

APPENDIX 3B

Well Construction Diagrams



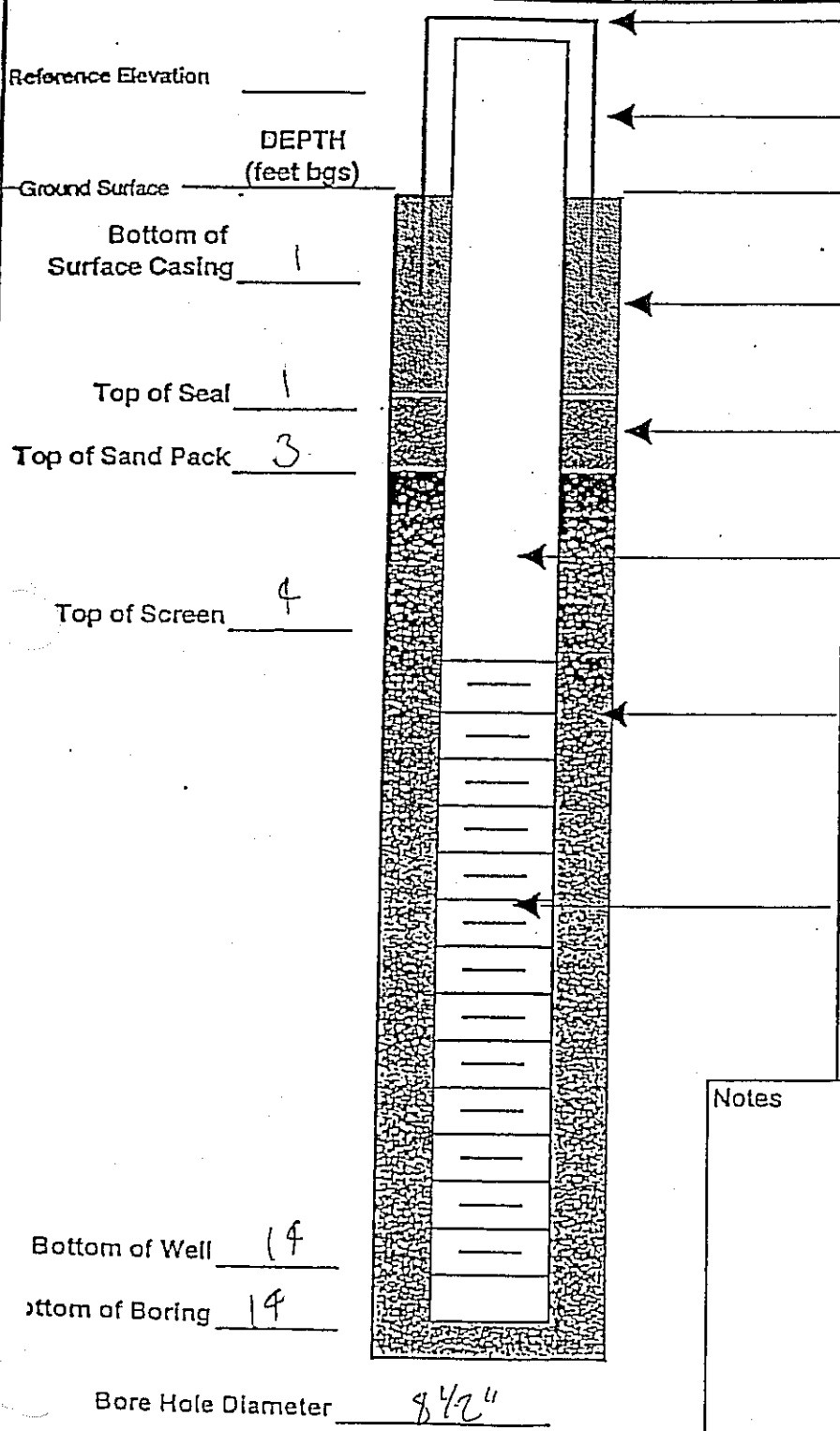
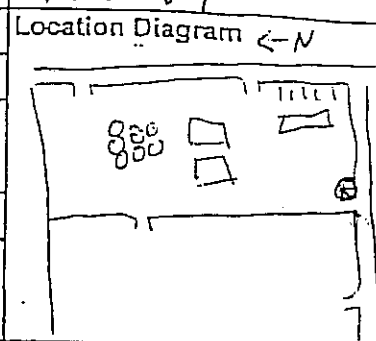
Monitoring Well Construction

Well ID MW-17

MW-17

Date Start 6/29/00
 Date Complete 6/29/00
 Boring Depth 14
 Borehole Diameter 8 1/2"
 Well Diameter 2"

Contractor (P.S.C.) Drilling
 Drillers Cascade Drilling
 Geologist Lou La Rosa
 Depth to Water (bgs)



Locking Cap

Steel Protective Surface Casing
Diameter: 1 1/2 bags Set Set

Grout Type: Cement

Annular Seal / by Type: Bentonite Type: Grad med cl w/p

Riser Casing Type: PVC
Diameter: 2"

Well Packing Material Sand
Type: Lapis Lustré
2/12
3 1/2 bags

Screen Type: PVC
Slot Width: 10 Slot
Diameter: 2"

Notes

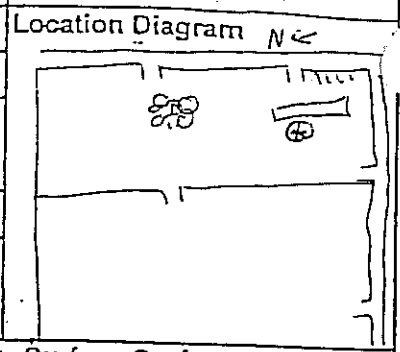


Monitoring Well Construction

Well ID MW-18
MW-18

Date Start 7/7/00
Date Complete 7/7/00
Boring Depth 15
Borehole Diameter 8 1/2"
Well Diameter 2"

Contractor PSC
Drillers Cascade Drilling
Geologist Lou La Rosa
Depth to Water (bgs)



Reference Elevation _____

Ground Surface _____
DEPTH (feet bgs)

Bottom of Surface Casing _____

Top of Seal 1

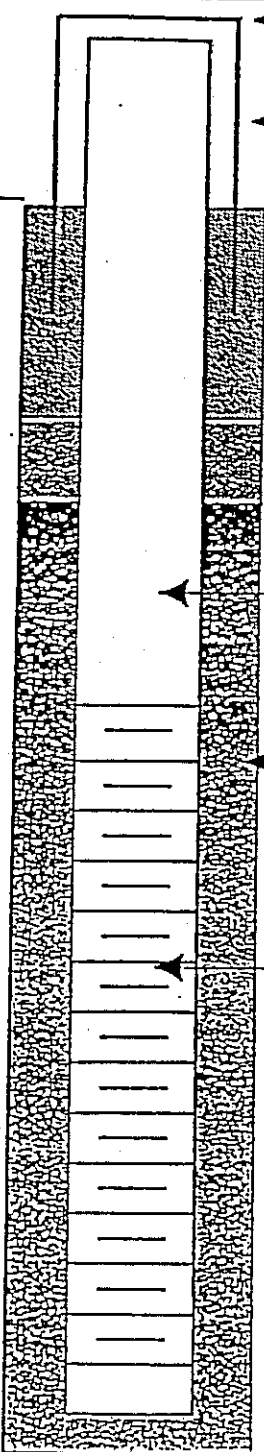
Top of Sand Pack 3

Top of Screen 8 5

Bottom of Well 15

Bottom of Boring 15

Bore Hole Diameter 8 1/2"



Locking Cap

Steel Protective Surface Casing
Diameter:

Grout
Type: Cement

Annular Seal
Type: Bentonite
Pure Grade material

Riser Casing
Type: PVC
Diameter: 2"

Well Packing Material
Type: Sand Lapis Lustré
2 1/2
4 bags

Screen
Type: PVC
Slot Width: 10 Slot
Diameter: 2"

Notes



Monitoring Well Construction

Well ID MW-19

MW-19

Date Start 6/29/00

Contractor Cascade Drilling

Location Diagram NE

Date Complete 6/29/00

Drillers Cascade Drilling

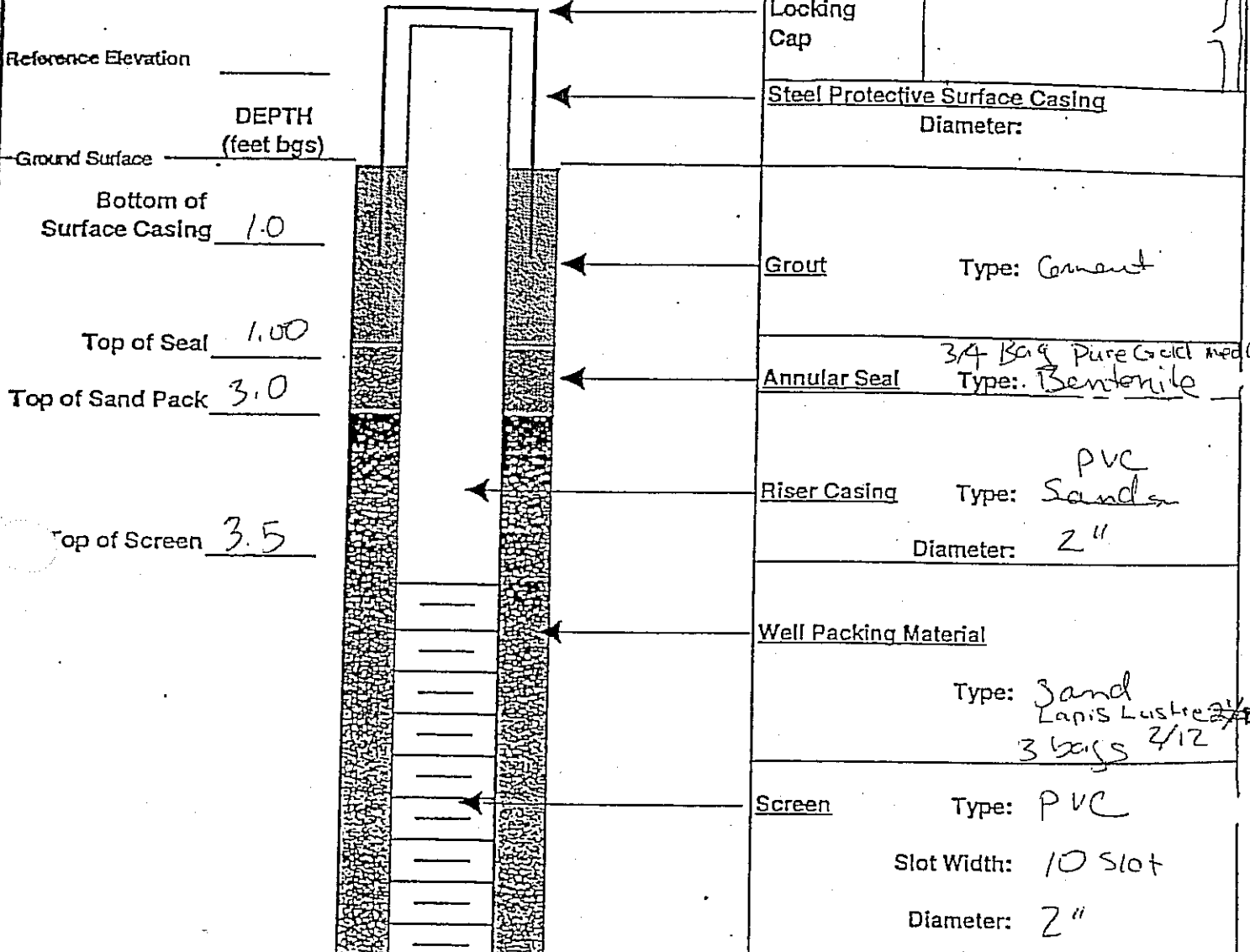
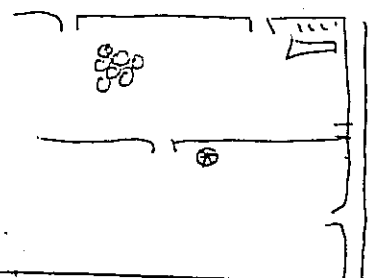
Boring Depth 13.5

Geologist Lou La Rosa

Borehole Diameter 8 1/2"

Well Diameter 2"

Depth to Water (bgs)



Bottom of Well 13.5

Bottom of Boring 13.5

Bore Hole Diameter 13.5 in 8 1/2"

Notes



Monitoring Well Construction

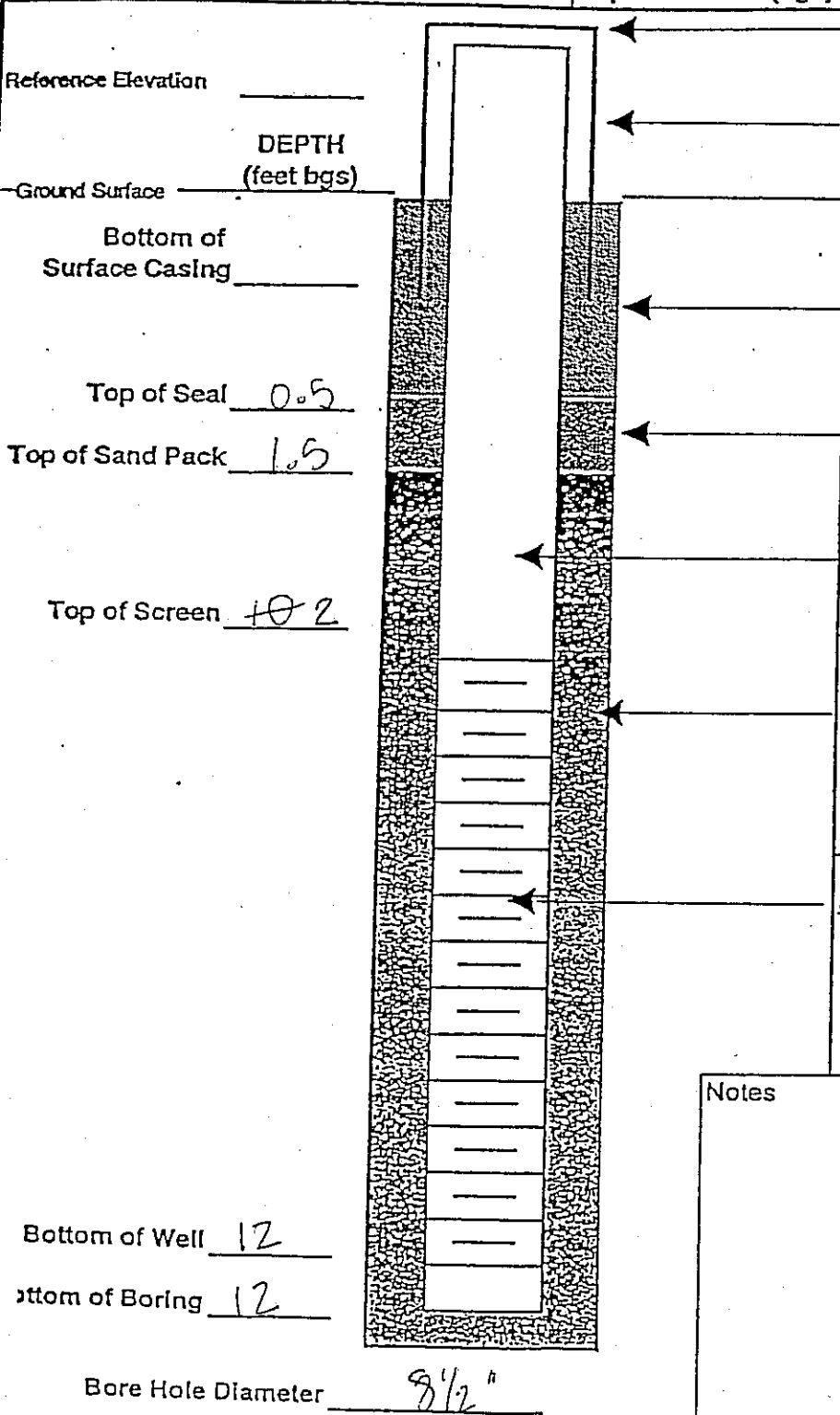
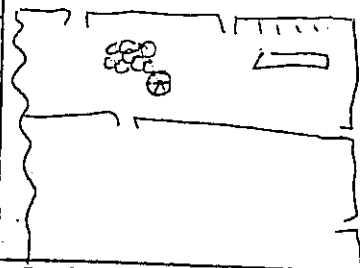
Well ID MW-20

MW-20

Date Start 6/28/00
 Date Complete 6/28/00
 Boring Depth 12
 Borehole Diameter 8 1/2"
 Well Diameter 2"

Contractor Cascade Drilling
 Drillers Cascade Drilling
 Geologist Lou LaRosa

Location Diagram NE



Locking Cap

Steel Protective Surface Casing
Diameter: 8"

Grout Type: Cement

Annular Seal Type: Bentonite
1/2 bag

Riser Casing Type: PVC
Diameter: 2"

Well Packing Material Lapis Lustré Sand
Type: 2/12
3 bags

Screen Type: PVC
Slot Width: 10
Diameter: 2"

Notes



Monitoring Well Construction

Well ID MW-21
Kent-MW-21

Date Start 7/14/00
 Date Complete 7/14/00
 Boring Depth 15
 Borehole Diameter 8 1/2"
 Well Diameter 2"

Contractor PSC
 Drillers Cascade Drilling
 Geologist Lou La Rosa
 Depth to Water (bgs) 6.5

Location Diagram

Reference Elevation _____

DEPTH (feet bgs)
 Ground Surface _____

Bottom of Surface Casing 0.75

Top of Seal 1

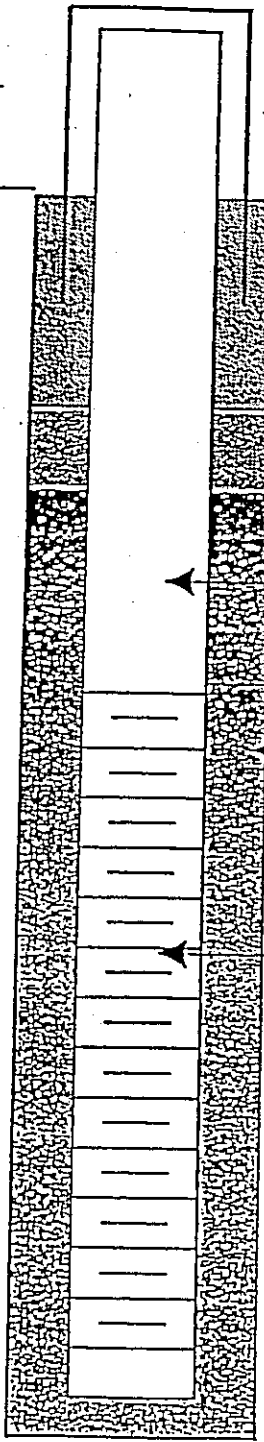
Top of Sand Pack 3

Top of Screen 5

Bottom of Well 15

Bottom of Boring 15

Bore Hole Diameter 8 1/2"



Locking Cap

Steel Protective Surface Casing
Diameter: _____

Grout Type: Cement

Annular Seal Type: Pure Gild med. Chip Bentonite

Riser Casing Type: PVC Schedule 40
Diameter: 2"

Well Packing Material
Type: Sand Lapislustre

Screen Type: PVC Schedule 40
Slot Width: 10 slot
Diameter: 2"

Notes

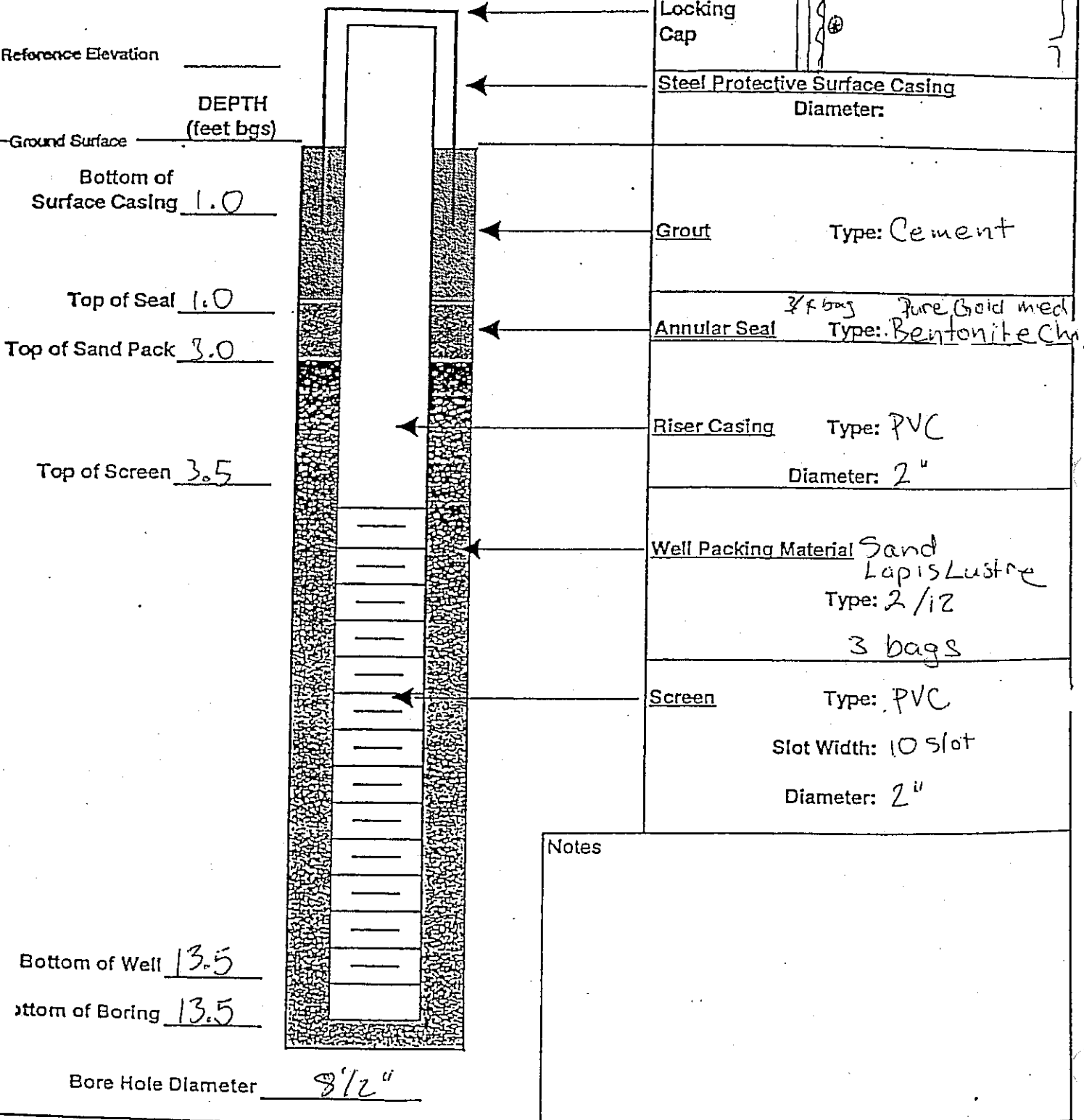
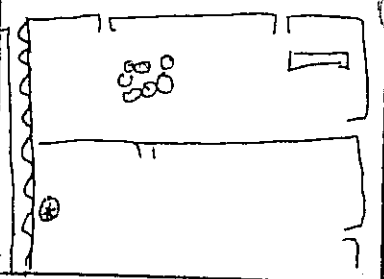


Monitoring Well Construction

Well ID MW-22
MW-22
Location Diagram NE

Date Start 6/29/00
Date Complete 6/29/00
Boring Depth 13.5
Borehole Diameter 8 1/2"
Well Diameter 2"

Contractor PSC Cascade Drilling
Drillers Cascade Drilling
Geologist
Lou LaRosa
Depth to Water (bgs)



Locking Cap

Steel Protective Surface Casing
Diameter:

Grout Type: Cement

Annular Seal Type: Bentonite Chips
3/4 bag Pure Gold med

Riser Casing Type: PVC
Diameter: 2"

Well Packing Material Sand Lapis Lustre
Type: 2/12
3 bags

Screen Type: PVC
Slot Width: 10 slot
Diameter: 2"

Notes



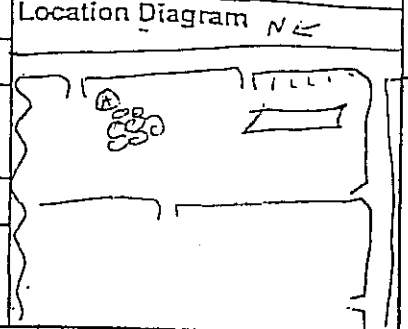
Monitoring Well Construction

Well ID MW-23

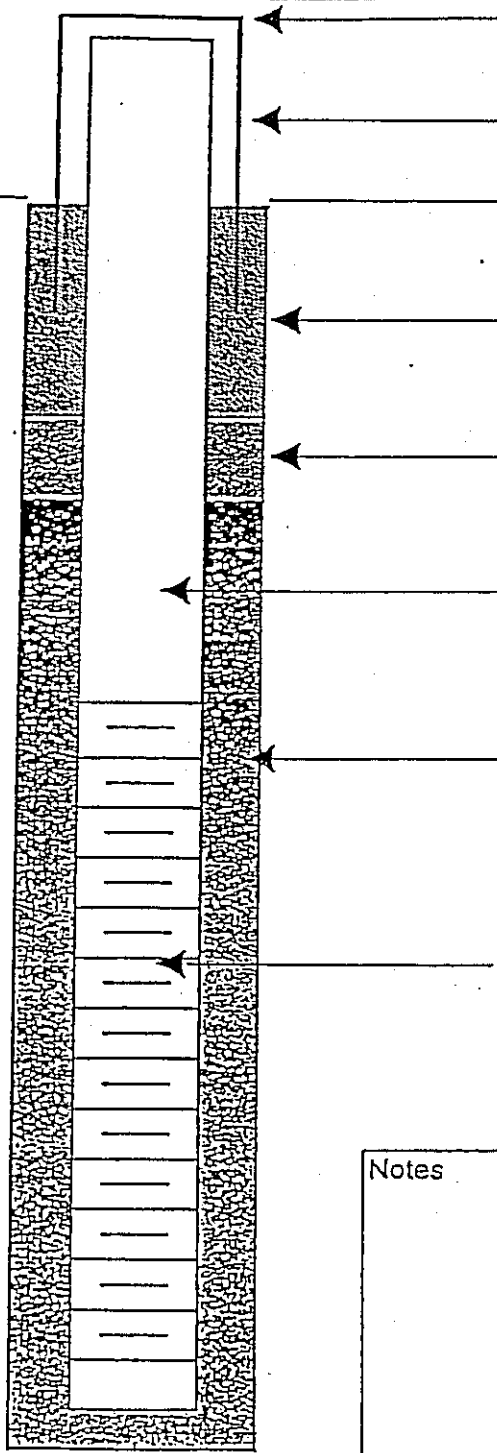
MW-23

Date Start 7/7/00
 Date Complete 7/7/00
 Boring Depth 15'
 Borehole Diameter 8 1/2"
 Well Diameter 2"

Contractor PSC
 Drillers Cascade Drillers
 Geologist Lou La Rosa
 Depth to Water (bgs)



Reference Elevation _____
 DEPTH (feet bgs)
 Ground Surface _____
 Bottom of Surface Casing _____
 Top of Seal 1
 Top of Sand Pack 3
 Top of Screen 5



Locking Cap
 Steel Protective Surface Casing Diameter:
 Grout Type: Cement
 Annular Seal Type: True Grid Mesh Cap Bentonite
 Riser Casing Type: PVC Diameter: 2"
 Well Packing Material Sand Lapis Lazuli Type: 2/12 3 1/2 bags
 Screen Type: PVC Slot Width: 10 Slot Diameter: 2"

Bottom of Well 15
 Bottom of Boring 15
 Bore Hole Diameter 8 1/2"

Notes

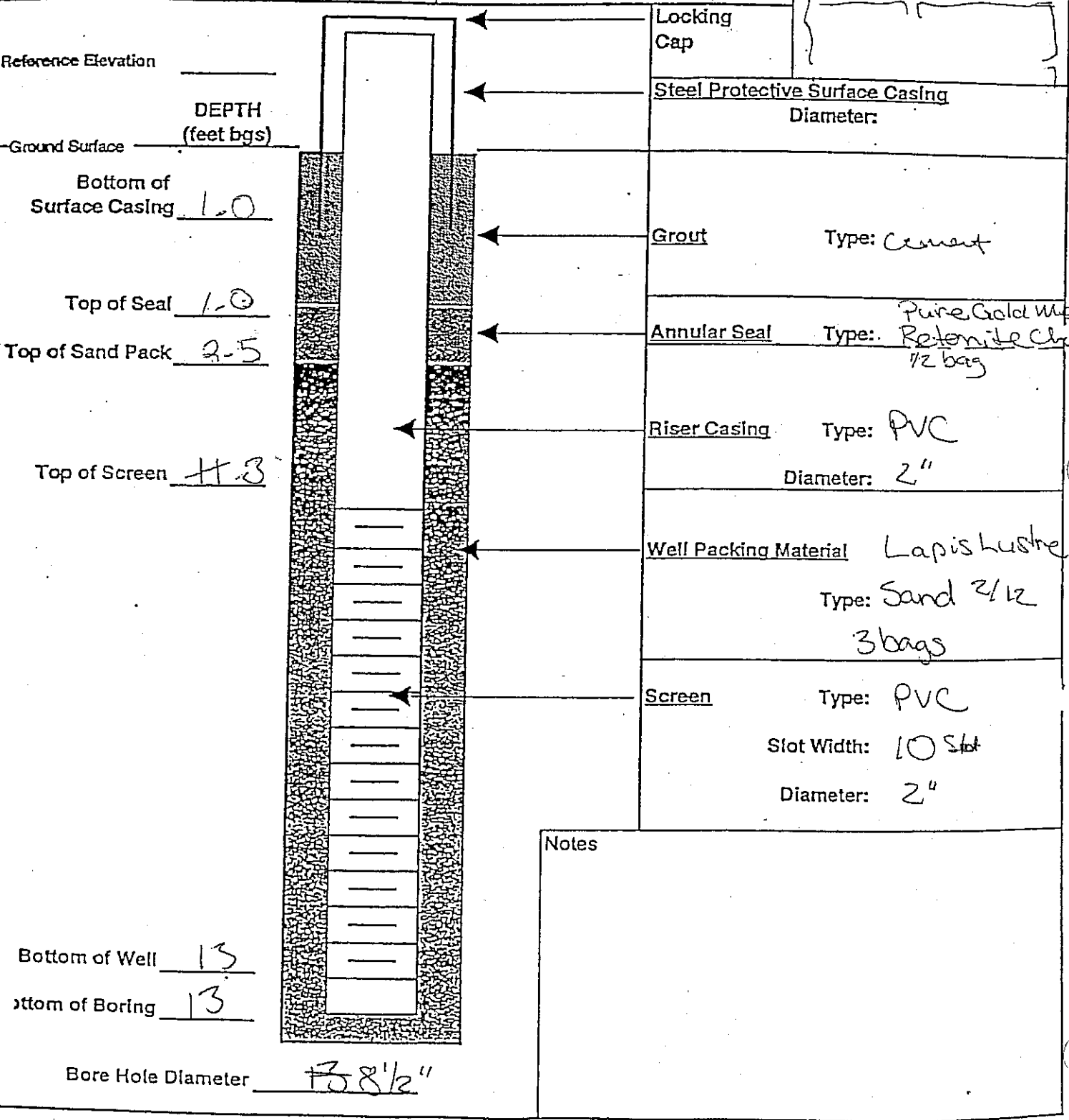
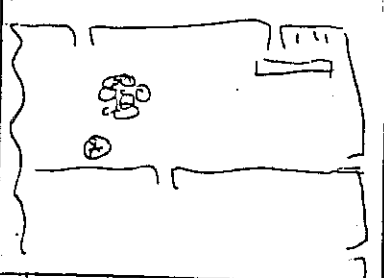


Monitoring Well Construction

Well ID MW-24
MW-24

Date Start 6/780
Date Complete 6/28/00
Boring Depth 13
Borehole Diameter 8 1/2"
Well Diameter 2"

Contractor [Signature]
Drillers Eastcarle Drilling
Geologist Lou La Rosa
Depth to Water (bgs)





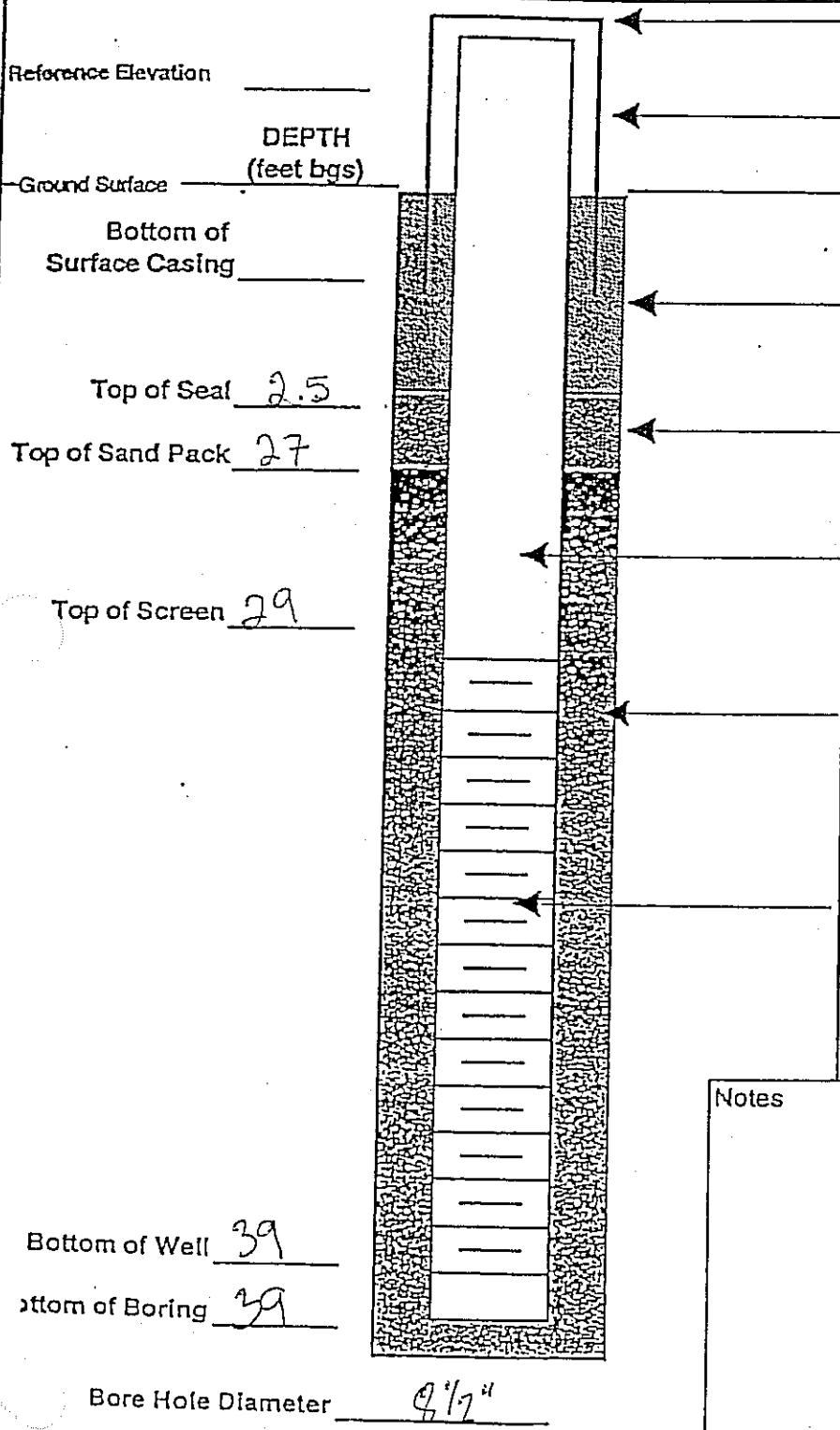
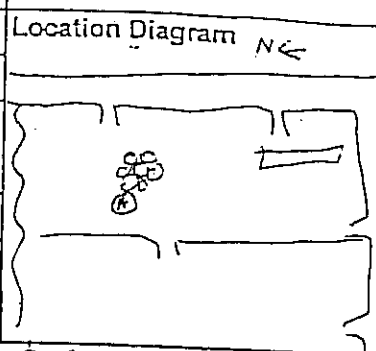
Monitoring Well Construction

Well ID MW-24D

MW-24D

Date Start 6/28/00
 Date Complete 6/28/00
 Logging Depth 39' bgs
 Borehole Diameter 8 1/2"
 Well Diameter 2"

Contractor PSC
 Drillers Cascade Drilling
 Geologist Lou LaRosa
 Depth to Water (bgs)



Locking Cap

Steel Protective Surface Casing Diameter: _____

Grout Cement Type: _____

Annular Seal Type: Pure Grd Med Bentonite chips
7 bags

Riser Casing Type: PVC
Diameter: 2"

Well Packing Material Lapis Lustra Sand
Type: 2/12
3 1/2 bags

Screen Type: PVC
Slot Width: 10 slot
Diameter: 2"

Notes



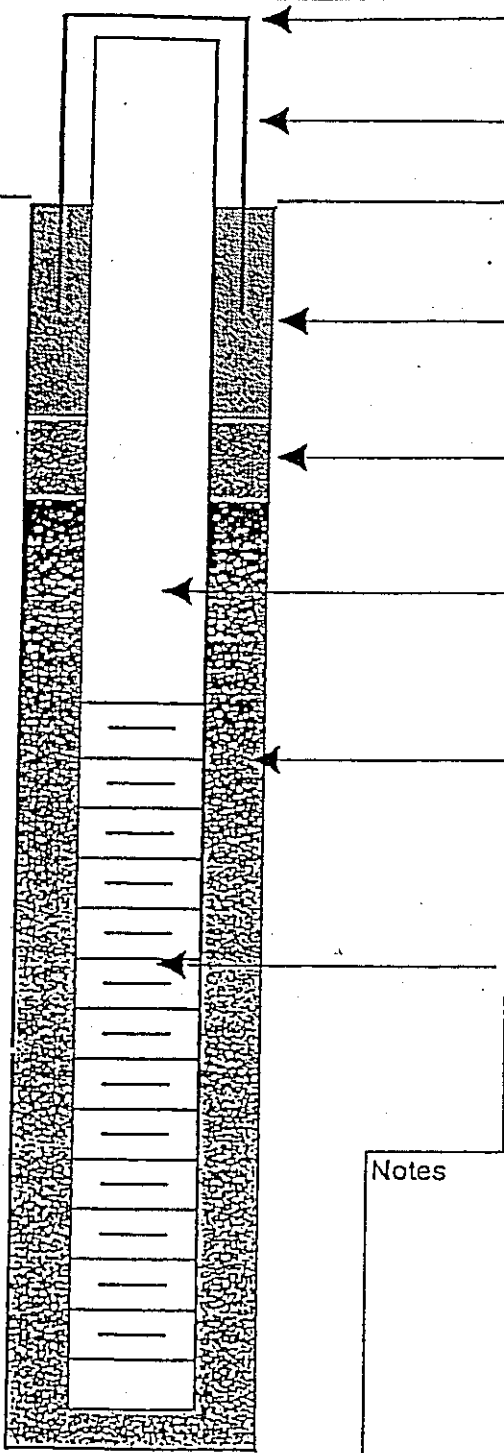
Monitoring Well Construction

Well ID MW-25
 MW-25
 Location Diagram

Date Start 7/7/00
 Date Complete 7/7/00
 Boring Depth 15'
 Borehole Diameter 8 1/2"
 Well Diameter 2"

Contractor PSC
 Drillers Cascade Drilling
 Geologist Lou La Rosa
 Depth to Water (bgs)

Reference Elevation _____
 DEPTH (feet bgs)
 -Ground Surface _____
 Bottom of Surface Casing _____
 Top of Seal 1
 Top of Sand Pack 3
 Top of Screen 5
 Bottom of Well 15'
 Bottom of Boring 15'
 Bore Hole Diameter 8 1/2"



Locking Cap
 Steel Protective Surface Casing Diameter:
 Grout Type: Cement
 Annular Seal Type: Pure Gild Med Chip Bentonite
 Riser Casing Type: PVC
 Diameter: 2"
 Well Packing Material Sand
 Type: Lapslustre 2/12 3 1/2 bags
 Screen Type: PVC
 Slot Width: 20 mesh 10 slot
 Diameter: 2"

Notes

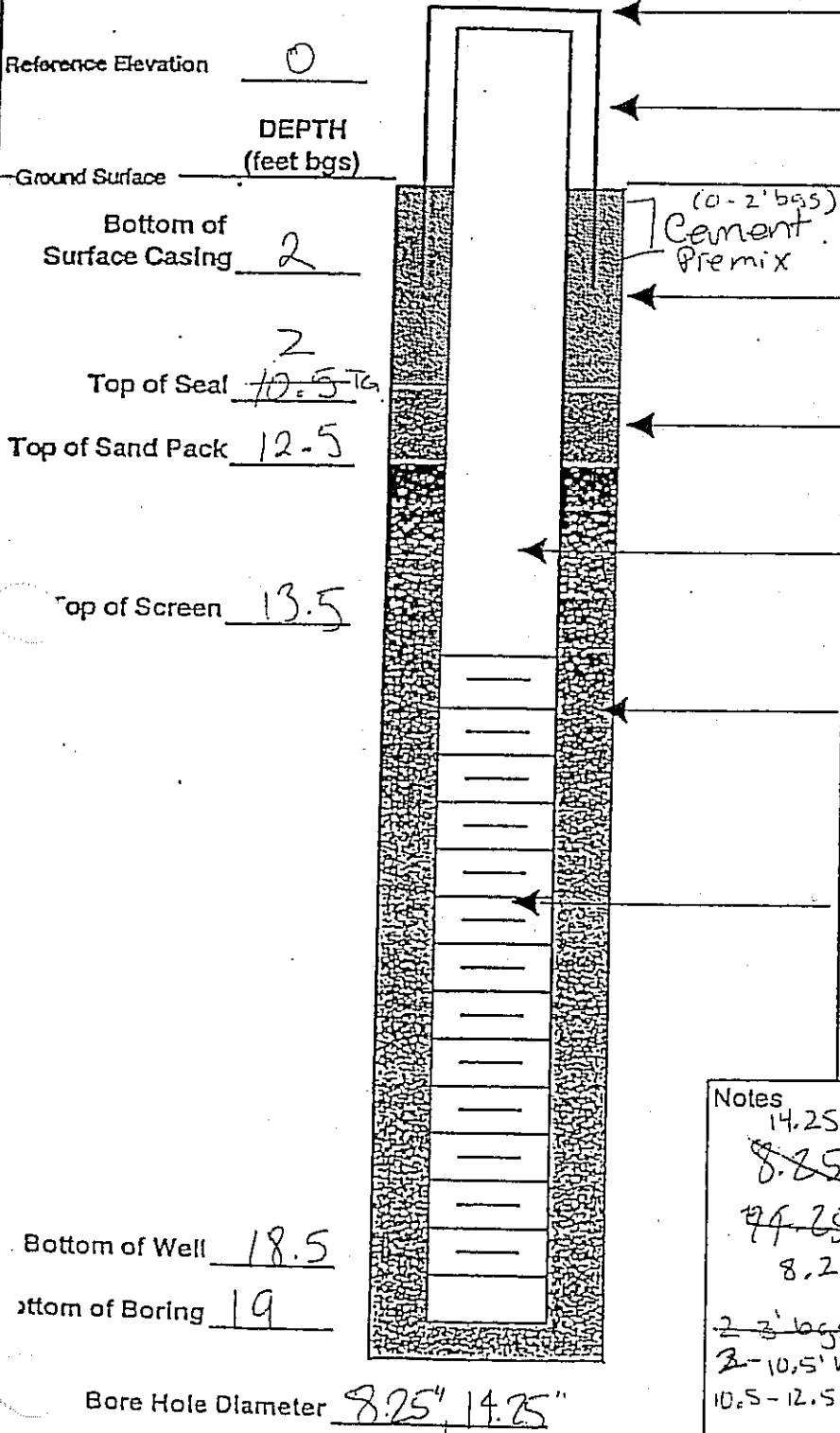
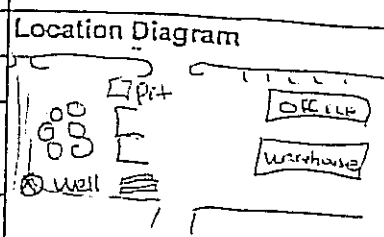


Monitoring Well Construction

Well ID MW-102-I-21
GM

Date Start 2/8/01
 Date Complete 2/8/01
 Boring Depth 19.0'
 Borehole Diameter 8.25" / 14.25"
 Well Diameter 2"

Contractor Cascade Drilling
 Drillers Brian Gose
 Geologist Salamah Magnuson
 Depth to Water (bgs)



Locking 30' Cap above ground

Steel Protective Surface Casing
 Diameter: standup well with bollard posts

Grout
 Type: Pure Gold Bentonite powder

Annular Seal
 Type: Pure Gold Medium Chip Bentonite

Riser Casing
 Type: Schedule 40
 Diameter: 2" PVC

Well Packing Material
 Type: Lapis Lustris Sand # 3/12

Screen
 Type: Schedule 40
 Slot Width: 10 Slot
 Diameter: 2" PVC

Notes

14.25"
~~8.25"~~ OD to 5.5' bgs
~~14.25"~~ OD to 19.0' bgs
 8.25"

2-3' bgs bentonite chips
 3-10.5' bgs bentonite powder
 10.5-12.5' bgs bentonite chips } seal

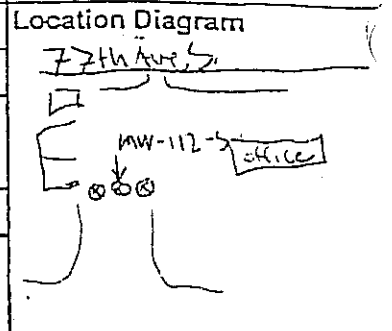


Monitoring Well Construction

Well ID MW-112-5

Date Start 2/1/01
 Date Complete 2/1/01
 Boring Depth 8.0
 Borehole Diameter 8.25"
 Well Diameter 2"

Contractor Cascade Drillers
 Drillers James Goble
 Geologist Salamah Magnuson
 Depth to Water (bgs) NA



Reference Elevation 0

DEPTH (feet bgs)

Ground Surface
Bottom of Surface Casing 1'

Top of Seal 1'

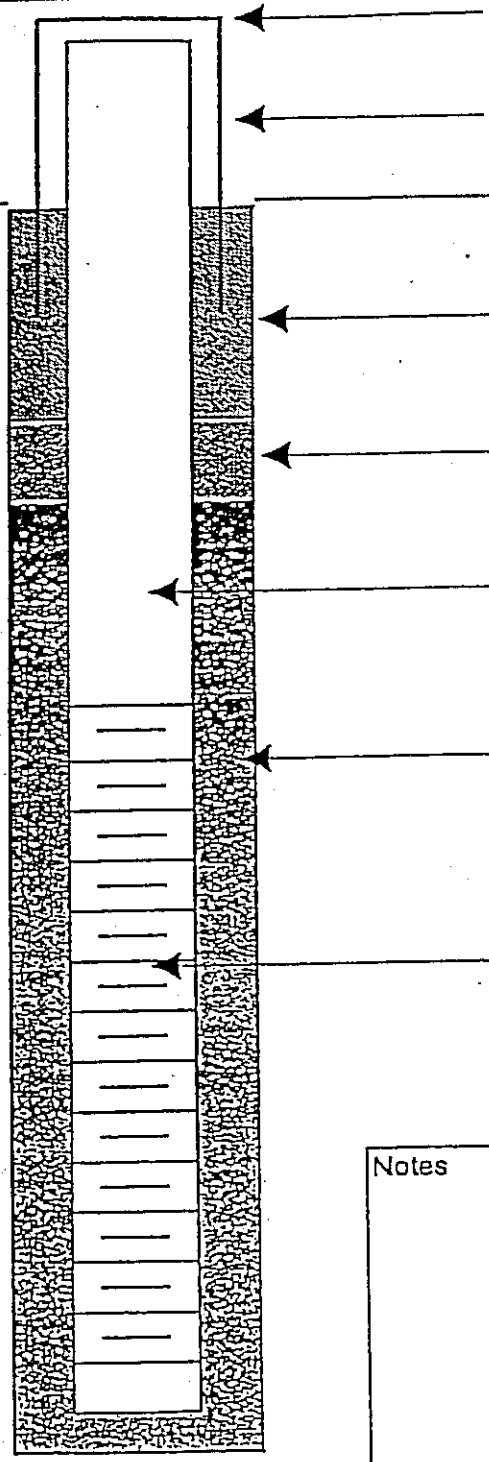
Top of Sand Pack 2.5'

Top of Screen 3.0'

Bottom of Well 6.5'

Bottom of Boring 8.0'

Bore Hole Diameter 8.25"



Locking Cap
 Steel Protective Surface Casing Diameter:
Jet Set
 concrete Pre-mix
 Grout Type: NA
 Annular Seal Type: Pure Grout / Bentonite Chips
 Riser Casing Type: PVC Schedule 40
 Diameter: 2"
 Well Packing Material Type: Lapis Lustrae / Sand 3/12
 Screen Type: PVC Schedule 40
 Slot Width: 1/16 slot
 Diameter: 2"

Notes

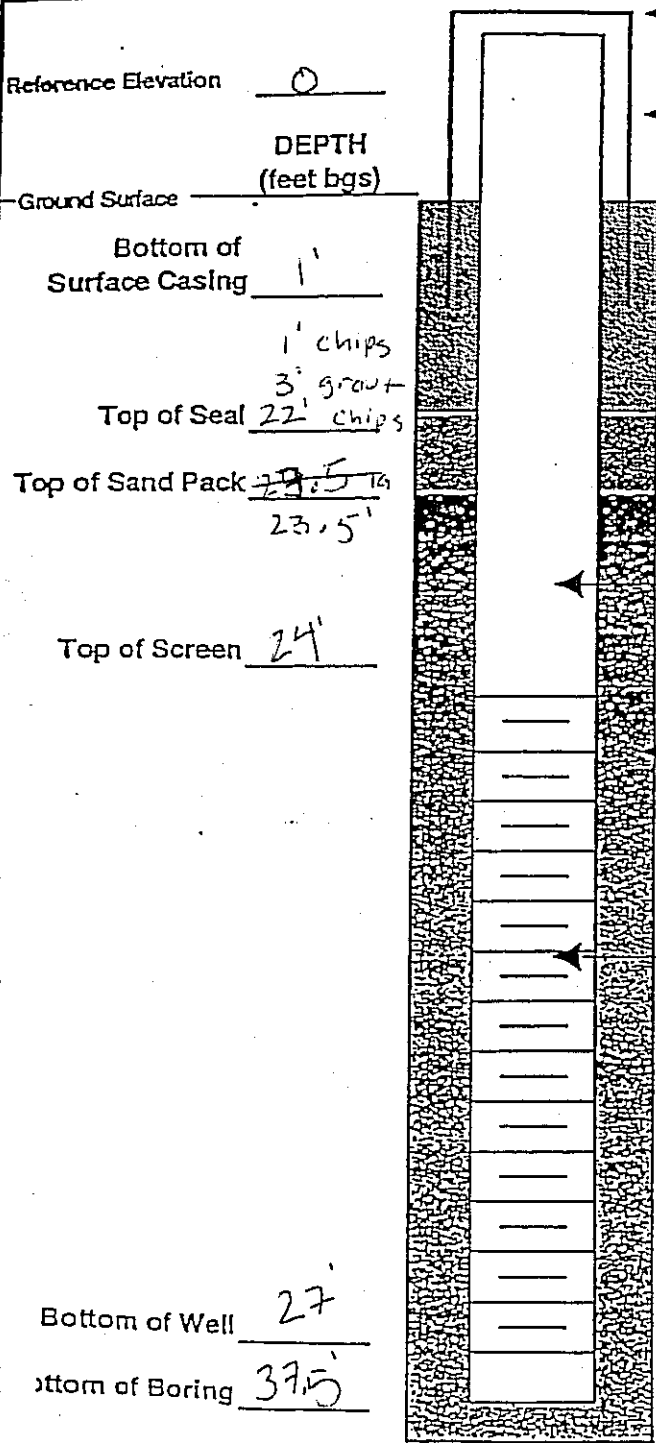


Monitoring Well Construction

Well ID MW-112-I2

Date Start 2/14/01	Contractor <i>Cascade Drilling</i>	Location Diagram 77th Ave office driveway pit building & well TF
Date Complete 2/14/01	Drillers <i>Bryan Gatz</i>	
Boring Depth 37.5' bgs	Geologist	
Borehole Diameter 14.25" / 8.25"	<i>Tanya Gray / Salamah Maguire</i>	
Well Diameter 2"	Depth to Water (bgs) NA	

Reference Elevation 0	Locking Cap
DEPTH (feet bgs)	Steel Protective Surface Casing Diameter: concrete ~ 60lb on 2/14/01 Seal - med. Bentonite chips ~ 150lb
Ground Surface	Grout Type: bentonite powder ~ 100 gallon 2100 lb
Bottom of Surface Casing 1'	~ 50lb Annular Seal Type: medium Bentonite chips
1' chips 3' grout Top of Seal 22' chips	Riser Casing Type: sched 40 PVC Diameter: 2"
Top of Sand Pack 27.5' / 23.5'	Well Packing Material ~ 150lb Type: Sand Lapis Luster #2/12
Top of Screen 24'	Screen Type: sched. 40 PVC Slot Width: 10 slot Diameter: 2"



Notes
 - chipped to 27.5' before sandpack (150lb)
 - 1.5' chips below grout
 - 2' chips above grout

Bottom of Well 27'
 Bottom of Boring 37.5'
 Bore Hole Diameter 14.25" + 0.5' bgs
 5-37.5' is 8.25"



Monitoring Well Construction

Well ID MW-112-D

Date Start 2/5/01

Contractor Casade Drilling

Location Diagram 77th

Date Complete 2/5/01

Drillers Brian

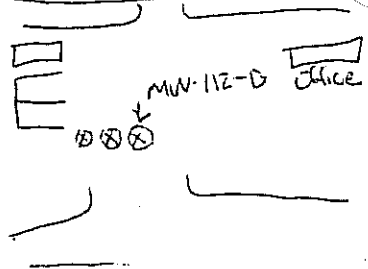
Boring Depth 44'

Geologist Salamah Magnuson

Borehole Diameter 4 1/4" 8 1/4"

Depth to Water (bgs) 11.5'

Well Diameter 2"



Reference Elevation 0

Locking Cap

DEPTH (feet bgs)

Steel Protective Surface Casing

Ground Surface

Diameter:

Bottom of Surface Casing 1'

Jet Set

Concrete Premix

3'

Grout

Type: Pure Grout Bentonite powder

Top of Seal 35'

chips

Grout

Annular Seal

Type: Pure Grout Medium Bentonite clay

Top of Sand Pack 37.5'

chips

Riser Casing

Type: Schedule 40 PIC

Top of Screen 38.5'

Diameter: 2"

Well Packing Material

Type: Lapis Lustrae Sand 2/12

Screen

Type: Schedule 40 DVC

Slot Width: 10 Slot

Diameter: 2"

Bottom of Well 43.5'

Bottom of Boring 44'

Bore Hole Diameter 4 1/4" 8 1/4"

Notes

14.25" OD to 7.0' bgs
8.25" OD to 44' bgs



Monitoring Well Construction

Well ID MW-113-I-1

Kent

Date Start 2/12/01

Contractor *Cascade*

Location Diagram

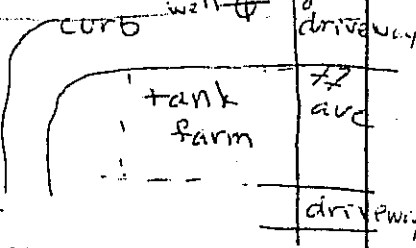
Date Complete 2/12/01

Drillers *James Goble*

end of property

Boring Depth 18'

Geologist *Tasya Gray*



Borehole Diameter 14.25" OD to 7' then 8.25"

LOU LaRosa

Well Diameter 2"

Depth to Water (bgs) 5.5'

Reference Elevation 0

Locking Cap

DEPTH (feet bgs)

Steel Protective Surface Casing Diameter:

Ground Surface

Bottom of Surface Casing 1'

stand up construction with belland POSTS

Concrete Premix Seal Pure Gold medium Bentonite Chips
Grout Type: Pure Gold Bentonite Powder

+ 3 chips
3 gravel

~100lb Annular Seal Type: Medium Bentonite Chips

Top of Seal 10'

Riser Casing Type: schedule 40 PVC
Diameter: 2"

Top of Sand Pack 12'

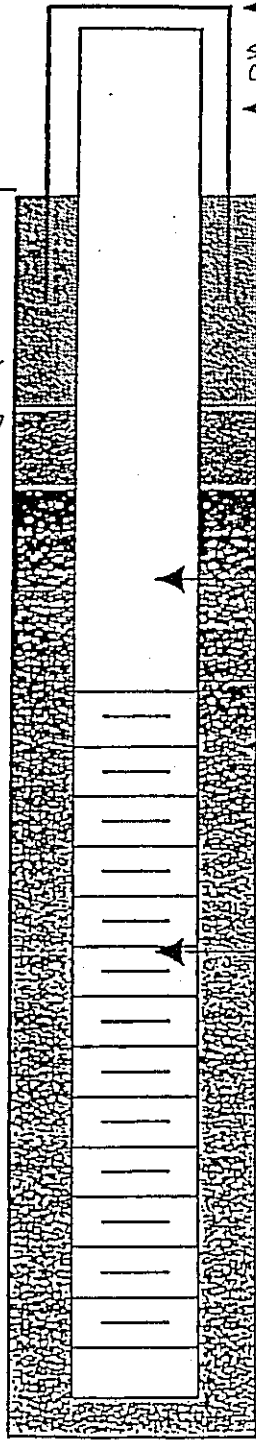
Well Packing Material Lapis Lustrre
~50lb Type: sand #2/12

Top of Screen 12.5'

Screen Type: schedule 40 PVC
Slot Width: ~10"
Diameter: 2"

Bottom of Well 13.5'

Bottom of Boring 18'



Bore Hole Diameter 14.25" to 7' bgs then 8.25"

Notes

- 2' chips above & below grout
- Chips from 14-18' bgs ~100lb
- 14.25" OD to 7.0' bgs
- 8.25" OD to 18.0' bgs

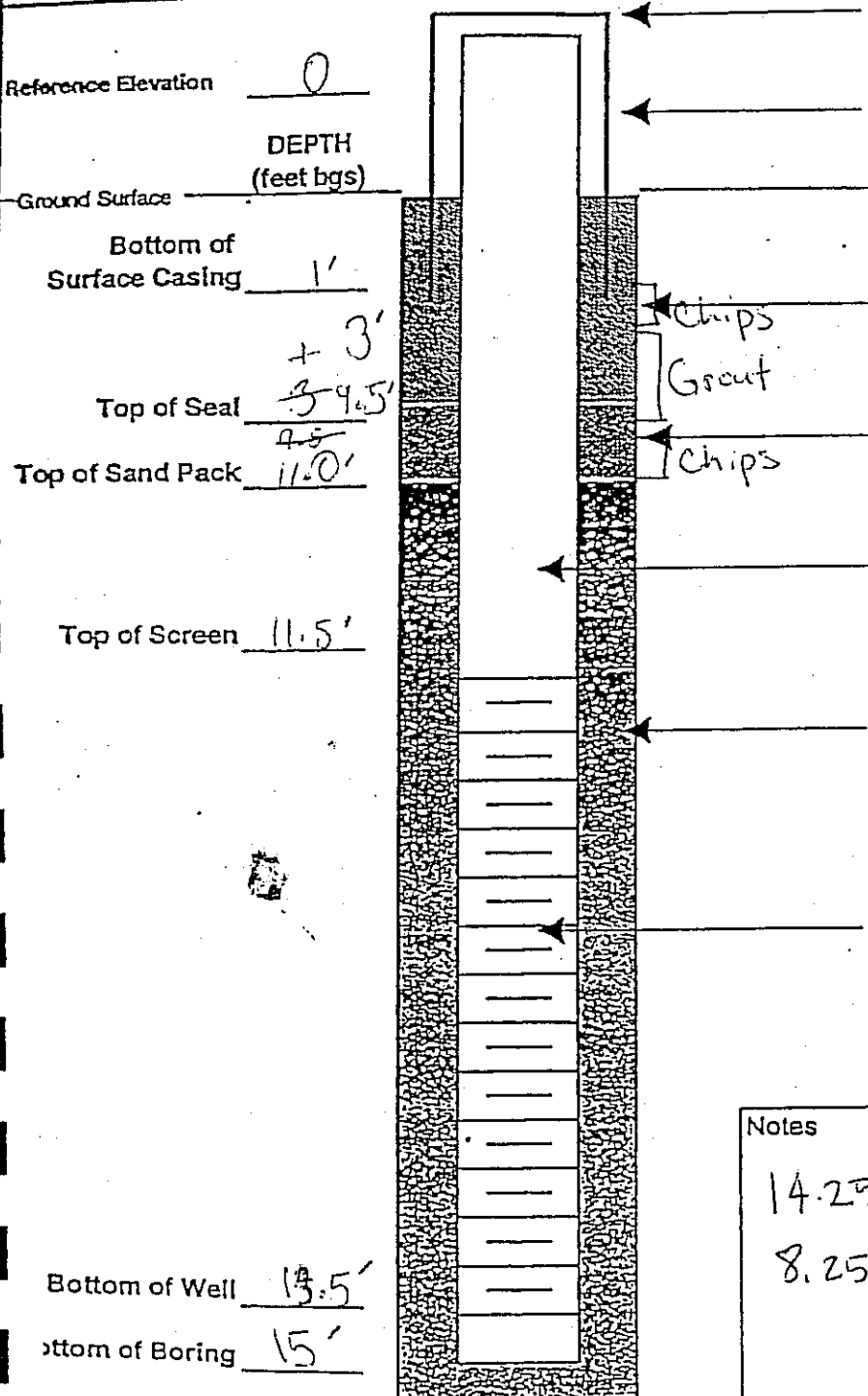
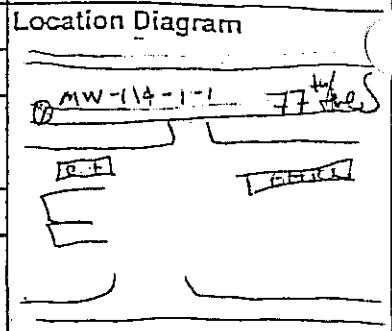


Monitoring Well Construction

Well ID MW-114-1-1

Date Start 2/4/01
 Date Complete 2/4/01
 Boring Depth 15' bgs
 Borehole Diameter 14 1/4" 8 1/4"
 Well Diameter 2"

Contractor Cascade Drilling
 Drillers Brian Gose
 Geologist Salamah Magnuson
 Depth to Water (bgs) 2.0'



Locking Cap

Steel Protective Surface Casing Diameter: Jet Set

Concrete Premix

Grout Type: Pure Grout
Grout
 Bentonite

Annular Seal Type: Pure Grout
Medium Chips
 Bentonite

Riser Casing Type: Schedule 40
2" PVC

Diameter:

Well Packing Material Lapis Lustrae
Type: Sand
2/12

Screen Type: Schedule 40
Slot Width: 2" PVC
10 slot

Diameter:

Notes

14.25" OD to 5.0' bgs
8.25" OD to 15.0' bgs



Monitoring Well Construction

Well ID MW-117-I-2

Date Start 2/6/01

Contractor Cascade Drilling

Location Diagram

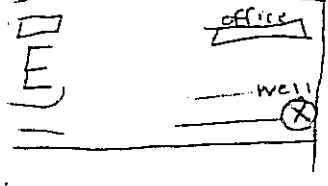
Date Complete 2/6/01

Drillers Brian

77' Above S

Boring Depth 19.5

Geologist



Borehole Diameter 1 1/4, 3/4

Salamah Magnuson

Well Diameter 2"

Depth to Water (bgs) 6.0'

Reference Elevation 0

Locking Cap

DEPTH (feet bgs)

Steel Protective Surface Casing Diameter:

Ground Surface

Jet Set

Bottom of Surface Casing 1.0'

Concrete Pre mix

Pure Gravel

3.0'

Grout

Type: Bentonite Powder

Top of Seal 11.0'

Annular Seal

Pure Gravel Used. Type: Bentonite Chip

Top of Sand Pack 13.0'

Riser Casing

Type: Schedule 40

Top of Screen 14.0'

Diameter: 2" PVC

Well Packing Material

Lapis Lazuli Sand 2/12

Screen

Type: Schedule 40 PVC

Slot Width: 10 Slot

Diameter: 2"

Bottom of Well 19.0'

Bottom of Boring 19.5'

Bore Hole Diameter 1 1/4, 3/4"

Notes

14.25" OD to

8.25" OD to 19.5' bgs



Monitoring Well Construction

Well ID MW-118-~~8~~

Date Start 1/29/01

Contractor Cascade Drilling

Location Diagram 77th Ave S

Date Complete 1/29/01

Drillers Kelsey Goble

Boring Depth 15.0

Geologist Salamah Magnuson

Conf Office

Borehole Diameter 14.25" 8.75" sm

Depth to Water (bgs) 10' bgs

Well Diameter 2"

Reference Elevation 0'

Locking Cap

DEPTH (feet bgs)

Steel Protective Surface Casing Diameter: Jet Set

Ground Surface

Bottom of Surface Casing 1'

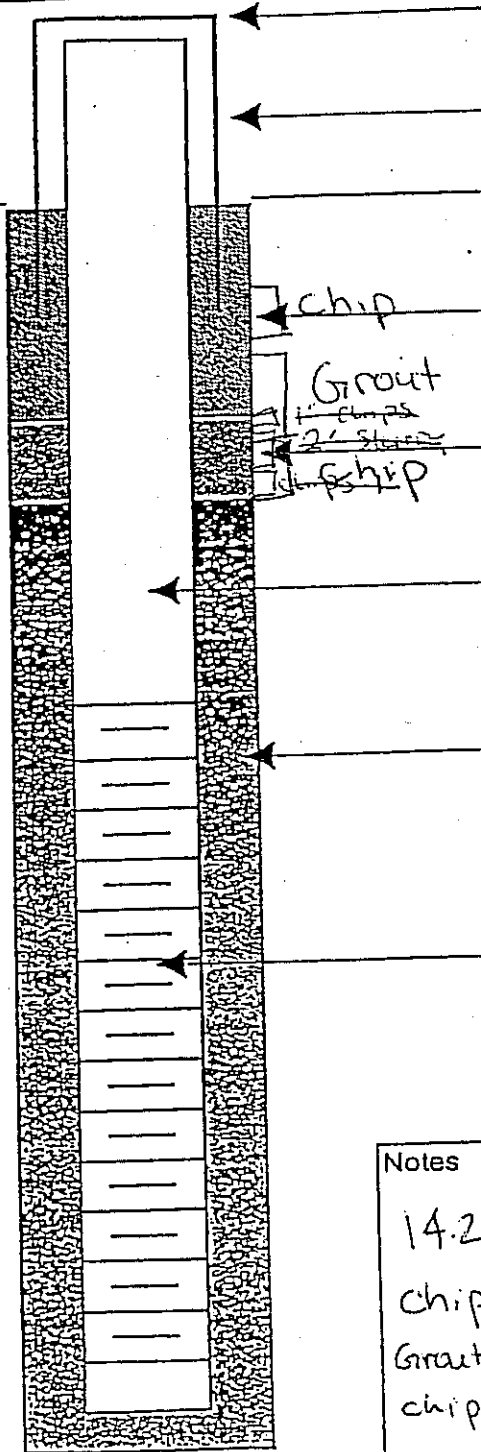
Concrete Premix Pure Gold
Grout Type: Bentone powder

Annular Seal Type: Pure Gold Bentone
Type: Medium (chips)

Riser Casing Type: Schedule 40 PVC
Diameter: 2"

Well Packing Material Lapislustre Sand
Type: 2/12

Screen Type: PVC Schedule 40
Slot Width: 10 Slot
Diameter: 2"



Notes
14.25" OD to 15.0' bgs
chip 5.0-4.0' bgs
Grout 4.0-2.0' bgs
chip 2.0-1.0' bgs

Ground Surface

Bottom of Surface Casing 1'

2'

Top of Seal 4'

Top of Sand Pack 5' 5.0
5' 5.0

Top of Screen 7.0

Bottom of Well 12.0'

Bottom of Boring 15.0

Bore Hole Diameter 14.25"

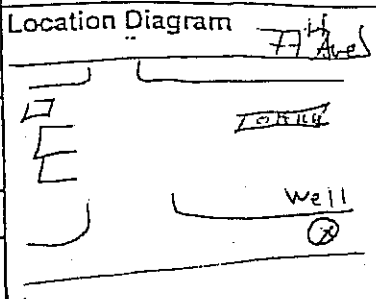


Monitoring Well Construction

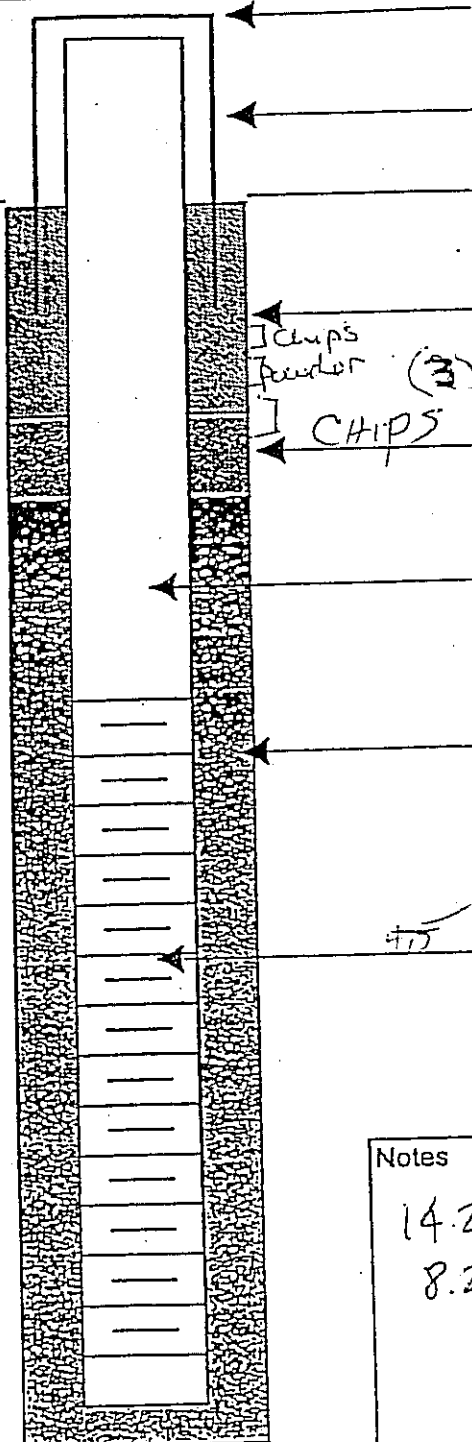
Well ID MW-118 I-L

Contractor: 1-30-01
 Drillers: Complete 1-30-01
 Geologist: 171
 Bore Hole Diameter: 14 1/4" → 9' / 8 1/4" - 16'
 Casing Diameter: 2"

Contractor: CASCADE DRILLING
 Drillers: JAMES JAKLE
 Geologist: LOU LA ROSA
 Depth to Water (bgs): 12.5'



Reference Elevation: 0
 Ground Surface
 Bottom of Surface Casing: 1'
 Top of Seal: 3' / 12.5'
 Top of Sand Pack: 13.5'
 Top of Screen: 14.0' / 13.5'



Locking Cap

Steel Protective Surface Casing
 Diameter: Jet Set

Concrete Premix
 Type: Pure Grout Bentonite
 Type: POWDER

Grout
 Type: Always CO GAS

Annular Seal
 Type: Pure Grout Bentonite
 Type: Chips

Riser Casing
 Type: PUC Schedule 40
 Diameter: 2"

Well Packing Material
 Type: Lapis Luster Sand
 Type: 2 bags 3/12

Screen
 Type: PUC Schedule 40
 Slot Width: .010
 Diameter: 2"

Notes

14.25" OD to 9.0' bgs
 8.25" OD to 17.0' bgs

Bore Hole Diameter: 14 1/4" / 8 1/4"

Bottom of Well: 16.0'
 Bottom of Boring: 17.0'

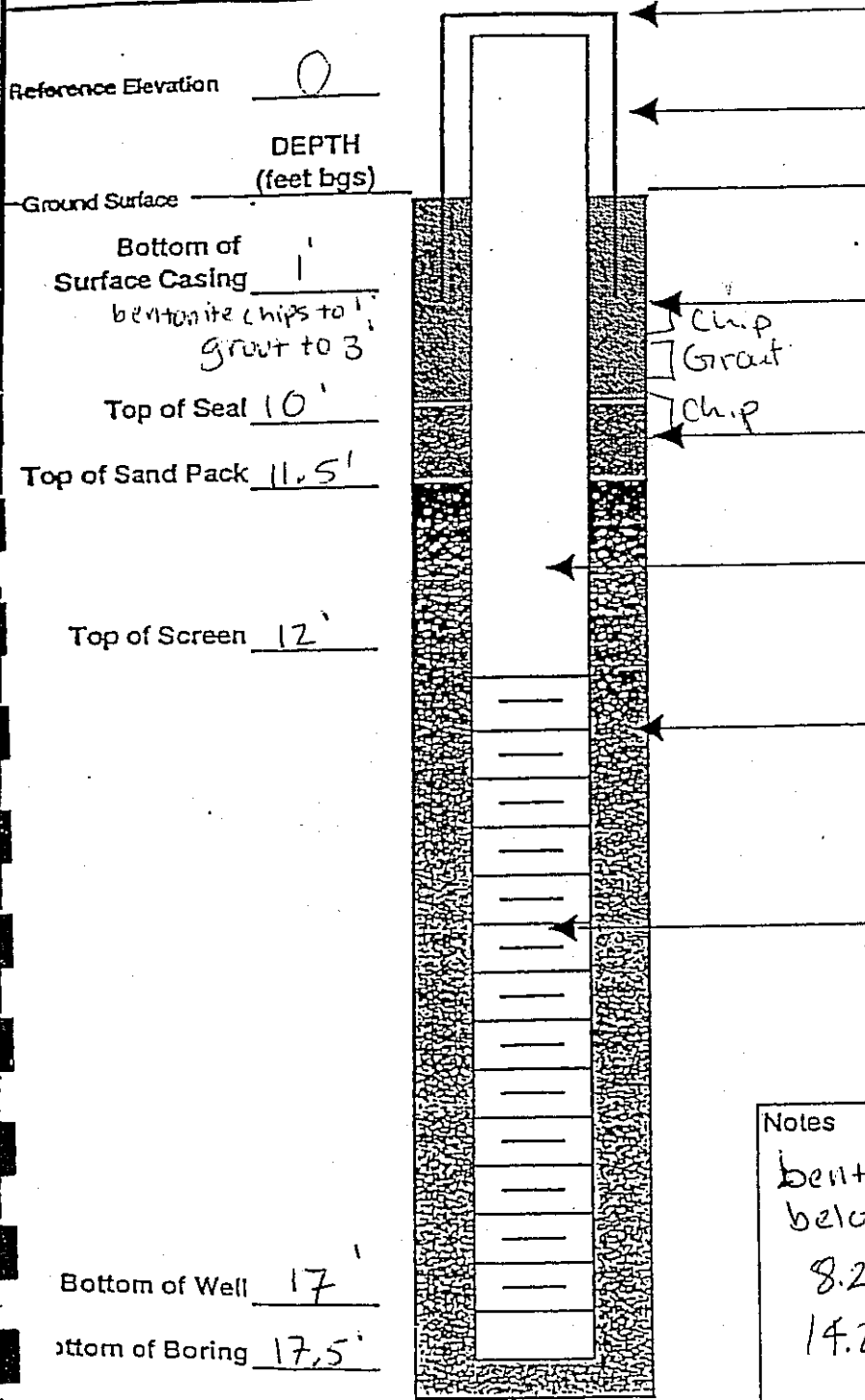
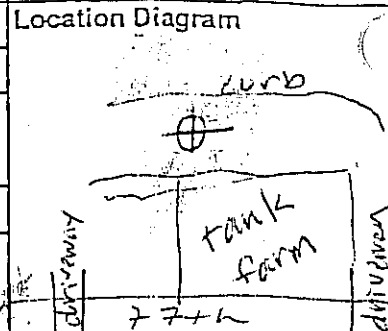


Monitoring Well Construction

Well ID MW-120-I-1

Date Start 2/12/01
 Date Complete 2/12/01
 Boring Depth 17.5
 Borehole Diameter 14 1/4", 8 1/4"
 Well Diameter 2"

Contractor Cascade Drilling
 Drillers Brian Giese
 Geologist Salamah Magnuson
 Depth to Water (bgs) 4.5'



Reference Elevation 0
 DEPTH (feet bgs)
 Ground Surface
 Bottom of Surface Casing 1'
 bentonite chips to 1'
 grout to 3'
 Top of Seal 10'
 Top of Sand Pack 11.5'
 Top of Screen 12'
 Bottom of Well 17'
 Bottom of Boring 17.5'

Locking Cap
 Steel Protective Surface Casing
 Diameter: 12" skirt 10" diameter
 Grout
 Type: Pure Cold Med. Bentonite Powder
 Annular Seal
 Type: Pure Cold Med. Bentonite Chips
 Riser Casing
 Type: Sched 40 PVC
 Diameter: 2"
 Well Packing Material
 Type: Lapis Luster 3/12 sand
 Screen
 Type: Sched. 40 PVC
 Slot Width: .10"
 Diameter: 2"
 6" cap

Notes
 bentonite seals above and below grout
 8.25" OD to 6.0' bgs
 14.25" OD to 17.5' bgs

Bore Hole Diameter 14.25" to 6' bgs
8.25" to 17.5' bgs



Monitoring Well Construction

Well ID MW-170-T2

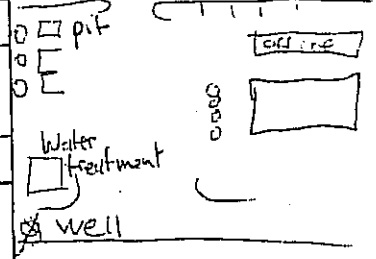
Start Date 2/15/01

Contractor Cascade Drilling

Location Diagram

Date Complete 2/15/01

Drillers Brian Crose



Boring Depth 28.5'

Geologist

Salahmah Magnusson

Borehole Diameter 1 1/4", 8/4"

Depth to Water (bgs) NA

Well Diameter 2"

Reference Elevation 0

Locking Cap

DEPTH (feet bgs)

Steel Protective Surface Casing Diameter:

Ground Surface

Bottom of Surface Casing 1

Grout

Pure Grout
Type: Bentonite Powder

Top of Seal 3

Annular Seal

Pure Grout med.
Type: Chip Bentonite

Top of Sand Pack 22

Riser Casing

Schedule 40
Type: PVC
Diameter: 2"

Top of Screen 23

Well Packing Material

Lapis Lustrus
Type: Sand 3/12

Screen

Type: Schedule 40
Slot Width: 10 Slot
Diameter: 2" PVC

Bottom of Well 28.0

Bottom of Boring 28.5

Bore Hole Diameter 8.25", 14.25"

Notes

8.25" OD to 6.5' bgs
14.25" OD to 28.5' bgs



Monitoring Well Construction

Well ID ~~AW-117-E~~

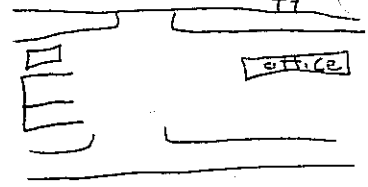
Date Start 2/16/01

Contractor Cascade Drilling

Location Diagram

Date Complete 2/7/01

Drillers Brian Carver



Boring Depth 20.5

Geologist

Borehole Diameter 1 1/4", 3/4"

Salamah Magnusson

Well Diameter 2"

Depth to Water (bgs) 7.5'

Reference Elevation 0

Stand up Monument with Bumper posts

Locking Cap

Well MW-122-I-2

DEPTH (feet bgs)

Steel Protective Surface Casing Diameter:

Ground Surface

Bottom of Surface Casing 1.0'

Concrete Premix Pure Gold
Grout Type: Bentonite powder

3.0'

Top of Seal 12.5'

Annular Seal Type: Pure Gold Med Bentonite chips

Top of Sand Pack 14.5'

Riser Casing Type: Schedule 40 PVC
Diameter: 2"

Top of Screen 15.5'

Well Packing Material Lapis Lister
Type: Sand 3/12

Bottom of Well 20.5'

Bottom of Boring 20.5'

Notes

14.25" OD to 5.5' bgs
8.25" OD to 21.5' bgs

Bore Hole Diameter 1 1/4", 3/4"



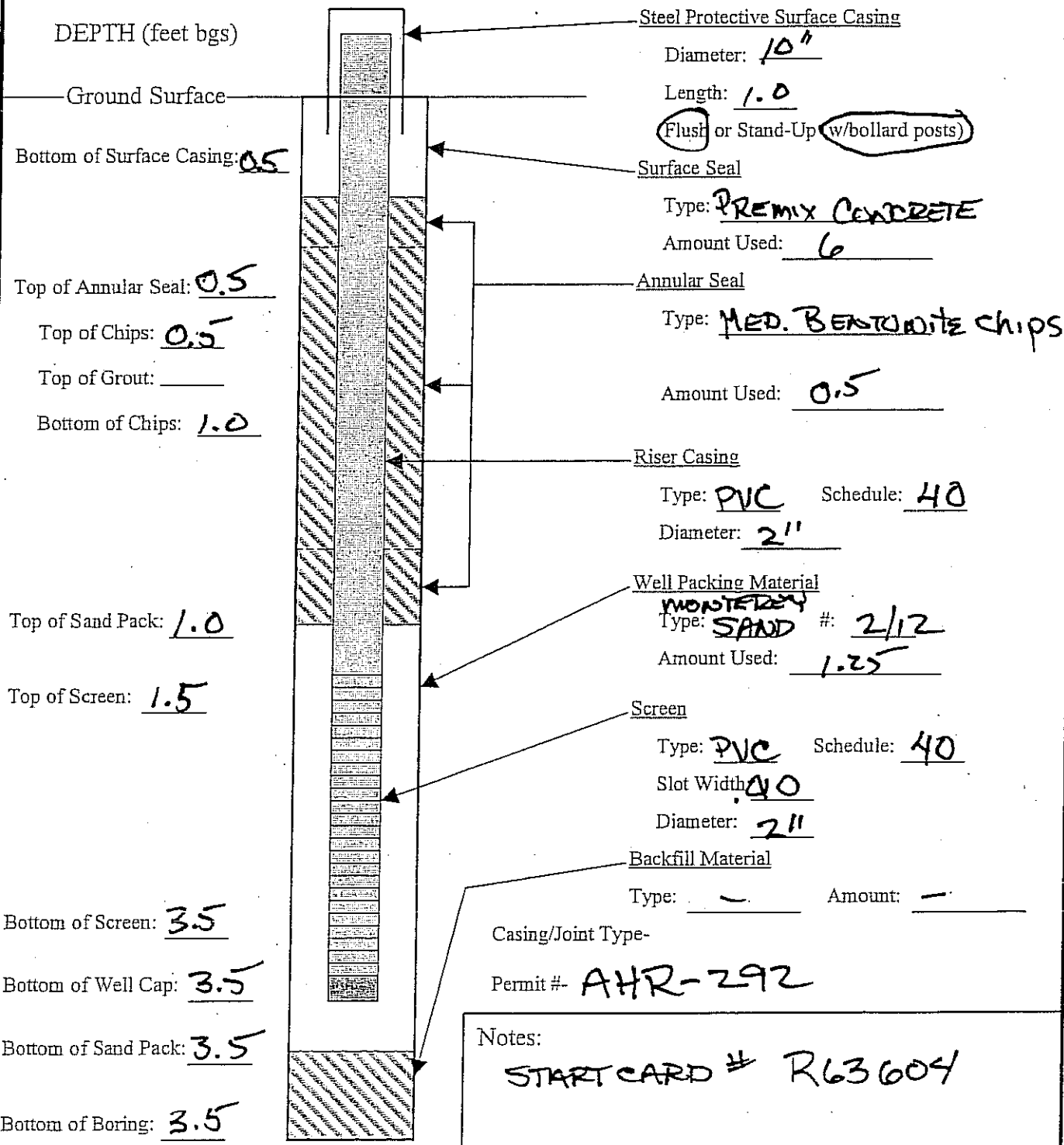
Monitoring Well Construction

Well ID: MW-122-5

Facility: KENT

Date Start: 11/20/02	Contractor: CASCADE DRILLING
Date Complete: 11/20/02	Drillers: BRIAN COOSE
Total Boring Depth: 3.5	Drill Rig: #1
Borehole Diameter: 8 1/4"	Geologist: LOU LA ROSA
	Well Diameter: 2"

Location Diagram



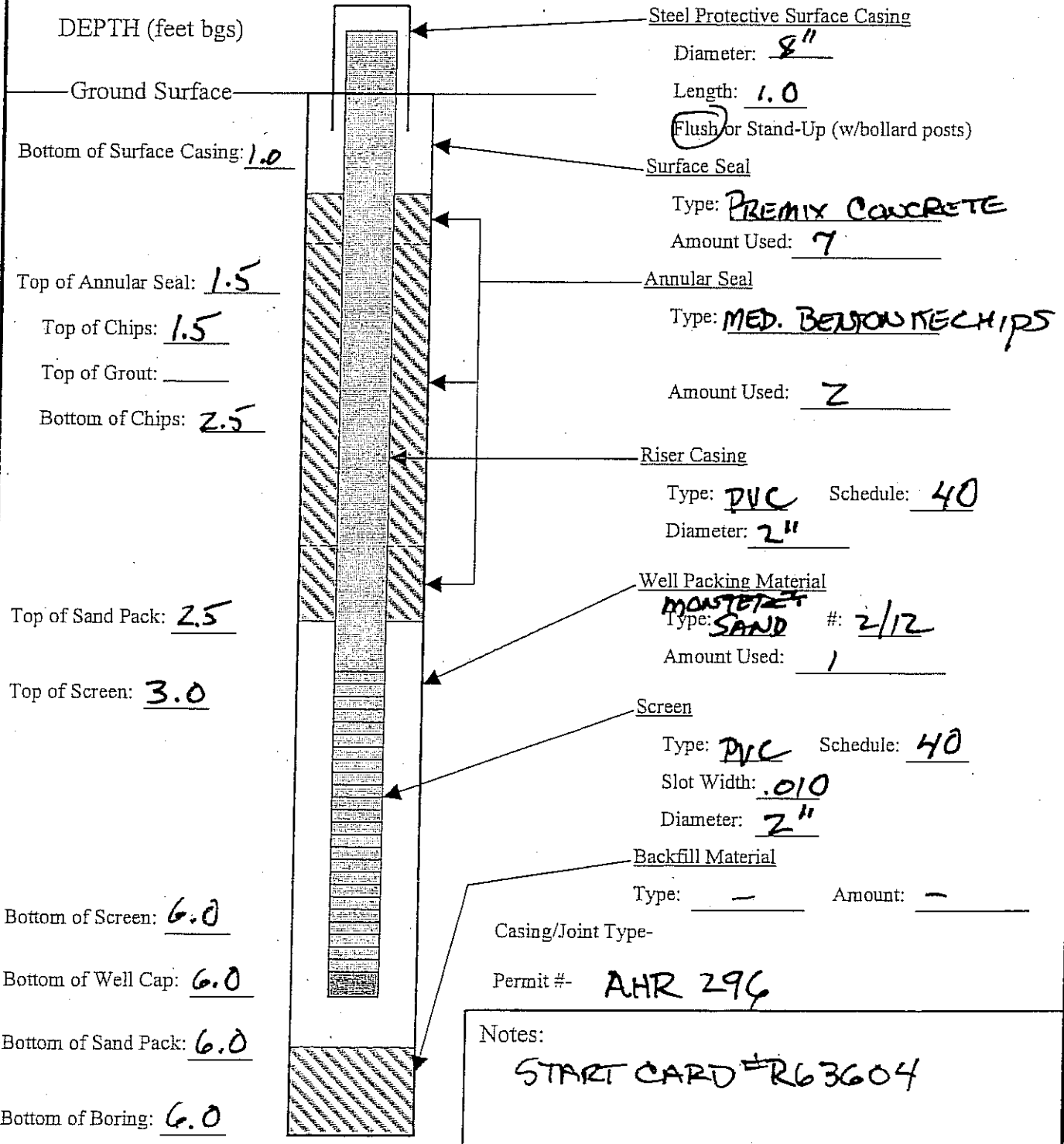


Monitoring Well Construction

Well ID: MW-126-S
Facility: KENT

Date Start: 11/22/02	Contractor: CASCADE DRILLING
Date Complete: 11/22/02	Drillers: BRIAN COSE
Total Boring Depth: 6.0	Drill Rig: #1
Borehole Diameter: 8 1/4"	Geologist: LOU LA ROSA
	Well Diameter: 2"

Location Diagram





Monitoring Well Construction

Well ID MW-123-S

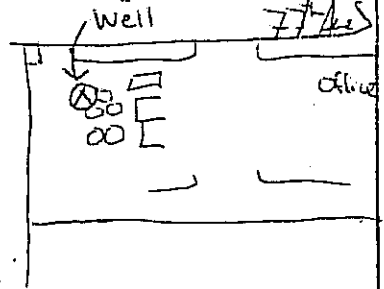
Date Start 2/1/01

Contractor Cascade Drillers

Location Diagram

Date Complete 2/1/01

Drillers James Goble



Boring Depth 7.0' bgs

Geologist Salamah Magnuson

Borehole Diameter 8.75"

Well Diameter 2"

Depth to Water (bgs) 6.0

Reference Elevation 0' bgs

Standup Well with Pumps

Locking Cap

DEPTH (feet bgs)

Steel Protective Surface Casing Diameter:

Ground Surface

Concrete Premix

Bottom of Surface Casing 1'

Grout Type: NA

Top of Seal 1'

Annular Seal Type: Bentonite Clay

Top of Sand Pack 2.5'

Riser Casing Type: Schedule 40 PVC
Diameter: 2"

Top of Screen 3'

Well Packing Material Type: Lapis Lustrae Sand 2/12

Screen Type: Schedule 40 PVC
Slot Width: 10' slot
Diameter: 2"

Bottom of Well 6' x 8"

Notes

Bottom of Boring 7'

Bore Hole Diameter 8.75"

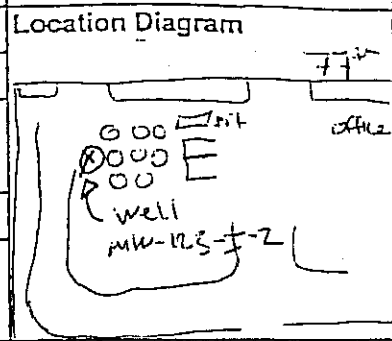


Monitoring Well Construction

Well ID MW-123-I-2

Start Date 1/31/01
 Complete Date 1/31/01
 Boring Depth 26.5
 Borehole Diameter 14.25", 8.25"
 Well Diameter 2"

Contractor Cascade Drilling
 Drillers James Cochle
 Geologist Salamah Magnusch
 Depth to Water (bgs) 10' bgs



Reference Elevation 0

DEPTH (feet bgs)

Ground Surface _____

Bottom of Surface Casing 1'

Top of Seal 3'

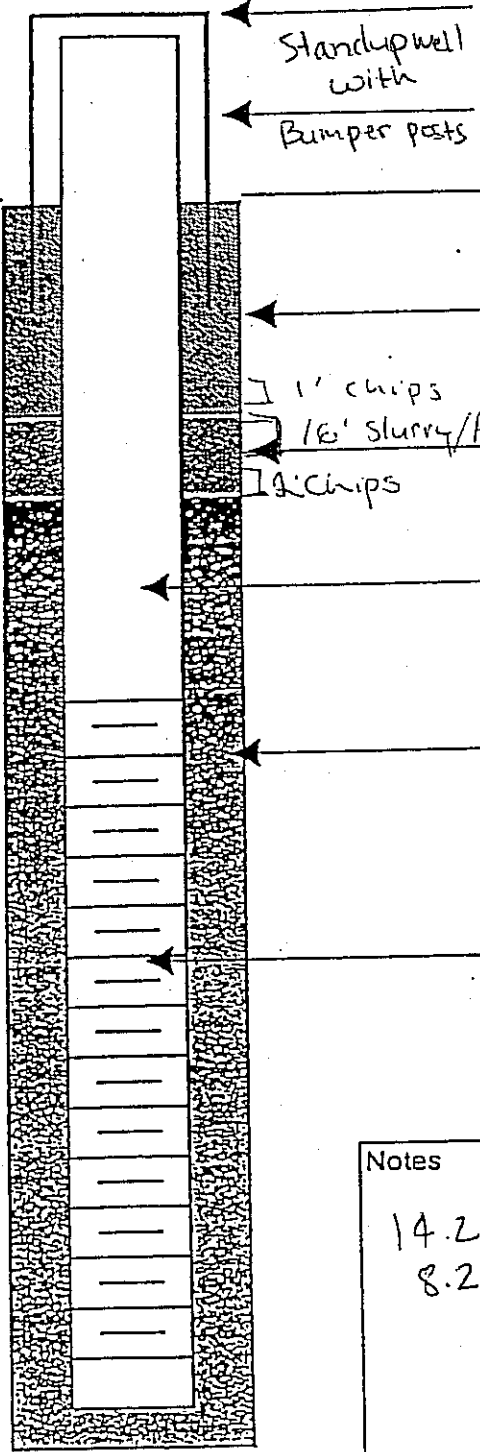
Top of Seal 18'

Top of Sand Pack 20.0'

Top of Screen 21.0'

Bottom of Well 26.0'

Bottom of Boring 26.5'



Locking Cap

Steel Protective Surface Casing Diameter: _____

Concrete Remix

Grout Type: Pure Grout Bentonite powder

Annular Seal Type: Pure Grout Modified Chip Bentonite

Riser Casing Type: PVC
Diameter: 2"

Well Packing Material Type: Lapis Lustrae Monterey Sand #2/12

Screen Type: PVC
Slot Width: 10 slot
Diameter: 2"

Notes

14.25" OD to 8.5' bgs
8.25" OD to 26.5' bgs

Bore Hole Diameter 14.25", 8.25"



Monitoring Well Construction

Well ID: MW-126-I

Facility: KENT

Date Start: 11/22/02

Contractor: CASCADE DRILLING

Location Diagram

Date Complete: 11/22/02

Drillers: BRIAN CASE

Total Boring Depth: 26.5

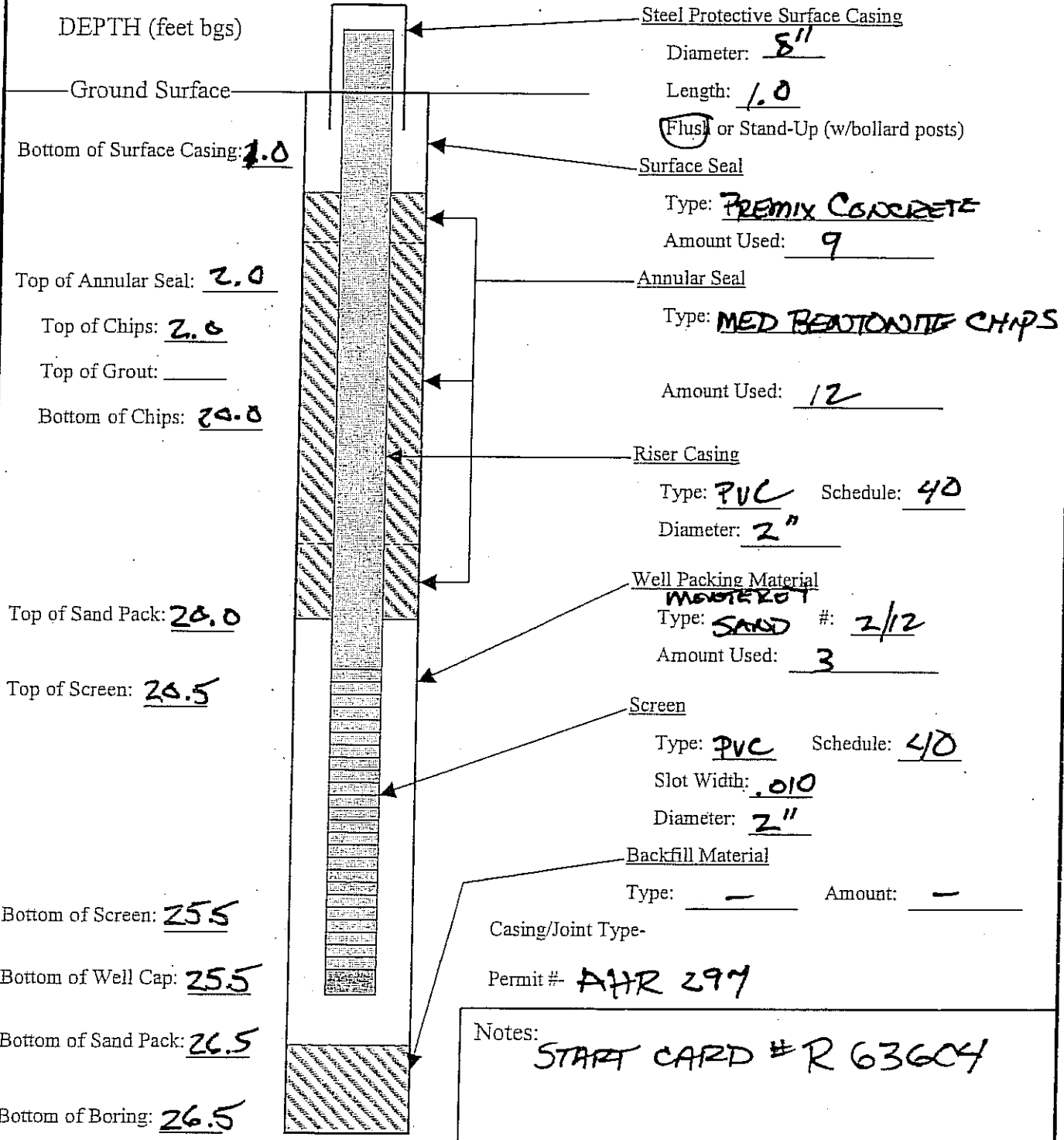
Drill Rig: #1

Borehole Diameter:

Geologist: LOUI LA ROSA

1 1/4 → 6.5' 8 1/4 → 26.5

Well Diameter: 2"





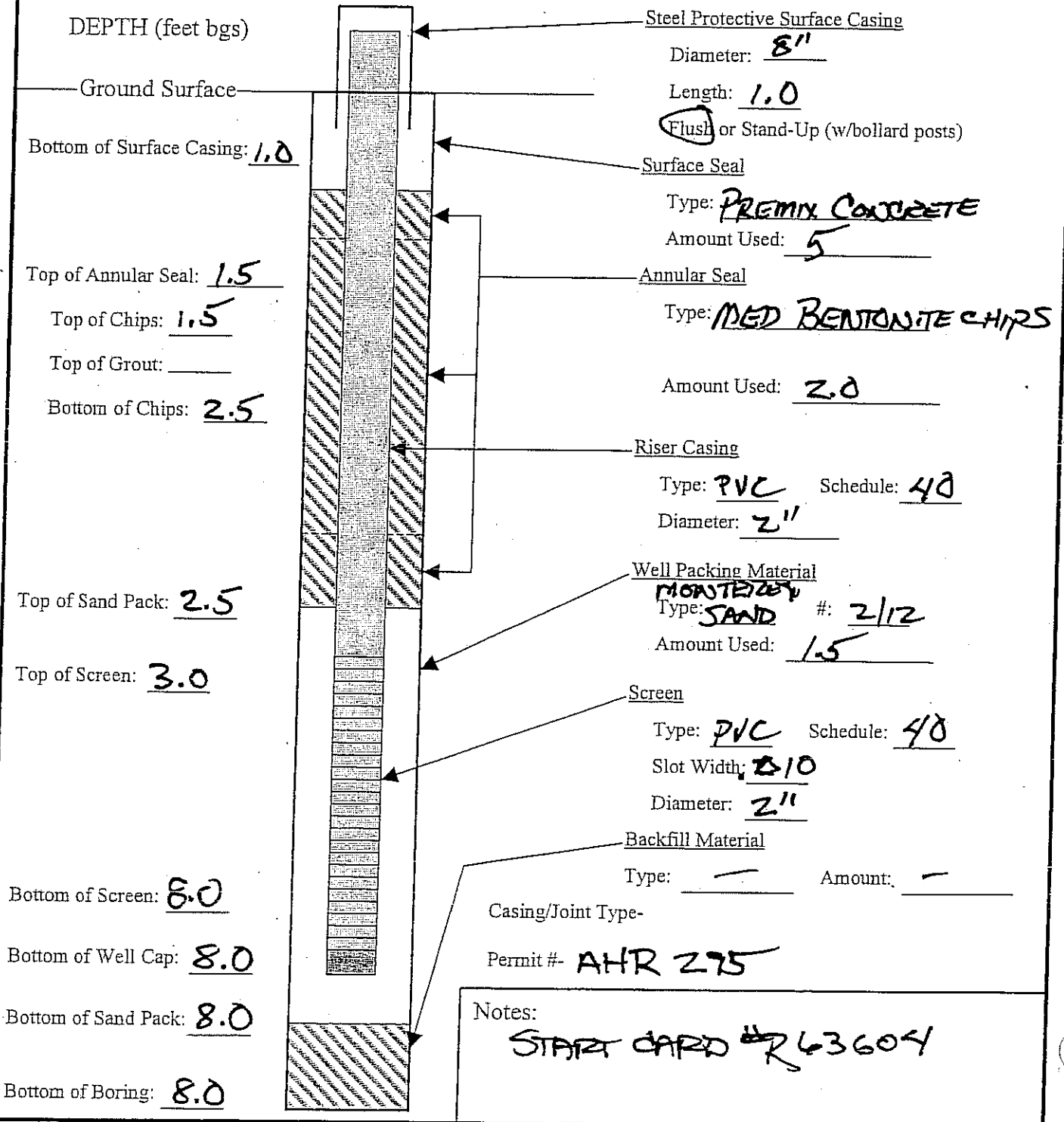
Monitoring Well Construction

Well ID: MW-127-5

Facility: KEWT

Date Start: 11/20/02	Contractor: CASCADE DRILLING
Date Complete: 11/20/02	Drillers: BRIAN COSE
Total Boring Depth: 8.0	Drill Rig: #1
Borehole Diameter: 8 1/4"	Geologist: LOU LA ROSA
	Well Diameter: 2"

Location Diagram





Monitoring Well Construction

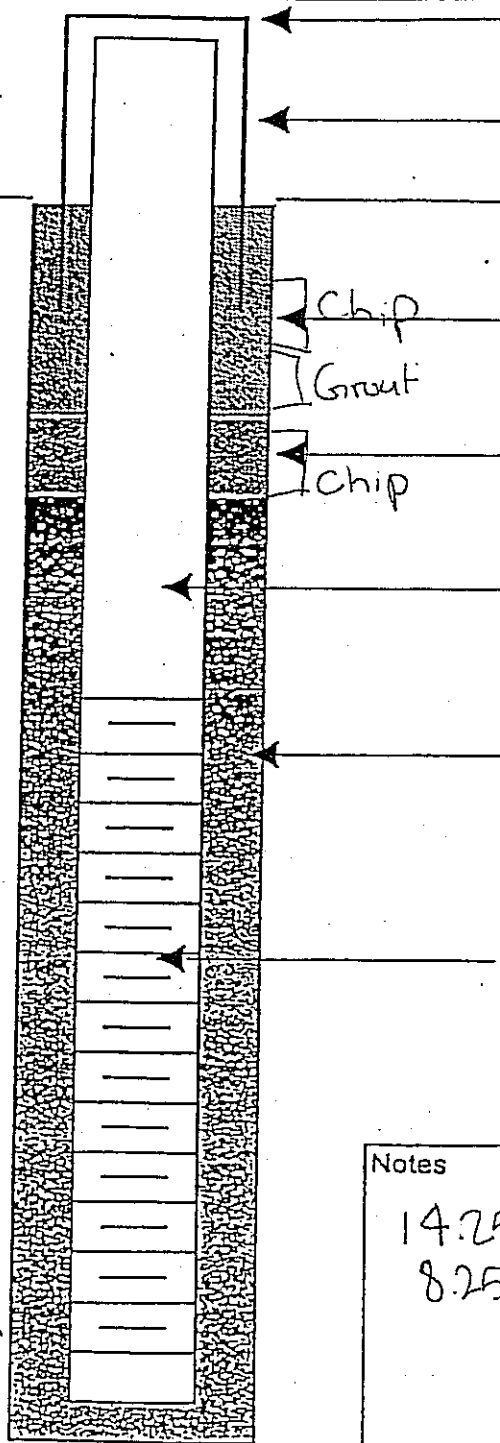
Well ID MW-174-I-1

Date Start	2/8/01	Contractor	Crescent Drilling	Location Diagram	77' Area
Date Complete	2/8/01	Drillers	Yansi-Lubite		
Boring Depth	180	Geologist	Salvador Maguison		
Borehole Diameter	1 1/4" 8 1/4"	Depth to Water (bgs)	9.5'		
Well Diameter	2"				

Reference Elevation 0

DEPTH (feet bgs)

Ground Surface	
Bottom of Surface Casing	1'
Top of Seal	3'
Top of Sand Pack	9.5'
Top of Screen	12.0'



Locking Cap	
Steel Protective Surface Casing Diameter:	Jetset Concrete Premix
Grout Type:	Pure Grout Powder Bentonite
Annular Seal Type:	Pure Grout Neel Bentonite Chips
Riser Casing Type:	Schedule 40
Diameter:	2" PVC
Well Packing Material Type:	Lapis Lustris Sand 3/12
Screen Type:	Schedule 40
Slot Width:	10 slot
Diameter:	2" PVC

Notes

14.25" OD to 6' bgs
 8.25" OD to 18.0' bgs

Bottom of Well 16.5'
17.0'

Bottom of Boring 18.0'

Bore Hole Diameter 1 1/4", 8 1/4"



Monitoring Well Construction

Well ID MW-125-T-1

Date Start 2/13/01

Contractor Cascade Drillers

Location Diagram

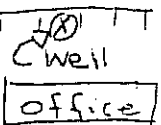
Date Complete 2/13/01

Drillers Brian Grese

774th

Boring Depth 30.5

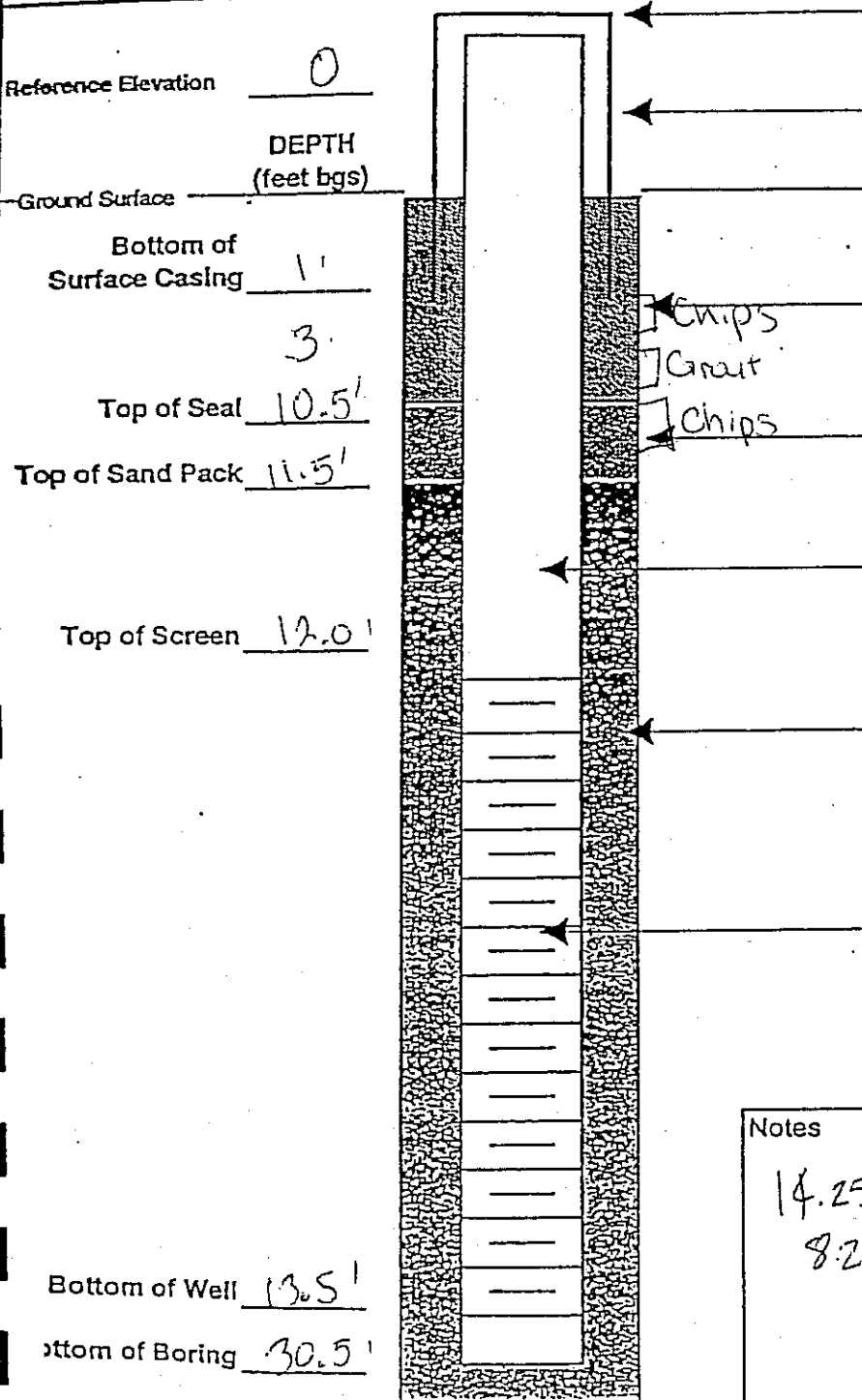
Geologist Salama Magnusen



Borehole Diameter 1 1/4", 8 1/4"

Depth to Water (bgs) 10.25'

Well Diameter 2"



Reference Elevation 0

Locking Cap

DEPTH (feet bgs)

Steel Protective Surface Casing

Ground Surface

Diameter: 12" 8"
Set set with a 12" skirt

Bottom of Surface Casing 1'

Concrete Premix Pure Gold

3'

Grout Type: Bentonite Powder

Top of Seal 10.5'

Pure Gold Medium
Annular Seal Type: Chip Bentonite

Top of Sand Pack 11.5'

Schedule
Riser Casing Type: PVC

Top of Screen 12.0'

Diameter: 2"

Well Packing Material Lapis Lustre Sand
Type: 2/12

Screen Type: Schedule 40
Slot Width: 10 Slot
Diameter: 2"

Bottom of Well 13.5'

Bottom of Boring 30.5'

Bore Hole Diameter 1 1/4", 8 1/4"

Notes

14.25" OD to 5.5 bgs
8.25" OD to 30.5 bgs



Monitoring Well Construction

Well ID: MW-102-S

Facility: KENOT

Date Start: 11/20/02

Contractor: CASCADE DRILLING

Location Diagram

Date Complete: 11/20/02

Drillers: BRIAN COOSE

Total Boring Depth: 5.75'

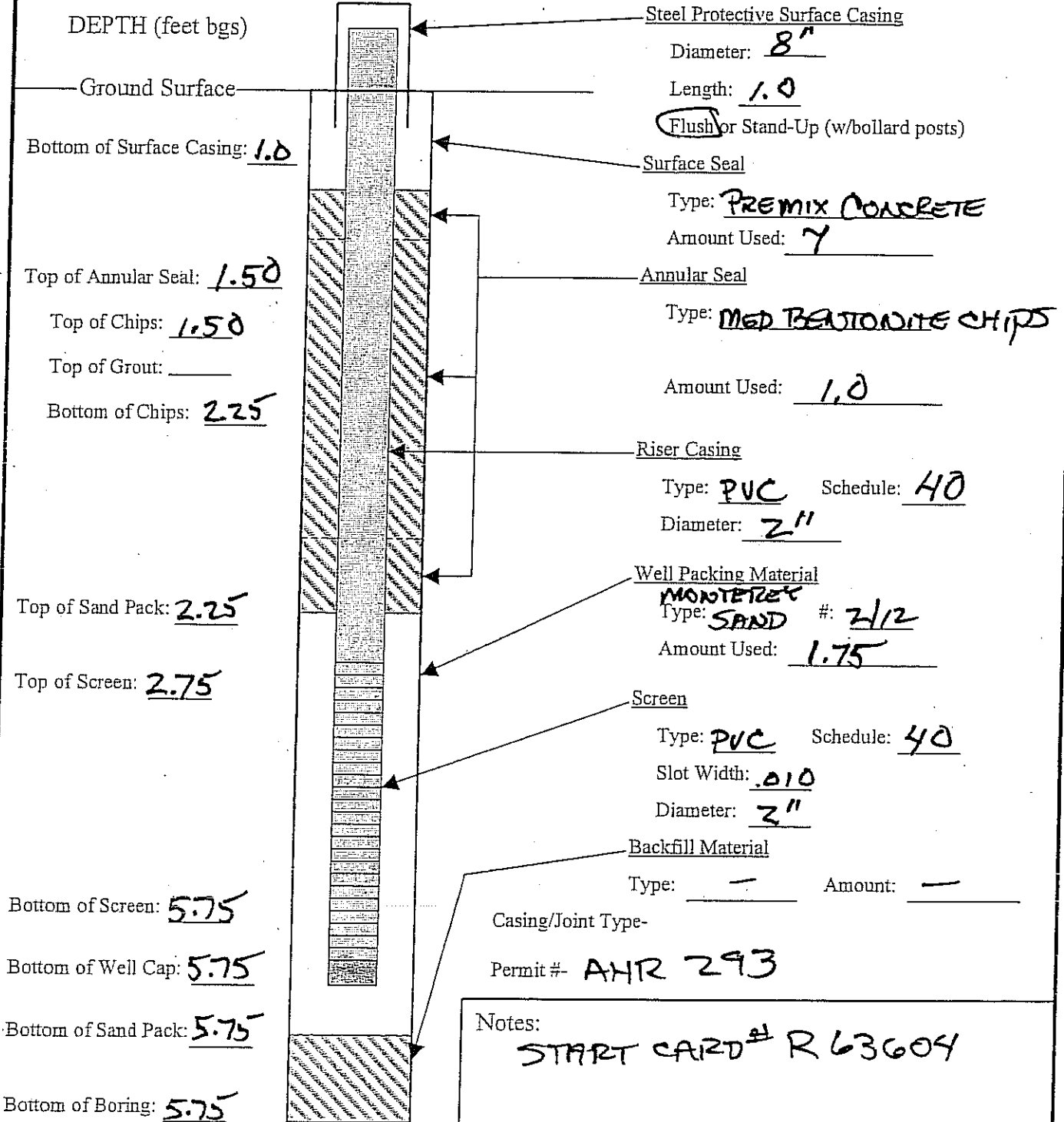
Drill Rig: #1

Borehole Diameter:

Geologist: LOW LAROSA

8 1/4"

Well Diameter: 2"





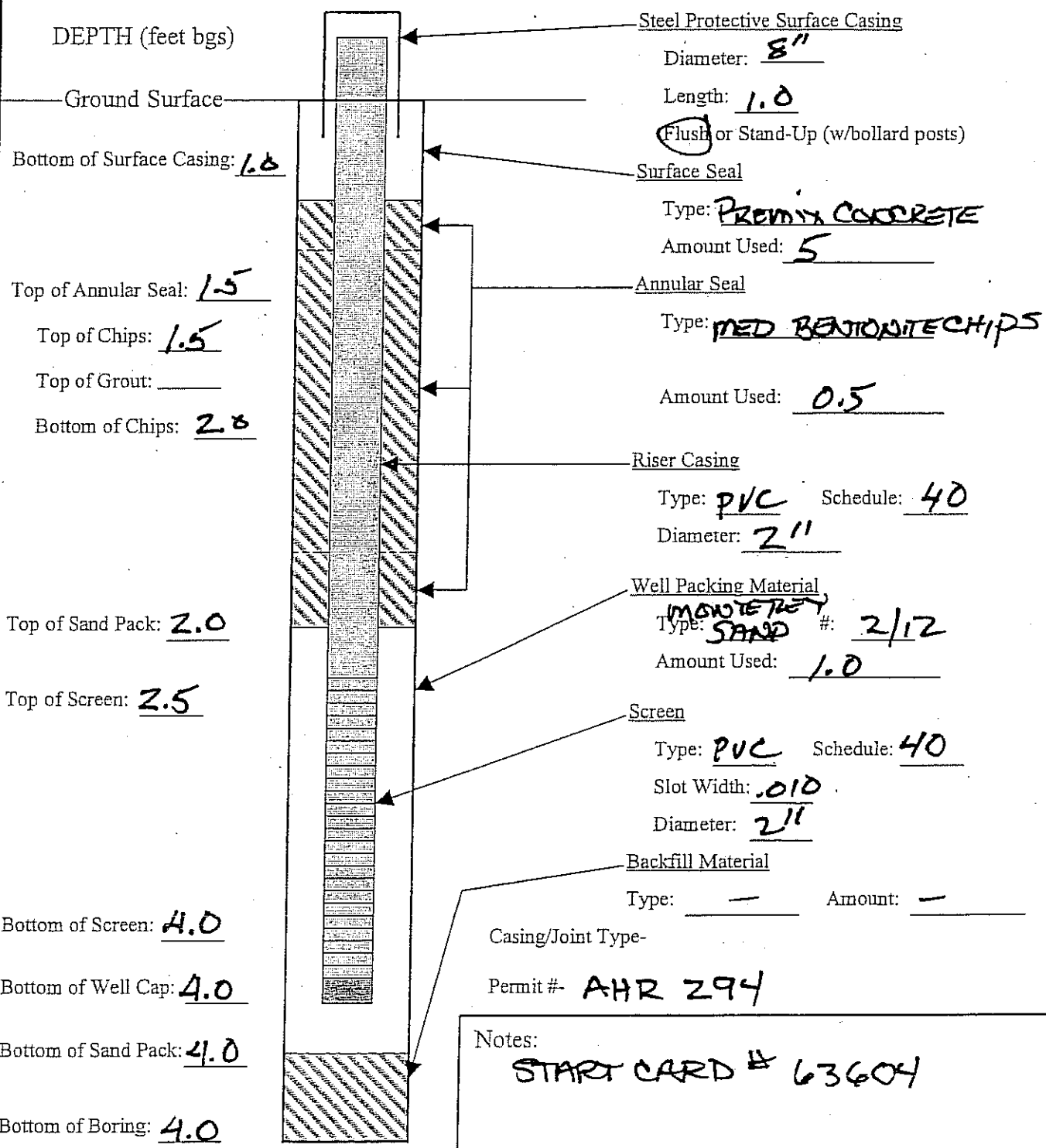
Monitoring Well Construction

Well ID: MW-117-5

Facility: KEAT

Date Start: 11/20/02	Contractor: CASCADE DRILLING
Date Complete: 11/20/02	Drillers: BRIAN GOSE
Total Boring Depth: 4.0	Drill Rig: #1
Borehole Diameter: 8 1/4"	Geologist: LOU LA ROSA
	Well Diameter: 2"

Location Diagram



Notes:
 START CARD # 63604



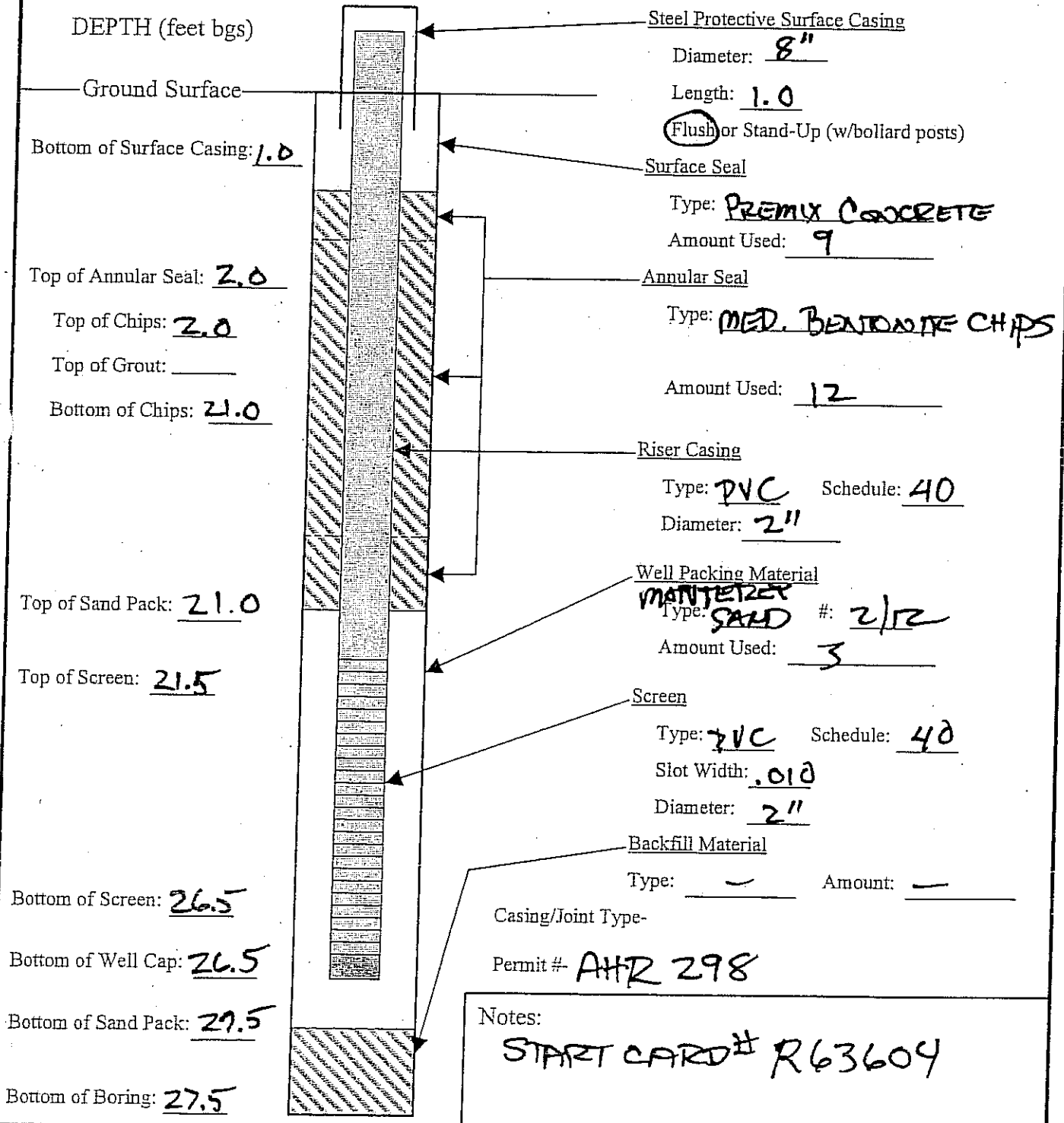
Monitoring Well Construction

Well ID: MW-128-I

Facility: KENT

Date Start: 11/22/02	Contractor: CASCADE DRILLING
Date Complete: 11/22/02	Drillers: BRIAN GOOSE
Total Boring Depth: 27.5	Drill Rig: #1
Borehole Diameter: 1 1/4" → 5.5, 8/4" → 27.5	Geologist: LOU HA ROSA
	Well Diameter: 2"

Location Diagram





Monitoring Well Construction

Well ID: MW-130-I

Facility: KENT

Date Start: 11/19/02

Contractor: CASCADE DRILLING

Location Diagram

Date Complete: 11/19/02

Drillers: BRIAN BOSE

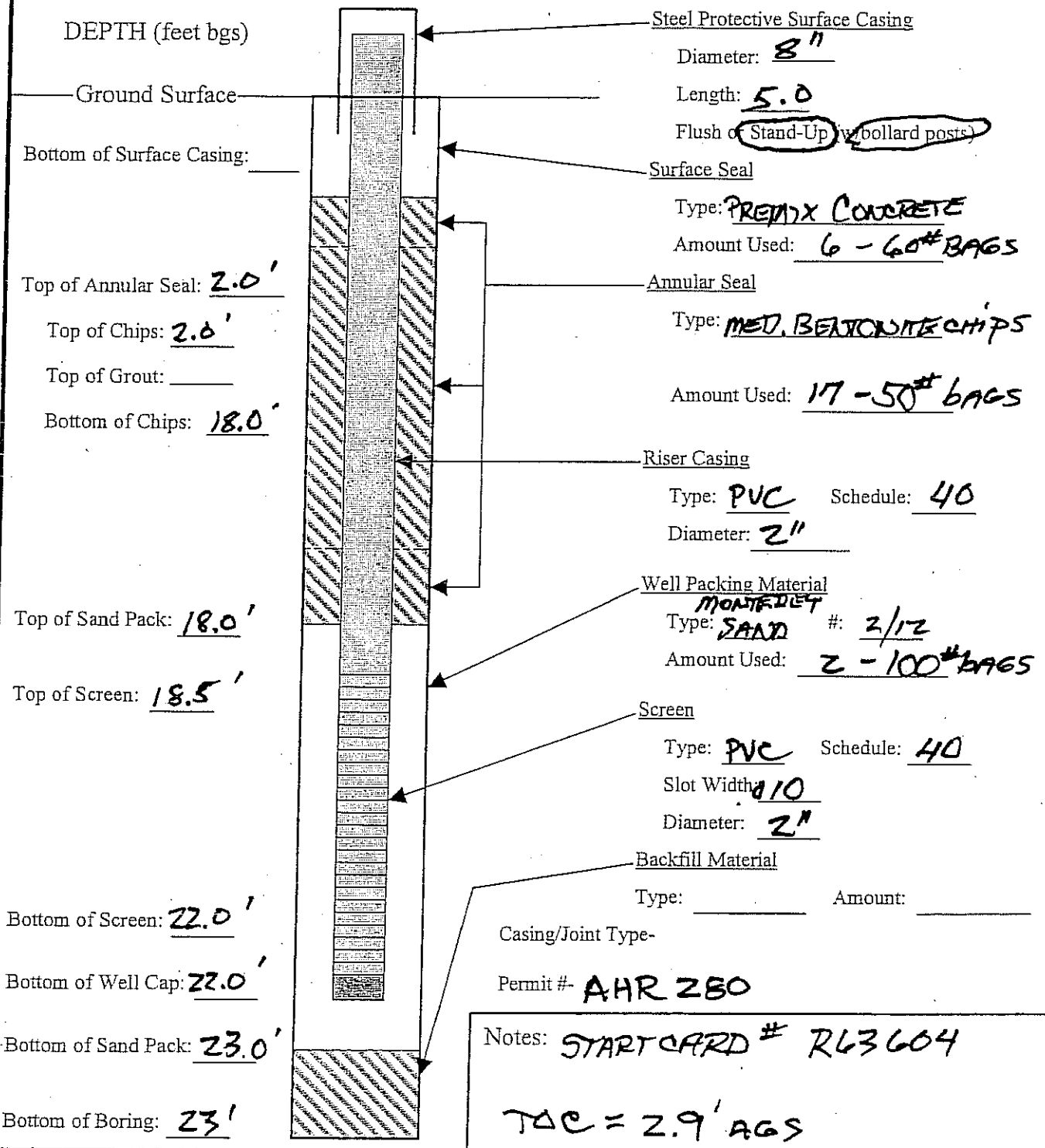
Total Boring Depth: 23.0'

Drill Rig: #1

Borehole Diameter:
1 1/4" to 6"
8/4" to 23'

Geologist: LOU LA ROSA

Well Diameter: 2"





Monitoring Well Construction

Well ID: MW-131-I

Facility: KEPOT

Date Start: 11/19/02

Contractor: CASCADE DRILLING

Location Diagram

Date Complete: 11/19/02

Drillers: BRIAN BOSE

Total Boring Depth: 14.5'

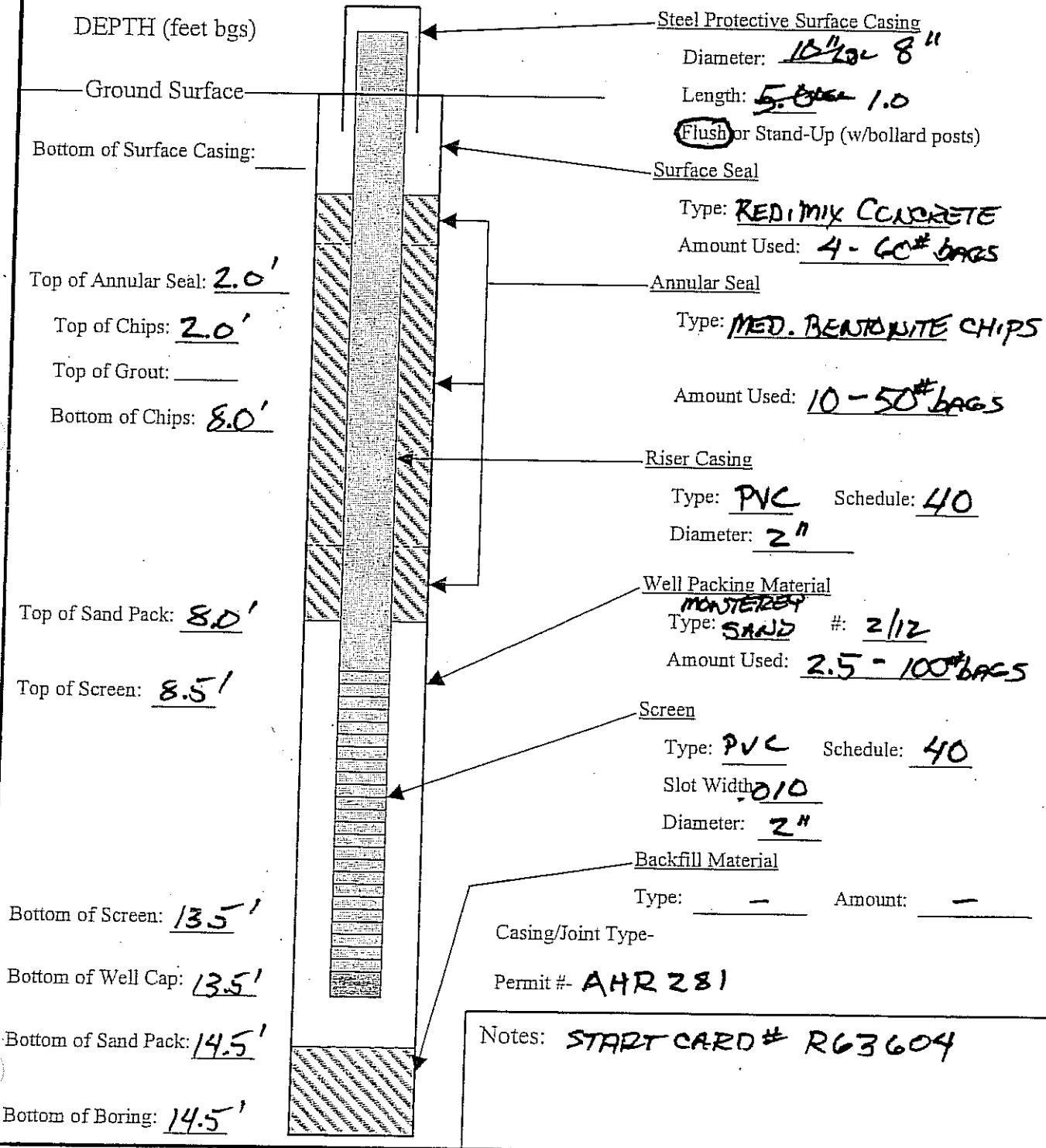
Drill Rig: #1

Borehole Diameter:

14 1/4" → 14.5'
8 1/4" → 14.5'

Geologist: LOU LA ROSA

Well Diameter: 2"



Steel Protective Surface Casing

Diameter: 10 1/2" or 8"

Length: 5.0' or 1.0'

Flush or Stand-Up (w/bollard posts)

Surface Seal

Type: REDIMIX CONCRETE

Amount Used: 4 - 60# BAGS

Annular Seal

Type: MED. BENTONITE CHIPS

Amount Used: 10 - 50# BAGS

Riser Casing

Type: PVC Schedule: 40

Diameter: 2"

Well Packing Material

Type: MONTEREY SAND #: 2/12

Amount Used: 2.5 - 100# BAGS

Screen

Type: PVC Schedule: 40

Slot Width: .010

Diameter: 2"

Backfill Material

Type: - Amount: -

Casing/Joint Type-

Permit #- AHR 281

Notes: START CARD # R63604



Monitoring Well Construction

Well ID: MW-132-S

Facility: KENT

Date Start: 11/20/02

Contractor: CASCADE DRILLING

Location Diagram

Date Complete: 11/20/02

Drillers: BRIAN COSE

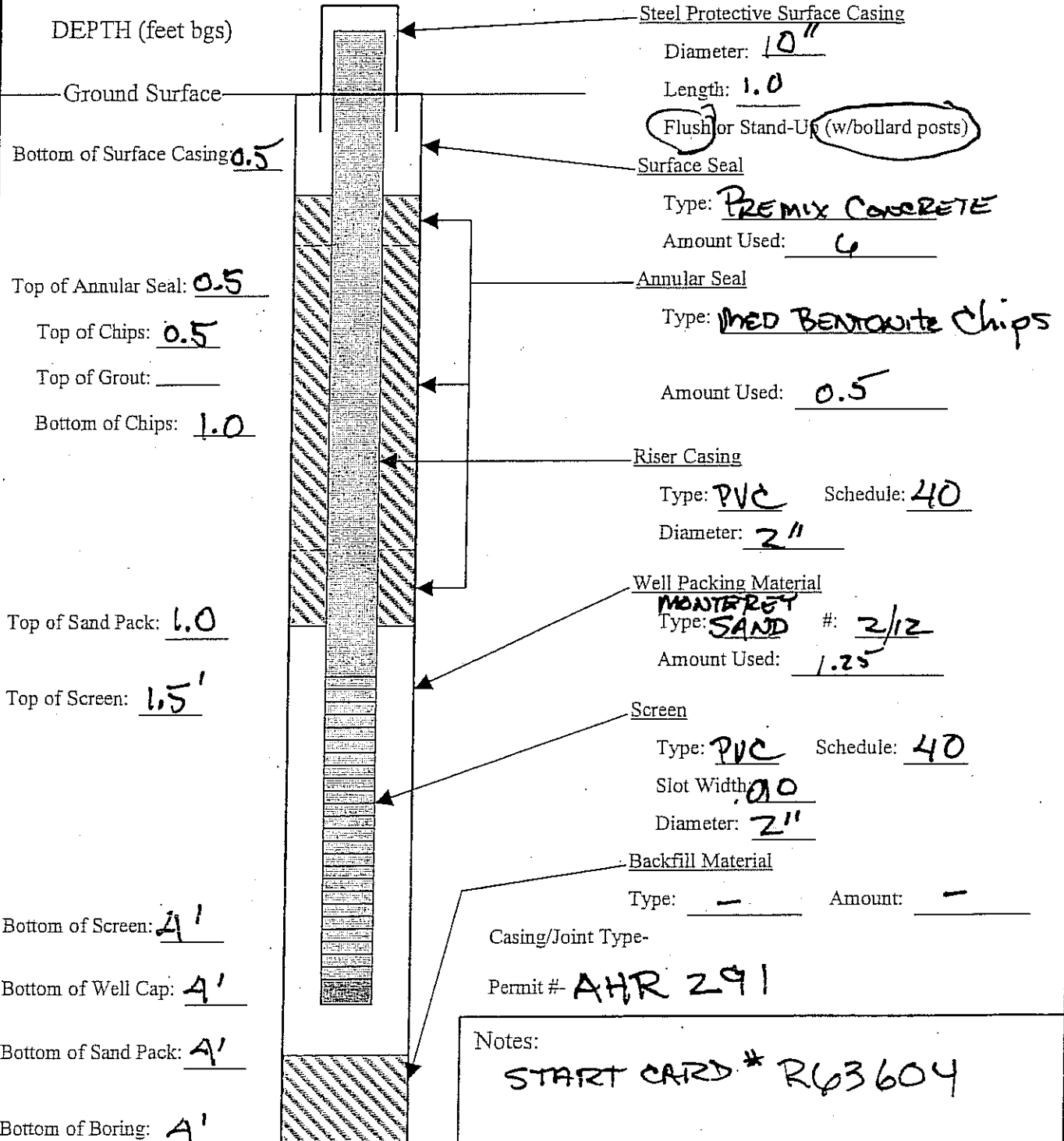
Total Boring Depth: 4' bgs

Drill Rig: #1

Borehole Diameter:
8 1/4"

Geologist: LOW LA ROSA

Well Diameter: 2"



PROJECT: Philip Services Corporation Kent, Washington		Log of Well No. MW-129-I	
BORING LOCATION: N 156128.5; E 1292729.6		TOP OF CASING ELEVATION AND DATUM: 29.40 feet (NAVD 1988)	
DRILLING CONTRACTOR: Cascade Drilling, Inc.		DATE STARTED: 6/15/07	DATE FINISHED: 6/15/07
DRILLING METHOD: Direct push		TOTAL DEPTH (ft.): 16.0	SCREEN INTERVAL (ft.): 11 to 16
DRILLING EQUIPMENT: Geoprobe 6600		DEPTH TO FIRST WATER (ft.): 5.0	COMPL. 5.5
SAMPLING METHOD: Geoprobe macro-core sampler [4' x 2"]		LOGGED BY: Z. Satterwhite	
HAMMER WEIGHT: NA	DROP: NA	RESPONSIBLE PROFESSIONAL: Z. Satterwhite	REG. NO. L.G. 2568

DEPTH (feet)	SAMPLES			OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation: 29.59 feet (NAVD 1988)	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
	Sample No.	Sample	Blows/ Foot			
1					SILTY SAND with GRAVEL (SM): brown (10YR 4/3), dry to moist, 45% fine to coarse sand, 40% fine to coarse subangular to subrounded gravel, 15% low plasticity fines	Traffic Box Concrete (Basalite Mix)
2				0	POORLY GRADED SAND with GRAVEL (SP): brown (10YR 4/3), moist, 55% fine to coarse sand, 40% fine to coarse subangular to subrounded gravel, 5% fines	Medium bentonite chip (PureGold) seal
3					Geotextile fabric (black)	
4				1	SILTY SAND (SM): very dark gray (10YR 3/1), moist, 50% fine to coarse sand, 40% fines, 10% fine subrounded to rounded gravel	1" diameter Schedule 40 PVC casing
5				0	POORLY GRADED SAND with SILT (SP-SM): very dark grayish brown (10YR 3/2), moist to wet, 90% fine to medium sand, 10% low plasticity fines, iron-stained	2" diameter borehole
6					SILT (ML): gray (10YR 5/1), mottled yellowish orange, moist, 95% fines, 5% fine sand, low plasticity, firm	native sand slough
7				0	SANDY SILT (ML): very dark gray (10YR 3/1), wet, 70% fines, 30% fine sand, low plasticity, very soft	*OVM = ThermoEnvironmental Instruments 580B PID calibrated with 100 ppm isobutylene standard.
8					POORLY GRADED SAND with SILT (SP-SM): black (10YR 2/1), wet, 90% fine sand, 10% low plasticity fines, soupy	#2/12 filter pack sand
9						Schedule 40 PVC pre-pack well screen with 3/4" diameter (nominal) inner screen with 1.25" O.D. outer stainless steel screen, 0.010" slot, and #20/40 filter pack sand
10				0	SILT (ML): very dark gray (10YR 3/1), moist, 90% fines, 10% fine sand, low plasticity, firm	
11					Bottom of boring at 16.0 feet.	1" diameter Schedule 40 PVC end cap
12						
13						
14						
15						
16						
17						
18						

OAKWELLV_PPACKTOC(5/03)