WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

PRINT OR TYPE ONLY
DO NOT WRITE ON BACK

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

OFFICE USE ONLY
Log No. 90421
Permit No.
Basin 110C

NOTICE OF INTENT NO. 46324

1. OWNER US ARMY CORP OF ENGRS
MAILING ADDRESS 1325 J Street
Sacramento, CA 95814

ADDRESS AT WELL LOCATION
HAWTHORNE ARMY DEPOT
Hawthorne, Nevada

2. LOCATION SW ¼ SE ¼ Sec 12 T 8 N/S R 30 E Mineral County

PERMIT NO. Issued by Water Resources | Parcel No. | Subdivision Name

3. WORK PERFORMED
☒ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Abandon ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☐ Test
☐ Municipal/Industrial ☒ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RVC
☐ Air ☒ Other H.S.A.

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
SILTY SAND YELLOW		0	50	
YELLOWISH ORANGE				
WELL GRADED SAND		50	80	
YELLOWISH ORANGE				
SILTY SAND YELLOW		80	100	
WELL GRADED SAND		100	140	
LIGHT GRAY				
SILTY SAND GRAY		140	150	
POORLY GRADED SAND		150	~~197~~	
LIGHT BROWN			197	

Date started 8/13/02, 19
Date completed 8/23/02, 19

7. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)

8. WELL CONSTRUCTION
Depth Drilled 197 Feet Depth Cased 195 Feet

HOLE DIAMETER (BIT SIZE)

		From	To
8 Inches	0 Feet	~~100~~ Feet	
Inches	Feet	197 Feet	
Inches	Feet	Feet	

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
2		sch. 40	0	195

Perforations:
Type perforation machined slot
Size perforation .010
From 175 feet to 190 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 1 to 168
Placement Method: ☐ Pumped ☒ Poured

Seal Type:
☒ Neat Cement
☐ Cement Grout
☐ Concrete Grout

Gravel Packed: ☒ Yes ☐ No
From 173 feet to 190 feet

9. WATER LEVEL
Static water level feet below land surface
Artesian flow G.P.M. P.S.I.
Water temperature °F Quality

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name Cascade Drilling, Inc. Contractor
Address 3632 Omec Circle Contractor
Rancho Cordova, CA 95742
Nevada contractor's license number issued by the State Contractor's Board C23 51207
Nevada driller's license number issued by the Division of Water Resources, the on-site driller M-1908
Signed By driller performing actual drilling on site or contractor
Date 10-9-02

(Rev. 3-91)

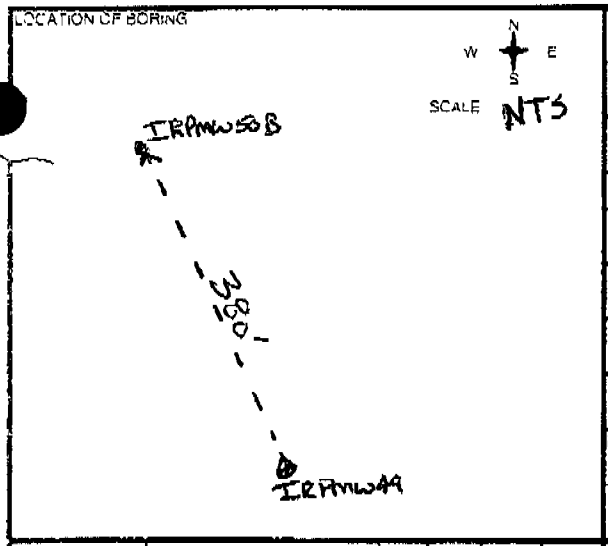
USE ADDITIONAL SHEETS IF NECESSARY

(O)-627

FORSGREN ASSOCIATES/BROWN AND CALDWELL

BOREHOLE/WELL LOG

LOCATION OF BORING



CLIENT	USACE
LOCATION	Hawthorne, NV
PROJECT NAME	HWAD
JOB NUMBER	00729.002
DRILLING CONTRACTOR	Cascade
RIG TYPE (CIRCLE ONE)	~~HSA~~ DP MUD ARCH NONE OTHER
DRILLING METHOD, FLUID USED	RME 95
SOIL SAMPLING METHOD (CIRCLE ONE)	~~SPLIT SPOON~~ CC ACETATE NONE OTHER
MONITORING INSTRUMENT (CIRCLE ONE)	~~PID~~ FID LEL RAD NONE OTHER
SURFACE CONDITIONS (CIRCLE ONE)	ASPHALT CONCRETE ~~DIRT~~ ~~DRY~~ WET OTHER

BORING NUMBER: IRPMW50B

SHEET 1 OF 10

DRILLING	START	FINISH
TIME	1445	1345
DATE	08.19.02	08.20.02

WELL CONSTRUCTION	START	FINISH
TIME	08.20.02	08.21.02
DATE	1345	0900

FINE GRAINED AND ORGANIC SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, SIZE DISTRIBUTION, PLASTICITY, DRY STRENGTH, DILATANCY, TOUGHNESS, MOISTURE, ODOR, STRUCTURE, CONSISTENCY, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, CONTACT DESCRIPTION

COARSE GRAINED SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, GRADATION (g/s/l), SIZE DISTRIBUTION, PLASTICITY, SHAPE, ANGULARITY, MOISTURE, ODOR, STRUCTURE, CEMENTATION, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, MINERALOGY, CONTACT DESCRIPTION

WELL CONSTRUCTION: ANNULUS	WELL CONSTRUCTION: CASING	SOIL SAMPLING: SAMPLER USED	BLOWS/6" INTERVAL	INTERVAL SAMPLED	RECOVERY	ANALYTICAL SAMPLE (A,B,C)	WATER LEVEL (INITIAL/STATIC)	DEPTH (FEET)	INSTRUMENT READING (ppm)	USCS GROUP SYMBOL	SAMPLE TYPE, INTERVAL, DESCRIPTION
		SS						0	0	~~SM~~ SW	0-10 Well graded sand w/silt, yellow-yellowish orange ~~(25,45,15)~~ (20,50,30), ~~SM~~ SW no plasticity, subrounded, dry, no odor, homogeneous, high-med perm, fine sands
Neat Cement Grout	2" SCH 40 PVC Blank							5			10- Sandy silt, yellow-yellowish orange, (10,40,50), ML, no plasticity, no-low dry strength, no dilatancy, no toughness, dry, no odor, homogeneous, med perm
			60(6) x x					10	1.0	ML	
								15			
								20			

ANALYTICAL SAMPLE ID (SEE ABOVE FOR LOCATION)

A _____ D _____

B _____ E _____

C _____ F _____

FORSGREN ASSOCIATES/BROWN AND CALDWELL

BOREHOLE/WELL LOG

LOCATION OF BORING

N W E S

SCALE

CLIENT: USACE

LOCATION: Hawthorne, NV

PROJECT NAME: HWAD

JOB NUMBER: 06727.002

DRILLING CONTRACTOR: Cascade

RIG TYPE (CIRCLE ONE): HSA DP MUD ARCH NONE OTHER

DRILLING METHOD FLUID USED: HSA

SOIL SAMPLING METHOD (CIRCLE ONE): SPLIT SPOON X CC ACETATE NONE OTHER

MONITORING INSTRUMENT (CIRCLE ONE): PID FID LEL RAD NONE OTHER

SURFACE CONDITIONS (CIRCLE ONE): ASPHALT CONCRETE DIRT DRY WET OTHER

BORING NUMBER: IRPMW50B

SHEET 2 OF 10

DRILLING	
START	FINISH
TIME 1445	TIME 1345
DATE 08.19.02	DATE 08.20.02

WELL CONSTRUCTION	
START	FINISH
TIME 1345	TIME 0900
DATE 08.20.02	DATE 08.21.02

WELL CONSTRUCTION: ANNULUS	WELL CONSTRUCTION: CASING	SOIL SAMPLING: SAMPLER USED	SOIL SAMPLING: BLOWS/6" INTERVAL	SOIL SAMPLING: INTERVAL SAMPLED	SOIL SAMPLING: RECOVERY	SOIL SAMPLING: ANALYTICAL SAMPLE (A,B,C)	WATER LEVEL (INITIAL/STATIC)	DEPTH (FEET)	INSTRUMENT READING (ppm)	USCS GROUP SYMBOL	FINE GRAINED AND ORGANIC SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, SIZE DISTRIBUTION, PLASTICITY, DRY STRENGTH, DILATANCY, TOUGHNESS, MOISTURE, ODOR, STRUCTURE, CONSISTENCY, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, CONTACT DESCRIPTION / COARSE GRAINED SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, GRADATION (g/cm), SIZE DISTRIBUTION, PLASTICITY, SHAPE, ANGULARITY, MOISTURE, ODOR, STRUCTURE, CEMENTATION, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, MINERALOGY, CONTACT DESCRIPTION / SAMPLE TYPE, INTERVAL, DESCRIPTION
Neat Cement Grout	2" SCH 40 PVC Blank		Table X 10					20	250	SM	20-30 Silty Sand, yellow-yellowish orange, (10,60,30), SM, no plasticity, subrounded, dry, no odor, homogeneous, weak-med. cementation, low-med perm, fine + dense sand
								25			30-40 Same as above except more gravel sizes present (20,55,25)
			60(6) X X					30	12	SM	
								35			
								40			

ANALYTICAL SAMPLE ID (SEE ABOVE FOR LOCATION)

A
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FORSGREN ASSOCIATES/BROWN AND CALDWELL

BOREHOLE/WELL LOG

LOCATION OF BORING

N W E S

SCALE

CLIENT: USACE

LOCATION: Hawthorne, Nv

PROJECT NAME: HWAD

JOB NUMBER: 00729-002

DRILLING CONTRACTOR: Cascade

RIG TYPE (CIRCLE ONE): HSA DP MUD ARCH NONE OTHER

DRILLING METHOD, FLUID USED: HSA

SOIL SAMPLING METHOD (CIRCLE ONE): SPLIT SPOON CC ACETATE NONE OTHER

MONITORING INSTRUMENT (CIRCLE ONE): FID FID LEL RAD NONE OTHER

SURFACE CONDITIONS (CIRCLE ONE): ASPHALT CONCRETE DRT DRY WET OTHER

BORING NUMBER: IRPMW50B

SHEET 3 OF 10

DRILLING	START	FINISH
TIME	1445	1345
DATE	08.19.02	08-20-02

WELL CONSTRUCTION	START	FINISH
TIME	1345	0900
DATE	08-20-02	08-21-02

FINE GRAINED AND ORGANIC SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, SIZE DISTRIBUTION, PLASTICITY, DRY STRENGTH, DILATANCY, TOUGHNESS, MOISTURE, ODOR, STRUCTURE, CONSISTENCY, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, CONTACT DESCRIPTION

COARSE GRAINED SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, GRADATION (g/s/t), SIZE DISTRIBUTION, PLASTICITY, SHAPE, ANGULARITY, MOISTURE, ODOR, STRUCTURE, CEMENTATION, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, MINERALOGY, CONTACT DESCRIPTION

WELL CONSTRUCTION: ANNULUS	WELL CONSTRUCTION: CASING	SOIL SAMPLING: SAMPLER USED	BLOWS/6" INTERVAL	INTERVAL SAMPLED	RECOVERY	ANALYTICAL SAMPLE (A,B,C)	WATER LEVEL (INITIAL/STATIC)	DEPTH (FEET)	INSTRUMENT READING (ppm)	USCS GROUP SYMBOL	SAMPLE TYPE INTERVAL DESCRIPTION
Neat Cement Grout	2" SCH 40 PVC Blank	SS	(60/6) x x					40	8.0	SW	40-50 Well graded sand, yellow-yellowish orange (15,55,30) SW, no plasticity, subangular, dry, no odor, homogeneous, weak cementation, med perm, fine + dense sands
								45			50- Well graded sand w/gravel, yellow-yellowish orange (20,65,15), SW, no plasticity, subrounded, dry, no odor, homogeneous, weak cementation, med perm, dense + medium sand
			(30/6) x x					50	2.5	SW	
								55			
								60			

ANALYTICAL SAMPLE ID (SEE ABOVE FOR LOCATION)

A _____ D _____

B _____ E _____

C _____ F _____

FORSGREN ASSOCIATES/BROWN AND CALDWELL

BOREHOLE/WELL LOG

LOCATION OF BORING

N W E S

SCALE

CLIENT: USACE

LOCATION: Hawthorne NV

PROJECT NAME: HWAD

JOB NUMBER: 00729.002

DRILLING CONTRACTOR: Cascade

RIG TYPE (CIRCLE ONE): HSA DP MUD ARCH NONE OTHER

DRILLING METHOD, FLUID USED: HSA

SOIL SAMPLING METHOD (CIRCLE ONE): SPLIT SPOON CC ACETATE NONE OTHER

MONITORING INSTRUMENT (CIRCLE ONE): PID FID LEL RAD NONE OTHER

SURFACE CONDITIONS (CIRCLE ONE): ASPHALT CONCRETE DIRT DRY WET OTHER

BORING NUMBER: IRPmw 503

SHEET 4 OF 10

DRILLING	
START	FINISH
TIME 1445	TIME 1345
DATE 08.19.02	DATE 08.20.02
WELL CONSTRUCTION	
START	FINISH
TIME 1345	TIME 0900
DATE 08.20.02	DATE 08.21.02

FINE GRAINED AND ORGANIC SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, SIZE DISTRIBUTION, PLASTICITY, DRY STRENGTH, DILATANCY, TOUGHNESS, MOISTURE, ODOR, STRUCTURE, CONSISTENCY, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, CONTACT DESCRIPTION

COARSE GRAINED SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, GRADATION (G/S/I), SIZE DISTRIBUTION, PLASTICITY, SHAPE, ANGULARITY, MOISTURE, ODOR, STRUCTURE, CEMENTATION, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, MINERALOGY, CONTACT DESCRIPTION

WELL CONSTRUCTION: ANNULUS	WELL CONSTRUCTION: CASING	SOIL SAMPLING: SAMPLER USED	SOIL SAMPLING: BLOWS/6" INTERVAL	SOIL SAMPLING: INTERVAL SAMPLED	SOIL SAMPLING: RECOVERY	SOIL SAMPLING: ANALYTICAL SAMPLE (A,B,C)	WATER LEVEL (INITIAL/STATIC)	DEPTH (FEET)	INSTRUMENT READING (ppm)	USCS GROUP SYMBOL	SAMPLE TYPE, INTERVAL, DESCRIPTION
Neat Cement Grout	2" SCH 40 PVC Blank	SS						60	2.5	SW	60-70 Same as 50-60
			80(6)					70	1.5	SW	70-80 well graded sand, yellow-yellowish orange, (10,65,25), nonplastic, low dry strength, subrounded, dry, no odor, homogeneous, weak cementation, low-med perm, dense, fine sands w/ some gravels present
								80			

ANALYTICAL SAMPLE ID (SEE ABOVE FOR LOCATION)

A
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FORSGREN ASSOCIATES/BROWN AND CALDWELL

BOREHOLE/WELL LOG

LOCATION OF BORING

N W E S

SCALE

CLIENT: USACE

LOCATION: Hawthorne, NV

PROJECT NAME: HWAD

JOB NUMBER: 00279.002

DRILLING CONTRACTOR: Cascade

RIG TYPE (CIRCLE ONE): HSA DP MUD ARCH NONE OTHER

DRILLING METHOD, FLUID USED: HSA

SOIL SAMPLING METHOD (CIRCLE ONE): SPLIT SPOON CC ACETATE NONE OTHER

MONITORING INSTRUMENT (CIRCLE ONE): PID FID LEL RAD NONE OTHER

SURFACE CONDITIONS (CIRCLE ONE): ASPHALT CONCRETE DRY WET OTHER

BORING NUMBER: IRPMW50B

SHEET 5 OF 10

DRILLING	
START	FINISH
TIME 1445	TIME 1345
DATE 08.19.02	DATE 08.20.02
WELL CONSTRUCTION	
START	FINISH
TIME 1345	TIME 0900
DATE 08.20.02	DATE 08.21.02

WELL CONSTRUCTION: ANNULUS	WELL CONSTRUCTION: CASING	SOIL SAMPLING: SAMPLER USED	SOIL SAMPLING: BLOWS/6" INTERVAL	SOIL SAMPLING: INTERVAL SAMPLED	SOIL SAMPLING: RECOVERY	SOIL SAMPLING: ANALYTICAL SAMPLE (A,B,C)	WATER LEVEL (INITIAL/STATIC)	DEPTH (FEET)	INSTRUMENT READING (ppm)	USCS GROUP SYMBOL	FINE GRAINED AND ORGANIC SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, SIZE DISTRIBUTION, PLASTICITY, DRY STRENGTH, DILATANCY, TOUGHNESS, MOISTURE, ODOR, STRUCTURE, CONSISTENCY, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, CONTACT DESCRIPTION; COARSE GRAINED SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, GRADATION (g/cm), SIZE DISTRIBUTION, PLASTICITY, SHAPE, ANGULARITY, MOISTURE, ODOR, STRUCTURE, CEMENTATION, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, MINERALOGY, CONTACT DESCRIPTION; SAMPLE TYPE, INTERVAL, DESCRIPTION
		SS						80	2.0	ML	80-90 Sandy Silt w/gravel, yellowish orange (20, 35, 45), ML, no-low plasticity, med dry strength, no dilatancy, no toughness, dry, no odor, homogeneous
Neat Cement Grout	2" SCH 40 PVC Blank		60(5) X X					85			90- Poorly graded sands, yellow-lt brown (5, 70, 25), SP, no plasticity, low dry strength, subangular, dry, no odor, homogeneous, weak cementation, med perm, dense fine sand
			60(6) X X					90	2.0	SP	
								95			
								100			

ANALYTICAL SAMPLE ID (SEE ABOVE FOR LOCATION)

A
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FORSGREN ASSOCIATES/BROWN AND CALDWELL

BOREHOLE/WELL LOG

LOCATION OF BORING

N W E S

SCALE:

CLIENT	USACE
LOCATION	Hawthorne, NV
PROJECT NAME	HWAD
JOB NUMBER	00729.002
DRILLING CONTRACTOR	Cascade
RIG TYPE (CIRCLE ONE)	HSA (X) DP MUD ARCH NONE OTHER
DRILLING METHOD, FLUID USED	HSA
SOIL SAMPLING METHOD (CIRCLE ONE)	SPLIT SPOON (X) CC ACETATE NONE OTHER
MONITORING INSTRUMENT (CIRCLE ONE)	PID (X) FID LEL RAD NONE OTHER
SURFACE CONDITIONS (CIRCLE ONE)	ASPHALT CONCRETE DIRT (X) DRY WET OTHER

BORING NUMBER: IRPMW50B

SHEET 6 OF 10

DRILLING	START	FINISH
TIME	1445	1345
DATE	08.19.02	08.20.02

WELL CONSTRUCTION	START	FINISH
TIME	1345	0900
DATE	08.20.02	08.21.02

FINE GRAINED AND ORGANIC SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, SIZE DISTRIBUTION, PLASTICITY, DRY STRENGTH, DILATANCY, TOUGHNESS, MOISTURE, ODOR, STRUCTURE, CONSISTENCY, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, CONTACT DESCRIPTION

COARSE GRAINED SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, GRADATION (g/cm), SIZE DISTRIBUTION, PLASTICITY, SHAPE, ANGULARITY, MOISTURE, ODOR, STRUCTURE, CEMENTATION, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, MINERALOGY, CONTACT DESCRIPTION

WELL CONSTRUCTION: ANNULUS	WELL CONSTRUCTION: CASING	SAMPLER USED	BLOWS/6" INTERVAL	INTERVAL SAMPLED	RECOVERY	ANALYTICAL SAMPLE (A,B,C)	WATER LEVEL (INITIAL/STATIC)	DEPTH (FEET)	INSTRUMENT READING (ppm)	USCS GROUP SYMBOL	SAMPLE TYPE INTERVAL DESCRIPTION
Neat Cement Grout	2" SCH 40 PVC Blank	SS	60(6) x x					100	2.5	SW	100 - 110 Wellgraded sands, lt gray, (20,60,20) SW, no plasticity, subangular, dry, no odor, homogeneous, weak cementation, med-high perm, (20% course, 60% medium, 20% fines) dense sands - well graded
								105			
											110 - Well graded sands, lt gray (25,65,10) SW, no plasticity, subrounded, dry, no odor, homogeneous, weak cementation, med-high perm, (30% course, 65% medium, 5% fines) well graded dense sand
			70(6) x x					110	2.0	SW	
								115			
								120			

ANALYTICAL SAMPLE ID (SEE ABOVE FOR LOCATION)

A _____ D _____

B _____ E _____

C _____ F _____

FORSGREN ASSOCIATES/BROWN AND CALDWELL

BOREHOLE/WELL LOG

LOCATION OF BORING

N W E S

SCALE

CLIENT: USACE

LOCATION: Hawthorne, NV

PROJECT NAME: HWAD

JOB NUMBER: 00329.002

DRILLING CONTRACTOR: Cascade

RIG TYPE (CIRCLE ONE): HSA DP MUD ARCH NONE OTHER

DRILLING METHOD, FLUID USED: HSA

SOIL SAMPLING METHOD (CIRCLE ONE): SPLIT SPOON CC ACETATE NONE OTHER

MONITORING INSTRUMENT (CIRCLE ONE): PID FID LEL RAD NONE OTHER

SURFACE CONDITIONS (CIRCLE ONE): ASPHALT CONCRETE DIRT DRY WET OTHER

BORING NUMBER: IRPMW 50B

SHEET 7 OF 10

DRILLING	
START	FINISH
TIME 1445	TIME 1345
DATE 08.19.02	DATE 08.20.02
WELL CONSTRUCTION	
START	FINISH
TIME 1345	TIME 0900
DATE 08.20.02	DATE 08.21.02

FINE GRAINED AND ORGANIC SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, SIZE DISTRIBUTION, PLASTICITY, DRY STRENGTH, DILATANCY, TOUGHNESS, MOISTURE, ODOR, STRUCTURE, CONSISTENCY, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, CONTACT DESCRIPTION

COARSE GRAINED SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, GRADATION (g/s/l), SIZE DISTRIBUTION, PLASTICITY, SHAPE, ANGULARITY, MOISTURE, ODOR, STRUCTURE, CEMENTATION, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, MINERALOGY, CONTACT DESCRIPTION

WELL CONSTRUCTION: ANNULUS	WELL CONSTRUCTION: CASING	SOIL SAMPLING: SAMPLER USED	SOIL SAMPLING: BLOWS/6" INTERVAL	SOIL SAMPLING: INTERVAL SAMPLED	SOIL SAMPLING: RECOVERY	SOIL SAMPLING: ANALYTICAL SAMPLE (A,B,C)	WATER LEVEL (INITIAL/STATIC)	DEPTH (FEET)	INSTRUMENT READING (ppm)	USCS GROUP SYMBOL	SAMPLE TYPE, INTERVAL, DESCRIPTION
Neat Cement Grout	8" SCH 40 PVC Blank	SS	6 6 15					120	1.0	SW	120-130 Same as 110-120
								125			130-140 Same as above except lense of clay @ 131' bgs ~ 2" thick. Clay layer contains 20% gravel. Stopped @ 130' bgs on 8.19.02 @ 1700
			10 14					130		SW	
								135			
								140			

ANALYTICAL SAMPLE ID (SEE ABOVE FOR LOCATION)

A
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FORSGREN ASSOCIATES/BROWN AND CALDWELL

BOREHOLE/WELL LOG

LOCATION OF BORING

N W E S

SCALE

CLIENT	USACE
LOCATION	Hawthorne, NV
PROJECT NAME	HWAD
JOB NUMBER	00729.002
DRILLING CONTRACTOR	Cascade
RIG TYPE (CIRCLE ONE)	HSA X DP MUD ARCH NONE OTHER
DRILLING METHOD, FLUID USED	HSA
SOIL SAMPLING METHOD (CIRCLE ONE)	SPLIT SPOON X CC ACETATE NONE OTHER
MONITORING INSTRUMENT (CIRCLE ONE)	PIC X FID LEL RAD NONE OTHER
SURFACE CONDITIONS (CIRCLE ONE)	ASPHALT CONCRETE DIRT X DRY WET OTHER

BORING NUMBER: IRPMW50B

SHEET 8 OF 10

DRILLING	START	FINISH
TIME	1445	1345
DATE	08.20.02	08.20.02

WELL CONSTRUCTION	START	FINISH
TIME	1345	0900
DATE	08.20.02	08.21.02

FINE GRAINED AND ORGANIC SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, SIZE DISTRIBUTION, PLASTICITY, DRY STRENGTH, DILATANCY, TOUCHNESS, MOISTURE, ODOR, STRUCTURE, CONSISTENCY, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, CONTACT DESCRIPTION

COARSE GRAINED SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, GRADATION (g/s/l), SIZE DISTRIBUTION, PLASTICITY, SHAPE, ANGULARITY, MOISTURE, ODOR, STRUCTURE, CEMENTATION, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, MINERALOGY, CONTACT DESCRIPTION

WELL CONSTRUCTION: ANNULUS	WELL CONSTRUCTION: CASING	SOIL SAMPLING: SAMPLER USED	SOIL SAMPLING: BLOWS/6" INTERVAL	SOIL SAMPLING: INTERVAL SAMPLED	SOIL SAMPLING: RECOVERY	SOIL SAMPLING: ANALYTICAL SAMPLE (A,B,C)	WATER LEVEL (INITIAL/STATIC)	DEPTH (FEET)	INSTRUMENT READING (ppm)	USCS GROUP SYMBOL	SAMPLE TYPE, INTERVAL, DESCRIPTION
Neat Cement Grout	2" SCH40 PVC Blank		7(6) X X					140	8.0	SM	140-150 Silty sand w/ gravel, lt gray, (20, 55, 25), SM, no plasticity, subrounded, dry, no odor, homogeneous, weak cementation, high-med perm, sands: 20% course, 30% medium, 50% fines dense sand
								145			
											150-160 Well graded sands, lt brown, (15, 65, 20), SW, no plasticity, subrounded, dry, no odor, homogeneous, weak cementation, med perm sands: 10% course, 30% medium, 60% fines dense sands
			60(6) X X					150	200	SW	
								155			
								160			

ANALYTICAL SAMPLE ID (SEE ABOVE FOR LOCATION)

A _____ D _____

B _____ E _____

C _____ F _____

FORSGREN ASSOCIATES/BROWN AND CALDWELL

BOREHOLE/WELL LOG

LOCATION OF BORING

N W E S

SCALE.

CLIENT: USACE

LOCATION: Hawthorne, NV

PROJECT NAME: HWAD

JOB NUMBER: 08329.002

DRILLING CONTRACTOR: Cascade

RIG TYPE (CIRCLE ONE): HSA DP MUD ARCH NONE OTHER

DRILLING METHOD, FLUID USED: HSA

SOIL SAMPLING METHOD (CIRCLE ONE): SPLIT SPOON CC ACETATE NONE OTHER

MONITORING INSTRUMENT (CIRCLE ONE): PID FID LEL RAD NONE OTHER

SURFACE CONDITIONS (CIRCLE ONE): ASPHALT CONCRETE DIRT DRY WET OTHER

BORING NUMBER: IRBMW5013

SHEET 9 OF 10

DRILLING	
START	FINISH
TIME 1445	TIME 1345
DATE 08.19.02	DATE 08.20.02

WELL CONSTRUCTION	
START	FINISH
TIME 1345	TIME 0900
DATE 08.20.02	DATE 08.21.02

FINE GRAINED AND ORGANIC SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, SIZE DISTRIBUTION, PLASTICITY, DRY STRENGTH, DILATANCY, TOUGHNESS, MOISTURE, ODOR, STRUCTURE, CONSISTENCY, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, CONTACT DESCRIPTION

COARSE GRAINED SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, GRADATION (g/cm), SIZE DISTRIBUTION, PLASTICITY, SHAPE, ANGULARITY, MOISTURE, ODOR, STRUCTURE, CEMENTATION, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, MINERALOGY, CONTACT DESCRIPTION

WELL CONSTRUCTION: ANNULUS	WELL CONSTRUCTION: CASING	SOIL SAMPLING: SAMPLER USED	SOIL SAMPLING: BLOWS/6" INTERVAL	SOIL SAMPLING: INTERVAL SAMPLED	SOIL SAMPLING: RECOVERY	SOIL SAMPLING: ANALYTICAL SAMPLE (A,B,C)	WATER LEVEL (INITIAL/STATIC)	DEPTH (FEET)	INSTRUMENT READING (ppm)	USCS GROUP SYMBOL	SAMPLE TYPE, INTERVAL, DESCRIPTION
Neat Cement Grout	2" SCH 40 PVC Blank		(4)(6)					160	320	SP	160-170 Poorly graded sands, lt brown, (15, 75, 10), SP, no plasticity, subrounded, dry, no odor, homogeneous, weak cementation, low-med perm, 80% Fine sand w/ 10% course & 10% medium sands, dense-very dense sands
								165			
			(4)(6)					170	380	ML	170- Sandy silt, lt brown, (5, 25, 70), ML, med plasticity, low dry strength, no dilatancy, low toughness, dry, no odor, homogeneous, low perm, soft
								175			
								180			

ANALYTICAL SAMPLE ID (SEE ABOVE FOR LOCATION)

A
B
C
D
E
F

FORSGREN ASSOCIATES/BROWN AND CALDWELL

BOREHOLE/WELL LOG

LOCATION OF BORING

N W E S

SCALE

CLIENT	USACE
LOCATION	Hawthorne, NV
PROJECT NAME	HWAD
JOB NUMBER	00729.002
DRILLING CONTRACTOR	Cascade
RIG TYPE (CIRCLE ONE)	HSA DP MUD ARCH NONE OTHER
DRILLING METHOD, FLUID USED	HSA
SOIL SAMPLING METHOD (CIRCLE ONE)	SPLIT SPOON CC ACETATE NONE OTHER
MONITORING INSTRUMENT (CIRCLE ONE)	PID FID LEL RAD NONE OTHER
SURFACE CONDITIONS (CIRCLE ONE)	ASPHALT CONCRETE DRY DAY WET OTHER

BORING NUMBER: IRPMW50B

SHEET 10 OF 10

DRILLING	START	FINISH
TIME	08.19.02	08.20.02
DATE	1445	1345

WELL CONSTRUCTION	START	FINISH
TIME	1345	0900
DATE	08.20.02	08.21.02

FINE GRAINED AND ORGANIC SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, SIZE DISTRIBUTION, PLASTICITY, DRY STRENGTH, DILATANCY, TOUGHNESS, MOISTURE, ODOR, STRUCTURE, CONSISTENCY, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, CONTACT DESCRIPTION

COARSE GRAINED SOIL DESCRIPTION: GROUP NAME, MUNSELL COLOR, COLOR, GRADATION (g/s/l), SIZE DISTRIBUTION, PLASTICITY, SHAPE, ANGULARITY, MOISTURE, ODOR, STRUCTURE, CEMENTATION, RELATIVE PERMEABILITY, LOCAL GEOLOGIC NAME, MINERALOGY, CONTACT DESCRIPTION

WELL CONSTRUCTION: ANNULUS	WELL CONSTRUCTION: CASING	SOIL SAMPLING: SAMPLER USED	SOIL SAMPLING: BLOWS/6" INTERVAL	SOIL SAMPLING: INTERVAL SAMPLED	SOIL SAMPLING: RECOVERY	SOIL SAMPLING: ANALYTICAL SAMPLE (A,B,C)	WATER LEVEL (INTIAL/STATIC)	DEPTH (FEET)	INSTRUMENT READING (ppm)	USCS GROUP SYMBOL
#2/12 SAND	2" .010 slotted SCH 40 PVC	SS	18 50				▽	180	200	SP
								185		
								190		
								195		
								200		

SAMPLE TYPE: INTERVAL DESCRIPTION

180 - Poorly graded sands, lt brown, SP (15, 75, 10), nonplastic, subrounded, wet, no odor, homogeneous, weak cementation, high perm, Sands = 80% course 10% medium, 10% Fines

190 - Unable to recover sample
TD boring = , wellset @ 195'
Well materials:
- 15' screen (.010 slott), 180' blank SCH 40, 6" threaded cap
- Sand = 195' - ~~180'~~ 178' = 17' = 5.4 ft³, used 4 bags
- Seal = 2-50 lb bags Enviroplug medium
  heranite chips = 6.5' seal
- Cement grout = 171.5 ft³ 2.44 gal/ft³ = 418 gal
  - used 520 gals + 39 bags cement
  - used 4 bags concrete for well box

8/21/02
TD well = 197.40 (well casing)
DTW = 176.22

ANALYTICAL SAMPLE ID (SEE ABOVE FOR LOCATION)

A _____ D _____
B _____ E _____
C _____ F _____