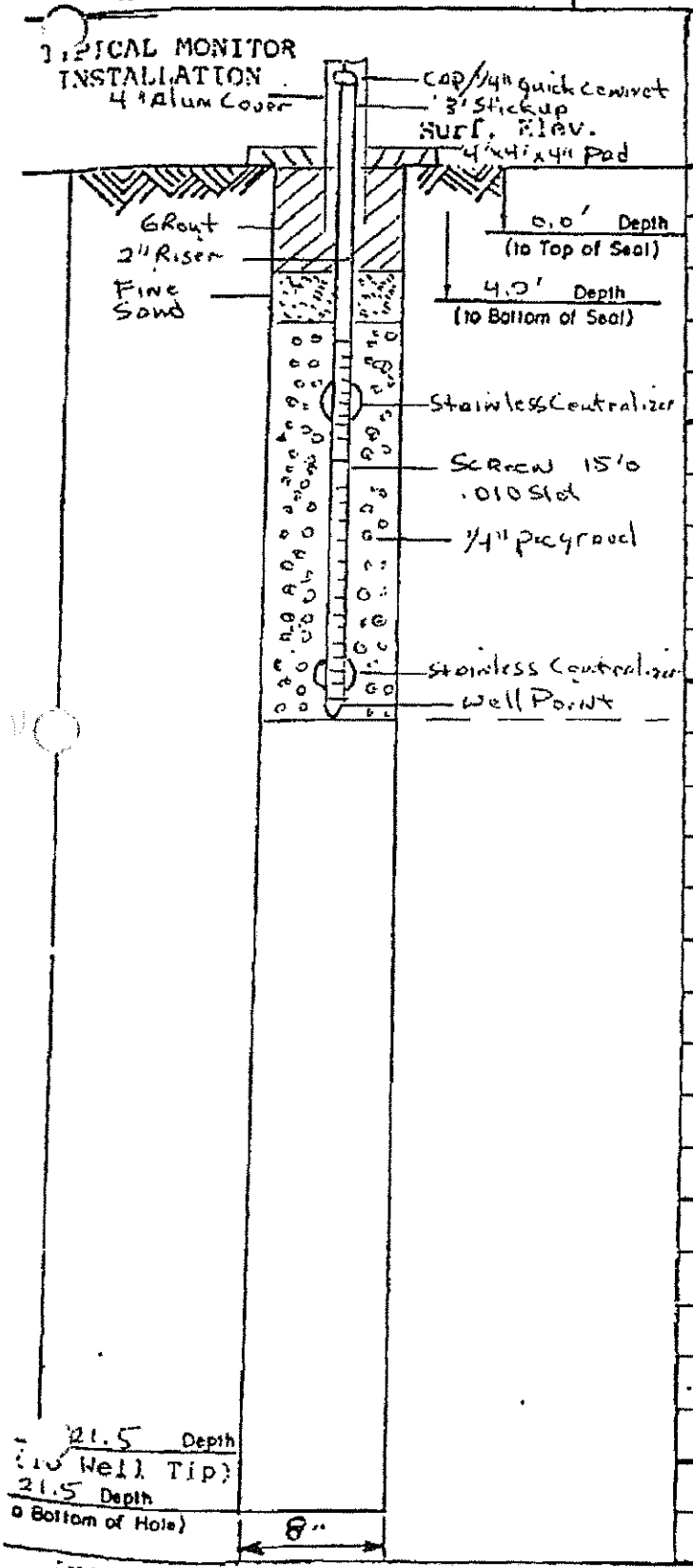
Number GP 44

Project: WMI Skyline SLF (Gas Prob)

Location: Ferris, Tex

Type: Auger Log

Surface Elevation:



STRATUM DESCRIPTION

Tan & Brown Clay — Fill
moist
w/ occ Brick Frag

Grayish Brown to Grey Clay

Grayish Brown Clay (weathered (marl)

Dark Gray Clay (marl)

T.D. 21.5'

Completion Depth: 21.5'

Date: 4/3/95

Water Observations:

LOG OF BORING GAS PROBE GP-44

WASTE MANAGEMENT OF TEXAS
MSW Permit 42-C
Dallas & Ellis County, Texas

TYPE OF BORING: HSA

LOCATION: 00+71 45+63

ELEVATION: Top Pipe 444.73, Ground 441.46

DEPTH, FT.	SYMBOL	SAMPLES	SOIL DESCRIPTION	
			Firm to very stiff, tan and brown CLAY with occasional brick fragments.	
			4'	(Fill)
5			Firm to very stiff, tan and gray CLAY (Weathered Taylor).	
10				
15			*15'*	(CH)
			Hard, dark gray CLAY (Taylor Marl).	
20				
			Total Depth 21.5'	(CH)
25				
30				
35				

7/28/95 26286.110

INSTALLATION OF LFG MONITORING PROBES
GMP 21R AND 22R

(COPY OF SOIL BOREHOLE LOG)

INSTALLED: AUGUST 2007
INSTALLED BY: APEX GEOSCIENCES, INC.

LOG OF BORING	Apex geoscience inc.	ENVIRONMENTAL SAMPLING
Project Number: 307-052	Name: Skyline Landfill	Boring No: GP – 21R
Location/Description: IH-45, Ferris, Texas		Date: 8/27/2007

SILTS & SANDS	CONSISTENCY	COLORS	MATERIALS	SAND TYPE	CHARACTERISTICS
VLo- Very Loose Lo- Loose MDe – Medium Dense De – Dense VDe – Very Dense	Vso – Very Soft So – Soft Mst – Medium Stiff St – Stiff Vst – Very Stiff H - Hard	Bk – Black, Bl – Blue Br – Brown, Dk – Dark G – Gray, Gr – Green Li – Light, R – Red Rdish – Reddish Y-Yellow, W - White	Cl – Clay, Clayey Gr – Gravel Ls – Limestone Sa – Sand, Sandy SS – Sandstone Sh – Shale, Si – Silt, Silty SiS - Siltstone	F – Fine M – Medium Co – Coarse Si - Silty	Calc – Calcareous Lam – Laminated Lig – Lignite Nod – Nodules Org – Organic Sm – Seam, Sl – Slightly Sls – Slickensided

SAMPLE #	DEPTH FT	CONDITION OR CONSISTENCY	COLOR	MINOR MATERIALS OR ADJECTIVES	PREDOMINATE MATERIAL	CHARACTERISTICS OR MODIFICATIONS	MOISTURE DESC.	PID	LEL
	0	So	Br	Si	Cl	Compacted fill	Dry		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	5	"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	10	"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	15	"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	20	"	"	"	"	"	"		
		Vst	Lt Br	"	"	Calc	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	25	"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	30	"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	35	"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		

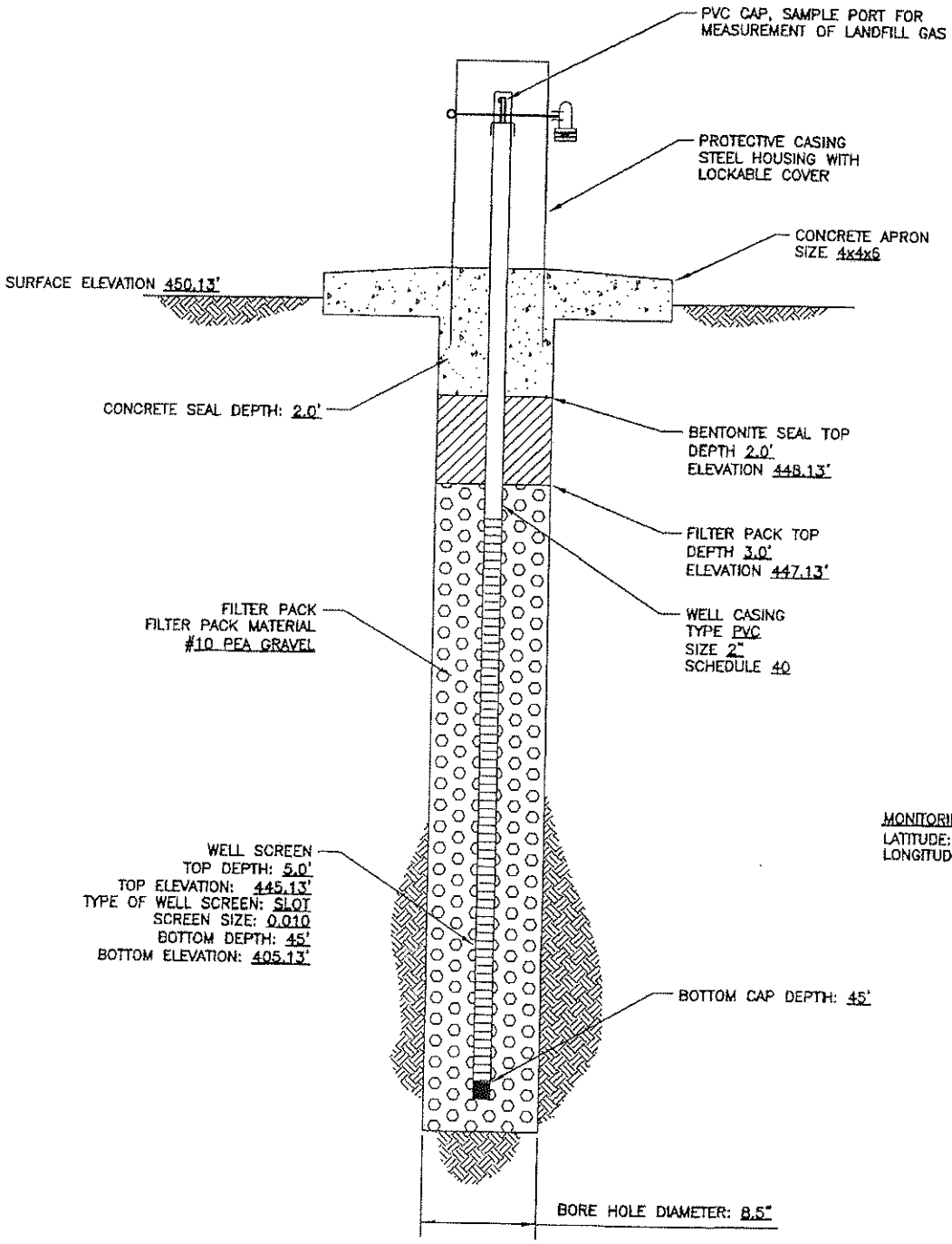
Project Number: 307-052	Name: Skyline Landfill	Boring No: GP – 21R
Location/Description: IH-45, Ferris, Texas		Date: 8/27/2007

SILTS & SANDS	CONSISTENCY	COLORS	MATERIALS	SAND TYPE	CHARACTERISTICS
VLo- Very Loose Lo- Loose MDe – Medium Dense De – Dense VDe – Very Dense	Vso – Very Soft So – Soft Mst – Medium Stiff St – Stiff Vst – Very Stiff H - Hard	Bk – Black, Bl – Blue Br – Brown, Dk – Dark G – Gray, Gr – Green Li – Light, R – Red Rdish – Reddish Y-Yellow, W - White	Cl – Clay, Clayey Gr – Gravel Ls – Limestone Sa – Sand, Sandy SS – Sandstone Sh – Shale, Si – Silt, Silty SiS - Siltstone	F – Fine M – Medium Co – Coarse Si - Silty	Calc – Calcareous Lam – Laminated Lig – Lignite Nod – Nodules Org – Organic Sm – Seam, Sl – Slightly Sis – Slickensided

SAMPLE #	DEPTH FT	CONDITION OR CONSISTENCY	COLOR	MINOR MATERIALS OR ADJECTIVES	PREDOMINATE MATERIAL	CHARACTERISTICS OR MODIFICATIONS	MOISTURE DESC.	PID	LEL
	40	Vst	Li, Br	Si	Cl	Calc	Dry		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	45	"	"	"	"	TD – 45'	"		

COMPLETION RECORD

Type of Boring: ☒HSA ☐ Other _____	Logged By: B. Collier	W.L. @ Dry Ft. On Completion; Caved to 0 Ft.
Screen From: 5 Ft. to 45 Ft.	Riser From 0 Ft. to 5 Ft.	Surface Completion ☐ Flush ☐ 2x2 Pad ☒ 4x4 Pad ☐ 6x6 Pad ☐ Other
Sand Gravel: 3 Ft. to 45 Ft.; Bentonite 3 Ft. to 4 Ft.		TD @ 45 Ft.



MONITORING PROBE
LATITUDE: 32° 32' 30" N
LONGITUDE: 96° 39' 57" W

GAS MONITORING PROBE DETAIL GP-21R

WASTE MANAGEMENT SKYLINE LANDFILL GAS MONITORING PROBE AS-BUILTS

ISSUED FOR INFORMATIONAL PURPOSES ONLY

REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

G3-31

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD
DALLAS • WICHITA FALLS
817-563-1144

DSN. MRW	DATE : 02/08	DRAWING
DWN. RMP	SCALE : GRAPHIC	1
CHK. MRW	DWG : MontProbe21R.dwg	

LOG OF BORING	Apex geoscience inc.	ENVIRONMENTAL SAMPLING
Project Number: 307-052	Name: Skyline Landfill	Boring No: GP – 22R
Location/Description: IH-45, Ferris, Texas		Date: 8/27/2007

SILTS & SANDS	CONSISTENCY	COLORS	MATERIALS	SAND TYPE	CHARACTERISTICS
VLo- Very Loose Lo- Loose MDe – Medium Dense De – Dense VDe – Very Dense	Vso – Very Soft So – Soft Mst – Medium Stiff St – Stiff Vst – Very Stiff H - Hard	Bk – Black, Bl – Blue Br – Brown, Dk – Dark G – Gray, Gr – Green Li – Light, R – Red Rdish – Reddish Y-Yellow, W - White	Cl – Clay, Clayey Gr – Gravel Ls – Limestone Sa – Sand, Sandy SS – Sandstone Sh – Shale, Si – Silt, Silty SiS - Siltstone	F – Fine M – Medium Co – Coarse Si - Silty	Calc – Calcareous Lam – Laminated Lig – Lignite Nod – Nodules Org – Organic Sm – Seam, Sl – Slightly Sls – Slickensided

SAMPLE #	DEPTH FT	CONDITION OR CONSISTENCY	COLOR	MINOR MATERIALS OR ADJECTIVES	PREDOMINATE MATERIAL	CHARACTERISTICS OR MODIFICATIONS	MOISTURE DESC.	PID	LEL
	0	So	Br	Si	Cl	Compacted fill	Dry		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	5	"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	10	"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	15	"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	20	"	"	"	"	"	"		
		Vst	Lt Br	"	"	Calc	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	25	"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	30	"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	35	"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		

Project Number: 307-052	Name: Skyline Landfill	Boring No: GP – 22R
Location/Description: IH-45, Ferris, Texas		Date: 8/27/2007

SILTS & SANDS	CONSISTENCY	COLORS	MATERIALS	SAND TYPE	CHARACTERISTICS
VLo- Very Loose Lo- Loose MDe – Medium Dense De – Dense VDe – Very Dense	Vso – Very Soft So – Soft Mst – Medium Stiff St – Stiff Vst – Very Stiff H - Hard	Bk – Black, Bl – Blue Br – Brown, Dk – Dark G – Gray, Gr – Green Li – Light, R – Red Rdish – Reddish Y-Yellow, W - White	Cl – Clay, Clayey Gr – Gravel Ls – Limestone Sa – Sand, Sandy SS – Sandstone Sh – Shale, Si – Silt, Silty SiS - Siltstone	F – Fine M – Medium Co – Coarse Si - Silty	Calc – Calcareous Lam – Laminated Lig – Lignite Nod – Nodules Org – Organic Sm – Seam, Sl – Slightly Sls – Slickensided

SAMPLE #	DEPTH FT	CONDITION OR CONSISTENCY	COLOR	MINOR MATERIALS OR ADJECTIVES	PREDOMINATE MATERIAL	CHARACTERISTICS OR MODIFICATIONS	MOISTURE DESC.	PID	LEL
	40	Vst	Li, Br	Si	Cl	Calc	Dry		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
		"	"	"	"	"	"		
	45	"	"	"	"	TD – 45'	"		

COMPLETION RECORD

Type of Boring: ☒HSA ☐ Other _____	Logged By: B. Collier	W.L. @ Dry Ft. On Completion; Caved to 0 Ft.
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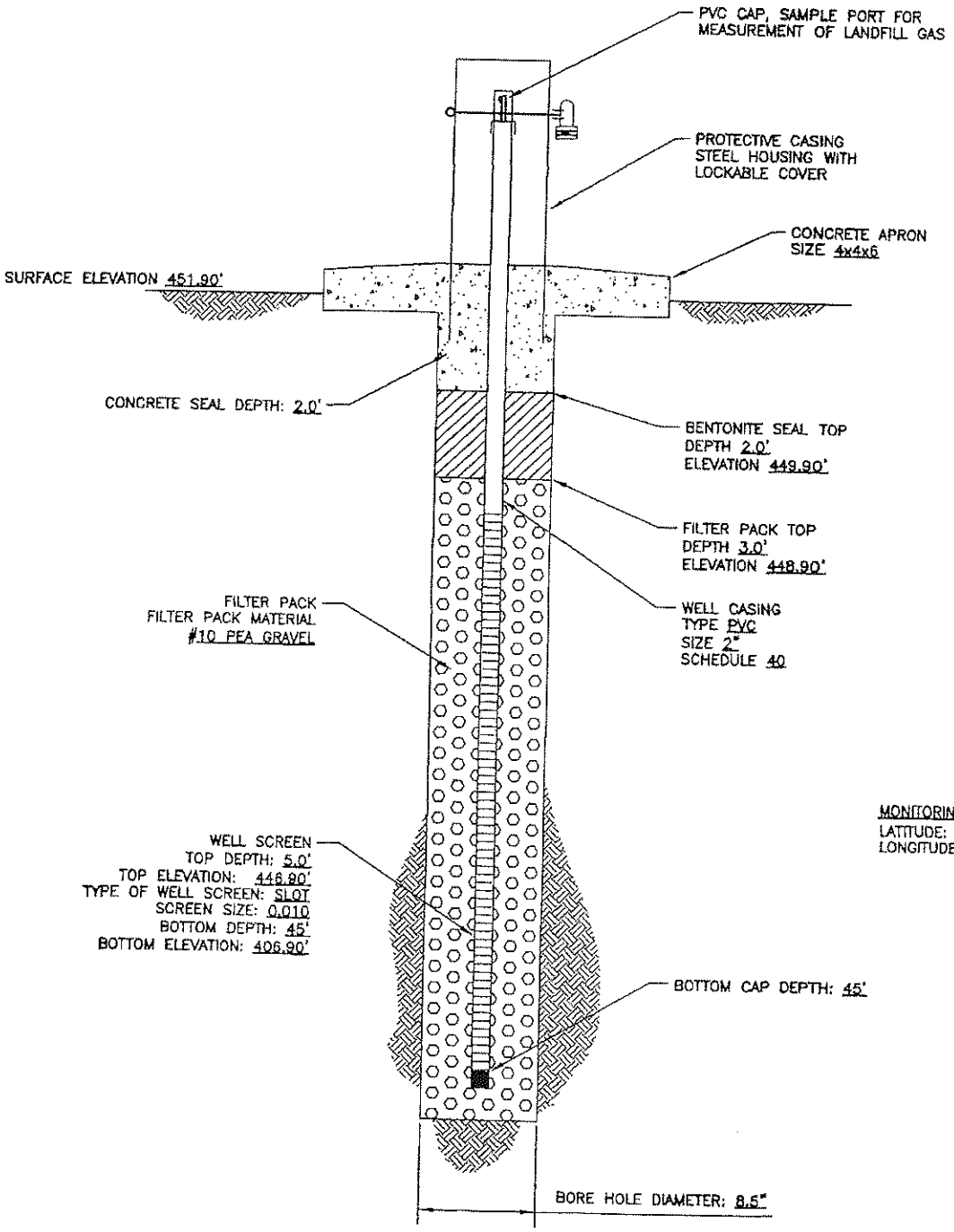
Sea Gravel: 3 Ft. to 45 Ft.; Bentonite 3 Ft. to 4 Ft.		TD @ 45 Ft.



nstallation Report\MontProbe22R.dwg Layout: 22R User: wmu

GAS MONITORING PROBE DETAIL GP-22R

WASTE MANAGEMENT SKYLINE LANDFILL GAS MONITORING PROBE AS-BUILTS

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD
DALLAS • WICHITA FALLS
817-563-1144

ISSUED FOR INFORMATIONAL PURPOSES ONLY

REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	DSN BY	APP BY
		G3-34				

DSN. MRW	DATE : 02/08	DRAWING
DWN. RMP	SCALE : GRAPHIC	1
CHK. MRW	DWG : MontProbe22R.dwg	

INSTALLATION OF LFG MONITORING PROBES
GMP43R

(COPY OF SOIL BOREHOLE LOG)

INSTALLED: SEPTEMBER 2009
INSTALLED BY: LANDTEC ENGINEERS

Project: Skyline Landfill
Dallas and Ellis Counties, Texas

Project Number: 0809-1377

BORING LOG
GMP-43R

Sheet 1 of 1

Location: See Gas Probe Map
Surface El.: 447.4
Northing: 321743 Easting: 2256900

Depth, feet	Samples	Symbol / USCS	MATERIAL DESCRIPTION	Hand Penetrometer, tsf	Penetration Blows / Foot	Recovery %	RQD	Moisture Content, %	Unit Dry Weight, pcf	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 200 Sieve	Unc. Compressive Strength, tsf
0	A1		CLAY, brown, stiff, moist to dry											
5	A2													
			8.0											
			CLAY, light brown to tan, shaly, very stiff, dry											
10	A3													
			14.0											
15	A4		CLAY, shaly, tan & gray, very stiff, dry											
			17.0											
			SHALE (Unweathered), gray, very stiff, dry											
20	A5													
25	A6													
			26.0											
30														
35														
40														

STATE OF TEXAS
THOMAS D. BAKER
4060

12-8-09

Thomas D Baker

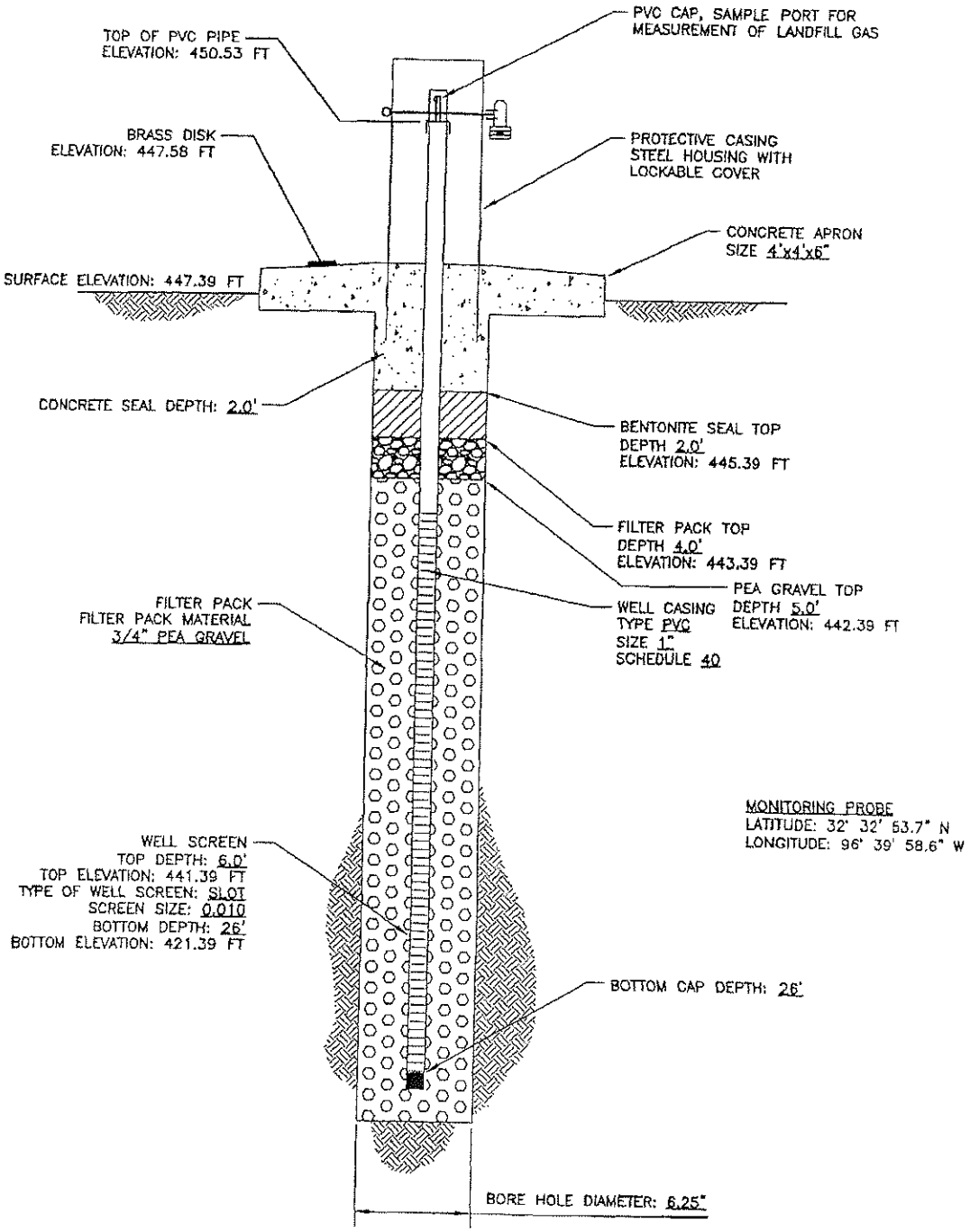
Completion Depth: 26 ft
Date: 9/29/09

Remarks: Dry at completion.
Top of Casing El.: 450.5'

BORING LOG NO WORD FIGURE 1377 SKYLINE LOGS.GPJ LANDTEC.GDT 12/8/09

LANDTEC

Soil and rock descriptions on this boring log are a compilation of data collected in both the field and the laboratory. The stratification lines represent the approximate boundary between soil types and the transition can be gradual.



LANDTEC engineers

TBPE REGISTRATION NO. F-329
1700 ROBERT ROAD, STE 101 PHONE 817.453.6049
MANSFIELD, TX 76063 FAX 817.453.5984

GAS MONITORING PROBE DETAIL
GP-43R
SKYLINE LANDFILL
DALLAS AND ELLIS COUNTIES, TEXAS

DATE: 10-2009
PROJ NO. 0809-1377
DRAWN BY: CLS
APPD BY: TDG

DRAWING 2

TCEQ PERMIT MODIFICATION APPROVAL

INSTALLATION OF LFG MONITORING PROBES GMP 21R, 22R, 32R, AND 33R

APPROVAL DATE: AUGUST 9, 2007

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

MODIFICATION TO

MUNICIPAL SOLID WASTE PERMIT NO. 42C

SKYLINE RECYCLING AND DISPOSAL FACILITY

Municipal Solid Waste Permit No. 42C is hereby modified as follows:

Description of Change:

1. Groundwater monitoring wells (MW) MW-2 and MW-3 will be replaced with MW-2R and MW-3R, respectively. MW-2 and MW-3 will be rendered inoperable upon construction of a portion of the perimeter drainage system. The approval of modification for these monitoring wells is with the following conditions:

    a. There will be no change to the design or depth of the wells, or the monitoring system design.

    b. A Monitor Well Installation Report will be submitted to the TCEQ Municipal Solid Waste (MSW) Permit Section within 30 days of the well completion activities.

    c. The Monitor Well Installation Report will include a discussion of the monitor well installation technique, boring/monitor well log of the completed monitor well, State of Texas Well Report, Monitor Well Data Sheet (Form TCEQ-10308), site map indicating the location of MW-2R and MW-3R, well development information, and plugging and abandonment information for MW-2 and MW-3.

    d. If statistical evaluation of the data from the first groundwater monitoring event for MW-2R and MW-3R indicates a statistical difference from the old data, the facility shall implement a quarterly background sampling event.

2. Landfill gas monitoring probes (GP) GP-21, GP-22, GP-32, and GP-33 will be replaced with GP-21R, GP-22R, GP-32R and GP-33R, respectively. GP-32 and GP-33 will be rendered inoperable upon construction of a portion of the perimeter drainage system. GP-21 and GP-22 are damaged and currently inoperable, thus they need to be relocated. There will be no change in the design or depth of the gas probes, or the monitoring system design.

Updated drawings of the new locations of the monitoring probes for the landfill gas monitoring system will be submitted to the MSW Permits Section.

The details of this permit modification are contained in the application received on March 30, 2007 and the revisions received June 28, 2007.

Part of Permit Modified:

Site Development Plan – Appendix 12.3 – Groundwater Sampling Analysis Plan, Figures 4 and 5
Site Development Plant – Appendix 12.5 – Landfill Gas Management Plan, Figure 1

This modification is a part of Permit No. 42C and should be attached thereto.

APPROVED, ISSUED, AND EFFECTIVE in accordance with Title 30 Texas Administrative Code Chapter 305, Section 305.70(j)(17) and Chapter 330.

ISSUED DATE:

AUG 0 9 2007

For the Commission

TCEQ PERMIT MODIFICATION APPROVAL

INSTALLATION OF LFG MONITORING PROBES GMP 37R AND 43R

APPROVAL DATE: JUNE 5, 2009

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

MODIFICATION TO

MUNICIPAL SOLID WASTE PERMIT NO. 42C

SKYLINE RECYCLING AND DISPOSAL FACILITY

Municipal Solid Waste Permit No. 42C is hereby modified as follows:

Description of Change:

This permit modification changes the Landfill Gas (LFG) Monitoring System. The changes to the LFG monitoring system include the replacement of LFG monitoring wells GP-37 and GP-43 with GP-37R and GP-43R respectively and the removal of LFG monitoring well GP-5N.

The details of this permit modification are contained in the application dated April 6, 2009 and the revisions dated June 1, 2009.

Part of Permit Modified:

Site Development Plan
Attachment 12 (Site Operating Plan)
Appendix 12.5(Landfill Gas Management Plan)
Figure 1 (Landfill Gas Probe Locations)

This modification is a part of Permit No. 42C and should be attached thereto.

APPROVED, ISSUED, AND EFFECTIVE in accordance with Title 30 Texas Administrative Code Chapter 305, Section 305.70(j)(18), (21) and (27).

ISSUED DATE:

JUN 05 2009

For the Commission