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

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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. 83382
Permit No.
Basin MOC

NOTICE OF INTENT NO. 70592

1. OWNER US Army, Hawthorne Army Depot
MAILING ADDRESS 1 S maine St.
Hawthorne NV 89415-5904

ADDRESS AT WELL LOCATION

2. LOCATION ~~SW~~ ~~1/4~~ ~~NE~~ 1/4 Sec. 5 T. 8 N/S R. 30 E. Mineral County

PERMIT NO. 40392 NW (Issued by Water Resources) | 6-30032 (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 Auger

6. LITHOLOGIC LOG MW 12

Material	Water Strata	From	To	Thickness
Gravelly Sand		0	5	5
Medium Sand		5	10	5
Medium Sand		10	15	5
Clayey Silt		15	20	5
Course Gravel		20	25	5
Sandy Clay		25	30	5
Moist Silty Sand		30	35	5
Sandy Gravel		35	40	5
Sand Gravel		40	45	5
Course Sand		45	47	2
Clayey Silty Sand		47	50	3
Course Sand/Cobbles		50	55	5
Course Sand		55	60	5
Course Silty Sand		60	62	2
Brown Clay		62	65	3
Clayey Sand		65	70	5
Fine Sand		70	75	5
Clay to medium Sand	✓	75	80	5
Sandy Silty Clay	✓	80	85	5
Medium Sand	✓	85	90	5
Course Clayey Sand	✓	90	95	5
Medium Grain Sand	✓	95	100	

Date started 1-25, ~~19~~ 2001
Date completed 2-02, ~~19~~ 2001

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

	G.P.M.	Draw Down (Feet Below Static)	Time (Hours)
Bailer	2.5	Bailed Dry	

8. WELL CONSTRUCTION
Depth Drilled 100 Feet Depth Cased 92 Feet

HOLE DIAMETER (BIT SIZE)

	From	To
8 Inches	0 Feet	100 Feet
10 Inches	0 Feet	93 Feet
Inches	Feet	Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
4 1/2		SCH 40 PVC	0	72

Perforations:
Type perforation Mill Slot
Size perforation 020
From 72 feet to 52 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

Surface Seal: ☒ Yes ☐ No
Depth of Seal 62
Placement Method: ☒ Pumped ☐ Poured
Seal Type: ☒ Neat Cement ☐ Cement Grout ☐ Concrete Grout
Bentonite Chips 62-67
Gravel Packed: ☒ Yes ☐ No
From 92 feet to 67 feet

9. WATER LEVEL
Static water level 78 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 Water Development Corp (Contractor)
Address P.O. Box 141 (Contractor)
Zamora CA 95698
Nevada contractor's license number issued by the State Contractor's Board 0012552
Nevada driller's license number issued by the Division of Water Resources, the on-site driller 2111
Signed James Whelley (By driller performing actual drilling on site or contractor)
Date 3-1-01

(Rev. 3-91)

USE ADDITIONAL SHEETS IF NECESSARY

(O)-627

TETRA TECH, INC.
FIELD LOG OF BORING

Boring #: MW12
Sheet 1 of 5

Project Name and Location: HWAD Bldg 336 Ph 3 GW invest.			TC Number: 113770202
Elevation: ~4000	Date and Time Started: 1/25/01 2:55		Date and Time Completed: 1/26/01 12:30
Completion Depth: ~100' bgs	Samples:	Drive:	1-liter:	VOA:	Other: No Samples
Boring Diameter & Drilling Method: 8" OD HSA coring		Water Level:	First (date/time):	Second (date/time):
Sample Type: CME core 5'	Hammer Wt.:	Drop:	Boring Location: west end of Bldg 102-51
Drilling Co: WDC	Driller: Jimmy		Geologist: R. Marvin/T. Whitehead

Depth (ft.)	Sample No.	Sample Interval	Recovery	Blow Count	Description	Graphic Symbol	USCS Symbol	Estimated % of Gr	Sa	Si	Cl	P.I.D. Reading	Comments
0	0-5'		30"		Surface cover: worn A-C/gravel pavement								
1					Mixed med. gr. sand and silty-sand. Becoming massive med. gr. sand at end of interval.				60	30	10		
2													
3	5'-10'		20"		Medium gr. qtz sand, angular to sub-angular grains. Tan to light brown.				70	25	5		
4													
5	10-15		24"		Medium gr. qtz sand with cm. scale clay to silty clay interbeds Tan to light brown			5	60	25	10		
6													
7													
8	15-20		26"		light green clayey silt grading down into medium gr. sand and into coarse bright oronge gravel.			10	40	30	20	4.0	
9													
10													
11	20-25		16"		Coarse gravel (light brown) then coarse qtz sand (yellow-brown).							2.3	16:18
12													
13	25-30		16"		sandy clay then fine yellow-tan sand then light tan, medium sand				60	30	10	2.2	
14													
15	30-35		20"		Moist silty medium gr. sand with 5% gravel then rounded gravel sand mixture.			10 ~~5~~	60	25	5 ~~10~~		
16													

BORING LOG FORM

Boring #: MW 12
Sheet 2 of 5

Project Name and Location: HWAD Bldg 336 Ph III GW Invest
TC Number: 113770202

Depth	Sample No.	Sample Interval	Recovery	Blow Count	Description	Graphic Symbol	USCS Symbol	Estimated % of Gr	Sa	Si	Cl	P.I.D. Reading	Comments
	35 - 40		22"		Sandy gravel with rocks. 2 inch diameter rock recoverd in core, a larger, rotten granite rock was crush into core barrel. Light tan color. Interval is dry			30	40	30		1.0	
	40 - 45				Sandy gravel with some clasts up to 2 inch grading down into silty fine grained sand. Interval is damp.			20	60	15	5	0.1	17:00
ND -25													
-5 -26	45 - 47		16"		Coarse sand with sharp bottom contact to well sorted fine sand. Interval is damp. brown-tan to yellow tan color.							0	7:45
	47 - 50		24"		Clayey - silty sand (Massive) to 18" of interval, sharp basal contact into bedded (cm-scale) medium grained qtz sand. Iron-oxide @ contact.							0	8:20
	50 - 55		26"		Coarse, poorly sorted qtz sand with ~~some~~ large cobbles @ contact with underlying cm scale clay layer. Crushed granite cobble @ end of interval.	??							

Continued on page 3

BORING LOG FORM

Boring #: MW-12
Sheet 3 of 5

Project Name and Location:

TC Number:

Depth	Sample No.	Sample Interval	Recovery	Blow Count	Description	Graphic Symbol	USCS Symbol	Estimated % of Gr	Sa	Si	Cl	P.I.D. Reading	Comments
	55-60		26"		Poorly sorted coarse sand with 5% large gravel (to 1.5 inch dia.) for top 16 inches of interval. Sharp contact with underlying silty sand with cm scale clay layers. Interval is moist. Upper interval is light yellow-tan, lower interval is brown.	??		5	50	25	20	1.2	
	60-62		24		Coarse silty sand, saturated with H_2O. Sharp basal contact to massive brown clay	?? Clay			30	20	50	1.0	Free H_2O @~60'
*3	62-65		24		Massive brown to green-brown clay	Clay				10	90		
	65-70		49"		Massive brown to olive-brown clay for 1 foot. Gradational contact to clayey sand (saturated H_2O) zone 6 inches thick then sharp contact to underlying massive brown clay. Clean, bright white fine, silty sand within clay (probable volcanic ash). Sandy clay @ ~~end~~ bottom of interval.	Clay; white sand ash; Clay			10	10	80	0.9	10:00; H_2O @~ 66'; H_2O @~69'
	70-75		24"		Well sorted fine sand tan to yellow tan. Sharp contact 6 inches above end of interval with massive tan clay below contact	?? ??			70	15	15	0.5	water dropping into core barrel from above.

BORING LOG FORM

Boring #: MW 12
Sheet 4 of 5

Project Name and Location:

TC Number:

Depth	Sample No.	Sample Interval	Recovery	Blow Count	Description	Graphic Symbol	USCS Symbol	Estimated % of Gr	Sa	Si	Cl	P.I.D. Reading	Comments
	75-80		60"		1 ft of massive orange-tan clay (wet). Sharp contact to underlying medium grained sand (damp to wet) gradational down into well sorted fine sand @ 3½ feet of interval. Saturated with H_2O @ ~77½ feet bgs. Gradational contact with clayey fine sand to bottom of interval (80').	clay			60	20	20	0.1	100% recovery; 10:30; Saturated sand @ ~77½'
	80-85		40"		Sandy-silty tan clay for 18 inches. Sharp contact with well sorted fine sand (saturated with H_2O) 2 foot thick. Graditional contact with underlying orange-tan massive clay. Razor sharp contact with underlying well sorted fine sand (saturated with H_2O) to end of interval	?? clay ? fine sand			50	20	30	0.2	Saturated Sand @ ~81½. Saturated Sand 84' to 85'
	85-90		32"		well sorted, micaceous, medium grained qtz sand. Saturated with H_2O. At 85' the sand is loose, flowing.	??			90	10		0	Saturated Sand 85'-90'
	90-95		60"		Coarse Clayey Sand grading down into silty-sandy clay grading down into clayey silt to bottom of interval. Entire interval is tightly packed and damp.								11:00 100% recovery.

BORING LOG FORM

Boring #: MW 12

Sheet 5 of 5

Project Name and Location:

TC Number: 11377-0202

Depth	Sample No.	Sample Interval	Recovery	Blow Count	Description	Graphic Symbol	USCS Symbol	Estimated % of Gr	Sa	Si	Cl	P.I.D. Reading	Comments
	95-100		60"		well sorted medium grained sand, massive, yellow-tan-olive color. Entire interval in saturated with H_2O. Interval is weakly packed to loose.				70	30			100% recovery 11:45
						EOH 100'							

Monitoring Well Construction Data
Hawthorne Army Depot, Hawthorne, Nevada

Monitoring Well: MW12 **Date:** 02/02/01

Date of well construction: 02/02/01 **Time of well construction:** 10:30 - 13:00
Reference elevation during construction: ~4000 feet
Depth ground water first encountered: 78 feet bgs
Depth of static ground water before construction: N/A
Depth of static ground water after construction:
Boring depth: 93 feet bgs **Casing length:** ~92 feet
Borehole diameter: 10 inch **Well casing diameter:** 4 inch

Blank Casing:
Type Schedule 40 **Interval** ~72 feet bgs to surface
Material PVC **Joint type** Flush Thread

Screen Casing:
Type Schedule 40 **Interval** ~92 feet bgs to 72 feet bgs
Material PVC **Slot size/design** 0.02

Centralizer Depths: none

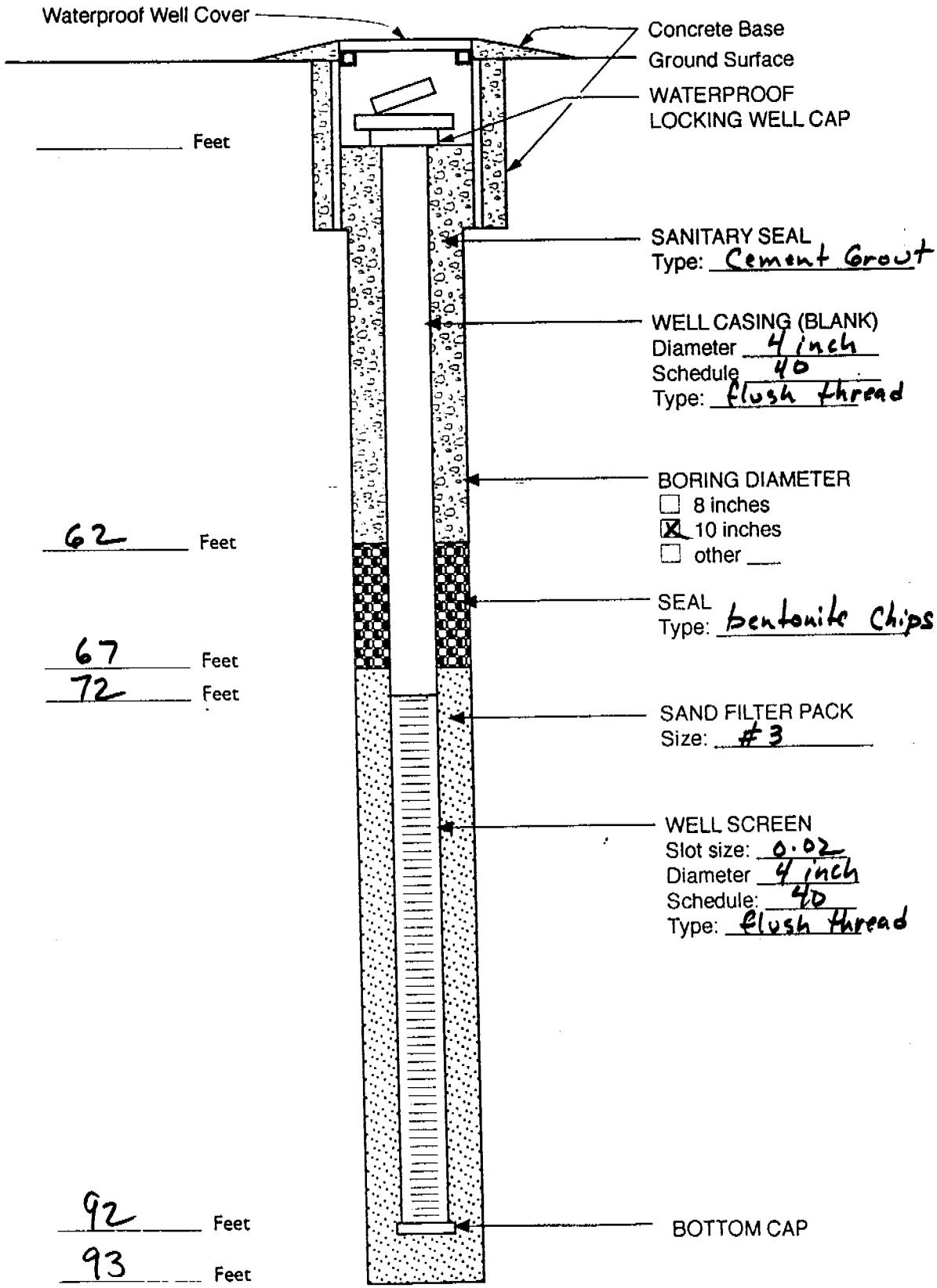
Filter Pack:
Material High-quality silica sand **Interval** 92' bgs to 67' bgs
Gradation **Uniformity coefficient**
Size #3 **Volume calculated** 11 cubic feet
Volume actual 10.5 cubic feet **Placement method** poured through auger

Transition Sand:
Material **Interval**
Gradation **Uniformity coefficient**
Size **Volume calculated**
Volume actual **Placement method**

Annular Sealant:
Material bentonite chips **Interval** ~67 feet bgs to 62 feet bgs
Volume calculated **Volume actual** 3 1/2 sacks
Placement method Hydrated with 9 gallons H_2O

Grout:
Material Cement with ~1% bentonite **Interval** ~62 feet bgs to 1 foot bgs
Volume calculated 198 gallons **Volume actual** 230 gallons
Placement method tremie pipe.

Comments: The sub-surface formations are soaking up cement grout accounting for the ~~at~~ actual volume exceeding the calculated volume. The grout has settled from 1 foot bgs to approx. 15 feet bgs. The open upper most portion of the hole will be grouted during surface completion.

Monitoring Well Construction Sheet

Project: Bldg. 336 Phase 3 Ground Water Invest.
Date: 02/02/01
Project No.: 11377-02-02
Driller: W.D.C. - Jimmy F.
Well Number: MW 12
Drilling Method: Hollow Stem Auger
Field Geologist: R. Marvin
Registered Geologist: _____