



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-26

Date Hole Started: 8/9/90 Date Hole Finished: 8/9/90

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: South of the old Wedge Roaster

Recorded By: MRW

Drilling Company: Layne

Driller: Arl Rodriguez

Drilling Method: Percussion Hammer

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 60

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	2-inch, flush threaded, Sch 40, PVC	0 - 60 feet
Surface Casing Used?	Y	Manhole	0 - .25 feet
Screen/Perforations?	Y	0.010-inch slot, Sch 40, PVC	30 - 60 feet
Sand Pack?	Y	10/20 silica sand	26 - 60 feet
Annular Seal?	Y	Bentonite Chips	24 - 26 feet
Surface Seal?	Y	Bentonite/Cement Grout	0 - 24 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 48.86

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft): 0

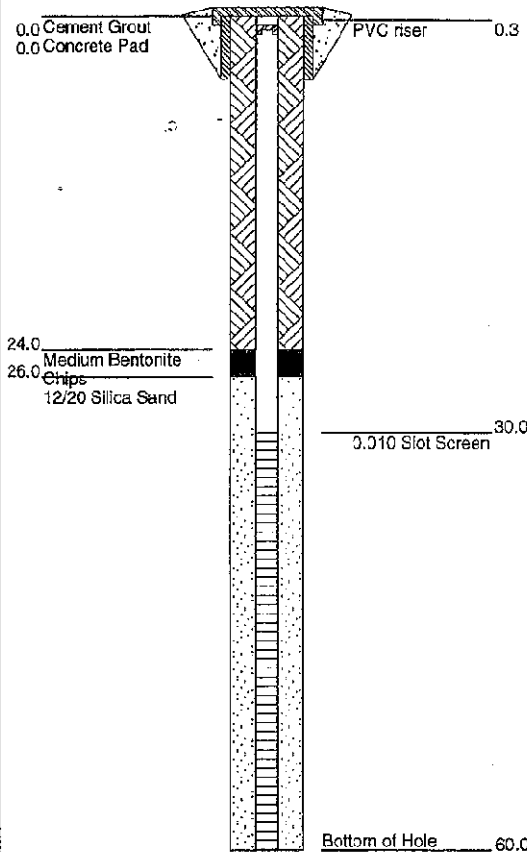
Riser Height (ft): -0.25

Ground Surface Elevation (ft): 3770.84

MP Elevation (ft): 3770.64

Remarks: Wet from 45 - 60 feet. Completion includes 2' X 2' concrete pad with a locking water tight manhole and expansion plug

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 0.5'
ASPHALT -pavement
[Road Pavement]

0.5 - 44.0'

SLAG -very hard, angular black slag. Loose from 30 - 44 feet.
[Slag Fill]

44.0 - 57.0'

gravelly sand -medium to coarse-grained sand with well-rounded gravel to 1 - inch. Moist to wet at 44 feet.
[Alluvium]

57.0 - 60.0'

Silty SAND -predominantly fine-grained sand and silt with trace amounts of clay. Occasional gravel to 1/2 - inch.
[Alluvium]



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Monitor Well Log

Hole Name: EP-27

Date Hole Started: 8/9/90 Date Hole Finished: 8/9/90

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Approx. 150 yards north of "ASARCO" stack

Recorded By: MRW

Drilling Company: Layne

Driller: Art Rodriguez

Drilling Method: Percussion Hammer

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in):

Total Depth Drilled (ft): 59

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	2-inch, flush threaded, Sch 40, PVC	0 - 59 feet
Surface Casing Used?	Y	Manhole	
Screen/Perforations?	Y	0.010-inch slot, Sch 40, PVC	29 - 59 feet
Sand Pack?	Y	10/20 silica sand	24 - 59 feet
Annular Seal?	Y	Bentonite Chips	22 - 24 feet
Surface Seal?	Y	Bentonite/Cement Grout	0 - 22 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP:

Date:

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

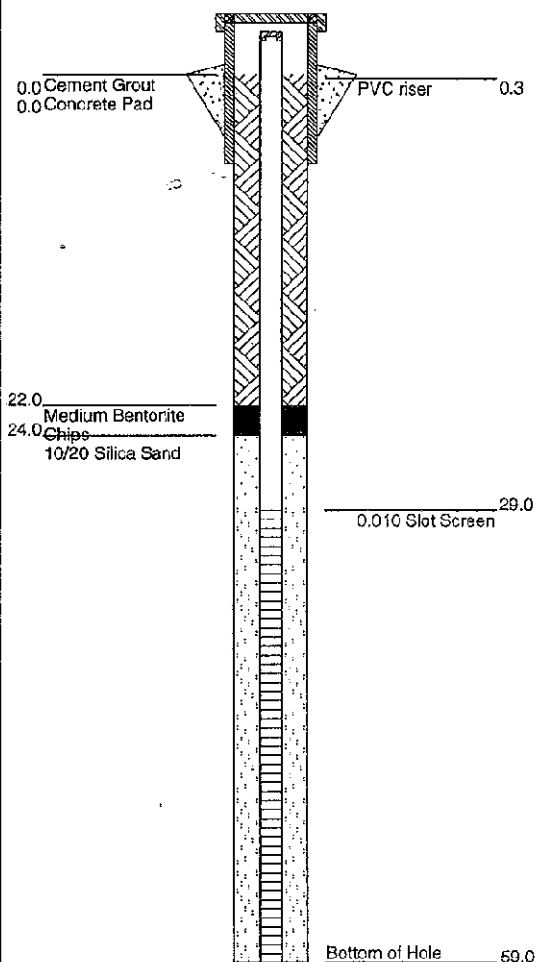
Riser Height (ft):

Ground Surface Elevation (ft): 3788

MP Elevation (ft):

Remarks: Water level in nearby EP-25 checked at 1700 and level @ 49'. Decided to drill to 60' and stop. Very hard drilling. Well completion includes a 2' X 2' concrete pad with a locking water-tight manhole and expansion plug. **Plugged and abandoned.**

WELL CONSTRUCTION



GEOLOGICAL DESCRIPTION

0.0 - 0.5'
FILL - silty gravel tan silt with angular gravel to 1/2"
0.5 - 24.0'
SLAG - very hard angular black slag

24.0 - 25.0'
SILTY CLAY - low to medium plasticity clay, greenish-brown color with some silt
25.0 - 39.0'
SILTY GRAVEL - coarse angular to subangular gravel to 2" with tan silt and a small amount of fine grained sand; large andesite cobbles to 12" at 29 - 39'; very hard drilling

39.0 - 41.0'
FAT CLAY - high plasticity clay mottled gray with orange/red oxidation staining; very stiff
41.0 - 45.0'
MUDSTONE - same as above; fat clay but very hard and rock-like

45.0 - 60.0'
QUARTZ COBBLES - large quartz cobbles and gravels to 12" with some silt; dry



HYDROMETRICS INC.

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Monitor Well Log

Hole Name: EP-29

Date Hole Started: 2/3/91 Date Hole Finished: 2/3/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Along rr tracks at 33 + 95 ft reference points on canal wall

Recorded By: AJH

Drilling Company: LARJON

Driller: Jim

Drilling Method: Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 38

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 37 feet
Surface Casing Used?	Y	12 inch Vault	0 - .5 feet
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	7 - 37 feet
Sand Pack?	Y	10/20 silica sand	5 - 37 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	Y	Concrete	0 - 3 feet

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	N
Boring Samples Taken?	N

Static Water Level Below MP: 13.80

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): -0.25

Surface Casing Height (ft): 0

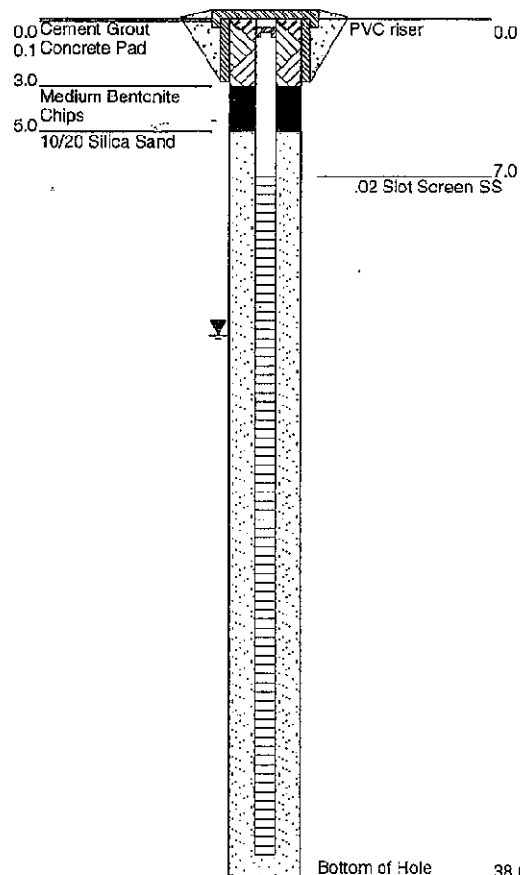
Riser Height (ft): -0.25

Ground Surface Elevation (ft): 3727.50

MP Elevation (ft): 3727.25

Remarks: op - 650 7 7/8" hole, completion - 7 - 37', 4" SS 0.02 slotted wellscreen, 0 - 7' 4" solid PVC, 5 - 37' 10/20 silica sand, 3 - 5' 1" hydrated bentonite pellets, 0 - 3' cement, 12" vault at surface, SS bottom plug, expansion top plug, 2' radial pad

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 11.0'	Fill SILTY SAND with GRAVEL -slightly moist, brown, non-plastic, calcareous, medium-grained [Fill]
11.0 - 16.0'	SILTY SAND -moist, light brown, non-plastic, calcareous [Alluvium]
16.0 - 19.0'	SANDY GRAVEL -some silt, slightly moist, light yellowish brown, non-plastic, calcareous [Alluvium]
19.0 - 24.0'	SILTY SAND -dry to slightly moist, light brown, non-plastic, calcareous [Alluvium]
24.0 - 38.0'	SANDY GRAVEL -moist, light yellowish brown, non-plastic, calcareous (approximately 35% sand) [Alluvium]



HYDROMETRICS INC.

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Monitor Well Log

Hole Name: EP-30

Date Hole Started: 1/31/91 Date Hole Finished: 1/31/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Along rr tracks at 34 + 50 ft reference points on canal wall

Recorded By: AJH

Drilling Company: LARJON

Driller: Jim

Drilling Method: Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 38

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 37 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	7 - 37 feet
Sand Pack?	Y	10/20 silica sand	5 - 37 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	Y	Concrete	0 - 3 feet

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	N
Boring Samples Taken?	N

Static Water Level Below MP: 17

Date: 1/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

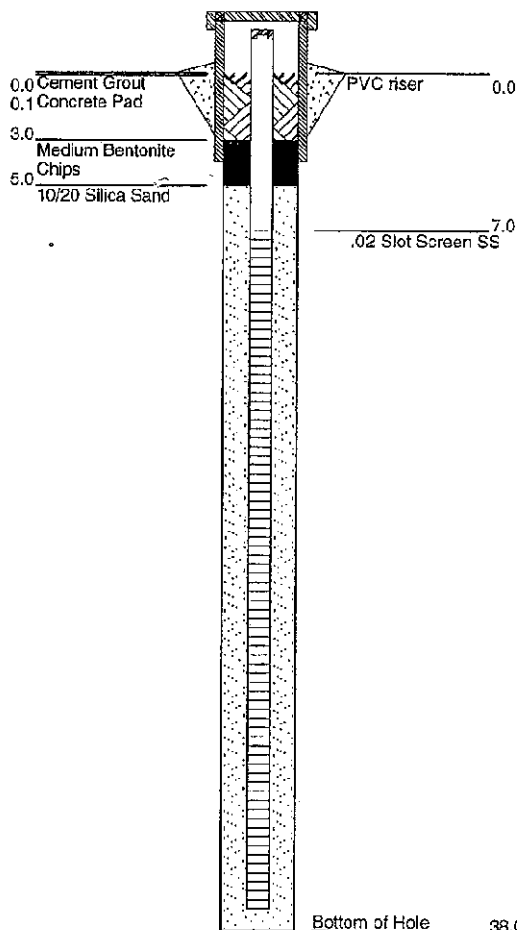
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3726.34

Remarks: CP-650 drill, 12" vault at surface, ss bottom plug, expansion plug.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 9.0'	GRAVELLY SAND -dry, light brown, non-plastic [Alluvium]
9.0 - 11.0'	BOULDER & COBBLE GRAVEL -dry, light brown, non-plastic, calcareous [Alluvium]
11.0 - 14.0'	SANDY GRAVEL -dry, brown, non-plastic [Alluvium]
14.0 - 18.0'	COBBLE GRAVELS -sandy, dry to slightly moist, non-plastic, yellowish-brown, calcareous [Alluvium]
18.0 - 28.0'	SANDY GRAVEL -moist, light yellowish-brown, non-plastic; some clay (10%), calcareous rock fragments - andesite, quartzite [Alluvium]
28.0 - 38.0'	As above, more clay, higher percentage of andesite rock fragments



HYDROMETRICS INC.

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Monitor Well Log

Hole Name: EP-31

Date Hole Started: 1/30/90 Date Hole Finished: 1/30/90

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order R1

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Along rr tracks at 35 + 20 ft reference points on canal wall

Recorded By: AJH

Drilling Company: LARJON

Driller: Jim

Drilling Method: Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 39

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 37 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	7 - 37 feet
Sand Pack?	Y	10/20 silica sand	6 - 37 feet
Annular Seal?	Y	Bentonite Chips	4 - 6 feet
Surface Seal?	Y	Concrete	0 - 4 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 16.00

Date: 1/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

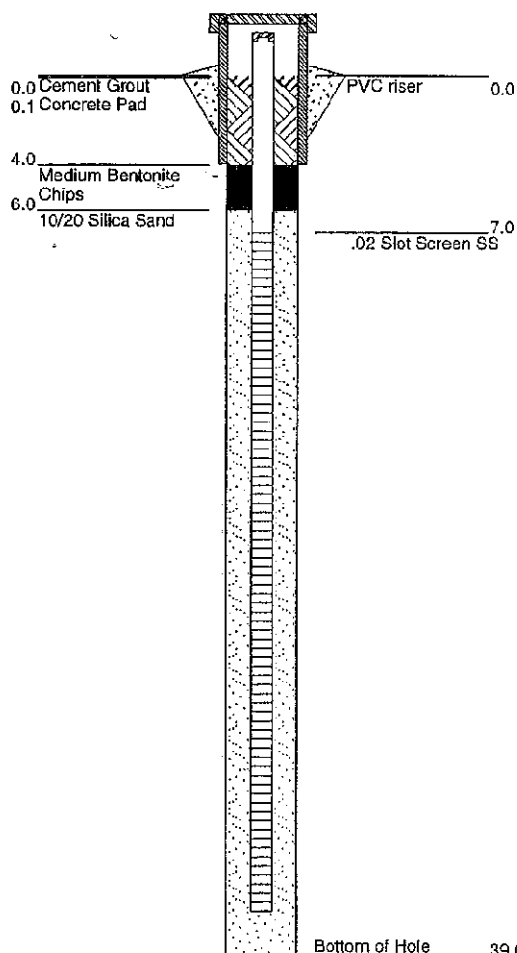
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3726.02

Remarks: CP-650: 7 7/8" hole

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 2.0'	SANDY GRAVEL -dry, light brown, non-cohesive, non-plastic
2.0 - 12.0'	SANDY GRAVEL -dry, light brown to cream, non-plastic
12.0 - 15.0'	SANDY GRAVEL -boulders, dry, light grayish-brown, non-plastic, high andesite content
15.0 - 23.0'	SANDY GRAVEL -slightly moist to wet, light grayish brown, non-plastic
23.0 - 29.0'	SANDY GRAVEL -As above
29.0 - 39.0'	CLAYEY GRAVEL -wet yellowish-brown, slightly plastic



HYDROMETRICS INC.

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Monitor Well Log

Hole Name: EP-32

Date Hole Started: 1/31/91 Date Hole Finished: 1/31/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Along rr tracks at 35 + 65 ft reference points on canal wall

Recorded By: WH

Drilling Company: Ruen

Driller: Will

Drilling Method: Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 38.5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 37 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	7 - 37 feet
Sand Pack?	Y	10/20 silica sand	5 - 37 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	Y	Concrete	0 - 3 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 20.00

Date: 1/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

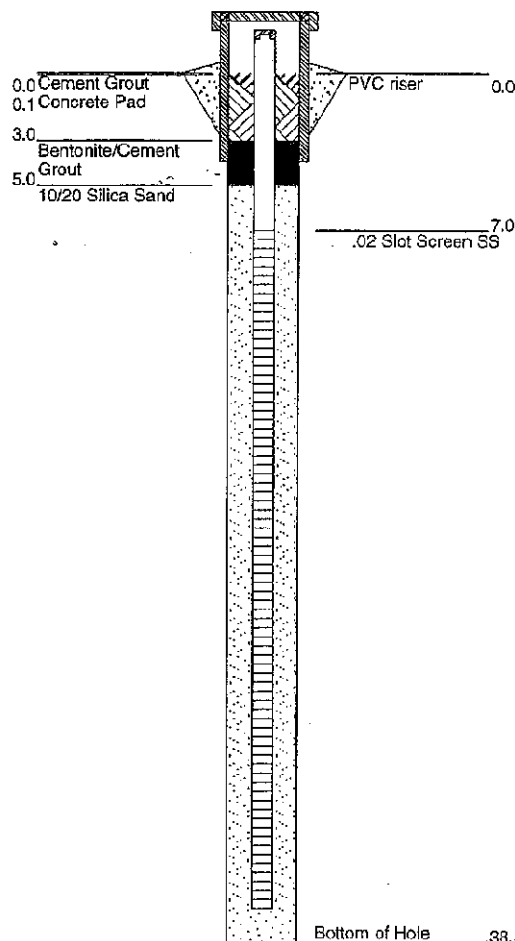
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3725.97

Remarks: Schramm: 7 7/8" hole

WELL CONSTRUCTION



GEOLOGICAL DESCRIPTION

0.0 - 0.5'
SANDY GRAVEL-medium dense, loose, dry, maximum size 3", light brown

0.5 - 31.0'
SANDY GRAVEL-dense to very dense, slightly moist, maximum size 3", some cobbles to 5", rounded to subangular, light brown (GP), boulder 7 - 8', 10 - 14' boulders harder and boulders again at 15.5' to 19'

31.0 - 38.5'
SANDY GRAVEL with CLAY-dense to very dense, wet, maximum gravel size 3", boulders to 6 - 8", considerable dry fines, gravel is subrounded to subangular, light brown (GP)



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Monitor Well Log

Hole Name: EP-33

Date Hole Started: 1/30/91 Date Hole Finished: 1/30/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Along rr tracks at 36 + 05 ft reference points on canal wall

Recorded By: WH

Drilling Company: Ruen

Driller: Will

Drilling Method: Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 37.5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 37 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	7 - 37 feet
Sand Pack?	Y	10/20 silica sand	5 - 37 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	Y	Concrete	0 - 3 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 21.00

Date: 1/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

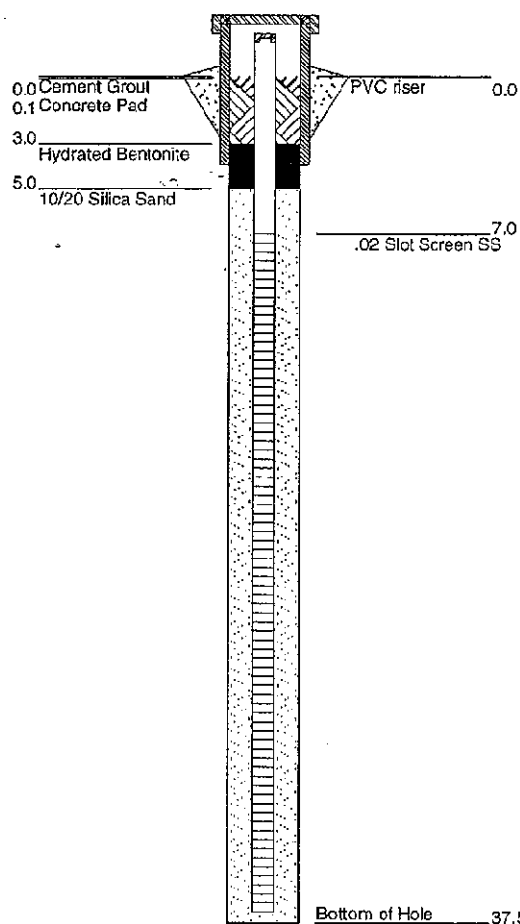
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3726.26

Remarks: Schramm: 7 7/8" hole

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 5.0'
SANDY GRAVEL-medium dense, slightly moist, light brown, maximum size 3" (GP)

5.0 - 12.0'
SANDY GRAVEL-dense to very dense, dry, cobbles to 5", rounded to angular, partly cemented

12.0 - 13.5'
ANDESITE BOULDERS-very hard drilling

13.5 - 30.0'
SANDY GRAVEL-very dense, dry to slightly moist, boulders to 6", light brown, hard drilling, considerable boulders, slightly moist at 20'; easier drilling, less boulders past 30'

30.0 - 37.5'
SANDY GRAVEL with CLAY-dense, wet, low plasticity, light brown



HYDROMETRICS INC.

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Monitor Well Log

Hole Name: EP-34

Date Hole Started: 2/3/91 Date Hole Finished: 2/3/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Along rr tracks at 36 + 50 ft reference points on canal wall

Recorded By: AJH

Drilling Company: LARJON

Driller: Jim

Drilling Method: Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 38

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 37 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	7 - 37 feet
Sand Pack?	Y	10/20 silica sand	5 - 38 feet
Annular Seal?	Y	Bentonite Chips	2.5 - 5 feet
Surface Seal?	Y	Concrete	0 - 2.5 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 14.48

Date: 5/98

MP Description:

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

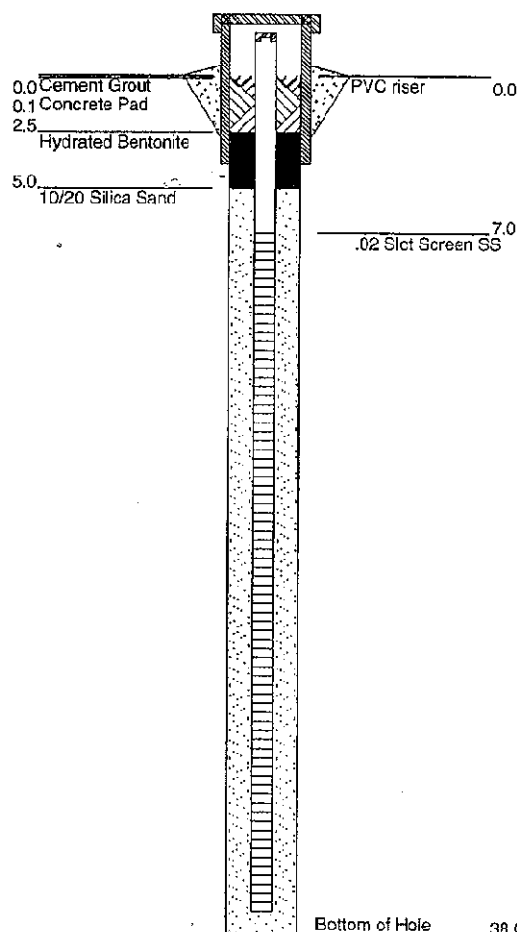
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3725.93

Remarks: CP-650: 7 7/8" hole

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 1.5'	GRAVELLY SAND-dry, light brown, calcareous (GP)
1.5 - 8.0'	SANDY GRAVEL-slightly moist, brown, calcareous angular fragments [Alluvium]
8.0 - 23.0'	SANDY GRAVEL-yellowish-brown, dry to slightly moist, calcareous, non-plastic; high andesite and quartzite content [Alluvium]
23.0 - 26.0'	GRAVELLY SAND-moist, brownish-yellow, non-plastic, subrounded, calcareous [Alluvium]
26.0 - 33.0'	As above but with cobbles and occasional boulders [Alluvium]
33.0 - 38.0'	SANDY SILT with gravel, moist to wet, brownish-yellow, moderate plasticity, calcareous, lacustrine [Alluvium]



HYDROMETRICS INC.

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Tucson, Arizona

Monitor Well Log

Hole Name: EP-35

Date Hole Started: 2/1/91 Date Hole Finished: 2/1/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Along rr tracks at 37 + 42 ft reference points on canal wall

Recorded By: WH/AJH

Drilling Company: LARJON

Driller: Jim

Drilling Method: Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 37.5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 37.5 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	7.5 - 37.5 feet
Sand Pack?	Y	10/20 silica sand	5 - 37.5 feet
Annular Seal?	Y	Bentonite Chips	2.5 - 5 feet
Surface Seal?	Y	Concrete	0 - 2.5 feet

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	N
Boring Samples Taken?	N

Static Water Level Below MP: 14.48

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

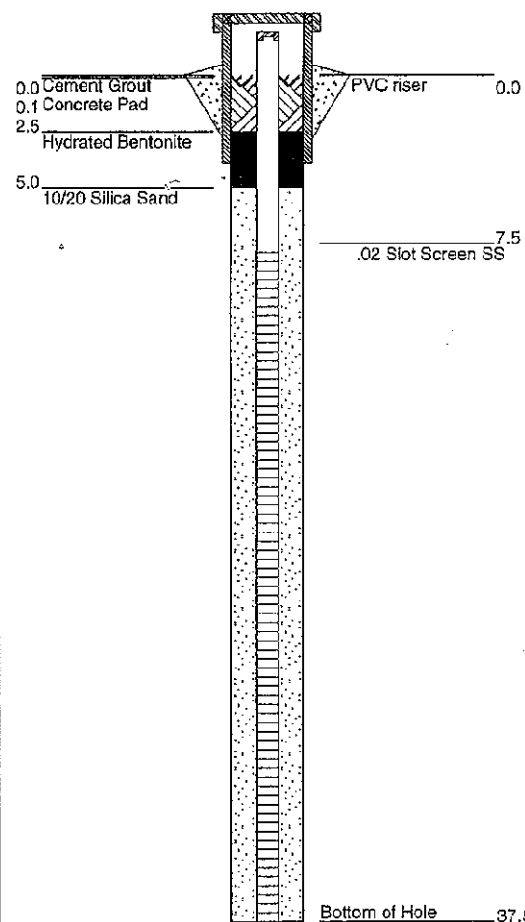
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3725.74

Remarks: CP-650: 7 7/8" hole

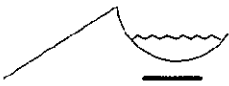
WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 5.0'	SANDY GRAVEL -dense, slightly moist, light brown (GP)
5.0 - 24.0'	SANDY GRAVEL -dense to very dense, slightly moist, light brown, cobbles to 5", rounded to subangular, softer and fewer boulders past 10', boulders at 16 - 17.5, boulders at 21'
24.0 - 29.0'	As above, moist
29.0 - 31.0'	COBBLE GRAVEL -wet, non-plastic, yellowish-brown (Alluvium)
31.0 - 37.5'	SILTY SANDY GRAVEL -wet to moist, brownish yellow, slight plasticity, calcareous (Alluvium)



HYDROMETRICS INC.

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Tucson, Arizona

Monitor Well Log

Hole Name: EP-36

Date Hole Started: 2/2/91 Date Hole Finished: 2/2/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order R1

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Along rr tracks at 37 +
85 ft reference points on canal wall

Recorded By: AJH

Drilling Company: LARJON

Driller: Jim

Drilling Method: Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 38

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 37 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	7 - 37 feet
Sand Pack?	Y	10/20 silica sand	5 - 38 feet
Annular Seal?	Y	Bentonite Chips	2.5 - 5 feet
Surface Seal?	Y	Concrete	0 - 2.5 feet

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	N
Boring Samples Taken?	N

Static Water Level Below MP: 24.00

Date: 2/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

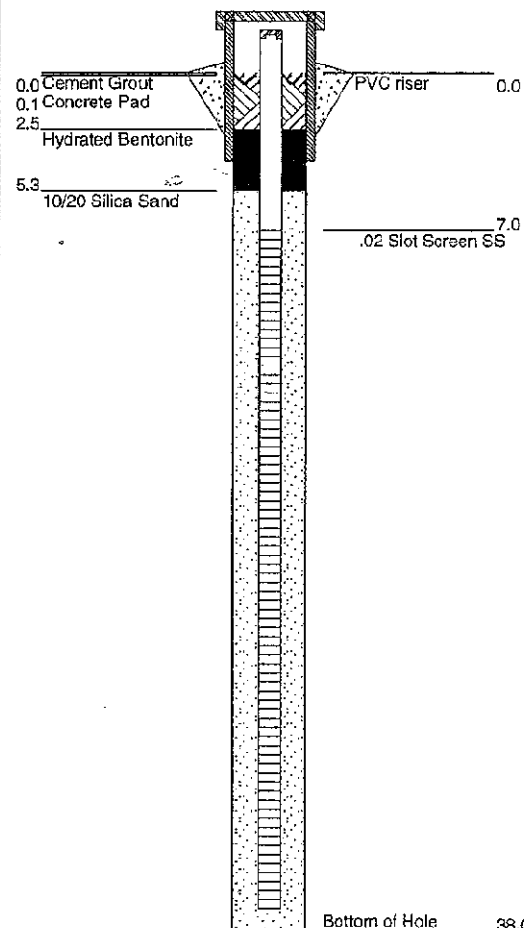
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3725.52

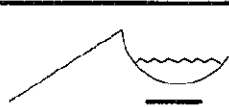
Remarks: CP-650: 7 7/8" hole

WELL CONSTRUCTION



GEOLOGICAL DESCRIPTION

0.0 - 1.0'	SANDY GRAVEL - FILL, dry, light brown, non-plastic, calcareous
1.0 - 9.0'	SANDY GRAVEL - dry, light yellowish-brown, non-plastic, calcareous [Alluvium]
9.0 - 24.0'	As above with Andesite and Quartzite cobbles dominant [Alluvium]
24.0 - 31.0'	SILTY SAND with GRAVEL - slightly moist, brownish-yellow, slightly plastic, calcareous, fines 20% [Alluvium]
31.0 - 38.0'	As above, not as consolidated [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-37

Date Hole Started: 2/2/91 Date Hole Finished: 2/2/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Along rr tracks at 38 + 25 ft reference points on canal wall

Recorded By: AJH

Drilling Company: LARJON

Driller: Jim

Drilling Method: Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 37.5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 34.5 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	4.5 - 34.5 feet
Sand Pack?	Y	10/20 silica sand	3.5 - 34.5 feet
Annular Seal?	Y	Bentonite Chips	1.8 - 3.5 feet
Surface Seal?	Y	Concrete	0 - 1.8 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 22.00

Date: 2/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

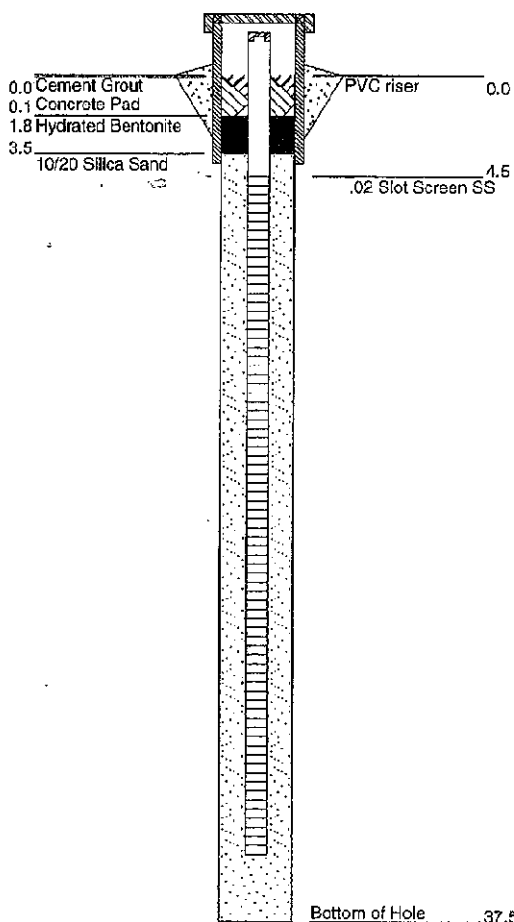
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3725.6

Remarks: CP-850: 7 7/8" hole

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 1.0'	SANDY GRAVEL FILL -dry, light brown, non-plastic, calcareous
1.0 - 13.0'	GRAVELLY SAND -coarse, dry, light brown, non-plastic, calcareous, angular [Alluvium]
13.0 - 16.0'	SANDY GRAVEL -slightly moist, yellowish-brown, non-plastic, calcareous, angular to subrounded, sand - fine to coarse [Alluvium]
16.0 - 24.0'	As above but with cobbles and boulders
24.0 - 26.0'	SANDY GRAVEL -moist, brownish-yellow, non-plastic, calcareous, more fines than above: 10 - 15% [Alluvium]
26.0 - 37.5'	SILTY SAND -moist, yellow, slightly plastic, calcareous, fines 25% [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-38

Date Hole Started: 2/2/91 Date Hole Finished: 2/2/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Along rr tracks at 38 + 68 ft reference points on canal wall

Recorded By: WH

Drilling Company: Ruen

Driller: Will

Drilling Method: Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 38

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 37 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	7 - 37 feet
Sand Pack?	Y	10/20 silica sand	5 - 37 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	Y	Concrete	0 - 3 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 20.00

Date: 2/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

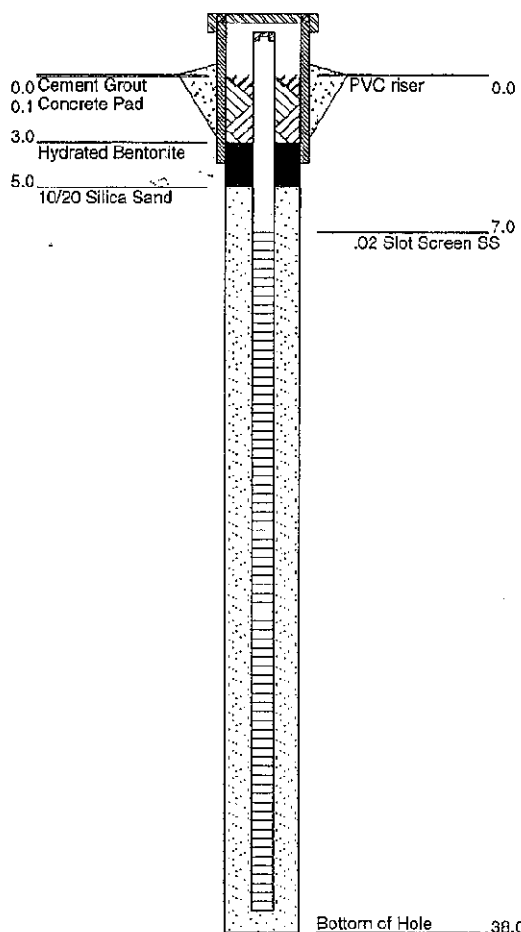
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3725.6

Remarks: Schramm: 7 7/8" hole

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 2.0'
SANDY GRAVEL
dense, light brown, (GP)
(Fill)
2.0 - 38.0'
SANDY GRAVEL
dense to very dense, slightly moist to wet, cobbles to 5', boulders to 7', light brown, numerous andesite boulders at 24 - 26', harder drilling, some clay fines intermixed past 32' [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-39

Date Hole Started: 2/1/91 Date Hole Finished: 2/1/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Along rr tracks at 39 + 55 ft reference points on canal wall

Recorded By: AJH

Drilling Company: LARJON

Driller: Jim

Drilling Method: Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 38

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 37 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	7 - 37 feet
Sand Pack?	Y	10/20 silica sand	5 - 38 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	Y	Concrete	0 - 3 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP:

Date:

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

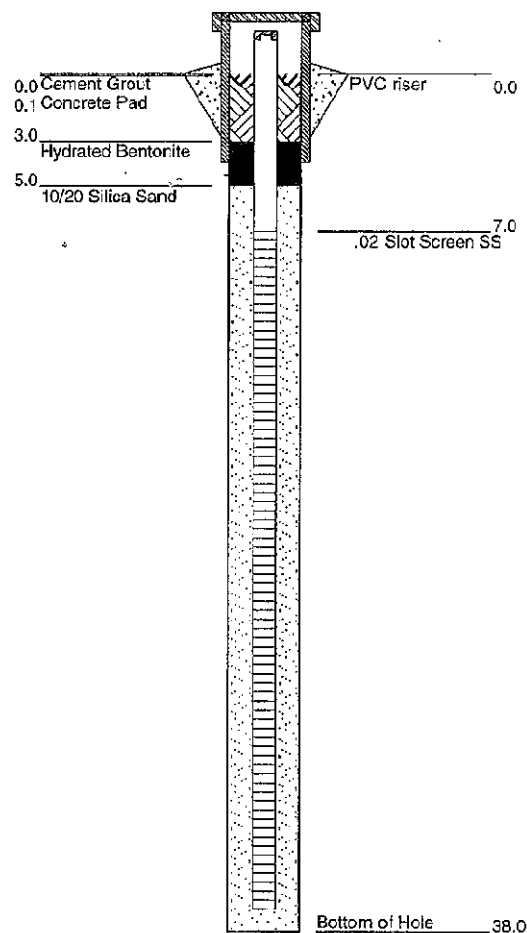
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3725.95

Remarks: CP-650: 7 7/8" hole

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 2.0'	SANDY GRAVEL -light brown, dry, non-plastic (GP)
2.0 - 7.0'	SANDY GRAVEL -slightly moist, brown to yellowish-brown, non-plastic, calcareous, 10% fines [Alluvium]
7.0 - 14.0'	SANDY GRAVEL -moist to slightly moist, non-plastic, less fines than above [Alluvium]
14.0 - 16.0'	SANDY COBBLE GRAVEL -dry to slightly moist, light yellowish-brown and gray, cemented (?); rock fragments mainly andesite with less quartzite [Alluvium]
16.0 - 23.0'	As above - less andesite and few cobbles, moist, mostly quartz rock fragments
23.0 - 32.0'	As above - more cobbles
32.0 - 38.0'	slightly SANDY GRAVEL -moist, yellowish-brown, non-plastic [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-40

Date Hole Started: 2/1/91 Date Hole Finished: 2/1/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Along rr tracks at 40 +
40 ft reference points on canal wall

Recorded By: WH

Drilling Company: Ruen

Driller: Will

Drilling Method: Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 38

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 37 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	7 - 37 feet
Sand Pack?	Y	10/20 silica sand	5 - 37 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	Y	Concrete	0 - 3 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 21.00

Date: 2/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

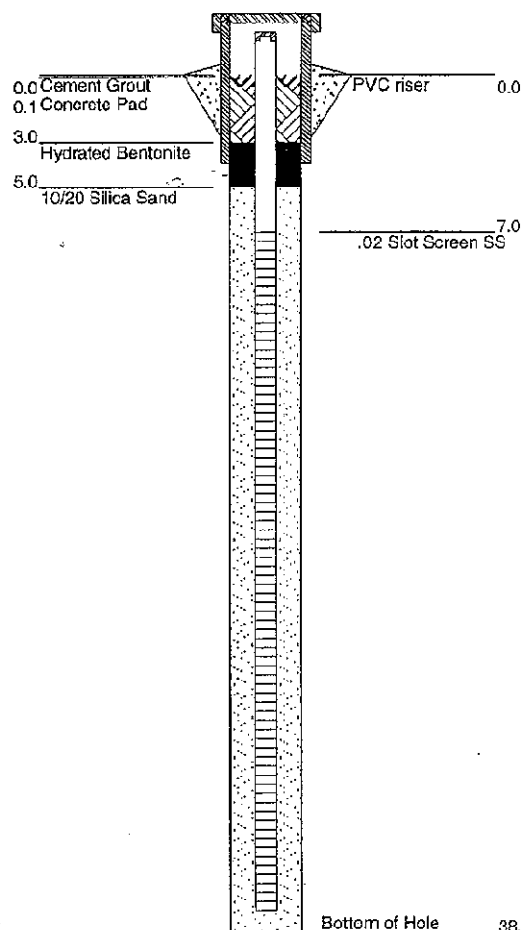
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3725.7

Remarks: Schramm: 7 7/8" hole

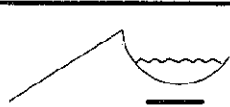
WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 1.0'	SANDY GRAVEL dense, slightly moist, light brown (GP) [Fill]
1.0 - 30.0'	SANDY GRAVEL dense to very dense, slightly moist to wet, maximum gravel size 3", boulders to 6", rounded to subangular, light brown, free water at 21', boulders and harder drilling at 26' [Alluvium]
30.0 - 38.0'	SANDY GRAVEL with clay, dense to very dense, wet, maximum size 3", boulders to 6", light brown [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-41

Date Hole Started: 1/31/91 Date Hole Finished: 1/31/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Along rr tracks at 41 + 22 ft reference points on canal wall

Recorded By: AJH

Drilling Company: LARJON

Driller: Jim

Drilling Method: Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 38

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 38 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	8 - 38 feet
Sand Pack?	Y	10/20 silica sand	5.5 - 38 feet
Annular Seal?	Y	Bentonite Chips	2.5 - 5.5 feet
Surface Seal?	Y	Concrete	0 - 2.5 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 19

Date: 1/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

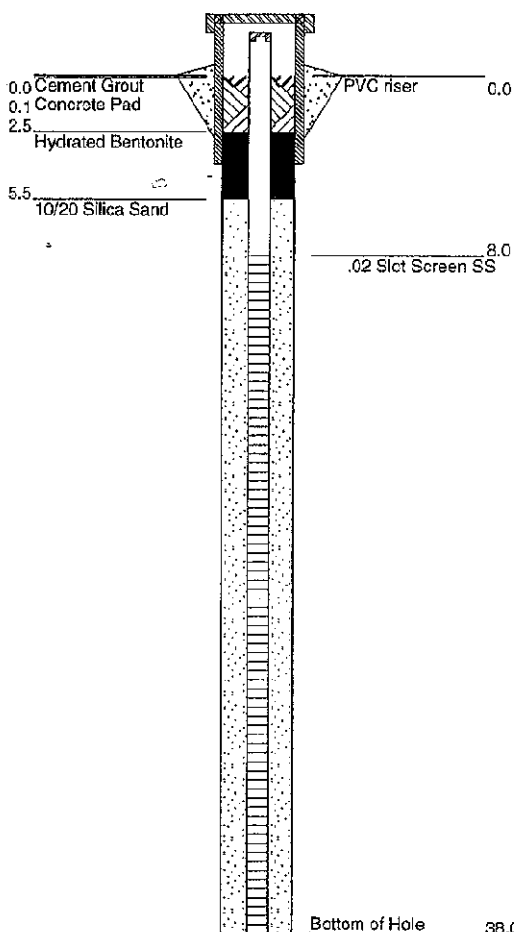
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3725.11

Remarks: CP-650: 7 7/8" hole

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 12.0'	SANDY GRAVEL -dry, light yellowish-brown, non-plastic, calcareous, variable rock fragment composition, coarse sand [Alluvium]
12.0 - 14.0'	SANDY GRAVEL -cobbles to boulders, dry, light brown, non-plastic [Alluvium]
14.0 - 18.0'	VERY COARSE GRAVELLY SAND -dry, non-plastic, calcareous, variable composition [Alluvium]
18.0 - 29.0'	As above but much harder, rock fragments (quartzite, andesite, rhyolite), moist at 19' [Alluvium]
29.0 - 38.0'	SILTY GRAVEL -more clay than above, wet, brownish-yellow, non-plastic, calcareous [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-42

Date Hole Started: 1/31/91 Date Hole Finished: 1/31/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Along rr tracks at 43 + 05 ft reference points on canal wall

Recorded By: WH

Drilling Company: Ruen

Driller: Will

Drilling Method: Schramm Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 37.5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 37 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	7 - 37 feet
Sand Pack?	Y	10/20 silica sand	5 - 37 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	Y	Concrete	0 - 3 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 21.00

Date: 1/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

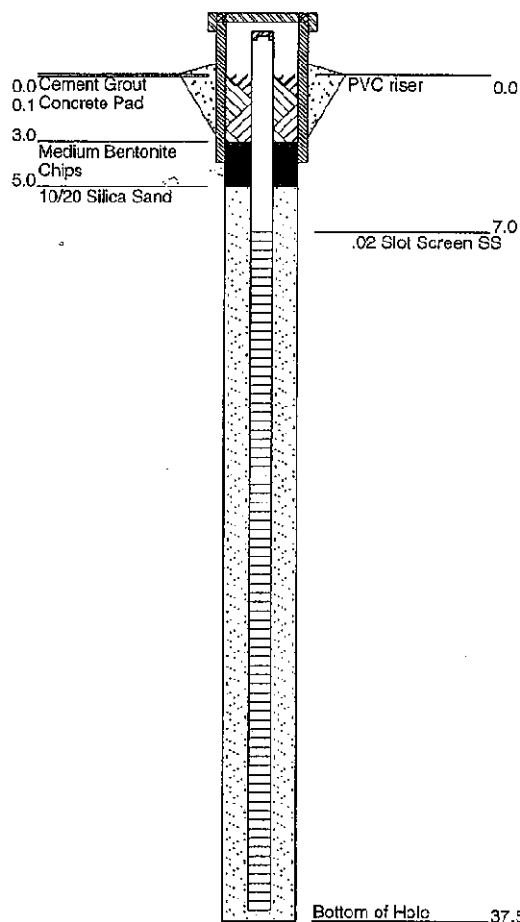
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3726.15

Remarks: Schramm: 7 7/8" hole

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 5.0'	SANDY GRAVEL -dense to medium dense, slightly moist, maximum size 3", light brown, (GP)
5.0 - 28.0'	SANDY GRAVEL -dense to very dense, dry to wet, maximum size 3", cobbles to 5", boulders to 6", rounded to subangular, light brown, more boulders past 17', harder drilling, free water at 2' [Alluvium]
28.0 - 32.0'	ANDESITE BOULDERS -softer past 32'
32.0 - 37.5'	SANDY GRAVEL with COBBLES -dense to very dense, wet to soft, maximum gravel size 3", boulders to 6", rounded to subrounded, light brown [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-43

Date Hole Started: 2/2/91 Date Hole Finished: 2/4/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Waste water tank area,
30' W and 30' S of SW corner of lunch house

Recorded By: WH

Drilling Company: Ruen

Driller: Will

Drilling Method: Schramm Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 90

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 88 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	58 - 88 feet
Sand Pack?	Y	10/20 silica sand	56 - 90 feet
Annular Seal?	Y	Bentonite Chips	52 - 56 feet
Surface Seal?	Y	Bentonite/Cement Grout	0 - 52 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 60.75

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

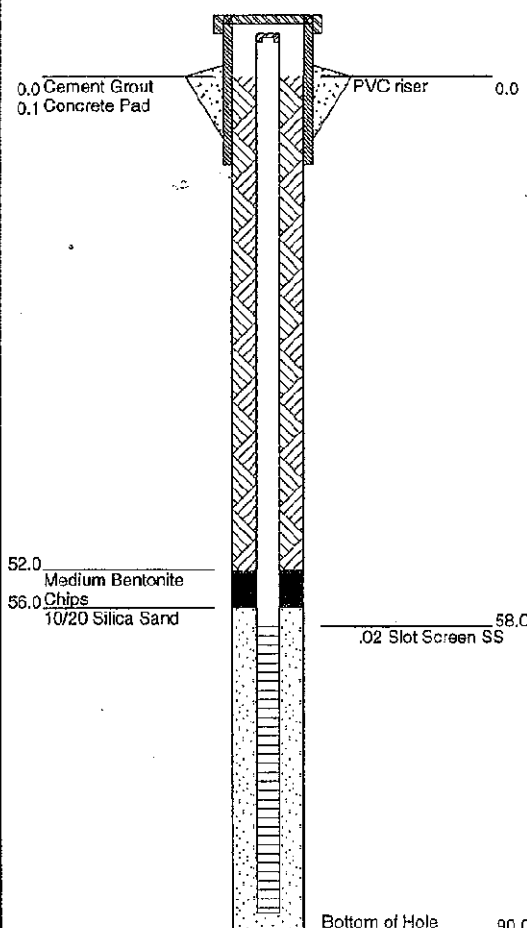
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3772.17

Remarks: Schramm: 7 7/8" hole. Very strong odor past 55', moist at 65'. Strong odor, free moisture at 73', approx. 5gpm.

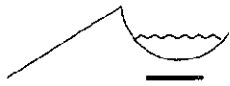
WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 2.5'	SANDY GRAVEL -some slag, medium dense, slightly moist, light to dark brown (GP), some scattered clay throughout (Fill)
2.5 - 7.0'	SANDY GRAVEL -dense to very dense, dry to slightly moist, maximum gravel size 3", boulders to 6", rounded to subangular, some slag material (Fill)
7.0 - 17.0'	SILTY SAND with GRAVEL -medium dense to dense, slightly moist, maximum gravel size 3", some black slag material intermixed, dark brown (Fill)
17.0 - 42.0'	SANDY GRAVEL -dense to very dense, slightly moist, dark brown, some scattered cobbles and boulders, more fine-grained at 30', boulders from 31.5 - 34.5'
42.0 - 47.0'	SILTY SAND with GRAVEL -medium dense, slightly moist, light brown, maximum gravel size 2"
47.0 - 90.0'	SANDY GRAVEL -dense, dry, light brown, very hard drilling at 48'; cemented, moderately easy drilling, some scattered boulders (6" maximum throughout), scattered boulders at 78', slow drilling, some scattered clay at 75'; strong odor, free moisture at 73'; about 5 gpm



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-44

Date Hole Started: 2/5/91 Date Hole Finished: 2/6/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location: 35' east of EP-43

Recorded By: AJH

Drilling Company: LARJON

Driller: Jim

Drilling Method: Rotary Air

Drilling Fluids Used: Foam

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 80

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 80 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	50 - 80 feet
Sand Pack?	Y	10/20 silica sand	45 - 80 feet
Annular Seal?	Y	Bentonite Chips	41 - 45 feet
Surface Seal?	Y	Bentonite/Cement Grout	0 - 41 feet

DEVELOPMENT/SAMPLING

Well Developed? N
Water Samples Taken? N
Boring Samples Taken? N

Static Water Level Below MP: 55.00

Date: 2/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

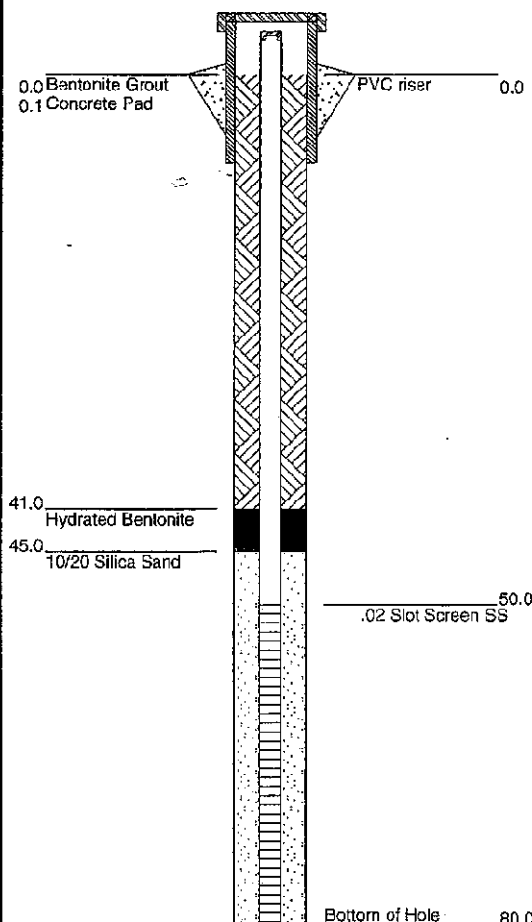
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3771.74

Remarks: CP-650: 7 7/8" hole

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 6.0'	SANDY GRAVEL -dry, dark gray to brown, non-plastic, slag and limestone (GM) [Fill]
6.0 - 18.0'	GRAVELLY SAND -moist, brown, non-plastic, loose, calcareous, 20% gravel [Alluvium]
18.0 - 23.0'	SANDY GRAVEL -slightly moist, brown, non-plastic, calcareous, gravels are rounded to subrounded [Alluvium]
23.0 - 29.0'	SILTY SANDY GRAVEL -brown slightly plastic, 10% clay, gravels vary in composition [Alluvium]
29.0 - 38.0'	SANDY GRAVEL -brown, non-plastic, calcareous, fines approx. 5% [Alluvium]
38.0 - 55.0'	SANDY GRAVEL -light brown, calcareous, very few fines, contains localized cobbles and boulders - andesite, quartzite dominant
55.0 - 57.0'	BOULDER GRAVEL -grav and cream, andesite and quartzite
57.0 - 80.0'	SANDY GRAVEL -brown, non-plastic [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-45

Date Hole Started: 2/4/91 Date Hole Finished: 2/4/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: 81' east of EP-43, east of lunch house

Recorded By: AJH

Drilling Company: LARJON

Driller: Jim

Drilling Method: Rotary Air

Drilling Fluids Used: Foam

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 83

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 79 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	49 - 79 feet
Sand Pack?	Y	10/20 silica sand	44 - 83 feet
Annular Seal?	Y	Bentonite Chips	40 - 44 feet
Surface Seal?	Y	Bentonite/Cement Grout	0 - 40 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 63.00

Date: 2/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

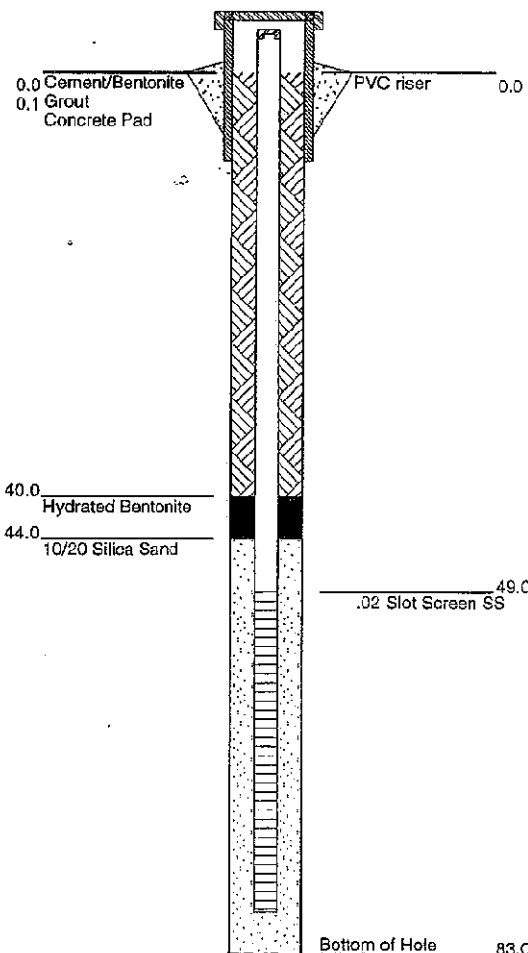
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3771.81

Remarks: CP-650: 7 7/8" hole. Strong diesel odor. Very hard drilling 63 - 65'.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 7.0'	SLAG and ROCK FRAGMENTS -sandy gravel (GP), dry, dark gray, non-plastic, calcareous
7.0 - 24.0'	SAND -dry, brown, calcareous, non-plastic, subrounded to rounded, sublitharenite composition 85% quartzite [Alluvium]
24.0 - 30.0'	As above with gravel
30.0 - 46.0'	SANDY GRAVEL -brown, non-plastic, calcareous [Alluvium]
46.0 - 48.0'	GRAVEL -very little sand, brown, non-plastic [Alluvium]
48.0 - 63.0'	SANDY GRAVEL -brown, non-plastic, calcareous, rock fragments of basalt, quartzite, chert, quartz sandstone [Alluvium]
63.0 - 72.0'	GRAVEL -grayish-brown, non-plastic, loose, cemented, highly variable composition of andesite quartzite and quartz sandstone [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-46

Date Hole Started: 2/5/91 Date Hole Finished: 2/5/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: 44' east of EP-45, 63'
south of compressor/treatment building

Recorded By: WH

Drilling Company: Ruen

Driller: Will

Drilling Method: Schramm Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 80

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 79 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	49 - 79 feet
Sand Pack?	Y	10/20 silica sand	47 - 79 feet
Annular Seal?	Y	Bentonite Chips	44 - 47 feet
Surface Seal?	Y	Bentonite/Cement Grout	0 - 44 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 70.00

Date: 2/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

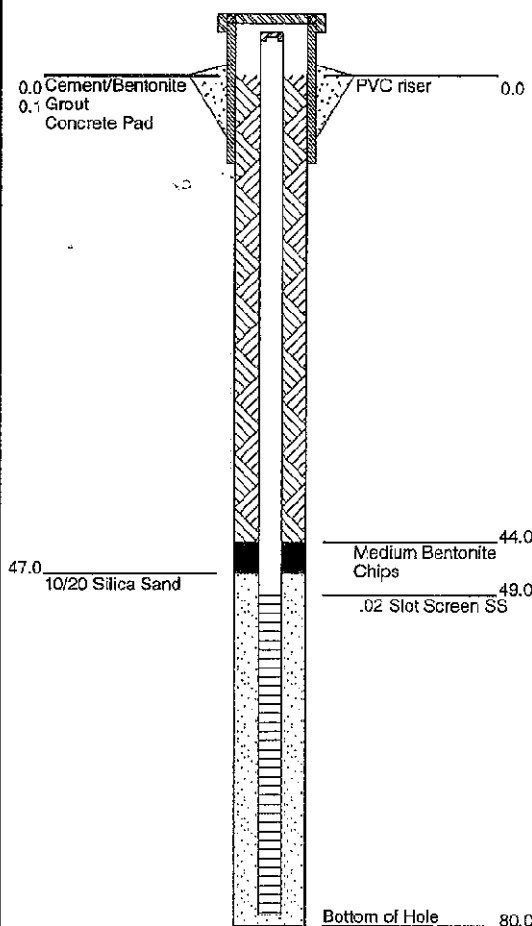
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3772.04

Remarks: Schramm: 7 7/8" hole

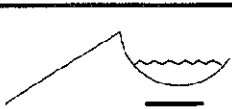
WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 7.0'	CLAYEY SAND -with gravel, loose, slightly moist, dark brown (SC)
7.0 - 12.0'	SANDY GRAVEL -medium dense to dense, dry, maximum gravel size 3", light brown
12.0 - 22.0'	SILTY GRAVEL -with gravel, medium dense, dry, medium to coarse grained, maximum gravel size 2", light brown, scattered gravel lenses
22.0 - 80.0'	SANDY GRAVEL -dense to very dense, dry, some cobbles to 5", scattered sand pockets and lenses throughout, partly cemented, very hard drilling, some fine shale fines



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-47

Date Hole Started: 2/4/91 Date Hole Finished: 2/4/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: 56' north of EP-43 on north side of lunchroom

Recorded By: WH

Drilling Company: Ruen

Driller: Will

Drilling Method: Schramm Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 80

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 79 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	49 - 79 feet
Sand Pack?	Y	10/20 silica sand	45 - 79 feet
Annular Seal?	Y	Bentonite Chips	42.5 - 79 feet
Surface Seal?	Y	Bentonite/Cement Grout	0 - 42.5 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 67.00

Date: 2/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

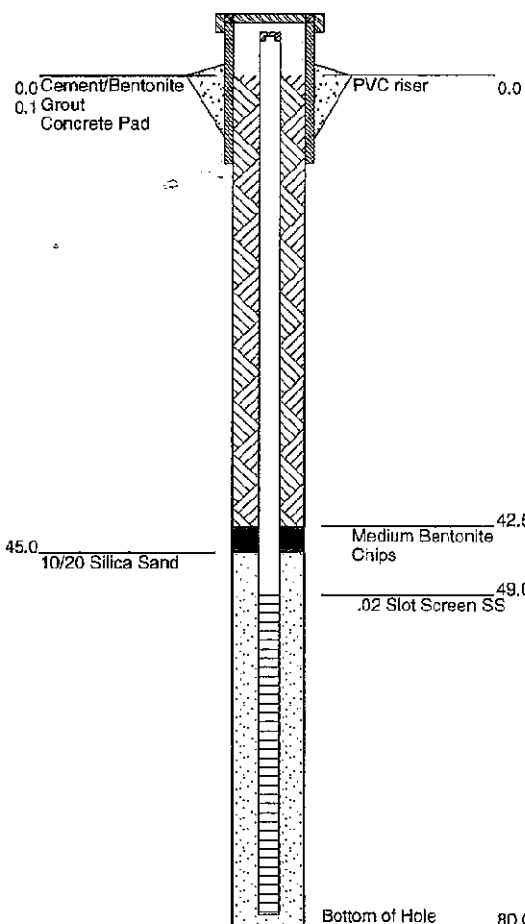
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3773.93

Remarks: Schramm: 7 7/8" hole. Moderately hard drilling, slight fuel odor at 60'. Fuel odor and moist at 67'.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 6.0'	SANDY GRAVEL - loose to medium dense, slightly moist, some slag material, light brown (GP), scattered brick
6.0 - 17.0'	SILTY SAND with GRAVEL - medium dense, slightly moist, black to (SM), maximum gravel size 2 - 3", angular
17.0 - 27.0'	GRAVELLY SAND - medium dense to dense, slightly moist, maximum gravel size 3", light to dark brown
27.0 - 39.0'	GRAVELLY SAND - medium dense to dense, dry, maximum size 3", dark brown
39.0 - 80.0'	SANDY GRAVEL - dense to very dense, slightly moist to wet, maximum gravel size 3", cobbles to 5", light brown, partly cemented, some softer sandstone pieces past 60'



HYDROMETRICS INC.

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Tucson, Arizona

Monitor Well Log

Hole Name: EP-48

Date Hole Started: 2/5/91 Date Hole Finished: 2/5/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Along rr tracks at 33 + 55 ft reference points on canal wall

Recorded By: AJH

Drilling Company: Larjon/Ruen

Driller: Jim/Will

Drilling Method: Rotary Air

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 38

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 37 feet
Surface Casing Used?	Y	12 inch Vault	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	7 - 37 feet
Sand Pack?	Y	10/20 silica sand	5 - 37 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	Y	Cement	0 - 3 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 31.00

Date: 2/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

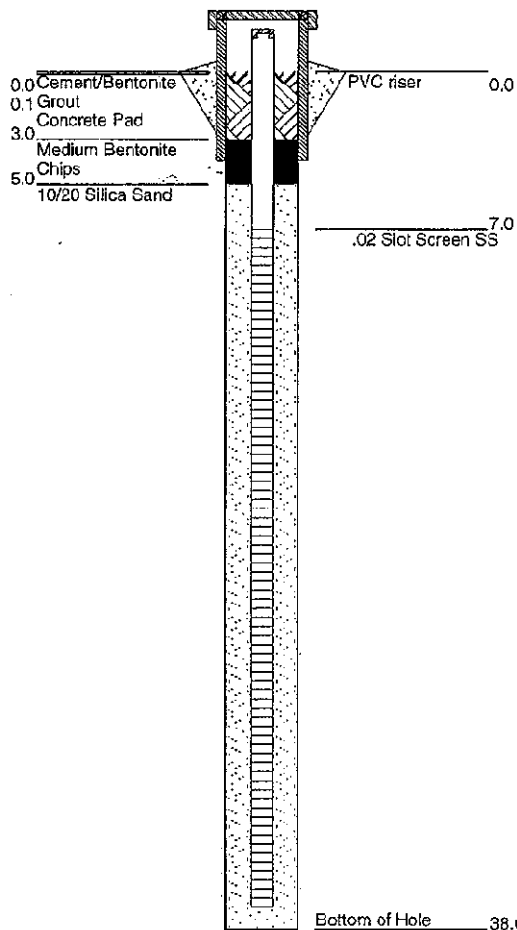
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3726.11

Remarks: CP-650: 7 7/8" hole. Strong diesel odor from 31' to total depth. Hard drilling at 30', extremely hard at 35'.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 10.5'
GRAVELLY SAND -moist, dark grayish-brown (SP), slightly plastic, calcareous, some fines: 10%

10.5 - 15.0'
SANDY GRAVEL -moist, brown, non-plastic, calcareous
[Alluvium]

15.0 - 27.0'
As above but grayish-brown; soil suggests decomposing diesel

27.0 - 34.0'
SANDY GRAVEL -wet, brown, non-plastic, calcareous fines, composition variable - andesite, quartzite dominant
[Alluvium]

34.0 - 38.0'
GRAVELLY COARSE SAND -moist, dark brown, slightly plastic, calcareous
[Alluvium]



HYDROMETRICS INC.

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Tucson, Arizona

Monitor Well Log

Hole Name: EP-49

Date Hole Started: 2/7/91 Date Hole Finished: 2/9/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Plant area near acid plant at Northwest end of plant

Recorded By: WH/AJH

Drilling Company: Ruen

Driller: Will

Drilling Method: Schramm Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 71

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 69 feet
Surface Casing Used?	Y	12 inch Vault	0 - .5 feet
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	39 - 69 feet
Sand Pack?	Y	10/20 silica sand	35 - 69 feet
Annular Seal?	Y	Bentonite Chips	32 - 35 feet
Surface Seal?	Y	Bentonite/Cement Grout	0 - 32 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 63.53

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): -0.25

Surface Casing Height (ft): 0

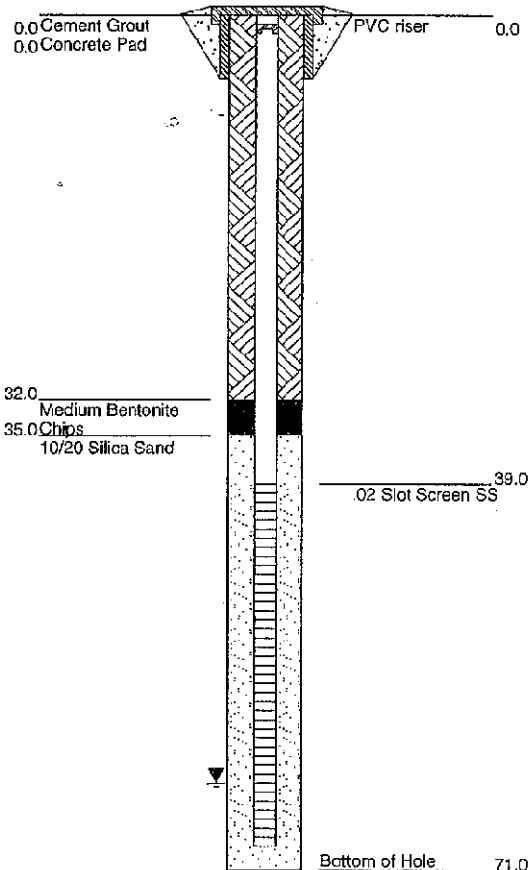
Riser Height (ft): -0.25

Ground Surface Elevation (ft): 3785.84

MP Elevation (ft): 3785.59

Remarks: Schraam 7 7/8 - inch hole. centralizer @ 64 feet

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 57.0'
SLAG AND GRAVEL FILL - loose to medium dense, black to brown, caves easily, all slag past 2 - feet, no scattered gravels, highly fractured, losing approximately 50 % of air, scattered soft and hard pockets. Caved badly at 37 feet. Very loose and fractured at 53 feet. [Slag Fill]

57.0 - 62.0'
SILTY SAND with GRAVEL -medium dense to dense, slightly moist, light brown [Alluvium]

62.0 - 72.0'
SANDY GRAVEL -dense, slightly moist, light brown, free water at 65 feet. [Alluvium]



HYDROMETRICS INC.

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Tucson, Arizona

Monitor Well Log

Hole Name: EP-50

Date Hole Started: 2/11/91 Date Hole Finished: 2/11/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: 86' east of EP-46,
approx. 80' north of EP-12, east of lunchroom

Recorded By: WH

Drilling Company: Ruen

Driller: Will

Drilling Method: Schramm Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 81

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
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Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 78 feet
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Surface Casing Used?	Y	12 inch Vault	
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Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	48 - 78 feet
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Sand Pack?	Y	10/20 silica sand	45 - 75 feet
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Annular Seal?	Y	Bentonite Chips	42 - 45 feet
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Surface Seal?	Y	Bentonite/Cement Grout	0 - 42 feet
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DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 65.00

Date: 2/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

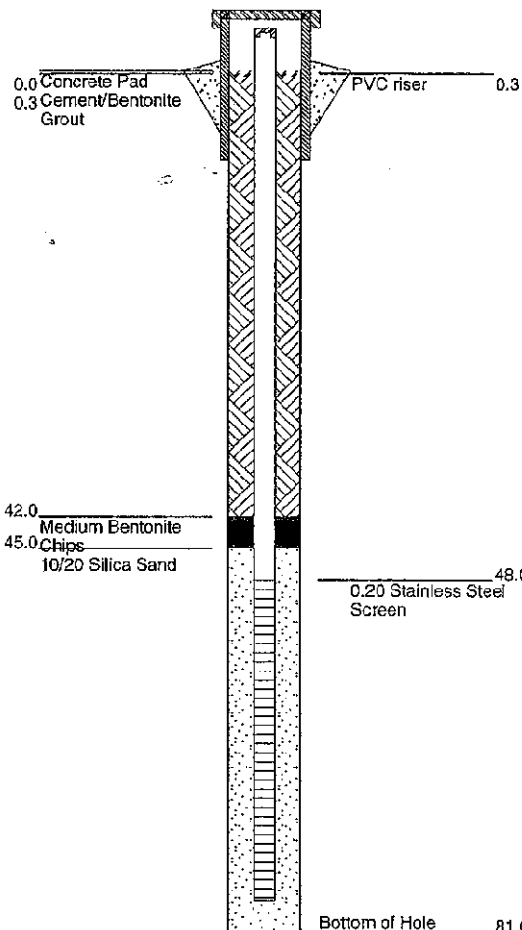
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3772.25

Remarks: Schramm: 7 7/8" hole. Free water at 65 feet.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 3.0'
Silty Sand with Gravel
medium dense, dry, light brown

3.0 - 27.0'
Silty Sand with Gravel
medium dense to dense, slightly moist, max gravel size 3", light brown

27.0 - 80.0'
Sandy Gravel
dense to very dense, dry to wet, max gravel size 3", cobbles to 5", partly cemented, light brown [Alluvium]

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Tucson, Arizona

Monitor Well Log

Hole Name: EP-51

Date Hole Started: 2/11/91 Date Hole Finished: 2/12/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Plant site south of stack
edge of property

Recorded By: WH/MRW

Drilling Company: Ruen

Driller: Will

Drilling Method: Schraam Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 6-inch

Total Depth Drilled (ft): 71

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 70 feet
Surface Casing Used?	Y	8 - inch manhole	0 - .5 feet
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	40 - 70 feet
Sand Pack?	Y	10/20 silica sand	36 - 70 feet
Annular Seal?	Y	Bentonite Chips	33.5 - 36 feet
Surface Seal?	Y	Bentonite/Cement Grout	0 - 33.5 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 48.73

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): -0.25

Surface Casing Height (ft): 0

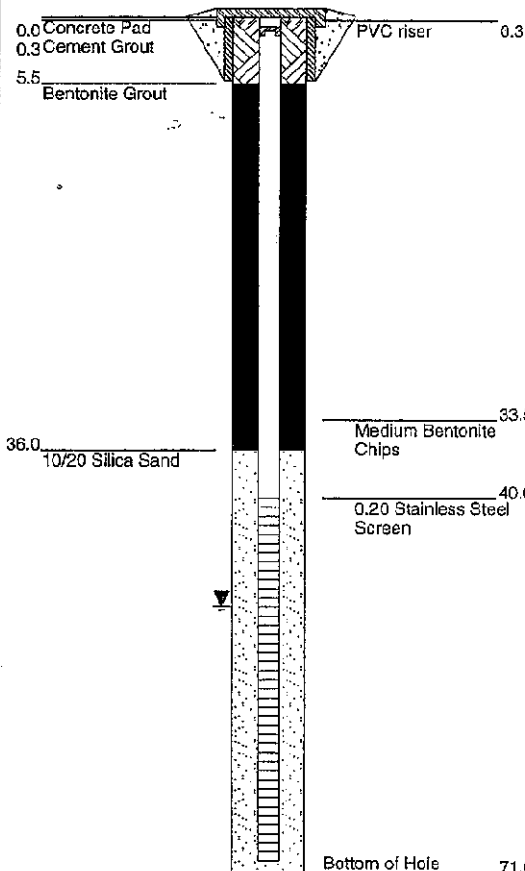
Riser Height (ft): -0.25

Ground Surface Elevation (ft): 3774.91

MP Elevation (ft): 3774.66

Remarks: First water encountered at 61'. Water level rose to 51.3' after one week.

WELL CONSTRUCTION



GEOLOGICAL DESCRIPTION

	<p>0.0 - 0.2' ASPHALT Asphaltic concrete (Road Pavement) 0.2 - 3.0' Silty CLAY -stiff, moist, light brown (Alluvium). 3.0 - 15.0' Sandy GRAVEL -dense to very dense, slightly moist, maximum size to 3 inches, subangular, light brown, few scattered cobbles 4-5", cemented gravels (Alluvium). 15.0 - 30.0' SAND -predominantly fine-grained sand with small amounts of coarse-grained sand near 30 feet (Alluvium).</p>
	<p>30.0 - 49.0' Silty SAND -fine to coarse-grained sand and silt, tan, some gravel to 1 - inch diameter intermixed from 45 - 54 feet, subangular (Alluvium).</p>
	<p>49.0 - 52.0' GRAVELLY SAND -predominantly fine-grained sand and silt (Alluvium). 52.0 - 58.0' Silty CLAY -low plasticity, moist clay with small amounts of silt, tan, some sandy silt at 54 - 55 feet (Alluvium).</p>
	<p>59.0 - 62.0' Sandy SILT -predominantly silt with some fine-grained sand (Alluvium). 62.0 - 67.0' Silty CLAY -low plasticity, moist clay with small amounts of silt, tan, some sandy silt at 54 - 55 feet (Alluvium).</p>
	<p>67.0 - 71.0' CLAY -low plasticity, gray shale, dry to moist, free water at 67 feet (Alluvium).</p>



HYDROMETRICS INC.

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Tucson, Arizona

Monitor Well Log

Hole Name: EP-52

Date Hole Started: 2/12/91 Date Hole Finished: 2/13/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: 75' northwest of
ASARCO stack (edge)

Recorded By: MRW

Drilling Company: Ruen

Driller: Will

Drilling Method: Schraam Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 71

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 70 feet
Surface Casing Used?	Y	8 - inch manhole	
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	40 - 70 feet
Sand Pack?	Y	12/20 silica sand	35.5 - 70 feet
Annular Seal?	Y	Bentonite Chips	32.5 - 35.5 feet
Surface Seal?	Y	Bentonite/Cement Grout	0 - 32.5 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 48.1

Date: 2/91

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

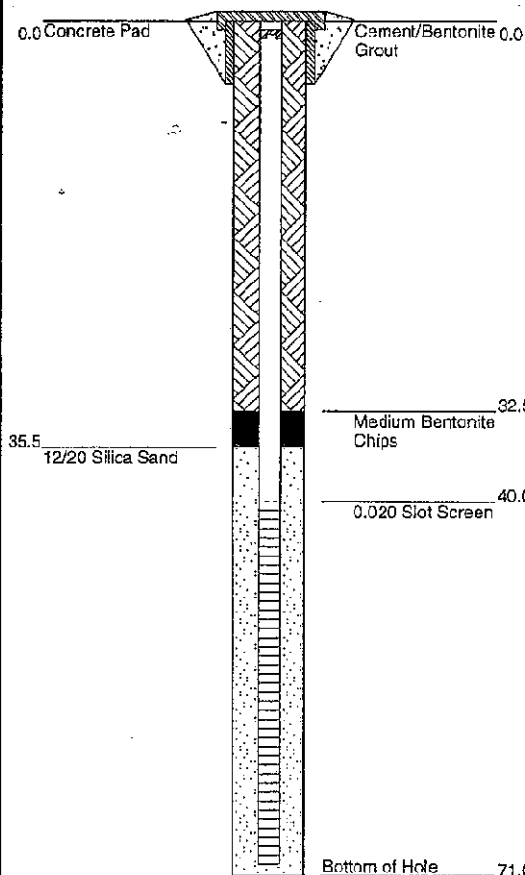
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3787.38

Remarks: Moist to wet at 53'. Wet at 55'. Water level at 48.1' from top of PVC on 2/14/91, no diesel odor on well probe. No odor or stain encountered during drilling.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 7.0'	Sandy Gravel well graded gravel to 1" diameter, well rounded with coarse to fine grained sand, dark brown fill [Alluvium]
7.0 - 17.0'	Sand poorly graded sand, medium to coarse grained, dark brown [Alluvium]
17.0 - 24.0'	Silty Sand fine grained sand, poorly graded and silt, tan [Alluvium]
24.0 - 53.0'	Gravelly Sand well graded sand and gravel to 1/2", less gravel from 35 - 45 [Alluvium]
53.0 - 71.0'	Silty Gravel poorly graded gravel to 1" diameter intermixed with sand, fine to medium grained and silts, small amounts of clay also present, light brown to tan [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-53

Date Hole Started: 2/13/91 Date Hole Finished: 2/14/91

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: In slag dump, up gradient from EP-22

Recorded By: MRW

Drilling Company: Ruen

Driller: Will

Drilling Method: Schraam Air Rotary

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 8-inch

Total Depth Drilled (ft): 81

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	2-inch, flush threaded, Sch 40, PVC	0 - 79 feet
Surface Casing Used?	Y	8-inch steel	
Screen/Perforations?	Y	0.020-inch slot, Sch 40 PVC	59 - 79 feet
Sand Pack?	Y	12/20 silica sand	55 - 81 feet
Annular Seal?	Y	Bentonite Chlps	52 - 55 feet
Surface Seal?	Y	Bentonite/Cement Grout	0 - 52 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 67.15

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

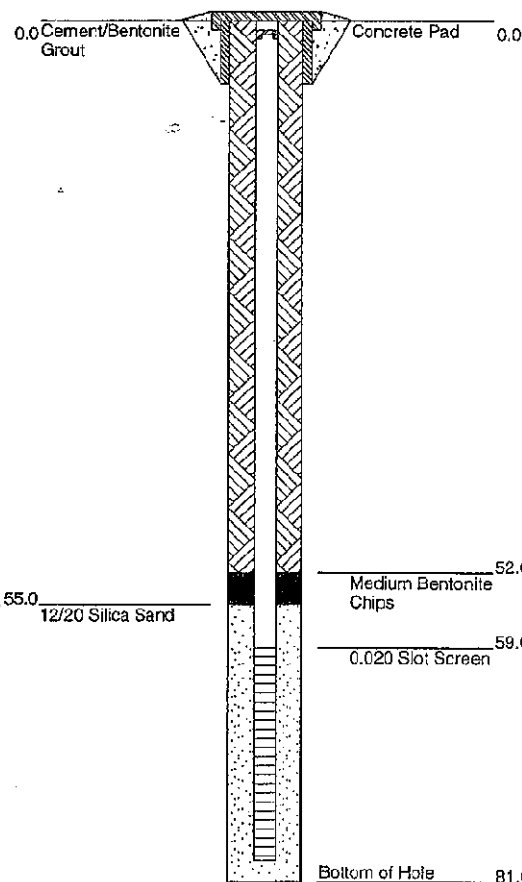
Riser Height (ft):

Ground Surface Elevation (ft):

MP Elevation (ft): 3805.64

Remarks: OVA sample every 5'. Moist at 60'. Hole dry to 81'; when pulled out, drill stem muddy up to 68'.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 33.0'

Slag
poured slag, very hard black angular fragments, reportedly former lead slag dump
[Slag Fill]

33.0 - 37.0'

Sandy Gravel

well graded gravel to 1" diameter and sand gravel rounded to subangular

[Alluvium]

37.0 - 48.0'

Sand

poorly graded, medium to coarse grained sand

[Alluvium]

48.0 - 63.0'

Sandy Gravel

poorly graded gravel subrounded to angular with andesite boulders to 6" and larger with coarse sand

[Alluvium]

63.0 - 68.0'

Sand

well graded sand, fine to coarse grained, light brown to tan

[Alluvium]

68.0 - 80.0'

Sandy Gravel

poorly graded gravel with fine to medium grained sand; gravel to 1" diameter, significant amounts of silt present at 78 - 80'

[Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-54

Date Hole Started: 2/9/94 Date Hole Finished: 2/9/94

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order R1

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: NW corner of Acid Plant

Recorded By: Wally Wilson

Drilling Company: GPI

Driller: Jose Landeros

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 80

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	2-inch, flush threaded, Sch 40, PVC	0 - 80 Feet
Surface Casing Used?	Y	6 inch steel	+2 - 2 Feet
Screen/Perforations?	Y	0.020-inch slot, Sch 40 PVC	60 - 80 feet
Sand Pack?	Y	10/20 silica Sand	56 - 80 Feet
Annular Seal?	Y	Bentonite Chips	0 - 56 Feet
Surface Seal?	Y	Bentonite Chips	

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 69.25

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 1.5

Surface Casing Height (ft): 2.0

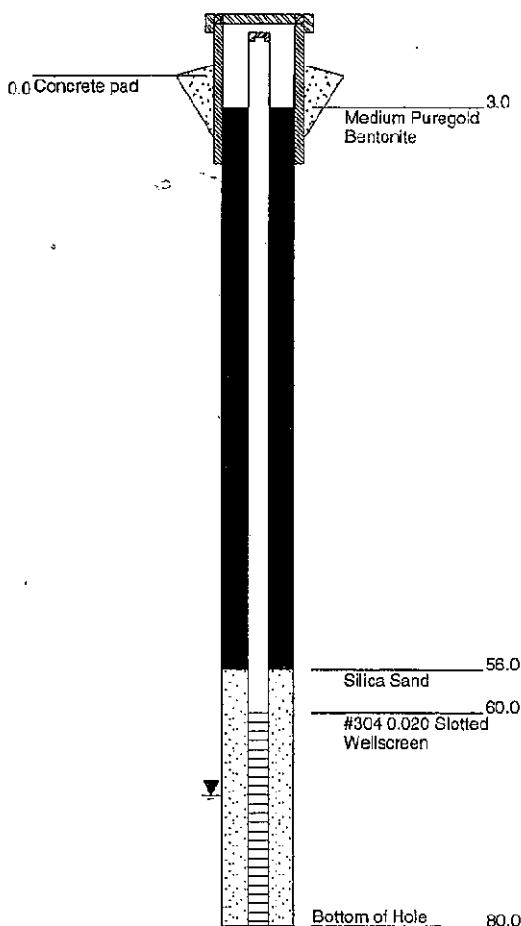
Riser Height (ft): 1.5

Ground Surface Elevation (ft): 3785.87

MP Elevation (ft): 3787.37

Remarks:

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 64.0'
Gravelly Sand
Gravel w/ SAND/SLAG crushed angular, gravel fine to coarse (slag), sand, fine to coarse (slag) black
[Artificial Fill]

64.0 - 80.0'
Clayey SAND
10 YR 6/3, pale brown, sand, fine to medium, quartz, clay soft, wet, medium dense, no sample recovery 65 - 70'
[Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-55

Date Hole Started: 2/9/94 Date Hole Finished: 2/9/94

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location: 200' West of EPS2

Recorded By: Wally Wilson

Drilling Company: GPI

Driller: Jose Landeros

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 62

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	
Surface Casing Used?	N		
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	
Sand Pack?	Y	12-20 CSSI	39 - 59
Annular Seal?	Y	Bentonite Chips	3 - 35.5
Surface Seal?	Y	Grout	0.5 - 3 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 54.35

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 2.0

Surface Casing Height (ft): 3.0

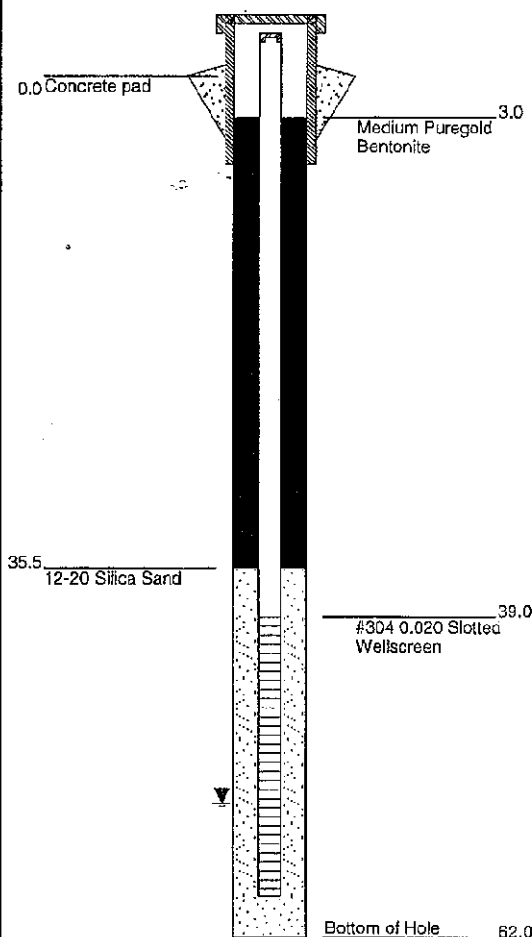
Riser Height (ft): 2.0

Ground Surface Elevation (ft): 3785.73

MP Elevation (ft): 3788.23

Remarks: All soil descriptions and size fraction distributions based on field observations and tests.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 3.5'	Gravelly Sand 10 YR 2/2, very dark brown, gravel 80%, partly sorted, med. to coarse, angular, crushed slag and rock, sand 15%, sorted, fine to medium, fines 5% silt, misc. industrial debris mixed in, loose, moist
3.5 - 15.0'	Gravelly Sand 10 YR 2/2, very dark brown, gravel 60%, partly sorted, med. to coarse, angular, crushed rock and slag, sand 35%, fine to med, mod. sorted, fines 5% silt, loose, dry, suing, with auger flight
15.0 - 30.0'	Gravelly Sand crushed slag, coarse gravel
30.0 - 35.0'	Gravelly Sand 10 YR Pale brown, SAND 60%, fine to medium, gravel fine to coarse
35.0 - 40.0'	Sand 10 YR 6/3, Pale brown, SAND 85%, mod-will sorted fine to med, qtz, magnetic and miner lithics fine 55%, medium dense. GRAVEL 10%, fine to coarse
40.0 - 50.0'	Sand SAND as above 0% GRAVEL, moist
50.0 - 62.0'	Gravelly Sand GRAVEL w/ SAND and CLAY, 10 YR 5/3, brown GRAVEL, 60%, fine to coarse, max. diameter 2", rounded qtz, SAND 20%, clay very stiff, wet, very dense



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-56

Date Hole Started: 2/9/94 Date Hole Finished: 2/9/94

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location: S of GPS house

Recorded By: Wally Wilson

Drilling Company: GPI

Driller: Jose Landeros

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 58

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	
Surface Casing Used?	N		
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	38- 58
Sand Pack?	Y	12-20 CSSI	34 - 58
Annular Seal?	Y	Bentonite Chips	3 - 34
Surface Seal?	Y	Grout	0.5 - 3 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 48.92

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 2.0

Surface Casing Height (ft): 3.0

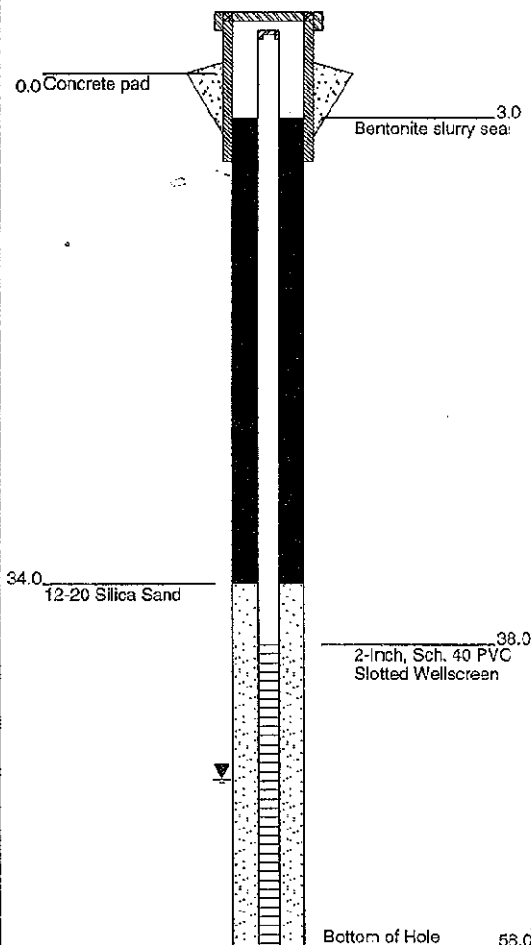
Riser Height (ft): 2.0

Ground Surface Elevation (ft): 3770.09

MP Elevation (ft): 3772.09

Remarks:

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 3.0'

Gravelly SAND

60% sand, 40% gravel

Sand w/ gravel, dry, light green with brown, calcareous, non-plastic; gravel rounded to 1" diameter variable composition

[Fill]

3.0 - 32.0'

SLAG

[Fill]

32.0 - 60.0'

Gravelly SAND

65% sand, 35% gravel

Brown, slightly moist, calcareous, very dense, non-plastic, has mildew like odor, subrounded variable composition

[Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-57

Date Hole Started: 1/16/94 Date Hole Finished: 1/16/94

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location: Old Smelter Town

Recorded By: Wally Wilson

Drilling Company: GPI

Driller: J. Landeros

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: Alluvial

Hole Diameter (in): 12-inch

Total Depth Drilled (ft): 30

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	+1.6 - 30 feet
Surface Casing Used?	Y	6 inch steel	+2 - 3 feet
Screen/Perforations?	Y	0.020-inch 304 slotted stainless steel	10 - 30 feet
Sand Pack?	Y	10/20 silica sand	5 - 30 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	N		

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	Y Bailer
Boring Samples Taken?	Y Split Spoon

Static Water Level Below MP: 9.17

Date: 5/93

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 1.6

Surface Casing Height (ft): 2.0

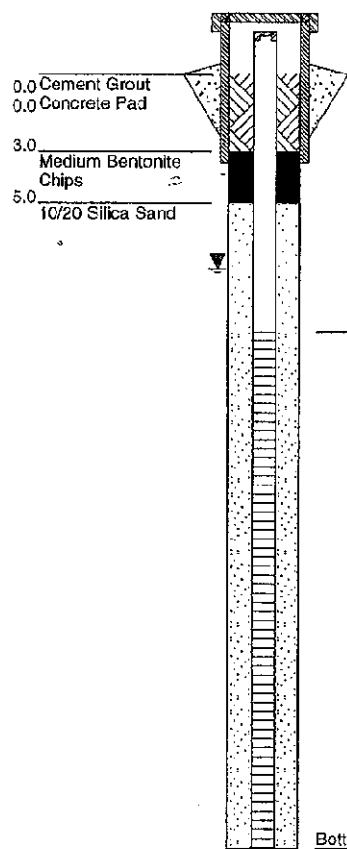
Riser Height (ft): 1.6

Ground Surface Elevation (ft):

MP Elevation (ft): 3723.52

Remarks: Monitoring well constructed through 8-inch ID hollow stem augers; all couplings are then flush threaded. Soil samples collected with 5-foot continuous split spoon sampler. Soil color notation (10 YR 5/4) based on Munsell Soil Color System. Head space analysis of soil samples performed by Micro-Tip organic vapor analyzer.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 10.0'

Sand

10 YR 5/3, brown sand 70%, fine to medium, moderately sorted; fines 25%, silt, nonplastic; gravel 5%, medium, subangular; loose, dry
[Alluvium]

10.0 - 17.0'

Fat Clay

10 YR 5/2, grayish-brown, fines 95%, clay soft, high plasticity; sand 5%, fine to medium, soft, wet - strong petroleum odor and soil staining
[Alluvium]

17.0 - 19.0'

Clayey Sand

10 YR 5/2, grayish-brown sand 85%, fine to medium; fines 15%, clay stiff, moderately plastic; loose wet
[Alluvium]

19.0 - 21.5'

Fat Clay

10 YR 5/2, grayish-brown, fines 95%, clay firm, high plasticity; sand 5%, fine to medium, firm, wet - strong petroleum odor and soil staining
[Alluvium]

21.5 - 30.0'

Clayey Sand

10 YR 5/2, grayish-brown sand 60%, fine to medium; fines 40%, clay stiff, moderately plastic; loose, wet
[Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-58

Date Hole Started: 6/16/94 Date Hole Finished: 6/16/94

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Old Smelter Town

Recorded By: WRW

Drilling Company: GPI

Driller: J. Landeros

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 12-inch

Total Depth Drilled (ft): 30

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	+1.56 - 28 feet
Surface Casing Used?	Y	6 inch steel	+2 - 3 feet
Screen/Perforations?	Y	0.020-inch slot, Sch 40 PVC	8 - 28 feet
Sand Pack?	Y	10/20 silica sand	5 - 30 feet
Annular Seal?	Y	Neat Cement	+2.5 - 3 feet
Surface Seal?	N		

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	Y Bailer
Boring Samples Taken?	Y Split Spoon

Static Water Level Below MP: 13.98

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 1.65

Surface Casing Height (ft): 2.0

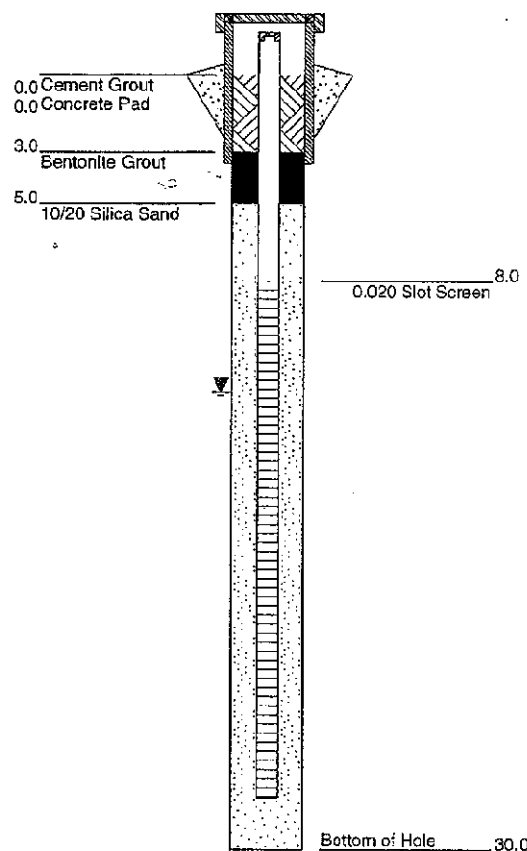
Riser Height (ft): 1.6

Ground Surface Elevation (ft): 3725.17

MP Elevation (ft): 3726.67

Remarks: Free product detected during drilling. Product thickness on 1/27/94 2.25 feet

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 2.0'	GRAVEL with Sand 10 YR 4/2, dark grayish brown gravel 60%, medium to coarse, rounded, max. dia. 3/4" to 1", sandy, 35% fine to medium, moderately sorted; fines 5%, silt, loose, dry. [Alluvium]
2.0 - 10.0'	SAND 7.5 YR 4/0 Dark gray, sand 95%, fine to medium, moderately sorted, fines 5%, silt, loose, moist, strong petroleum odor and staining from 9 - 10 feet. [Alluvium]
10.0 - 12.5'	Clayey SAND 7.5 YR 4/0 dark gray sand 85 %, fine to medium, fines 15%, clay - soft, moderately plastic, loose wet, strong petroleum odor and staining on soil [Alluvium]
12.5 - 18.5'	Fat CLAY 10 YR 4/2 dark grayish brown, fines 90%, clay - firm, high plasticity, sand 10 %, fine to medium, firm; wet - strong petroleum odor and soil staining [Alluvium]
18.5 - 20.0'	Clayey SAND 10 yr 4/4, dark yellowish brown sand 85 %, fine to medium; fine 15%, clay, soft, non-plastic; loose; wet, slight petroleum odor, no staining on soils [Alluvium]
20.0 - 30.0'	SAND 10 YR 4/4, dark yellowish brown, sand 85%, fine to medium, moderately sorted; gravel 10%, fine rounded max. dia. 1/2", fines 5%, silt; loose; wet - slight petroleum odor [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-59

Date Hole Started: 1/17/94 Date Hole Finished: 1/17/94

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc. Property
Legal Description: Asarco Plant
Descriptive Location: Old Smelter Town

Recorded By: Wally Wilson

Drilling Company: GPI

Driller: J. Landeros

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: Alluvial

Hole Diameter (in): 12-inch

Total Depth Drilled (ft): 30

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	+1.6 - 20 feet
Surface Casing Used?	Y	6 inch steel	+2 - 3 feet
Screen/Perforations?	Y	.020-inch slot, SS	10 - 20 feet
Sand Pack?	Y	10/20 silica sand	8 - 30 feet
Annular Seal?	Y	Bentonite Chips	3 - 8 feet
Surface Seal?	N		+25 - 3 feet

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	Y Bailor
Boring Samples Taken?	Y Split Spoon

Static Water Level Below MP: 13.20

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 1.6

Surface Casing Height (ft): 2.0

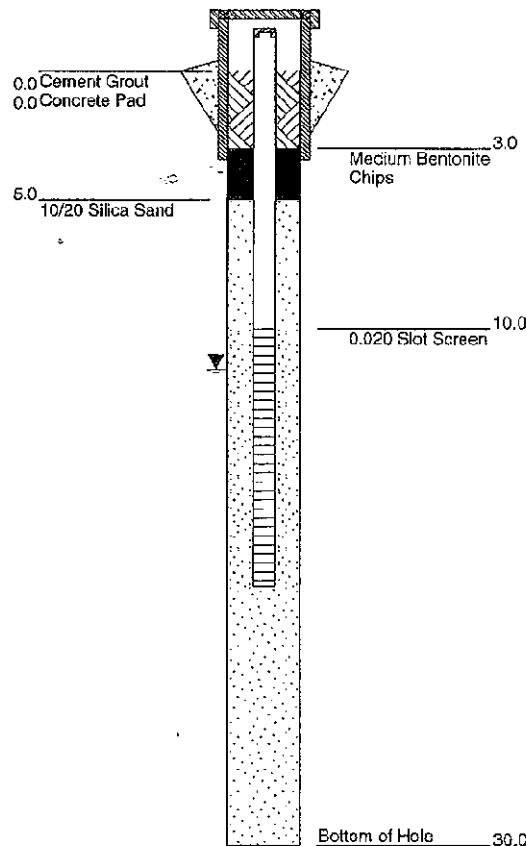
Riser Height (ft): 1.6

Ground Surface Elevation (ft):

MP Elevation (ft): 3728.37

Remarks: Monitoring well constructed through 8-inch ID hollow stem augers; all couplings are then flush threaded. Soil samples collected with 5-foot continuous split spoon sampler. Soil color notation (10 YR 5/4) based on Munsell Soil Color System. Head space analysis of soil samples performed by Micro-Tip organic vapor analyzer.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 3.0'	Gravel with Sand and Silt -10 YR 5/3, brown gravel 60%, fine to medium, subangular to subrounded, max dia 3/4; Sand 20%, fine to medium, moderately sorted, quartz and mafic grains fines 20%, silt, nonplastic; loose, dry. [Alluvium]
3.0 - 12.5'	Sand -10 YR 5/2, grayish-brown sand 80%, fine to medium, moderately sorted; gravel 5%, fine, rounded, max dia 1/2; fines 5%, silt, very loose; moist to wet [Alluvium]
12.5 - 16.0'	Clayey Sand -10 YR 5/2, grayish-brown sand 65%, fine to medium; fines 30%, clay soft and moderately plastic; gravel 5%, fine, rounded, max dia 1/2; loose, wet [Alluvium]
16.0 - 17.5'	Fat Clay -10 YR 4/2, dark grayish-brown, fines 90%, clay firm, moderate to high plasticity; sand 10%, fine to medium, firm, wet [Alluvium]
17.5 - 18.5'	Clayey Sand -10 YR 5/2, grayish-brown sand 65%, fine to medium; fines 30%, clay soft and moderately plastic; gravel 5%, fine, rounded, max dia 1/2; loose, wet [Alluvium]
18.5 - 19.0'	Fat Clay -10 YR 4/2, dark grayish-brown, fines 90%, clay firm, moderate to high plasticity; sand 10%, fine to medium, firm, wet [Alluvium]
19.0 - 30.0'	Clayey Sand -10 YR 5/2, grayish-brown sand 65%, fine to medium; fines 30%, clay soft and moderately plastic; gravel 5%, fine, rounded, max dia 1/2; loose, wet [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-60

Date Hole Started: 1/17/94 Date Hole Finished: 1/17/94

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Old Smelter Town

Recorded By: Wally Wilson

Drilling Company: GPI

Driller: J. Landeros

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: Alluvial

Hole Diameter (in): 12-inch

Total Depth Drilled (ft): 20

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	+1.6 - 17 feet
Surface Casing Used?	Y	6 inch steel	+2 - 3 feet
Screen/Perforations?	Y	.020-inch slot, SS	7 - 17 feet
Sand Pack?	Y	10/20 silica sand	5 - 20 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	Y	Concrete	+25 - 3 feet

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	Y Bailer
Boring Samples Taken?	Y Split Spoon

Static Water Level Below MP: 9.22

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 1.6

Surface Casing Height (ft): 2.0

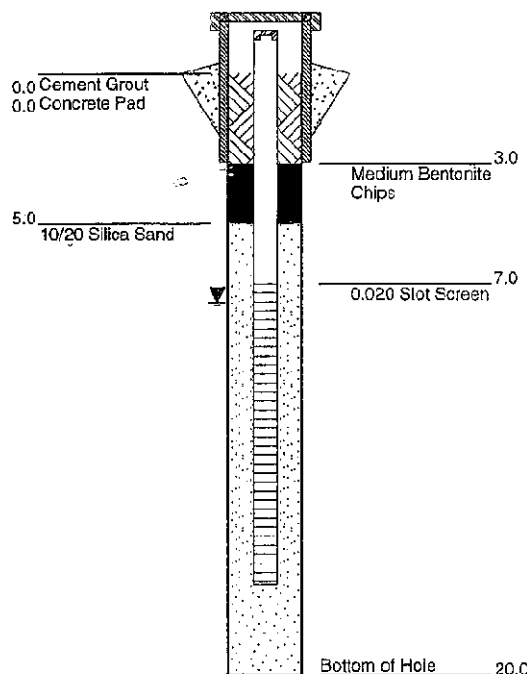
Riser Height (ft): 1.6

Ground Surface Elevation (ft):

MP Elevation (ft): 3722.52

Remarks: Monitoring well constructed through 8-inch ID hollow stem augers; all couplings are then flush threaded. Soil samples collected with 5-foot continuous split spoon sampler. Soil color notation (10 YR 5/4) based on Munsell Soil Color System. Head space analysis of soil samples performed by Micro-Tip organic vapor analyzer. Soil sample results: 0 - 5', 1305, 167 ppm; 5 - 10', 1310, 252 ppm; 10 - 15', 1320, 172 ppm; 15 - 20', 1330, 69.0 ppm.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 11.5'

Sand with Gravel

10 YR 5/3, brown sand 70%, fine to medium, moderately sorted, quartz grains; gravel 25%, fine to medium, subangular to subrounded, max dia 3/4; fines 5%, silt, nonplastic, loose, dry to wet [Alluvium]

11.5 - 13.0'

Fat Clay with Sand

10 YR 4/2, dark grayish-brown, fines 80%, clay firm, moderate to high plasticity; sand 20%, fine to medium; firm, wet - slight petroleum odor [Alluvium]

13.0 - 18.0'

Clayey Sand

10 YR 5/2, grayish-brown sand 70%, fine to medium, fines 30%, clay soft, moderately plastic; loose, wet [Alluvium]

18.0 - 20.0'

Fat Clay with Sand

10 YR 4/2, dark grayish-brown, fines 80%, clay firm, moderate to high plasticity; sand 20%, fine to medium; firm, wet [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-61

Date Hole Started: 1/18/94 Date Hole Finished: 1/18/94

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location:

Recorded By: WRW

Drilling Company: GPI

Driller: J. Landeros

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: NA

Hole Diameter (in): 12-inch

Total Depth Drilled (ft): 20

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	+1.6 - 17 feet
Surface Casing Used?	Y	8-inch steel	+2 - 3 feet
Screen/Perforations?	Y	.02-inch slot SS	7 - 17 feet
Sand Pack?	Y	10/20 silica sand	5 - 20 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	Y	Concrete	+2.25 - 2 feet

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	Y Bailor
Boring Samples Taken?	Y Split Spoon

Static Water Level Below MP: 10.73

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 1.6

Surface Casing Height (ft): 2.0

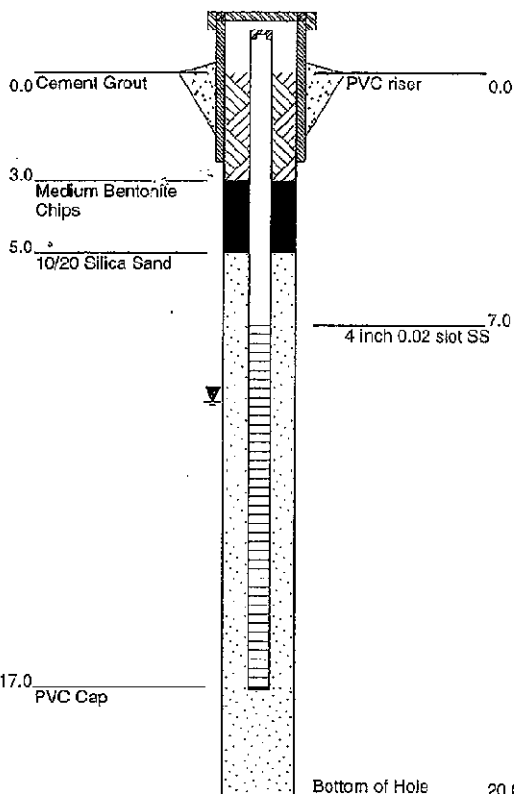
Riser Height (ft): 1.6

Ground Surface Elevation (ft): 3721.35

MP Elevation (ft): 3722.95

Remarks: Free product detected prior to well construction. After construction, product level not measurable

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 7.0'

SAND with Gravel

10 yr 5/3, brown, sand 80%, fine to coarse, poorly sorted, quartz grains; gravel 15%, fine to medium, subrounded, max dia. 3/4 - inch; fines 5%, silt, nonplastic; very loose; dry. [Alluvium]

7.0 - 10.0'

Clayey SAND

10 YR 5/2, grayish brown, sand 70%, fine to medium; fines 25%, clay, soft, moderately plastic; gravel 5%, fine rounded, max. dia. 3/4 - inch; fines 5%, silt, nonplastic; very loose; dry. [Alluvium]

10.0 - 17.0'

Fat CLAY with Sand

10 YR 4/2, dark grayish brown, fines 85%, clay, firm, moderate to high plasticity; sand 15%, fine to coarse; firm; wet - strong petroleum odor. [Alluvium]

17.0 - 20.0'

Clayey SAND

10 YR 5/2, grayish brown sand 65%, fine to medium; fines 35%, clay, soft, moderately plastic; loose; moist to wet. [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-62

Date Hole Started: 1/18/94 Date Hole Finished: 1/25/94

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Old Smelter Town

Recorded By: WRW

Drilling Company: GPI

Driller: J Landeros

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer:

Hole Diameter (in): 12-inch

Total Depth Drilled (ft): 25

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	+1.6 - 17 feet
Surface Casing Used?	Y	6 inch steel	+2 - 3 feet
Screen/Perforations?	Y	.020-inch slot, SS	7 - 17 feet
Sand Pack?	Y	10/20 silica sand	5 - 25 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	Y	Concrete	+25 - 2.5 feet

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	Y Bailer
Boring Samples Taken?	Y Split Spoon

Static Water Level Below MP: 7.62

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 1.6

Surface Casing Height (ft): 2.0

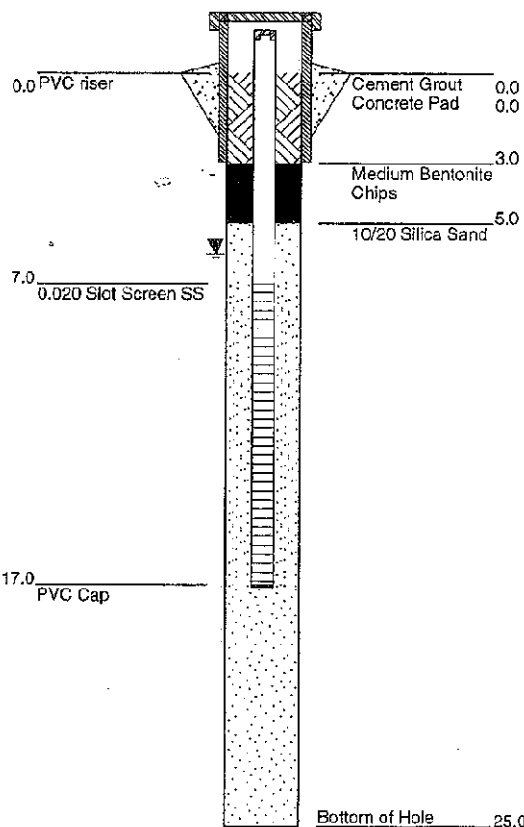
Riser Height (ft): 1.6

Ground Surface Elevation (ft): 3719.04

MP Elevation (ft): 3720.54

Remarks:

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 8.0'	SAND 10 YR 5/3, Brown sand 90%, fine to medium, moderately sorted, quartz grains; Gravel 5%, fine, rounded, max. dia. 1/4", fines 5%, silt, nonplastic; very loose; dry [Alluvium]
8.0 - 15.0'	Fat CLAY with Sand 10 YR 4/2, dark grayish brown, fines 90%, clay, firm, moderate to high plasticity; sand 10%, medium to coarse; firm; wet - slight petroleum odor. [Alluvium]
15.0 - 25.0'	SAND 10 YR 5/3, Brown, Sand 90%, fine to medium, moderately sorted, quartz grains; Gravel 5%, fine rounded, max. dia. 1/4 - inch, Fines 5 %, nonplastic; very loose; dry. [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-63

Date Hole Started: 1/19/94 Date Hole Finished: 1/26/94

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Old Smelter Town

Recorded By: WRW

Drilling Company: GPI

Driller: J. Landeros

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 12-inch

Total Depth Drilled (ft): 20

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	+1.6 - 17.70 feet
Surface Casing Used?	Y	8-inch steel	+2 - 3 feet
Screen/Perforations?	Y	0.020-inch slot SS	7.70 - 17.70 feet
Sand Pack?	Y	10/20 silica sand	5 - 20 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	Y	Concrete	+2.5 - 2.5 feet

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	Y Bailer
Boring Samples Taken?	Y Split Spoon

Static Water Level Below MP: 6.95

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 1.6

Surface Casing Height (ft): 2.0

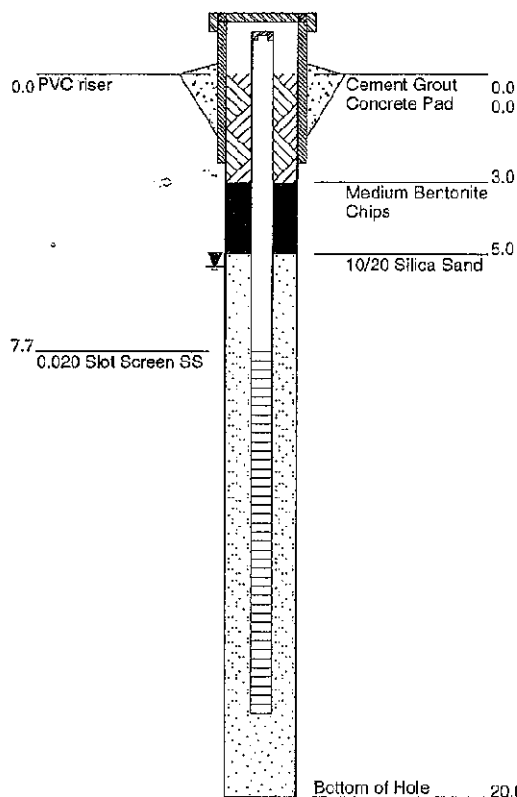
Riser Height (ft): 1.6

Ground Surface Elevation (ft): 3717.92

MP Elevation (ft): 3719.52

Remarks:

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 10.0'	SAND 10 YR 5/3, brown sand 85%, fine to coarse, poorly sorted, quartz grains; Gravel 5%, fine to medium, rounded, max. dia. 3/4 - inch; Fines 10%, clay, nonplastic; loose; dry to wet [Alluvium]
10.0 - 14.0'	Fat CLAY with Sand 10 YR 4/2, dark grayish brown, Fines 90%, Clay, Firm, moderate to high plasticity; Sand 10%, medium to coarse; Firm; Wet. [Alluvium]
14.0 - 15.0'	Clayey SAND 10 YR 5/3 Brown, Sand 75%, fine to medium, moderately sorted, quartz grains; Fines 25%, clay, nonplastic; Very loose; Dry. [Alluvium]
15.0 - 17.0'	Fat CLAY with Sand 10 YR 4/2, dark grayish brown, Fines 90%, Clay, Firm, moderate to high plasticity; Sand 10%, medium to coarse; Firm; Wet. [Alluvium]
17.0 - 20.0'	SAND 10 YR 5/3 brown Sand 95%, fine to coarse, poorly sorted, quartz grains; fines 5%, silt, loose; Wet. [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-64

Date Hole Started: 1/19/94 Date Hole Finished: 1/25/94

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Old Smelter Town

Recorded By: WRW

Drilling Company: GPI

Driller: J. Landeros

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 12-inch

Total Depth Drilled (ft): 20

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	+1.6 - 15 feet
Surface Casing Used?	Y	8-inch steel	+2 - 3 feet
Screen/Perforations?	Y	0.020-inch slot SS	5 - 15 feet
Sand Pack?	Y	10/20 Silica Sand	4 - 20 feet
Annular Seal?	Y	Bentonite Chips	3 - 4 feet
Surface Seal?	Y	Bentonite/Cement Grout	+2.5 - 2.5 feet

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	Y Baller
Boring Samples Taken?	Y Split Spoon

Static Water Level Below MP: 10.45

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 1.6

Surface Casing Height (ft): 2.0

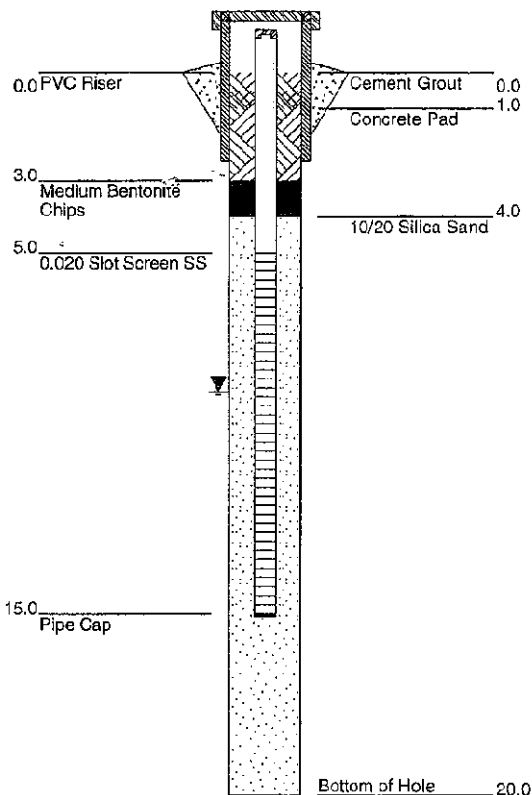
Riser Height (ft): 1.6

Ground Surface Elevation (ft): 3722.40

MP Elevation (ft): 3724

Remarks:

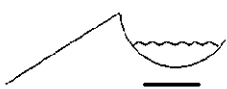
WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 5.0'	SAND with Gravel 10 YR 5/3, brown sand 75%, fine to medium, moderately sorted, quartz grains, Gravel 20%, fine to medium, subrounded, max. dia. 3/4", Fines 5%, Silt, nonplastic; loose; dry. [Alluvium]
5.0 - 10.5'	Clayey SAND 10 YR 5/2, grayish brown, sand 70%, fine to medium; fines 25%, clay, soft, moderately plastic; Gravel 5%, fine, rounded, max. dia. 1/2"; loose; Dry. [Alluvium]
10.5 - 16.0'	Fat CLAY with Sand 10 YR 4/2, dark grayish brown, Fines 80%, Clay, Firm, moderate to high plasticity; sand 10%, fine to coarse, subrounded; firm; Wet. [Alluvium]
16.0 - 20.0'	SAND 10 YR 4/4, Dark yellowish brown, Sand 95 %, fine to coarse; fines 5%, silt, soft, loose; Wet. [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-65

Date Hole Started: 1/27/94 Date Hole Finished: 1/27/94

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Old Smelter Town

Recorded By: WRW

Drilling Company: GPI

Driller: J. Landers

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: install Monitor Well

Target Aquifer: NA

Hole Diameter (in): 12-inch

Total Depth Drilled (ft): 20

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	+1.6 - 16 feet
Surface Casing Used?	Y	8-inch steel	+2 - 3 feet
Screen/Perforations?	Y	0.020-inch slot SS	6.40 - 16 feet
Sand Pack?	Y	10/20 silica sand	5 - 20 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	Y	Concrete	+2.5 - 2.5 feet

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	Y Bailor
Boring Samples Taken?	Y Split Spoon

Static Water Level Below MP: 8.52

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 1.6

Surface Casing Height (ft): 2.0

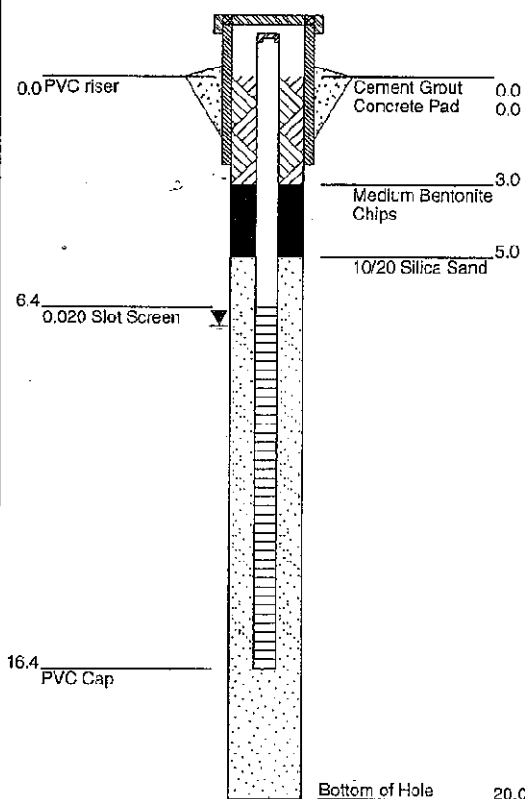
Riser Height (ft): 1.6

Ground Surface Elevation (ft): 3719.79

MP Elevation (ft): 3721.39

Remarks: Free product detected prior to and after well construction. On 1/27/93, product thickness 0.97 feet.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 1.0'	SAND with Gravel 10 YR 5/3, Brown Sand 60%, fine to coarse, poorly sorted, quartz grains; Gravel 30%, fine to medium, subrounded, concrete and brick, max. dia. 3/4"; fines 10%, Silt, nonplastic; loose; dry; [Alluvium]
1.0 - 9.0'	SAND 10 YR 5/2, grayish brown, sand 90%, fine to medium; gravel 5%, fine, rounded, max. dia. 1/2"; fines 5%, silt; loose; moist - strong petroleum odor [Alluvium]
9.0 - 13.0'	Fat CLAY with Sand 10 YR 5/2, grayish brown, Fines 95%, clay, firm, moderate to high plasticity; Sand 5%, fine to coarse; firm; wet - strong petroleum odor, free product with soil samples [Alluvium]
13.0 - 15.0'	Clayey SAND 10 YR 5/2, grayish brown, sand 70%, fine to medium; fines 25%, clay, soft, moderately plastic; loose; moist to wet. [Alluvium]
15.0 - 20.0'	SAND 10 YR 4/4, dark yellowish brown, Sand 95%, fine to medium, quartz and malic fragments; fines 5%, silt; loose; wet. [Alluvium]



HYDROMETRICS INC.

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Monitor Well Log

Hole Name: EP-66

Date Hole Started: 1/27/94 Date Hole Finished: 1/27/94

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc. Property

Legal Description: Asarco Plant

Descriptive Location: Old Smelter Town

Recorded By: WRW

Drilling Company: GPI

Driller: J. Landeros

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Install Monitor Well

Target Aquifer:

Hole Diameter (in): 12-inch

Total Depth Drilled (ft): 20

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	+1.6 - 16.40 feet
Surface Casing Used?	Y	8 - inch steel	+2.0 - 3.0 feet
Screen/Perforations?	Y	0.020-inch slot, Sch 40 PVC	6.40 - 16.40 feet
Sand Pack?	Y	10/20 Silica sand	5 - 20 feet
Annular Seal?	Y	Bentonite Chips	3 - 5 feet
Surface Seal?	Y	Bentonite/Cement Grout	+25 - 2.5 feet

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	Y
Boring Samples Taken?	Y

Baller

Split Spoon

Static Water Level Below MP: 10.37

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 1.6

Surface Casing Height (ft): 2.0

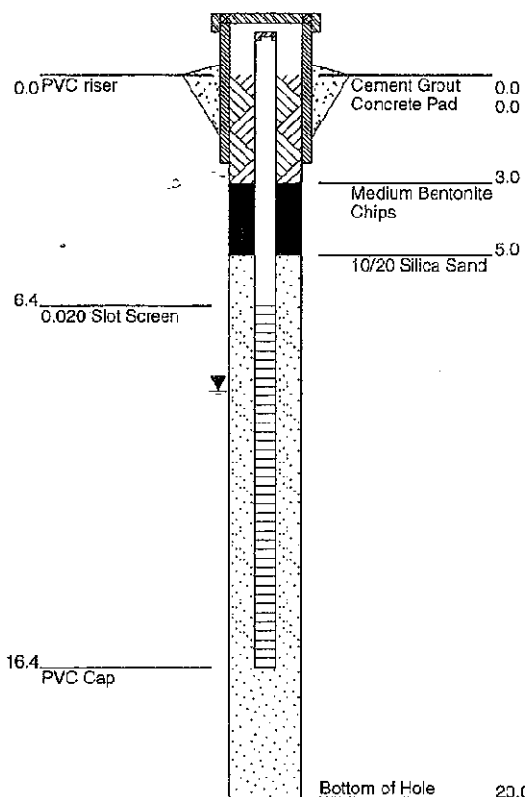
Riser Height (ft): 1.3

Ground Surface Elevation (ft): 3721.28

MP Elevation (ft): 3722.88

Remarks: Free product detected during drilling. Product thickness on 1/27/94 2.25 feet

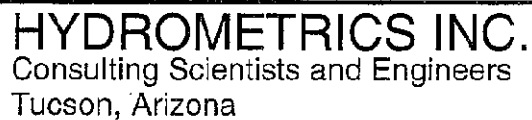
WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 3.0'	SAND with Gravel 10 YR 5/3, Brown, Sand 60%, fine to coarse, poorly sorted, quartz grains; Gravel 40%, fine to medium, subrounded, concrete to brick, max. dia. 3/4"; loose; dry. [Alluvium]
3.0 - 18.0'	SAND 10 YR 5/2, grayish brown, sand 90%; fine to medium; fines 10%, silt; loose; moist to wet. [Alluvium]
18.0 - 20.0'	Fat CLAY with Sand 10 YR 5/2, grayish brown, fines 90%, Clay: firm, moderate to high plasticity; Sand 10%, fine to coarse; firm, wet. [Alluvium]



Hole Name: EP-67

Date Hole Started: 5/28/97 Date Hole Finished: 5/28/97

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc.
Legal Description: Asarco Plant
Descriptive Location: Truck Staging Area

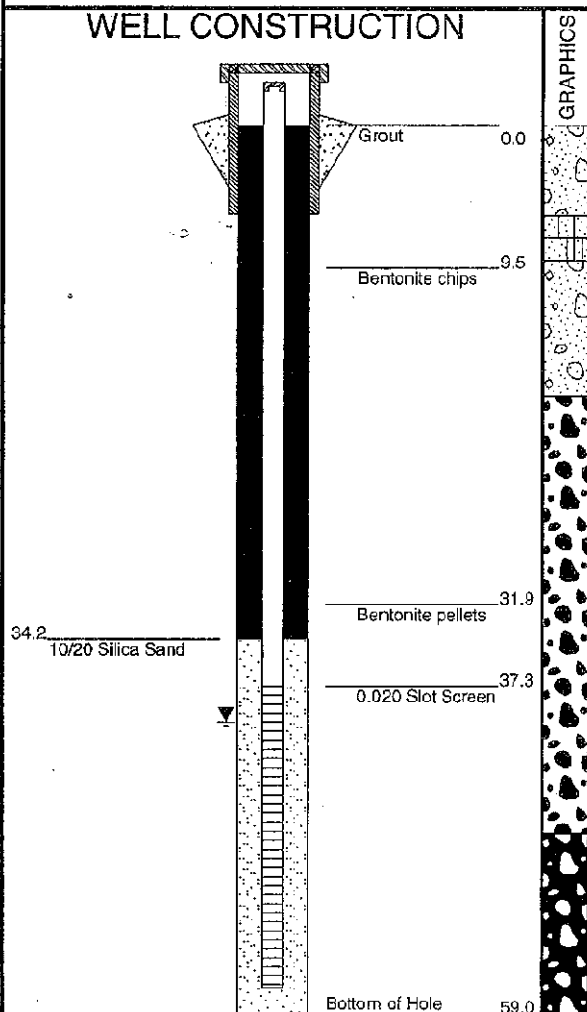
Purpose of Hole: Monitor Well
Target Aquifer: Alluvial/Colluvial
Hole Diameter (in): 8 Inch
Total Depth Drilled (ft): 59

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 57.3
Surface Casing Used?	Y	6-inch steel	+2.5 - 2.5 feet
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	37.3 - 57.3
Sand Pack?	Y	12-20 CSSI	34.2 - 57.3
Annular Seal?	Y	Bentonite Chips	9.5 - 34.2
Surface Seal?	Y	Grout	0 - 9.5 feet

Well Developed?	N	
Water Samples Taken?	N	
Boring Samples Taken?	Y	XRF 5 foot intervals

MP Elevation (ft): 3761.07

WELL CONSTRUCTION



GEOLOGICAL DESCRIPTION

6.0 - 7.5'
Gravelly SAND -Grayish-brown (5YR 3/2)"Fine to coarse gravel to 2 inches, dense."[Fill]
[Artificial Fill]

6.0 - 7.5'
Silty SAND -Light brown (5YR 6/4)"Fine grained, dense uniform."
[Alluvium]

7.5 - 9.0'
SAND -Pale yellow brown (10YR 6/2)"Fine to coarse grained, loose, some boulders."
[Alluvium]

9.0 - 18.0'
Gravelly SAND -Pale yellow brown (10YR 6/2)"Fine to coarse with boulders, composed of limestone, quartzite or andesite."
[Alluvium]

18.0 - 47.0'
GRAVEL Grayish-orange (5YR 7/2) to very pale orange (10YR 8/2)"Boulders and gravel of fine-grained quartzite and andesite, moist. "Cuttings are from andesite."Water @ 45".
[Alluvium]

47.0 - 59.0'
Andesite Boulders -Limestone and andesite (pulverized @ 47').
[Alluvium]

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Monitor Well Log

Hole Name: EP-68

Date Hole Started: 5/29/97 Date Hole Finished: 5/29/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: South end of Employees Parking

Recorded By: WR Wilson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 82

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 82 feet
Surface Casing Used?	Y	8-inch steel	+2.5 - 2 feet
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	62 - 82 Feet
Sand Pack?	Y	12-20 CSSI	60 - 82 Feet
Annular Seal?	Y	Bentonite Chips	2 - 60
Surface Seal?	Y	Grout	0 - 2 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 63.1

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 2.0

Surface Casing Height (ft): 2.5

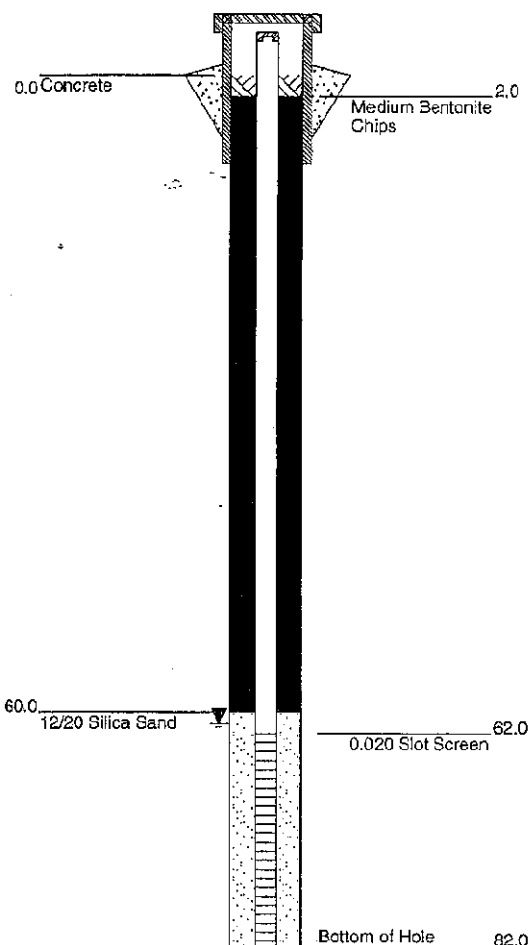
Riser Height (ft): 2.0

Ground Surface Elevation (ft): 3781.76

MP Elevation (ft): 3783.76

Remarks:

WELL CONSTRUCTION



GEOLOGICAL DESCRIPTION

Silty, Gravelly SAND -15% silt, 15% gravel, 70% sand; reddish-brown (5YR 4/4), fine to medium-grained, quartzite, friable, moist. [Fill]

Sandy GRAVEL -30% sand, 5% silt, 65% gravel; dark brown (10YR 4/3), medium to coarse, subangular to subrounded (max 2"), medium dense, moist. [Alluvium]

Gravelly SAND -20% gravel, 10% silt, 70% sand; yellowish-brown (10YR 5/4), fine to medium-grained, gravel subrounded, medium dense, moist. [Alluvium]

CLAY -Dark yellowish-brown (10YR 4/4), hard, medium plasticity, small veins of gypsum, moist. [Alluvium]

Gravelly CLAY with Sand -20% gravel, 10% sand, 70% clay; dark yellowish-brown (10YR 4/6), medium plasticity, firm; gravel fine to medium-grained, subrounded (max. 1"), sand medium to coarse, medium dense, moist. [Alluvium]

Gravelly SAND with Clay -15% clay, 30% gravel, 65% sand; dark yellowish-brown (10YR 4/6), fine to coarse grained, subangular to subrounded (max. 1.5"). [Alluvium]

Clayey GRAVEL with Sand -yellow (10YR 7/8); gravel medium to coarse, subangular, igneous, andesite cobbles common; clay firm, low plasticity; sand fine to coarse, dense, moist to wet, andesite boulders common at bottom (48', 55', 68' and 79'). [Alluvium]



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Monitor Well Log

Hole Name: EP-69

Date Hole Started: 5/29/97 Date Hole Finished: 5/29/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc.
Legal Description: Asarco Plant
Descriptive Location: East of Scale House

Recorded By: WR Wilson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 65

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	
Surface Casing Used?	Y	8 - inch steel	
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	45 - 55 Feet
Sand Pack?	Y	12-20 CSSI	42 - 55 Feet
Annular Seal?	Y	Bentonite Chips	10 - 42
Surface Seal?	Y	Grout	0 - 10 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: Dry

Date:

MP Description: Top of PVC

MP Height Above or Below Ground (ft):

Surface Casing Height (ft):

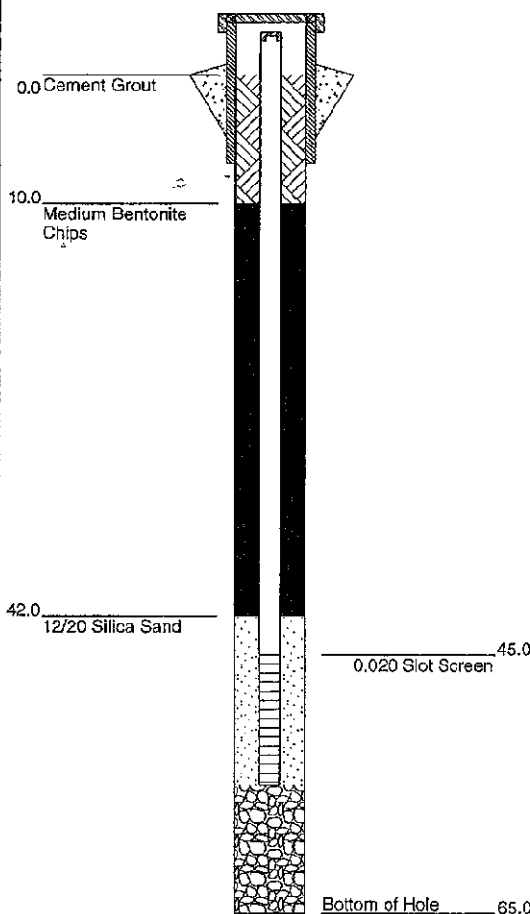
Riser Height (ft):

Ground Surface Elevation (ft): 3779.06

MP Elevation (ft): 3779.06

Remarks: Abandoned after four days of dry conditions. Casing was filled with med. chips and annular filled with cement grout to surface.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 2.0'	Gravelly SAND with Clay 20% gravel, 10% sand, 70% clay; black (2.5Y 2/0), sand and gravel fine to medium, subangular; clay low plasticity, soft, friable (???), moist [Artificial Fill]
2.0 - 8.0'	SAND with silt Black (2.5Y 2/0), very fine to fine, medium dense, moist [Artificial Fill]
8.0 - 20.0'	Gravelly SAND with silt 40% gravel, 5% silt, 55% sand; brown (10YR 5/3), medium to coarse, subangular to subrounded (gravel max. 1"), medium dense, moist [Alluvium]
20.0 - 30.0'	Sandy CLAY with some gravel Brown (10YR 5/3), sand fine to coarse, gravel medium, subangular to subrounded, medium dense to dense, moist [Alluvium]
30.0 - 54.0'	Gravelly SAND with some Clay 40% gravel, 10% clay, 50% sand; pale brown (10YR 6/3), sand fine to coarse; gravel medium, subangular to subrounded, igneous, clay dense, moist [Alluvium]
54.0 - 65.0'	ANDESITE [Bedrock]

HYDROMETRICS INC.
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Tucson, Arizona

Monitor Well Log

Hole Name: EP-71R

Date Hole Started: 6/11/97 Date Hole Finished: 6/11/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: Near Gate 18

Recorded By: Lairy Johnson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 65

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 65 Feet
Surface Casing Used?	Y	8 - inch steel	+2.5 - 2 feet
Screen/Perforations?	Y	4" Sch 40 PVC FT 20 slot	45 - 65
Sand Pack?	Y	12-20 CSSI	43 -65
Annular Seal?	Y	Bentonite Chips	10.0 - 43.0
Surface Seal?	Y	Grout	0 - 10 feet
DEVELOPMENT/SAMPLING			
Well Developed?	Y	Submersible Pump	45 - 65 Feet
Water Samples Taken?	N		
Boring Samples Taken?	Y	XRF	5 foot intervals

Static Water Level Below MP: 50.22

Surface Casing Height (ft): 2.5

Date: 5/98

Riser Height (ft): 2.0

MP Description: Top of PVC

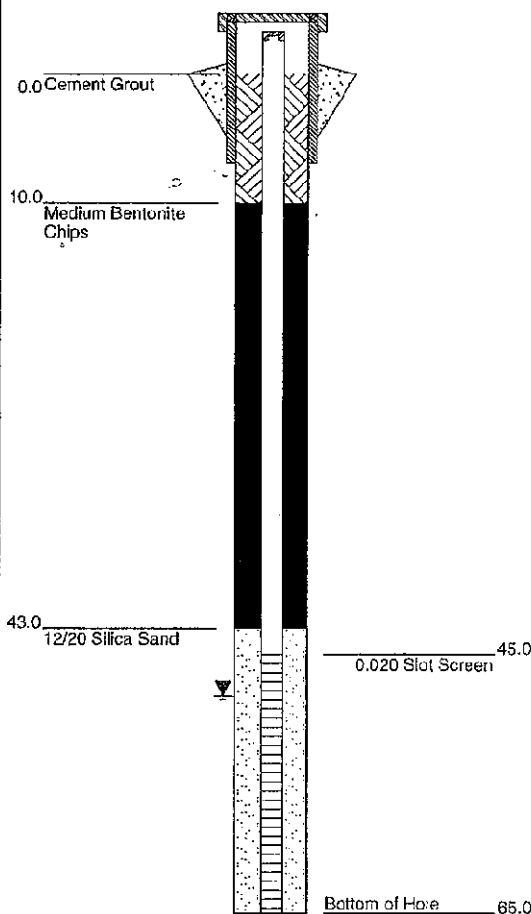
Ground Surface Elevation (ft): 3763.19

MP Height Above or Below Ground (ft): 2.0

MP Elevation (ft): 3765.19

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

WELL CONSTRUCTION



GEOLOGICAL DESCRIPTION

0.0 - 4.0'	GRAVELLY SAND -fine to coarse, some concentrate, some green oxidized gravel, dark yellow brown (10vr4/2) [Fill]
4.0 - 14.0'	GRAVELLY SAND -fine to coarse, loose, gap graded, pale yellow brown (10yr6/2) dry, river material (Rio Grande) clay lense 12.5 to 13 feet
14.0 - 25.5'	SAND -fine to medium, loose, uniform, moderate, yellow brown (10yr5/4) moist
25.5 - 54.0'	GRAVELLY SAND -fine to coarse, loose, gapgraded, Moderate, yellow brown (10yr5/4), dry, gravels, quartzite @34 feet getting mixed river gravel, basalt quartzite, andesite, turning to boulders at 38 feet some 2 feet in diameter, 53' H2O rising to 45'
54.0 - 60.0'	RIVER SANDS/ GRAVELLY SAND -fine to coarse, loose, gap graded, pale yellow brown (10yr6/2), Wet
60.0 - 65.0'	GRAVELLY SAND -Boulders with Sand 1'-1-1/2'



HYDROMETRICS INC.

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Tucson, Arizona

Monitor Well Log

Hole Name: EP-73

Date Hole Started: 6/1/97 Date Hole Finished: 6/1/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: East of Acid Plant 2

Recorded By: Lairy Johnson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 80

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 80 Feet
Surface Casing Used?	Y	8 - inch steel	+2.5 - 2 feet
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	60 - 80 Feet
Sand Pack?	Y	12-20 CSSI	57.8 - 80 Feet
Annular Seal?	Y	Bentonite Chips	8.4 - 57.8
Surface Seal?	Y	Grout	0 - 8.4 feet
DEVELOPMENT/SAMPLING			
Well Developed?	Y	Submersible Pump	60 - 80 Feet
Water Samples Taken?	N		
Boring Samples Taken?	Y	XRF	5 foot intervals

Static Water Level Below MP: 71.10

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 2.0

Surface Casing Height (ft): 2.5

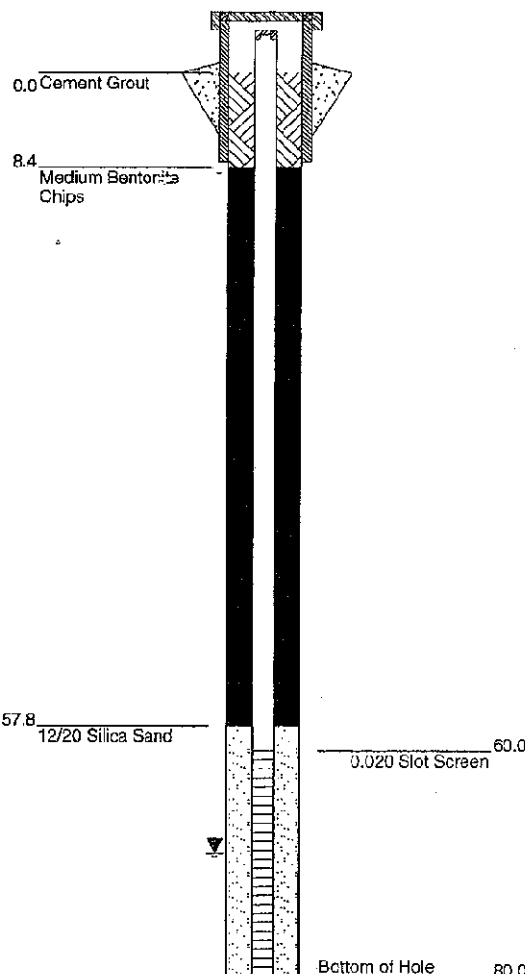
Riser Height (ft): 2.0

Ground Surface Elevation (ft): 3787.45

MP Elevation (ft): 3789.45

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

WELL CONSTRUCTION



GEOLOGICAL DESCRIPTION

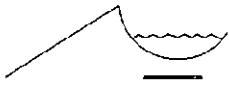
0.0 - 15.0'
SLAG -concoidal fractures

15.0 - 17.0'
CLAYEY GRAVEL -with sand, (10yr5/3) brown, gravel 50 % fine - coarse, angular-subangular, clay 30% mod plastic, soft sand 20 % fine coarse, loose, wet perched in slag on-clayey soils (FILL)

17.0 - 21.0'
SILTY SAND -with gravel, sand very fine - fine, silt 40 %, gravel medium - coars, subangular-subrounded, medium dense, moist

21.0 - 45.0'
SLAG and GRAVEL -Slag 50 %, gravel 30 % medium-coarse, subangular, sand 10 %, fine-medium, silt 10%, gravel quartzite,dry

45.0 - 80.0'
GRAVELLY, SILTY SAND -(10yr6/1), gray medium plasticity, low strength, friable, mottled orange and red; dry, interbedded with roddish brown to reddish, yellow quartzite, wet at 68 feet



HYDROMETRICS INC.

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Tucson, Arizona

Monitor Well Log

Hole Name: EP-74

Date Hole Started: 6/2/97 Date Hole Finished: 6/2/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: Lead Works

Recorded By: WR Wilson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 72

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 72 Feet
Surface Casing Used?	Y	8 - inch steel	+2 - 2 feet
Screen/Perforations?	Y	4" Sch 40 PVC FT 20 slot	52 - 72 Feet
Sand Pack?	Y	12-20 CSSI	52 - 72 Feet
Annular Seal?	Y	Bentonite Chips	10 - 52
Surface Seal?	Y	Grout	0 - 10 feet

DEVELOPMENT/SAMPLING

Well Developed? N

Water Samples Taken? N

Boring Samples Taken? N

Static Water Level Below MP: 52.55

Date: 6/97

MP Description: Top of PVC

MP Height Above or Below Ground (ft): -0.25

Surface Casing Height (ft): 0

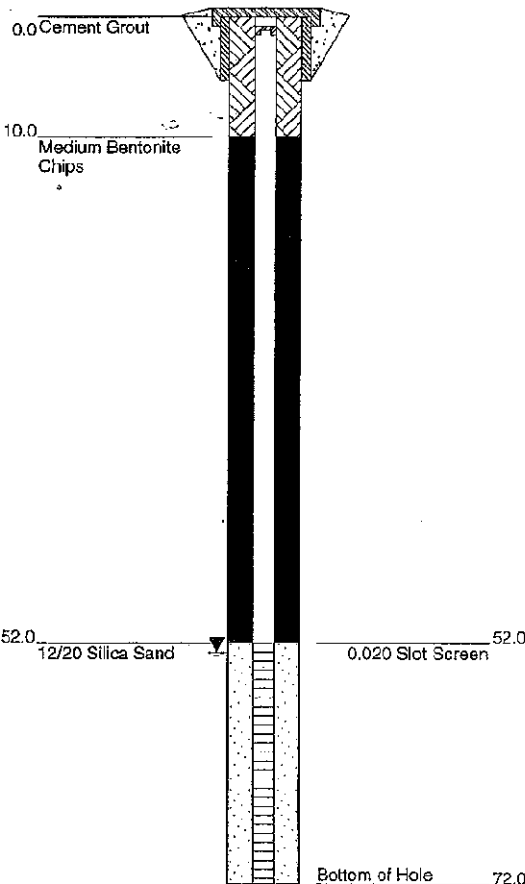
Riser Height (ft): -0.25

Ground Surface Elevation (ft): 3775.89

MP Elevation (ft): 3775.89

Remarks: Well abandoned.

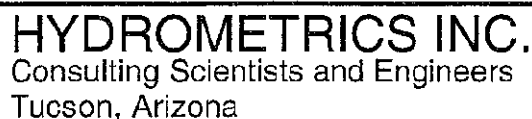
WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 2.0'	Concrete and brick under concrete
2.0 - 12.0'	Clayey SAND with Gravel -50% sand, 40% clay, 10% gravel, yellow brown (10YR 5/4), sand fine to medium, clay medium plasticity, soft, gravel medium to coarse, subangular to subrounded medium dense, moist, some slag. [Fill]
12.0 - 15.0'	Gravelly SAND with Silt -40% sand, 40% gravel, 20% silt, pale brown (10YR 6/3), sand fine to medium, gravel fine to coarse, subangular to subrounded (max. 1"); silt dense, moist. [Alluvium]
15.0 - 45.0'	Sandy GRAVEL -70% gravel, 30% sand, pale brown (10YR 6/3), gravel fine to coarse, subangular up to cobble size; sand fine to coarse, dense, dry, quartz, andesite. [Alluvium]
45.0 - 65.0'	Sandy GRAVEL with Clay -Dark yellowish-brown (10YR 4/4), gravel fine to coarse, subangular to subrounded, quartz, andesite, up to cobbles; sand fine to coarse, clay (15%) medium plasticity, soft, dense, moist (water at 60'). [Alluvium]
65.0 - 69.0'	SAND 90% sand, 10% gravel, dark yellowish-brown (10YR 4/4), fine to coarse, subangular to subrounded, dense, wet. [Alluvium]
69.0 - 71.0'	ANDESITE
	[Bedrock]



Hole Name: EP-75

Date Hole Started: 6/2/97 Date Hole Finished: 6/3/97

Project: Asarco El Paso Agreed Order RI
County: El Paso State: Texas
Property Owner: ASARCO, Inc.
Legal Description: Asarco Plant
Descriptive Location: Boneyard

Total Depth Drilled (ft): 71

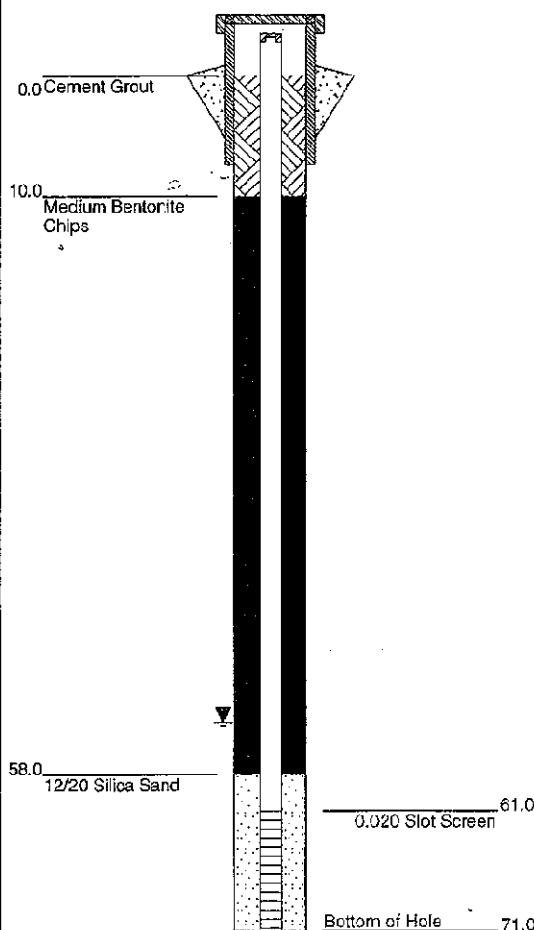
WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 71 Feet
Surface Casing Used?	Y	8 - inch steel	+3 - 2 feet
Screen/Perforations?	Y	4'Sch 40 PVC FT 20 slot	61 - 71 Feet
Sand Pack?	Y	12-20 CSSI	58 - 71 Feet
Annular Seal?	Y	Bentonite Chips	10 - 58
Surface Seal?	Y	Grout	0 - 10 feet

Boring Samples Taken? N

MP Elevation (ft): 3800.85

Remarks:

GRAPHICS



GEOLOGICAL DESCRIPTION

Black gravel-sized, angular, vesicular, non-concoidal fractures. (Slag Fill)

50% sand, 30% silt, 20% gravel, orange brown 7.5YR 5/6, sand fine, silt nonplastic, medium dense, moist; gravel medium to coarse, subangular to subrounded, quartz, andosite. (Alluvium)

50% sand, 30% gravel, 20% clay, dark yellowish-brown 10YR 4/4, sand medium to coarse; gravel medium to coarse, subrounded, andesite, quartz; clay medium plasticity, soft, medium dense, moist to wet. (Alluvium)

60% sand, 20% gravel, 20% silt, pale brown 10YR 6/3, sand fine; gravel fine to medium, subangular to subrounded, quartz, andesite; silt dense, dry to moist (probable water at 66%). (Alluvium)

ANDESITE Bedrock



HYDROMETRICS INC.

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Tucson, Arizona

Monitor Well Log

Hole Name: EP-76

Date Hole Started: 6/3/97 Date Hole Finished: 6/3/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: Boneyard

Recorded By: WR Wilson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 64

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 64 Feet
Surface Casing Used?	Y	8 - inch steel	+2.5 - 2 feet
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	44 - 64 Feet
Sand Pack?	Y	12-20 CSSI	40 - 64 Feet
Annular Seal?	Y	Bentonite Chips	10 - 41
Surface Seal?	Y	Grout	0 - 10 feet
DEVELOPMENT/SAMPLING			
Well Developed?	Y	Submersible Pump	44 - 64 Feet
Water Samples Taken?	N		
Boring Samples Taken?	Y	XRF	5 foot intervals

Static Water Level Below MP: 50.20

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 2.0

Surface Casing Height (ft): 2.5

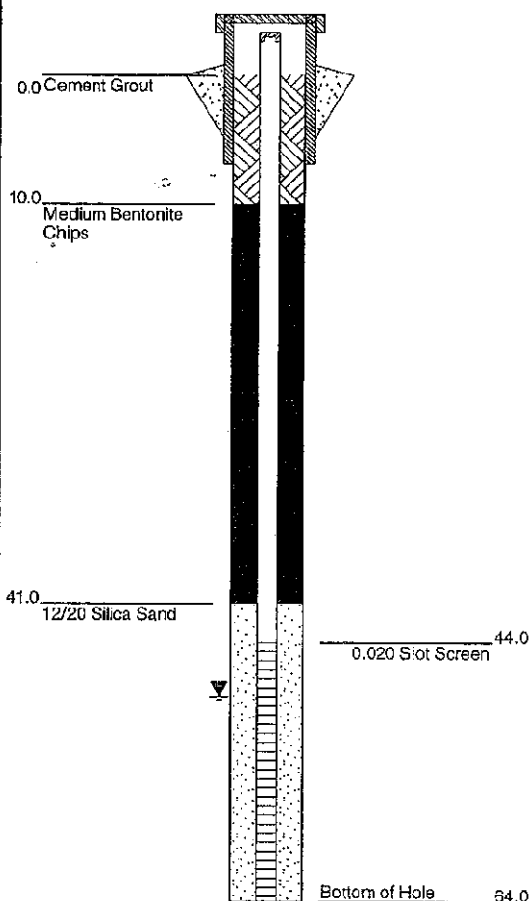
Riser Height (ft): 2.0

Ground Surface Elevation (ft): 3796.56

MP Elevation (ft): 3798.56

Remarks:

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 45.0'

Slag

Very dark gray 2.5YR 3/0, gravel-sized medium to coarse, angular, vesicular, non-concoidal fracturing [Slag Fill]

45.0 - 48.0'

Silty SAND

50% sand, 50% silt, dark brown 10YR 3/3, sand fine to coarse; silt low plasticity, soft, loose, wet [Alluvium]

48.0 - 63.0'

SAND

85% sand, 15% gravel, dark brown 10YR 3/3, sand medium to coarse; gravel fine to medium, subrounded to rounded, quartzite, medium dense, wet [Alluvium]

63.0 - 64.0'

ANDESITE Boulders

[Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-77

Date Hole Started: 6/4/97 Date Hole Finished: 6/4/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: North of pond 5

Recorded By: WR Wilson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 55

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 55 Feet
Surface Casing Used?	Y	8 - inch steel	
Screen/Perforations?	Y	4" Sch 40 PVC FT 20 slot	45 - 55 Feet
Sand Pack?	Y	12-20 CSSI	42 - 55 Feet
Annular Seal?	Y	Bentonite Chips	4 - 42 Feet
Surface Seal?	Y	Grout	0 - 4 feet
DEVELOPMENT/SAMPLING			
Well Developed?	Y	Submersible Pump	45 - 55 Feet
Water Samples Taken?	N		
Boring Samples Taken?	Y	XRF	5 foot intervals

Static Water Level Below MP: 41.10

Surface Casing Height (ft): 0

Date: 5/98

Riser Height (ft): -0.5

MP Description: Top of PVC

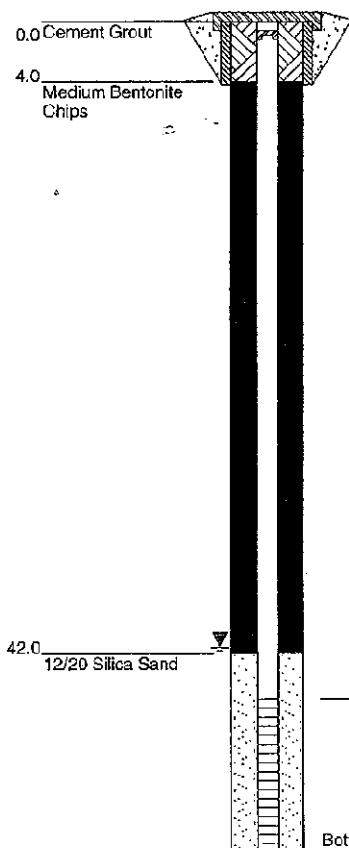
Ground Surface Elevation (ft): 3777.38

MP Height Above or Below Ground (ft): -0.5

MP Elevation (ft): 3776.88

Remarks:

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 0.4'	ASPHALT
0.4 - 18.0'	Sandy GRAVEL 65% gravel, 30% sand 5% silt and clay Dark reddish-brown (5YR 2.5/2) Gravel fine to coarse, angular to subangular, slag, quartz, andesite; sand fine to coarse; fines loose, moist to wet (5-10% + 3" andesite fragments) [Fill]
18.0 - 30.0'	Gravelly SAND 80% sand, 20% gravel Black (10YR 2/1) to dark brown (10YR 4/4) Sand fine to coarse, angular; gravel fine to medium, subrounded to rounded; increasing fines (10%); loose, medium dense, moist (water at 27') [Alluvium]
30.0 - 38.0'	Gravelly SAND with Clay 50% sand, 30% gravel, 20% clay Pale brown (10YR 6/3) Sand fine to coarse; gravel subrounded to rounded, max. 1", clay medium plasticity, soft, dense, moist [Alluvium]
38.0 - 55.0'	Clayey GRAVEL 60% gravel, 30% clay, 10% sand Gravel fine to coarse, subangular to subrounded, quartz, andesite, max. 1.5"; clay medium plasticity, soft; sand medium to coarse, medium dense, moist (saturated at 45') [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-78

Date Hole Started: 6/4/97 Date Hole Finished: 6/4/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order R1

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: Near pond on Parker Bros.

Recorded By: WR Wilson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 9 inch

Total Depth Drilled (ft): 45

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 45 Feet
Surface Casing Used?	Y	8 - inch steel	+3.0 - 2 Feet
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	34.42 - 44.42 Feet
Sand Pack?	Y	12-20 CSSI	31.1 - 44.75 Feet
Annular Seal?	Y	Bentonite Chips	10 - 31
Surface Seal?	Y	Grout	0 - 10 feet
DEVELOPMENT/SAMPLING			
Well Developed?	Y	Submersible Pump	34.5 - 44.5 Feet
Water Samples Taken?	N		
Boring Samples Taken?	Y	XRF	

Static Water Level Below MP: 33.05

Surface Casing Height (ft): 3.0

Date: 5/98

Riser Height (ft): 2.5

MP Description: Top of PVC

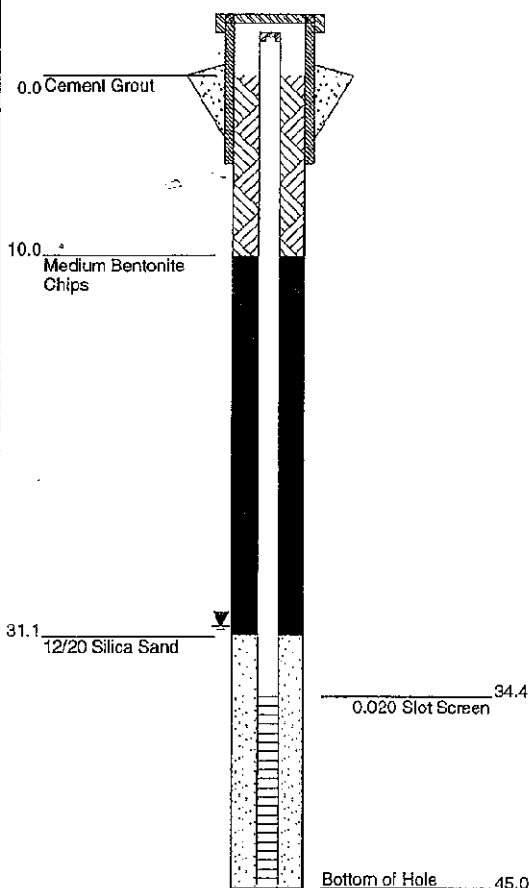
Ground Surface Elevation (ft): 3770.96

MP Height Above or Below Ground (ft): 2.5

MP Elevation (ft): 3773.46

Remarks:

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 23.0'

SLAG

Black (10YR 2/1)

Gravel-sized, angular, non-concoidal fracturing; wet at 5'; perched from adjacent pond (Fill)
[Slag Fill]

23.0 - 25.0'

Sandy CLAY

70% clay, 30% sand

Very dark gray (10YR 3/2)

Clay medium plasticity, soft; sand fine, gravel (scarce) fine; saturated
[Alluvium]

25.0 - 41.0'

Sandy GRAVEL

70% gravel, 30% sand

Dark brown (10YR 4/3)

Gravel fine to coarse, subangular to subrounded, quartzite, andesite, limestone; sand medium to coarse, medium dense; dry to moist, cobbles and boulders at 30'
[Alluvium]

41.0 - 45.0'

Gravel

Gray (10YR 5/1)

Mudstone (very fine grain), dense, appears to be formation (?); water at 33.05'
[Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-79

Date Hole Started: 6/5/97 Date Hole Finished: 6/5/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: South West of Cemetery

Recorded By: Lairy Johnson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 55

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 55 Feet
Surface Casing Used?	Y	8 - Inch steel	+2.5 - 2 feet
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	39 - 54 Feet
Sand Pack?	Y	12-20 CSSI	36 - 54 Feet
Annular Seal?	Y	Bentonite Chips	3 - 36
Surface Seal?	Y	Grout	0 - 3 feet
DEVELOPMENT/SAMPLING			
Well Developed?	Y	Submersible Pump	39 - 54 Feet
Water Samples Taken?	N		
Boring Samples Taken?	Y	XRF	5 foot intervals

Static Water Level Below MP: 47.01

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 2.0

Surface Casing Height (ft): 2.5

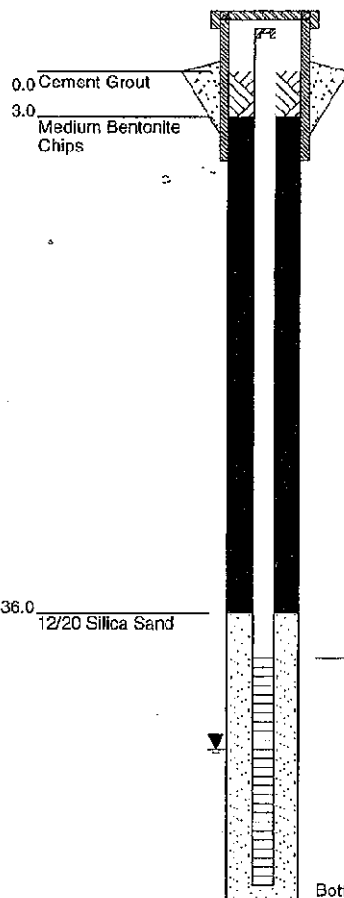
Riser Height (ft): 2.0

Ground Surface Elevation (ft): 3791.94

MP Elevation (ft): 3793.94

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 5.0'	SLAG -(10yr2/1) black, gravel to cobble sized angular fragments of poured slag [Slag Fill]
5.0 - 22.0'	Sandy CLAY -(10yr4/3) dark yellow brown, clay med plasticity, hi dry strength, firm, sand firm, dry. [Alluvium]
22.0 - 28.0'	Sandy CLAY with gravel -(10yr4/3) dark yellow brown, clay medium plasticity, firm, high dry strength, sand 20 % medium-coarse, gravel 20 % fine medium rounded Quartzite and limestone max. 1/2 inch, firm, moist. [Alluvium]
28.0 - 55.0'	Sandy GRAVEL -pale brown, gravel, fine-coarse, subrounded-subangular, Quartzite, Chert, Andsite, sand fine-coarse, 30%, fines 5% silt, dense dry. (Alluvium)



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-80

Date Hole Started: 6/6/97 Date Hole Finished: 6/6/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: Asarco Annex 2

Recorded By: WR Wilson

Drilling Company: Layne

Driller: Rod

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 9 inch

Total Depth Drilled (ft): 26.5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 26.5 Feet
Surface Casing Used?	Y	8 - inch steel	+3.0 - 2 feet
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	9 - 24 feet
Sand Pack?	Y	12-20 CSSI	8 - 24 feet
Annular Seal?	Y	Bentonite Chips	5 - 8
Surface Seal?	Y	Grout	0 - 5 feet

DEVELOPMENT/SAMPLING

Well Developed?	Y	Submersible Pump	9 - 24 Feet
Water Samples Taken?	N		
Boring Samples Taken?	Y	XRF	5 foot intervals

Static Water Level Below MP: 11.13

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 2.5

Surface Casing Height (ft): 3.0

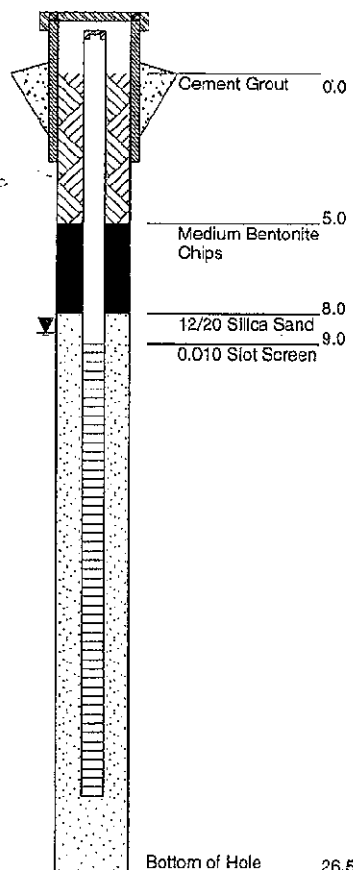
Riser Height (ft): 2.5

Ground Surface Elevation (ft): 3724.09

MP Elevation (ft): 3726.59

Remarks: Samples were collected with 2-inch ID split spoon and grab samples

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 3.0'	Gravelly SAND -10 YR 3/3, Yellow sand, fine-medium, gravel 40% fine to coarse, rounded-subrounded, quartzite and dolomite, max 1 1/2", +3" about 1% in upper 2'. Fines 5% silt; medium dense, dry - moist at 3' [Alluvium]
3.0 - 8.0'	SAND -10 YR 3/3 yellow brown, fine to medium-grained, gravel 5% fine to medium-grained, rounded, max diameter 1"; loose; moist. [Alluvium]
8.0 - 21.0'	Clayey SAND -10 YR 3/3 yellow brown, fine to coarse-grained; clay 40%, medium plasticity, soft; loose - soft; moist - saturated, 0.5 - 1' clay layers. Saturated @ 10'. [Alluvium]
21.0 - 24.0'	SAND -Gray, medium to coarse-grained; gravel <5%, fine to medium-grained, rounded; fines <5%, medium dense; saturated. [Alluvium]
24.0 - 26.5'	Clayey SAND -Dark gray, fine to medium-grained; clay 40%, nonplastic, soft; medium dense; saturated. [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-81

Date Hole Started: 6/6/97

Date Hole Finished: 6/6/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: Parker Bros. entrance

Recorded By: WR Wilson

Drilling Company: Layne

Driller: Rod

Drilling Method: Hollow Stem Auger

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 9 inch

Total Depth Drilled (ft): 28

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 28 Feet
Surface Casing Used?	Y	8 - inch steel	+3.0 - 2 feet
Screen/Perforations?	Y	4" Sch 40 PVC FT 20 slot	11 to 26 feet
Sand Pack?	Y	12-20 CSSI	9 to 26 feet
Annular Seal?	Y	Bentonite Chips	3 - 9
Surface Seal?	Y	Grout	0 - 3 feet
DEVELOPMENT/SAMPLING			
Well Developed?	Y	Submersible Pump	11 - 26 Feet
Water Samples Taken?	N		
Boring Samples Taken?	Y	XRF	5 foot intervals

Static Water Level Below MP: 18.42

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 2.5

Surface Casing Height (ft): 3.0

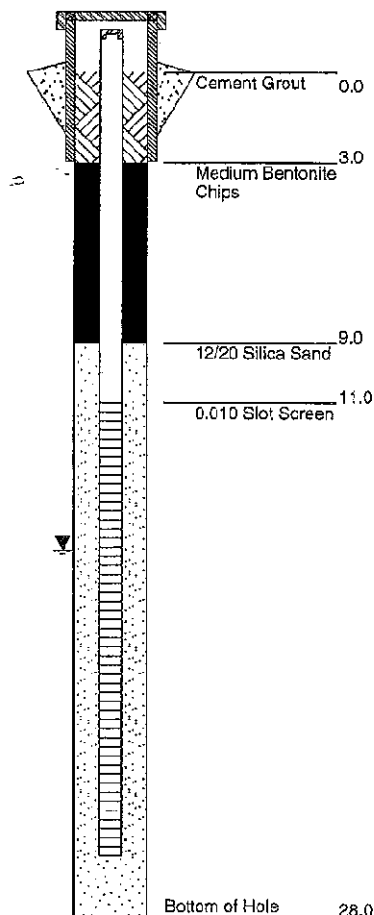
Riser Height (ft): 2.5

Ground Surface Elevation (ft): 3731.59

MP Elevation (ft): 3734.09

Remarks: Samples were collected with 2-inch ID split spoon and grab samples

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 4.0'	SLAG - mixed with gravelly clay and gravel-sized fragments of slag. [Slag Fill]
4.0 - 8.0'	Clayey SAND with gravel - Dark yellow brown sand, fine to coarse-grained; clay 40%, medium plasticity, soft; gravel 20%, fine to medium-grained, rounded, max 1", loose, medium dense; moist. [Alluvium]
8.0 - 15.0'	SAND - Dark yellow brown, fine to medium-grained; <10% fines; gravel 5%, fine-grained, medium dense; moist - saturated. Water @ 14'. [Alluvium]
15.0 - 28.0'	Clayey SAND - Dark yellow brown, fine to coarse-grained with clean coarse layers @ 0.5'; clay 40%, medium plasticity, soft, high dry strength; gravel 5%, fine-grained, rounded; loose, medium dense, saturated. Sands heave @ 25'. [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-82

Date Hole Started: 6/10/97 Date Hole Finished: 6/10/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: E of Plant/ W of I10
South of Parker Brothers

Recorded By: Lairy Johnson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 9 inch

Total Depth Drilled (ft): 32

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 30 feet
Surface Casing Used?	Y	8 - inch steel	+3.0 - 2.5 feet
Screen/Perforations?	Y	4" Sch 40 PVC FT 20 slot	15 - 30
Sand Pack?	Y	12-20 CSSI	13 - 30
Annular Seal?	Y	Bentonite Chips	0 - 13
Surface Seal?	Y	Grout	0

DEVELOPMENT/SAMPLING

Well Developed?	Y	Submersible Pump	15 -30 Feet
Water Samples Taken?	N		
Boring Samples Taken?	Y	XRF	5 foot intervals

Static Water Level Below MP: 16.92

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 2.5

Surface Casing Height (ft): 3.0

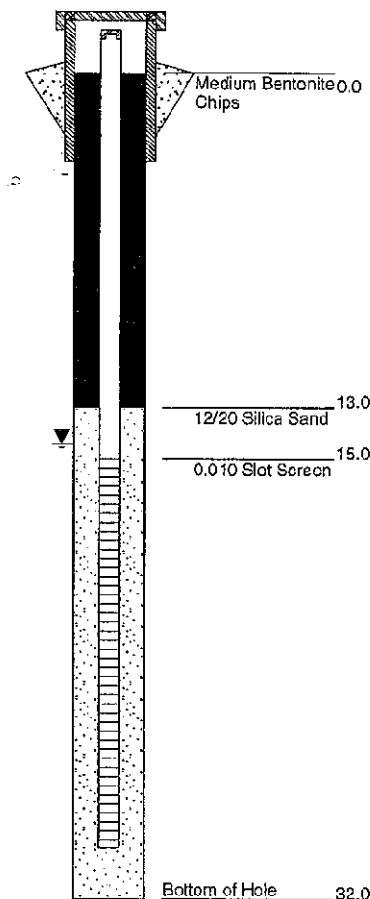
Riser Height (ft): 2.5

Ground Surface Elevation (ft): 3771.15

MP Elevation (ft): 3773.65

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 32.0'

Gravelly SAND -fine to coarse grained, gap graded, loose, gravel 1/4" to 3/8" dia., pale yellow brown (10yr6/2), dry, gravels volcanic, andesite Ryolite at 10 feet gravels are quartzite and limestone. wet at 20-1/2 feet, stopping at 30 feet; no bedrock [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-83

Date Hole Started: 6/11/97 Date Hole Finished: 6/11/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: 200' North of # Bridge

Recorded By: Lairy Johnson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 9 inch

Total Depth Drilled (ft): 50

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 50 Feet
Surface Casing Used?	Y	8 - inch steel	+2.5 - 2 feet
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	35-50
Sand Pack?	Y	12-20 CSSI	32.4-50
Annular Seal?	Y	Bentonite Chips	10-32.4
Surface Seal?	Y	Grout	0 - 10 feet
DEVELOPMENT/SAMPLING			
Well Developed?	Y	Submersible Pump	35 - 50 Feet
Water Samples Taken?	N		
Boring Samples Taken?	Y	XRF	5 foot intervals

Static Water Level Below MP: 27.91

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 2.0

Surface Casing Height (ft): 2.5

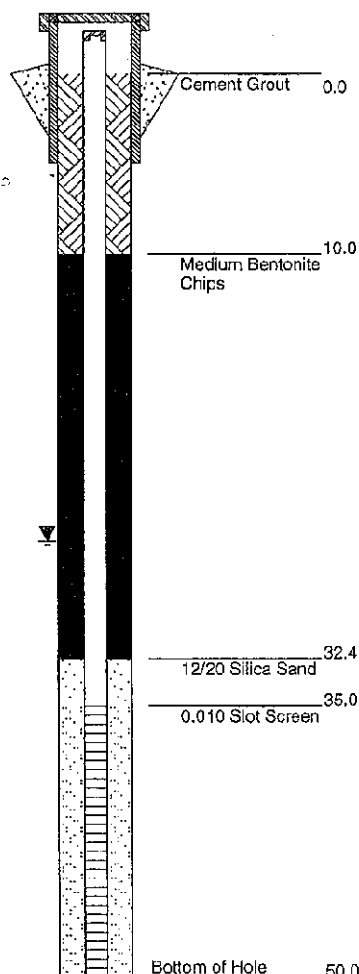
Riser Height (ft): 2.0

Ground Surface Elevation (ft): 3801.73

MP Elevation (ft): 3803.73

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 7.0'	SLAG black (5 YR 2/2) - 10 YR 2/2 [Slag Fill]
7.0 - 12.0'	SAND -fine to coarse - 80 % fine mud dense, gap graded, some slag, grayish orange 10 YR 7/4 dry, slag not present after 9' [Alluvium]
12.0 - 21.0'	SAND -fine grained, loose uniform, moderate yellow brown 10YR 5/4, dry [Alluvium]
21.0 - 50.0'	Gravelly SAND -fine to coarse grained loose, gap graded, 10 YR 5/4 dry Gravel composed of Quartzite Very Pale Orange 10 YR 8/2 @ 39' Start seeing Andesite in the gravel moist @ 39' 1/2 water @ 44 [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-84

Date Hole Started: 6/11/97 Date Hole Finished: 6/11/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: E of I10 1000'

Recorded By: WR Wilson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 9 inch

Total Depth Drilled (ft): 20

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 13.5 Feet
Surface Casing Used?	Y	8 - inch steel	+3.5 - 2.0 feet
Screen/Perforations?	Y	4'Sch 40 PVC FT 20 slot	3 1/2 - 13 1/2
Sand Pack?	Y	12-20 CSSI	2.5 - 14
Annular Seal?	Y	Bentonite Chips	1.5 - 2.5
Surface Seal?	Y	Grout	0 - 1.5 feet

DEVELOPMENT/SAMPLING

Well Developed?	Y	Submersible Pump	3.5 - 13.5 Feet
Water Samples Taken?	N		
Boring Samples Taken?	Y	XRF	5 foot intervals

Static Water Level Below MP: 8.38

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 3.0

Surface Casing Height (ft): 3.5

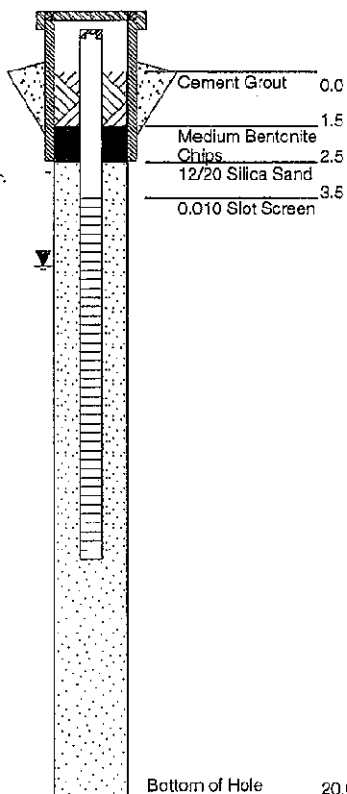
Riser Height (ft): 3.0

Ground Surface Elevation (ft): 3794.52

MP Elevation (ft): 3797.52

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 8.0'
SANDY GRAVEL - loose, gap graded, fine to coarse, all material is weathered andesite, moderate yellow brown 10YR 5/4, moist at 1' H2O @ 6' [Alluvium]

8.0 - 20.0'
Gravelly SAND - with cobbles and boulders, qtzite, cs, Andesite, turning clay, some shale, possibly perlitic shale @ 14' > 2" [Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-85

Date Hole Started: 6/12/97 Date Hole Finished: 6/12/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: In Arroyo due North of Cadmium bldg.

Recorded By: Lairy Johnson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvia/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 25

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 25 Feet
Surface Casing Used?	Y	8 - inch steel	+3.0 - 2 feet
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	10-25
Sand Pack?	Y	12-20 CSSI	7.5 - 25
Annular Seal?	Y	Bentonite Chips	3 - 7.5
Surface Seal?	Y	Grout	0 - 3 feet
DEVELOPMENT/SAMPLING			
Well Developed?	Y	Submersible Pump	10 - 25 Feet
Water Samples Taken?	N		
Boring Samples Taken?	Y	XRF	5 foot intervals

Static Water Level Below MP: 15.49

Date: 5/98

MP Description: Top of PVC

MP Height Above or Below Ground (ft): 2.5

Surface Casing Height (ft): 3.0

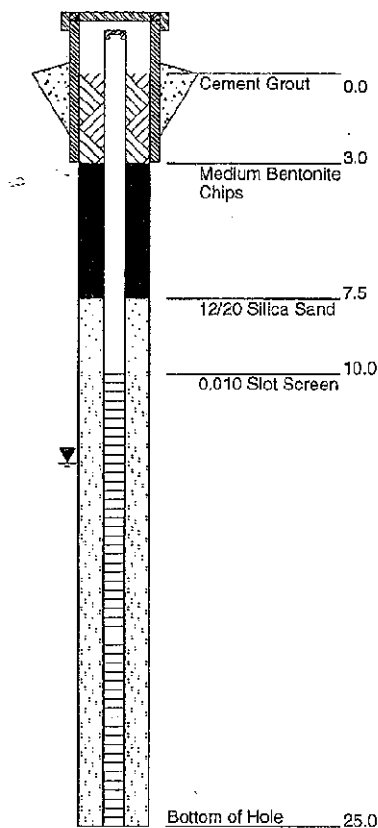
Riser Height (ft): 2.5

Ground Surface Elevation (ft): 3739.41

MP Elevation (ft): 3741.91

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

WELL CONSTRUCTION

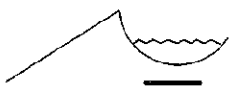


GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 5.0'
SLAG
[Slag Fill]

5.0 - 25.0'
GRAVELLY SAND -fine to coarse, loose, gap graded, pale yellow brown, 10 YR 4/2, dry moist @ 9, H2O @ 10 3/4' - 11', moist between, H2O @ 18 1/2, TD=25
[Alluvium]



HYDROMETRICS INC.

Consulting Scientists and Engineers
Tucson, Arizona

Monitor Well Log

Hole Name: EP-86

Date Hole Started: 6/13/97 Date Hole Finished: 6/13/97

Client: ASARCO, Inc.

Project: Asarco El Paso Agreed Order RI

County: El Paso State: Texas

Property Owner: ASARCO, Inc.

Legal Description: Asarco Plant

Descriptive Location: Slag pile North of Cemetery

Recorded By: Lairy Johnson

Drilling Company: Layne

Driller: Neil Hale

Drilling Method: Stratex

Drilling Fluids Used: None

Purpose of Hole: Monitor Well

Target Aquifer: Alluvial/Colluvial

Hole Diameter (in): 10 inch

Total Depth Drilled (ft): 70.5

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	4-inch, flush threaded, Sch 40, PVC	0 - 70.5 Feet
Surface Casing Used?	Y	8 - inch steel	+2.5 - 2 feet
Screen/Perforations?	Y	4"Sch 40 PVC FT 20 slot	30.5 - 70.5
Sand Pack?	Y	12-20 CSSI	27.4 - 70.5
Annular Seal?	Y	Bentonite Chips	7.5 - 27.4
Surface Seal?	Y	Grout	0 - 7.5 feet
DEVELOPMENT/SAMPLING			
Well Developed?	Y	Submersible Pump	30.5 - 70.5 Feet
Water Samples Taken?	N		
Boring Samples Taken?	Y	XRF	5 foot intervals

Static Water Level Below MP: 48.83

Date: 5/98

MP Description: Top of PCV

MP Height Above or Below Ground (ft): 2.0

Surface Casing Height (ft): 2.5

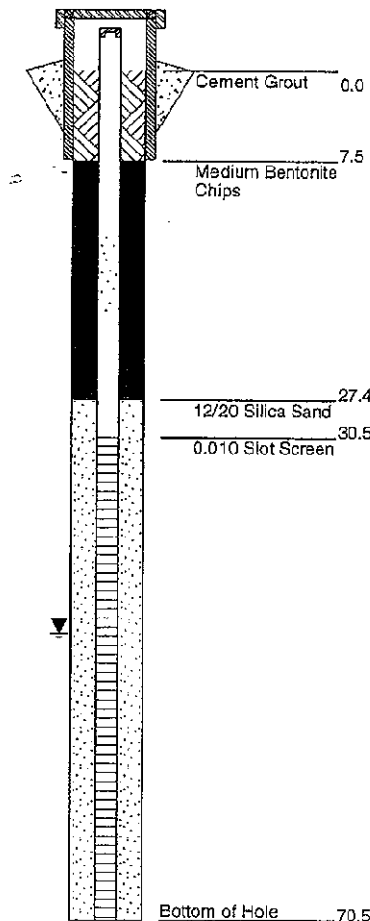
Riser Height (ft): 2.0

Ground Surface Elevation (ft): 3817.99

MP Elevation (ft): 3819.99

Remarks: Samples were collected with a 2-inch ID split spoon and grab samples

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 19.0'	SAND -fine to medium, loose, uniform, light brown 5YR 6/4 dry, Interbedded gravels of, limestone gravels, rounded to subrounded [Alluvium]
19.0 - 70.5'	GRAVELLY SAND -fine to coarse, loose, gap graded, light brown, 5YR 6/4, DRY Gravel Predominately LS w/ some qtzite, Andesite, moist 44' (cutting from cyclone) appears to be wet @ 58' Sample 60 Oz wet? TD =70' after 1 hr H2O @ 46.15' Backfill w/sand to 50' [Alluvium]