INL/EXT-13-28787

2012 Idaho National Laboratory Water Use Report and Comprehensive Well Inventory (Revision 21)

June 2013

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June 2013

Idaho National Laboratory
Idaho Falls, Idaho 83415

http:www.inl.gov

Prepared for the
U.S. Department of Energy
Office of Nuclear Energy
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ABSTRACT

This *2012 Idaho National Laboratory Water Use Report and Comprehensive Well Inventory (Revision 21)* provides water use information (monthly annual average and total annual volume) for production and potable water wells at the Idaho National Laboratory for Calendar Year 2012. It also provides detailed information for new, modified, and abandoned (decommissioned) wells and holes. Three new wells were drilled and completed in Calendar Year 2012. Two wells, RWMC-GAS-V-078 and USGS-092 were modified. No wells or holes were decommissioned. Detailed construction information for the new and modified wells is provided. Location maps are included, provided survey information was available.

This report is being submitted in accordance with the Water Rights Agreement between the State of Idaho and the United States, for the United States Department of Energy (dated 1990) and the subsequent Partial Decree for Water Right 34-10901 issued June 20, 2003.

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ACRONYMS

ATR Complex	Advanced Test Reactor Complex
ARP	Accelerated Retrieval Project
bls	below land surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFA	Central Facilities Area
CITRC	Critical Infrastructure Test Range Complex
CWI	Comprehensive Well Inventory
CY	calendar year
IDWR	Idaho Department of Water Resources
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
MFC	Materials and Fuels Complex
NRF	Naval Reactors Facility
RWMC	Radioactive Waste Management Complex
TAN	Test Area North
USGS	United States Geological Survey

2012 Idaho National Laboratory Water Use Report and Comprehensive Well Inventory (Revision 21)

1. INTRODUCTION

This *2012 Idaho National Laboratory Water Use Report and Comprehensive Well Inventory, (Revision 21)* is being submitted in accordance with the *Water Rights Agreement between the State of Idaho and the United States, for the United States Department of Energy* (Department of Justice 1990) and the subsequent Partial Decree for Water Right 34-10901 (District Court 2003) issued June 20, 2003. As previously agreed (Street 2001), the annual Water Use Report and Comprehensive Well Inventory (CWI) are being combined and submitted as one report.

The Idaho National Laboratory (INL) Site water use reported is for Calendar Year (CY) 2012. Section 2 provides the annual volume of water diverted, maximum and average diversion rates and "available" pumping level (water depth) as required by Section 6.2.3 of the Water Rights Agreement for production and potable water wells at the INL Site. Section 2.1 provides monthly, monthly average, and total annual volumes diverted and water depths (as available) for each production or potable water well. Section 2.2 provides the total monthly volume of water diverted for each facility and the total annual volume for all INL Site production or potable water wells. Section 2.3 provides a summary of the annual water usage including the total volume of water diverted, maximum diversion rate and average monthly volume of water diverted for all production and potable wells.

Section 3 is the CWI for the INL Site as required by Section 6.2.2 of the Water Rights Agreement. Section 3.1 provides information for new and modified wells, and Section 3.2 provides information for abandoned (decommissioned) wells and boreholes. Three new wells were drilled and completed in Calendar Year 2012. Two wells, RWMC-GAS-V-078 and USGS-092 were modified. Physical modification work on RWMC-GAS-V-078 was completed in October 2011; however, the documentation for this well was not completed until early 2012. The majority of the modification was completed on well USGS-092 in December, 2012. In February, 2013, a 2nd casing extension was added, a concrete pad placed and the well was surveyed. No wells or boreholes were decommissioned during 2012.

Appendix A provides location maps and diagrams containing detailed construction information for the new and modified wells.

2. 2012 WATER USE INFORMATION FOR THE IDAHO NATIONAL LABORATORY

2.1 Water Volume for Individual Idaho National Laboratory Production or Potable Water Wells

Eight major facilities are located at the INL Site:

- Advanced Test Reactor Complex (ATR Complex)
- Central Facilities Area (CFA)
- Critical Infrastructure Test Range Complex (CITRC)
- Idaho Nuclear Technology and Engineering Center (INTEC)
- Materials and Fuels Complex (MFC)
- Naval Reactors Facility (NRF)
- Radioactive Waste Management Complex (RWMC)
- Test Area North (TAN).

Each major facility is serviced by one or more production and/or potable water wells. Tables 1 through 8 show the water information for production or potable wells at these facilities.

Seven wells are grouped under the CFA facility. Wells CFA-1 and CFA-2 serve the actual CFA facility. The other five wells (Badging Facility Well, EBR-1, Fire Station Well, Rifle Range Well, and Site-04 [Dairy Farm]) serve smaller facilities or processes. The Fire Station Well has occasionally been used for filling water trucks for construction purposes. However, for 2012, the Fire Station Well was not used because the pump remains inoperable. The Dairy Farm Well is used for irrigating various research projects. The wells identified at other INL Site facilities provide water primarily for that specific facility.

Each table provides the monthly annual average and total annual volume of water diverted from each production or potable well during CY 2012. The tables provide water depth as available. Many of the wells were not designed with an access line to measure the water depth. Each well is identified by its official well name, the most common alias name, and the well identification number. Footnotes are provided where applicable.

Section 5.3 of the Water Rights Agreement states: “The use of water for fire suppression benefits the public. Water diverted for fire suppression may be taken randomly, without a definition of the specific elements of a recordable water right, and if so diverted for fire suppression, existing water rights shall not be diminished.” The volumes in the tables may include water used for fire suppression activities. However, there is no way to distinguish water used for fire suppression and water used for other activities.

Table 1. Advanced Test Reactor Complex water volume for 2012.

Volume in Gallons																
Well	Alias	INL Well ID	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual Volume	Average Monthly Volume
TRA-01	NO. 1 DEEP WELL	356	28,588,000	7,031,000	33,175,000	5,617,000	25,145,000	9,841,000	9,909,000	28,442,000	396,000	39,724,000	3,655,000	38,961,000	230,484,000	19,207,000
TRA-03	NO. 3 DEEP WELL	358	25,000	585,000	23,000	13,000	27,000	10,000	468,000	92,000	343,000	436,000	6,000	33,000	2,061,000	171,750
TRA-04	NO. 4 DEEP WELL	359	7,536,000	21,341,000	13,000	29,614,000	6,575,000	21,099,000	36,248,000	22,740,000	46,338,000	45,000	29,303,000	2,632,000	223,484,000	18,623,667
TRA-1863		1863	3,002,200	2,854,700	3,599,300	3,567,900	3,152,900	3,265,800	3,892,100	1,974,100	1,320,300	2,968,000	3,237,400	2,896,800	35,731,500	2,977,625
Monthly total			39,151,200	31,811,700	36,810,300	38,811,900	34,899,900	34,215,800	50,517,100	53,248,100	48,397,300	43,173,000	36,201,400	44,522,800		
Total annual volume for ATR Complex**: 491,760,500**																
Depth to water, static water level: Date TRA-1863 September 27, 2012 469.99 feet below the brass cap																

Table 2. Central Facilities Area water volume for 2012.

Volume in Gallons																
Well	Alias	INL Well ID	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual Volume	Average Monthly Volume
CFA-1	CFA-651	93	1,424,700	1,318,600	1,416,800	1,327,300	1,801,800	2,856,700	10,046,700	10,447,900	9,371,700	2,152,300	1,607,800	1,638,200	45,410,500	3,784,208
CFA-2	CFA-642	94	0	0	0	0	0	0	184,700	0	0	23,600	0	0	208,300	17,358
Badging Facility Well	B27-605 Main Gate	88	1,640	4,170	6,300	2,740	2,400	3,260	3,310	3,870	5,100	5,030	3,510	3,720	45,050	3,754
EBR-1		149	94	494	4,858	570	35,185	8,866	64,184	26,610	2,102	517	1,540	1,620	146,640	12,220
Rifle Range Well	B21-607 Gun Range	267	1,310	1,400	2,530	2,740	2,430	1,570	1,340	1,860	1,840	2,220	1,370	1,570	22,180	1,848
Site-04	B16-604 Dairy Farm	273	0	0	0	43,000	0	21,460	10,510	10,540	0	0	17,050	0	102,560	8,547
Fire Station Well[a]	Fire Station #2	158	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monthly total			1,427,744	1,324,664	1,430,488	1,376,350	1,841,815	2,891,856	10,310,744	10,490,780	9,380,742	2,183,667	1,631,270	1,645,110		
Total annual volume for CFA area: **45,935,230**																
a. Pump for the Fire Station Well is inoperable. Pump has not been repaired or replaced.																

Table 3. Critical Infrastructure Test Range Complex water volume for 2012.

Volume in Gallons																
Well	Alias	INL Well ID	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual Volume	Average Monthly Volume
SPERT-1	PBF Deep Well No. 1	280	117,500	49,900	46,300	75,600	46,900	102,200	114,900	46,900	33,800	56,600	45,600	87,900	824,100	68,675
SPERT-2	PBF Deep Well No. 2	281	42,100	47,000	58,200	35,000	25,400	35,700	24,400	35,300	48,200	46,800	93,500	11,900	503,500	41,958
Monthly total			159,600	96,900	104,500	110,600	72,300	137,900	139,300	82,200	82,000	103,400	139,100	99,800		
Total annual volume for CITRC: **1,327,600**																

Table 4. Idaho Nuclear Technology and Engineering Center water volume for 2012.

Volume in Gallons																
Well	Alias	INL Well ID	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual Volume	Average Monthly Volume
CPP-01	F-UTI-670	98	17,558,000	15,621,000	15,867,000	12,117,000	1,548,000	15,869,000	750,000	13,979,000	1,973,000	14,277,000	5,663,000	5,529,000	120,751,000	10,062,583
CPP-02	F-UTI-671	99	0	0	1,513,000	2,141,000	16,160,000	616,000	15,539,000	0	12,914,000	1,041,000	8,885,000	8,454,000	67,263,000	5,605,250
CPP-04[a]		101	485,293	491,725	495,206	491,832	437,783	246,716	214,567	230,290	196,611	196,767	172,831	190,906	3,850,523	320,877
ICPP-POT-A-012[a]	F-UTI-699 or CPP-05	1186	485,293	491,725	495,206	491,832	437,783	246,716	214,567	230,290	196,611	196,767	172,831	190,906	3,850,523	320,877
Monthly total			18,528,585	16,604,449	18,370,412	15,241,664	18,583,565	16,978,431	16,718,134	14,439,579	15,280,221	15,711,534	14,893,661	14,364,811		
Total annual volume for INTEC: **195,715,046**																
a. One flow meter was used for potable wells CPP-04 and ICPP-POT-A-012. Operations switched between the wells weekly, so the totals are estimated to be 50% for each well.																

Table 5. Materials and Fuels Complex water volume for 2012.

Volume in Gallons																
Well	Alias	INL Well ID	January	February	March	April	May	June	July	August[a]	September	October	November	December	Total Annual Volume	Average Monthly Volume
EBR-II #1[b]	EBR-1	150	952,500	1,050,500	1,176,500	1,021,000	1,189,000	869,500	1,322,500	4,816,500	993,000	1,217,000	1,373,000	1,258,500	17,239,500	1,436,625
EBR-II #2[b]	EBR-II	151	952,500	1,050,500	1,176,500	1,021,000	1,189,000	869,500	1,322,500	4,816,500	993,000	1,217,000	1,373,000	1,258,500	17,239,500	1,436,625
Monthly total			1,905,000	2,101,000	2,353,000	2,042,000	2,378,000	1,739,000	2,645,000	9,633,000	1,986,000	2,434,000	2,746,000	2,517,000		
Total annual volume for MFC**: 34,479,000**																
a. Increased water volume for August was due to filling the Materials and Fuels Complex new evaporative sewage lagoons for seepage testing.																
b. The two wells share one flow meter. Operations switch between the wells, so the totals are estimated to be 50% for each well.																
Depth to water, static water level:																
Date	EBR-II #1	EBR-II #2														
September 2012	661.1 feet bls	662.8 feet bls														
November 2012	659.5 feet bls	660.0 feet bls														

Table 6. Naval Reactors Facility water volume for 2012.

Volume in Gallons																
Well	Alias	INL Well ID	January	February	March	April	May	June	July[a]	August[a]	September	October[a]	November	December	Total Annual Volume	Average Monthly Volume
NRF-1	1	240	249,000	75,000	0	45	51,000	0	1,230,000	0	0	27,000	31,000	198,000	1,861,045	155,087
NRF-2[b]	2	241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRF-3[c]	3	242	105,433	480,085	120,172	259,697	253,716	247,220	367,825	99,703	105,765	104,886	142,108	297,257	2,583,867	215,322
NRF-4	4	869	2,020,000	143,185	1,803,000	1,451,000	1,347,000	1,323,000	8,971,000	5,858,000	1,594,000	2,446,000	958,000	1,099,000	29,013,185	2,417,765
NRF-14[c,d]		2204	444,972	166,000	452,500	361,515	393,989	380,364	303,637	436,360	322,538	401,874	382,935	321,427	4,368,111	364,009
Monthly total			2,819,405	864,270	2,375,672	2,072,257	2,045,705	1,950,584	10,872,462	6,394,063	2,022,303	2,979,760	1,514,043	1,915,684		

Total annual volume for NRF: **37,826,208**

a. Elevated volumes for the months of July, August, and October are the result of water being added to both the new sewage lagoons and the old sewage lagoons.

b. NRF-2 was removed from service in 2006. Future use will be determined.

c. Wells NRF-3 and NRF-14 are used as potable water wells.

d. The flow meter for well NRF-14 was out of service from June 2012 to December 2012. The volume of water for this well was estimated using the corresponding months from the 2011 Water Use Report due to the relatively stable water demand for this well.

Depth to water, static water level:

Date	NRF-3	NRF-14
May 2012	385.59 ft bls	385.08 ft bls
November 2012	386.43 ft bls	385.86 ft bls

Table 7. Radioactive Waste Management Complex water volume for 2012.

Volume in Gallons																
Well	Alias	INL Well ID	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual Volume	Average Monthly Volume
RWMC Production		268	412,100	394,600	385,700	528,200	1,126,600	994,200	784,100	1,168,000	1,596,300	374,600	335,100	402,400	8,501,900	708,492
PIT 9 Production Well		2155	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monthly total			412,100	394,600	385,700	528,200	1,126,600	994,200	784,100	1,168,000	1,596,300	374,600	335,100	402,400		

Total annual volume for RWMC: **8,501,900**

Table 8. Test Area North water volume for 2012.

Volume in Gallons																
Well	Alias	INL Well ID	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual Volume	Average Monthly Volume
ANP-01[a]	TAN-612	69	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANP-02	TAN-613	70	25,400	105,900	66,200	69,700	214,500	222,500	240,300	181,500	196,700	244,900	147,800	42,900	1,758,300	146,525
FET-1	TAN-632	154	0	73,200	98,400	181,900	312,300	162,400	0	0	0	0	0	0	828,200	69,017
FET-2	TAN-639	155	334,500	373,600	250,300	317,200	316,100	493,200	812,100	746,500	586,700	560,600	385,400	191,200	5,367,400	447,283
Monthly total			359,900	552,700	414,900	568,800	842,900	878,100	1,052,400	928,000	783,400	805,500	533,200	234,100		

Total annual volume for TAN: **7,953,900**

a. Well is maintained as a backup well for ANP-02.

2.2 Combined Total Volume Diverted from All Production and Potable Water Wells

Table 9 provides the combined total volume from all production and potable water wells at the INL Site during CY 2012. Table 9 includes:

- Total monthly volume of water diverted for each major INL Site facility
- The combined total monthly volume diverted from all the major INL Site facilities
- Monthly average volume diverted for all wells combined
- Monthly maximum volume diverted for all wells combined.
- Total annual volume diverted at the INL Site.

Table 9. Idaho National Laboratory water volume totals for 2012.

Volume in Gallons												
Facility	January	February	March	April	May	June	July	August	September	October	November	December
Advanced Test Reactor Complex	39,151,200	31,811,700	36,810,300	38,811,900	34,899,900	34,215,800	50,517,100	53,248,100	48,397,300	43,173,000	36,201,400	44,522,800
Central Facilities Area	1,427,744	1,324,664	1,430,488	1,376,350	1,841,815	2,891,856	10,310,744	10,490,780	9,380,742	2,183,667	1,631,270	1,645,110
Critical Infrastructure Test Range Complex	159,600	96,900	104,500	110,600	72,300	137,900	139,300	82,200	82,000	103,400	139,100	99,800
Idaho Nuclear Technology and Engineering Center	18,528,585	16,604,449	18,370,412	15,241,664	18,583,565	16,978,431	16,718,134	14,439,579	15,280,221	15,711,534	14,893,661	14,364,811
Materials and Fuels Complex	1,905,000	2,101,000	2,353,000	2,042,000	2,378,000	1,739,000	2,645,000	9,633,000	1,986,000	2,434,000	2,746,000	2,517,000
Naval Reactors Facility	2,819,405	864,270	2,375,672	2,072,257	2,045,705	1,950,584	10,872,462	6,394,063	2,022,303	2,979,760	1,514,043	1,915,684
Radioactive Waste Management Complex	412,100	394,600	385,700	528,200	1,126,600	994,200	784,100	1,168,000	1,596,300	374,600	335,100	402,400
Test Area North	359,900	552,700	414,900	568,800	842,900	878,100	1,052,400	928,000	783,400	805,500	533,200	234,100
Monthly Totals	**64,763,534**	**53,750,283**	**62,244,972**	**60,751,771**	**61,790,785**	**59,785,871**	**93,039,240**	**96,383,722**	**79,528,266**	**67,765,461**	**57,993,774**	**65,701,705**
Maximum monthly diversion total		96,383,722 for August 2012										
Total average monthly volume		68,624,949										
Annual total for 2012		**823,499,384**										

2.3 Water Use Summary

The INL Site's Federal Reserved Water Right is 35,000 acre-ft per year (1.14×10^{10} gal/ yr) and will not exceed a maximum diversion rate of 80 ft^3/s (35,904 gpm). The total volume of water diverted at the INL Site for CY 2012 was approximately 8.23×10^8 gal (see Table 9) or approximately 7.2% of the annual water right. The maximum diversion rate occurred during August at a rate of 4.81 ft^3/s (2,159 gpm). The average monthly volume of water diverted for all INL Site production and potable wells was approximately 6.86×10^7 gal. The INL Site's water use remained well within the established water right.

3. COMPREHENSIVE WELL INVENTORY, REVISION 21

3.1 Idaho National Laboratory New and Modified Wells in Calendar Year 2012

Three new wells were constructed at the INL Site in CY2012; USGS-131A, USGS-137A and USGS-138. Two wells were modified; RWMC-GAS-V-078 and USGS-092. These additions and modifications are listed in Table 10.

USGS-131A is a replacement for USGS-131, located south of U.S. Highway 20/26 (Figure A-1). While attempting to deepen USGS-131, problems occurred and casing could not be recovered from the well. USGS-131 will continue to be used to monitor water levels. Drilling for USGS-131A started in September, 2011 and was completed in August, 2012. A 12 inch borehole was drilled to 8 ft bls and a 10 inch carbon steel surface casing was installed. A 10 inch borehole was drilled to 131 feet bls; 8 inch carbon steel casing was set to 131 ft bls. From 131 ft to 536 ft bls a 6.88 inch borehole was drilled; a 5 inch carbon steel casing was set. Cement grout was placed to 536 ft bls to seal the casings. Using a 4.75 inch tricone bit the hole was drilled from 536 to 1198 ft bls. Three inch PVC casing was placed from -1.38 ft to 1188.8 ft bls. Well USGS-131A (Figure A-2) is equipped with a multilevel monitoring system (Westbay™ MP55).

USGS-137A is located on the southern boundary of the INL Site directly south of RMWC approximately 200 ft north of well USGS-109 (Figure A-1). It was drilled as a replacement well for USGS-137 after that well collapsed near 230 ft bls; USGS-137 is planned for decommissioning in 2013. Drilling for USGS-137A started in June, 2012 and was completed in August, 2012. A 10 inch borehole was drilled to 39 ft bls; an 8 inch carbon steel casing was installed. A 7 7/8 inch borehole was drilled to 331 ft bls; a 5 inch carbon steel casing was installed. Cement grout was placed to 331 ft bls to seal the casings. Using a 4.75 inch tricone bit the hole was drilled from 331 to 984 ft bls. Starting at 984 ft bls a HQ coring bit (3.8 inch borehole) was used and core was collected to 1317 ft bls. After HQ coring, the hole was reamed to 4.75 inch from 984 to 1218 ft bls to accommodate a multi-level Westbay sampling system. However the hole was not stable below 1058 ft bls. There were several attempts to clean out the hole but a decision was made to fill the hole with sluff material to 1058 ft bls. While installing a 3 inch PVC casing equipped with a multilevel monitoring system (Westbay™ MP55), an obstruction was detected at 900 ft bls. Therefore the 3 inch PVC casing was placed from -1.48 to 894.7 ft bls (Figure A-3).

USGS-138 is located in the northwest corner of the INL Site near the Big Lost River Sinks (Figure A-1). The purpose of this well is to look at hydraulic head, specifically to monitor inflows from the Little Lost River Basin system. Drilling began in early October, 2012 and was completed at the end of November, 2012. A 5.75 inch borehole was drilled to 26 ft bls; a 5 inch carbon steel surface casing was set to 26 ft bls. A PQ coring bit (4.875 inch borehole) was used from 26 to 334 ft bls to collect core. Bentonite was placed in the bottom of the hole to 325 ft bls. A 2.5 inch PVC casing was set 3 ft above land surface to 325 ft bls and perforated from 302 to 322 ft bls (screened section). Sand was placed in the annular space around the perforated casing from 295 to 325 ft bls. Bentonite casing seal was placed from 295 to the surface (Figure A-4).

Table 10. Idaho National Laboratory new wells and modified wells in Calendar Year 2012.

Well Name	Type	Borehole Depth (ft bls)	Casing Diameter (in.)	Construction Material	Status	Location	Driller/ License #	Comments
USGS-131A	Monitoring	1198	10 from 0 to 8 ft bls 8 from 0 to 131 ft bls 5 from -0.75 to 536 ft bls 3 from -1.38 to 1188.8 ft bls	Carbon Steel PVC	Active	T02N, R29E, Sec.11, NW ¼, SW ¼, SW ¼	USGS	Non-CERCLA
USGS-137A	Monitoring	1317	8 from 0 to 39 ft bls 5 from -0.47 to 331 ft bls 3 from -1.48 to 894.74 ft bls	Carbon Steel PVC	Active	T02N, R29E, Sec.31, SW ¼, SE ¼, SW ¼	USGS	Non-CERCLA
USGS-138	Monitoring	334	5 from -1 to 26 ft bls 2.5 from -3 to 325 ft bls (perforated from 302 to 322 ft bls)	Carbon Steel PVC	Active	T05N, R30E, Sec.7, NE ¼, SE¼, SW ¼	USGS	Non-CERCLA
RWMC-GAS-V-078	Vapor Port	231	14 from 6 to 21.5 ft bls 4 from 6 to 237 ft bls	Carbon Steel PVC	Active	T02N, R29E, Sec.18, SW ¼, SE ¼, NE ¼	N/A	CERCLA well
USGS-092	Observation	253.4	6 from -3.48 to 25.4 ft bls	Carbon Steel	Active	T02N, R29E, Sec.18, NW ¼, NE ¼, SW ¼	N/A	CERCLA well. Casing extended

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act
USGS U.S. Geological Survey

Two wells (RWMC-GAS-V-078 and USGS-092) are located at RWMC near the Accelerated Retrieval Project (ARP). Wells RWMC-GAS-V-078 and USGS-092, are located in or near the new passageway between ARP-VII and ARP-VIII (Figure A-5). Modifications to the wells were necessary to support construction of the passageway. Planning began in April, 2011 for modification to well RWMC-GAS-V-078 which is located in the middle of the passageway. Well RWMC-GAS-V-078 (Figure 1) is a vapor extraction well operated under a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remediation activity. Even though this well is not an Idaho Department of Water Resources (IDWR) permitted well but rather a CERCLA well, discussions were held with IDWR showing the design (MacConnel 2011). The well head was buried and the sample lines and vapor transmission line were rerouted. Drawing #774232 (Figure A-6) shows how the well head was buried and the rerouting of the lines. This part of the work was completed in October 2011. Documentation was not complete until early 2012; therefore this modification is being included in this update report.

Figure 1. Rerouting of sample lines in well RWMC-GAS-V-078 prior to burial of well head and lines.

Well USGS-092 is used for CERCLA perched water monitoring. The well is located on the side of the passageway between ARP-VII and ARP-VIII. Initial casing extension for well USGS-092 started in October, 2011; ARP VIII construction implemented a design change to increase the final grade in the vicinity of well USGS-092. A decision was made to wait until construction of the passageway was completed before installing a second extension on USGS-092 and performing surveys. This work, which included an increase of 6.4 feet to the final grade in the vicinity of well USGS-092, was completed in December 2012. The second extension was added to the USGS-092 well casing, a new cement pad was installed, and the well was surveyed. This work was completed in February, 2013. The work completed in February 2013 is included in this report because it was part of the same work scope used for well RWMC-GAS-V-078. A construction diagram reflecting the changes in depths in well USGS-092 is shown in Figure A-7.

The CWI database maintains detailed well information that can be provided electronically to the state upon request.

3.2 Idaho National Laboratory Wells Decommissioned in Calendar Year 2012

No wells or boreholes were abandoned (decommissioned) during calendar year 2012.

4. REFERENCES

Department of Justice, Environment and Natural Resources Division, 1990, "Water Rights Agreement between the State of Idaho and the United States, for the United States Department of Energy", CCN 23795.

District Court-SRBA, Twin Falls Co., Idaho, 2003, Order of Partial Decree for Water Right 34-10901, (United States Department of Energy, Idaho National Engineering and Environmental Laboratory), Case No. 39576, June 20, 2003, CCN 23795.

Jessmore, Jim, email to Renee Bowser, February 5, 2012, "Summary of Modifications to Well Locations 7V and USGS-092,", CCN 314919.

Macconnel, Michael J., email to Brent N. Burton, August 9, 2011, "IDWR Conversation – Well 7V Modification," CCN 312269

Street, L. V., INEEL, to D. Dunn, IDWR, September 4, 2001, "INEEL Comprehensive Well Surveys and Annual Water Use Reports," CCN 25370.

Appendix A

Maps and Construction Diagrams for New and Modified Wells

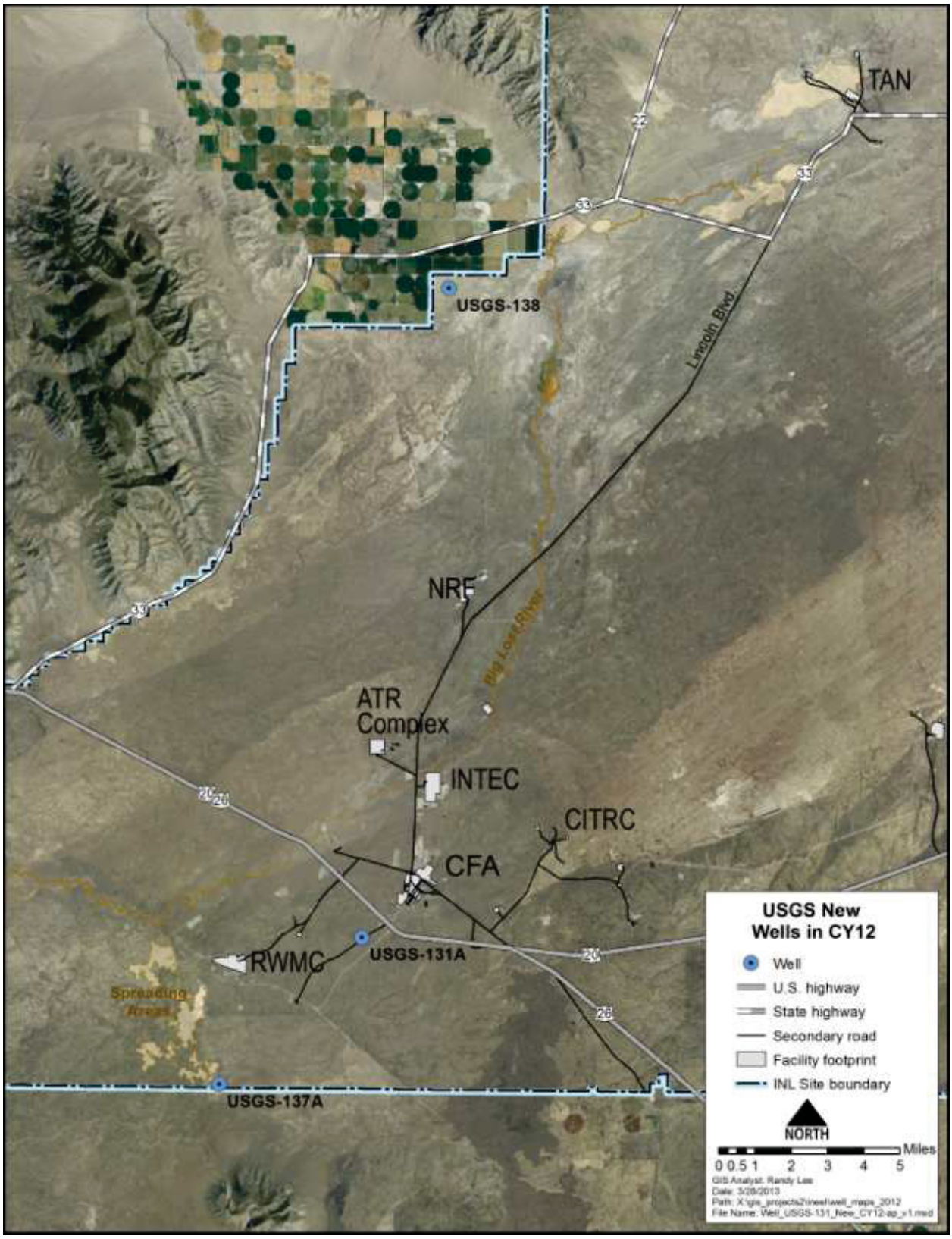


Figure A-1. Map showing the locations of new wells USGS-131A, USGS-137A, and USGS-138.

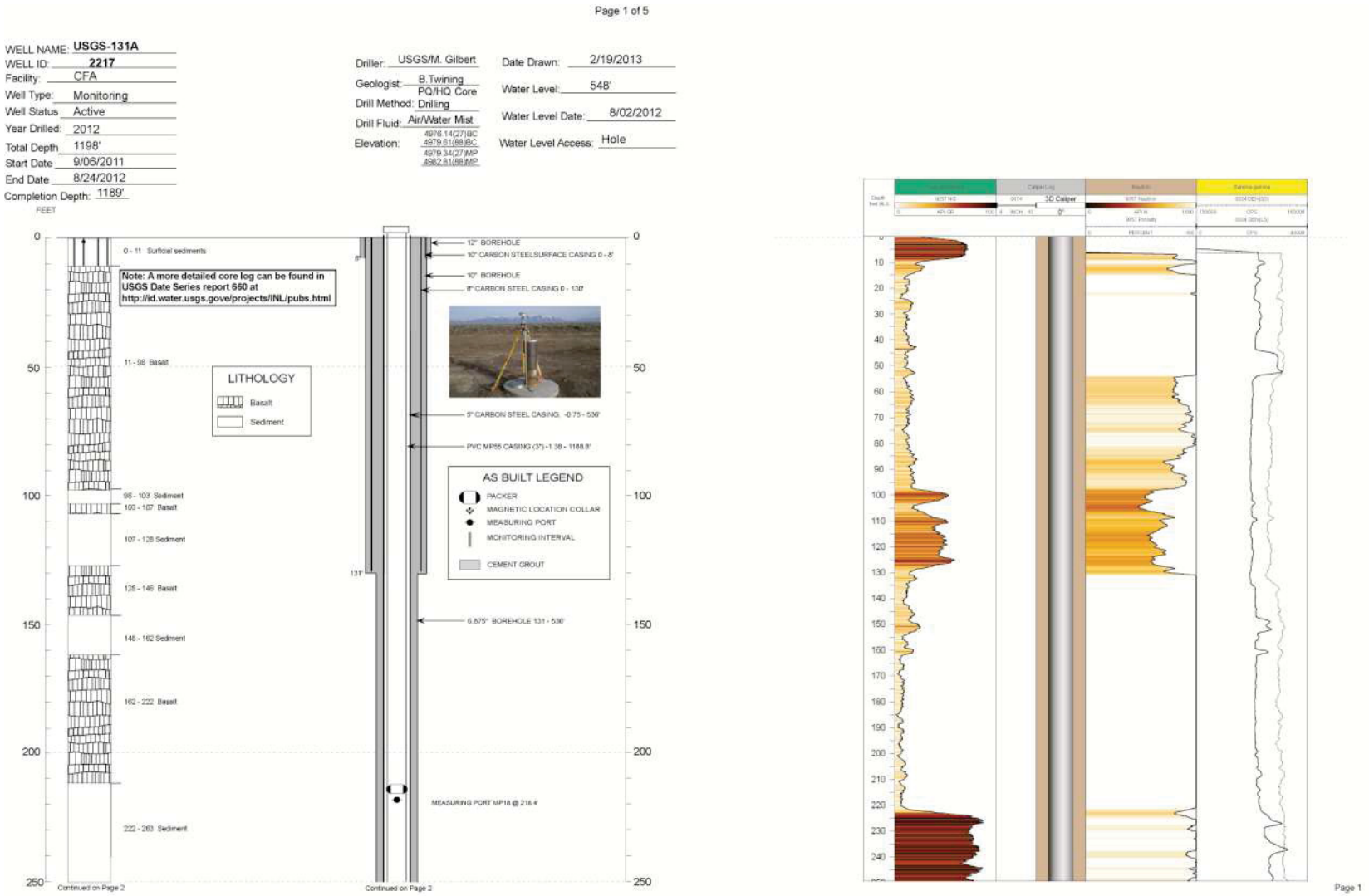
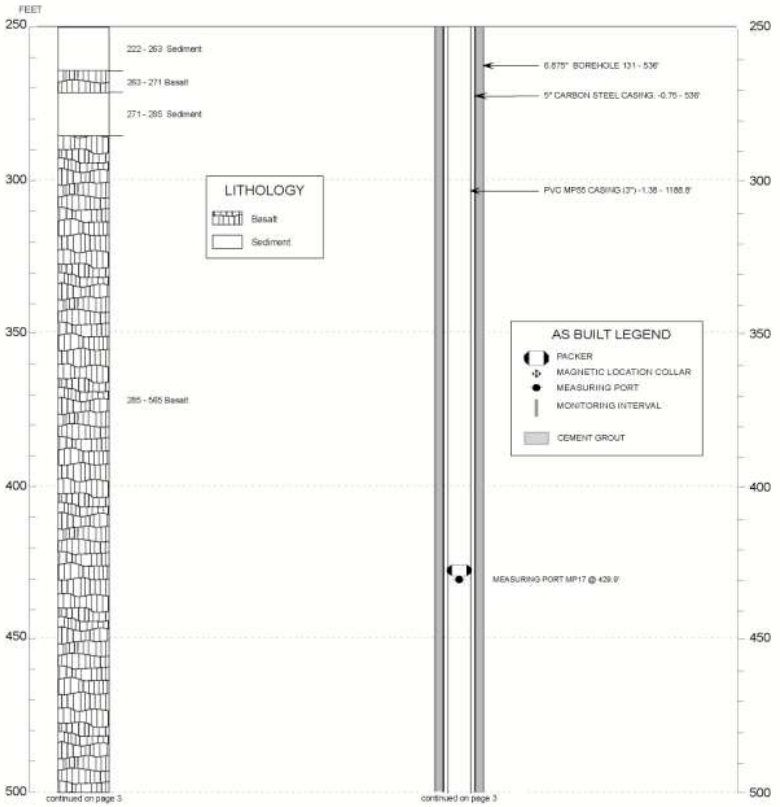


Figure A-2. Construction diagram for USGS-131A.

WELL NAME: **USGS-131A**



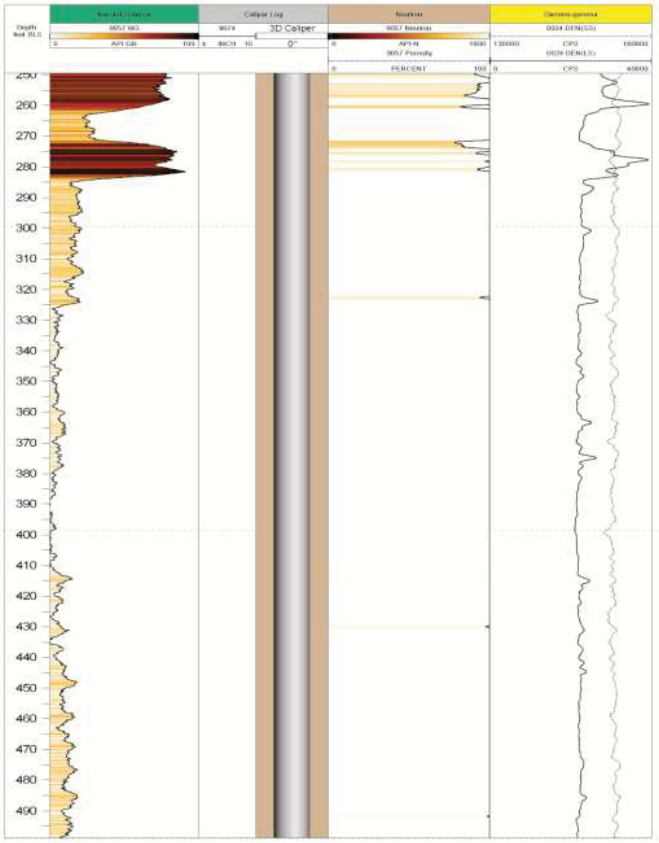
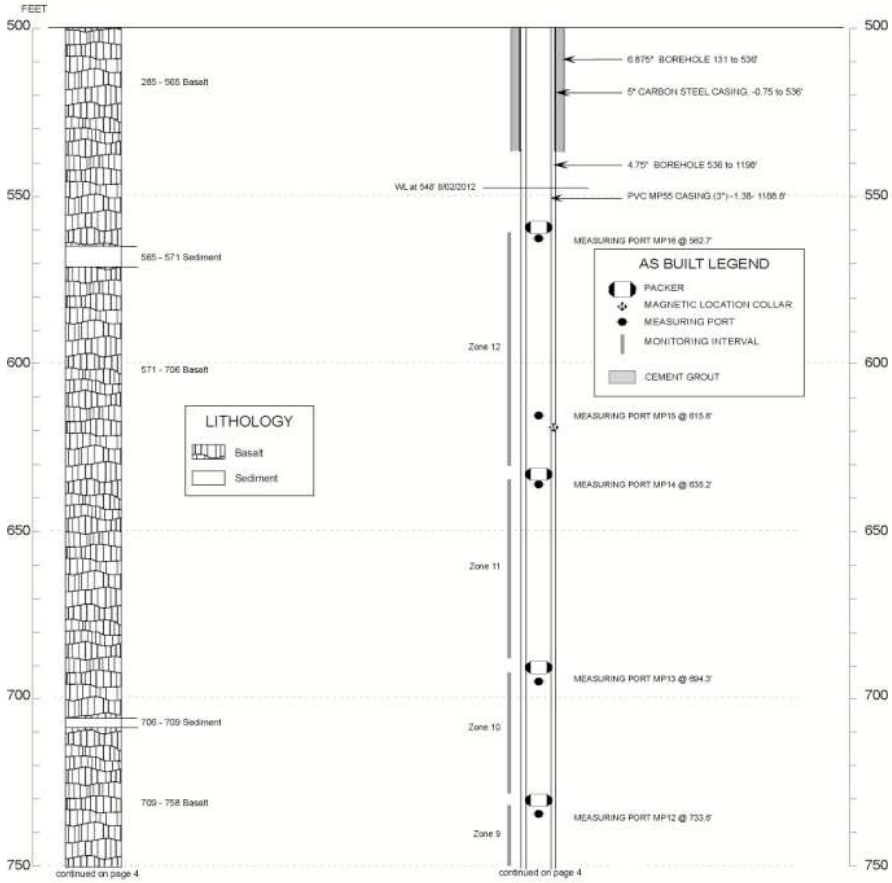


Figure A-2 continued.

WELL NAME: **USGS-131A**



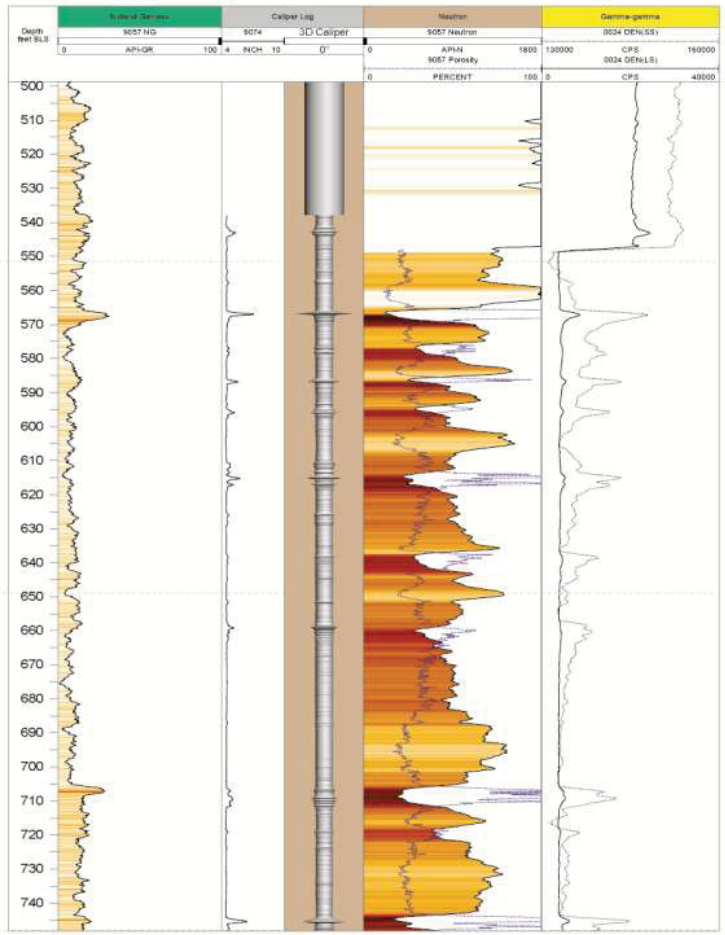


Figure A-2 continued.

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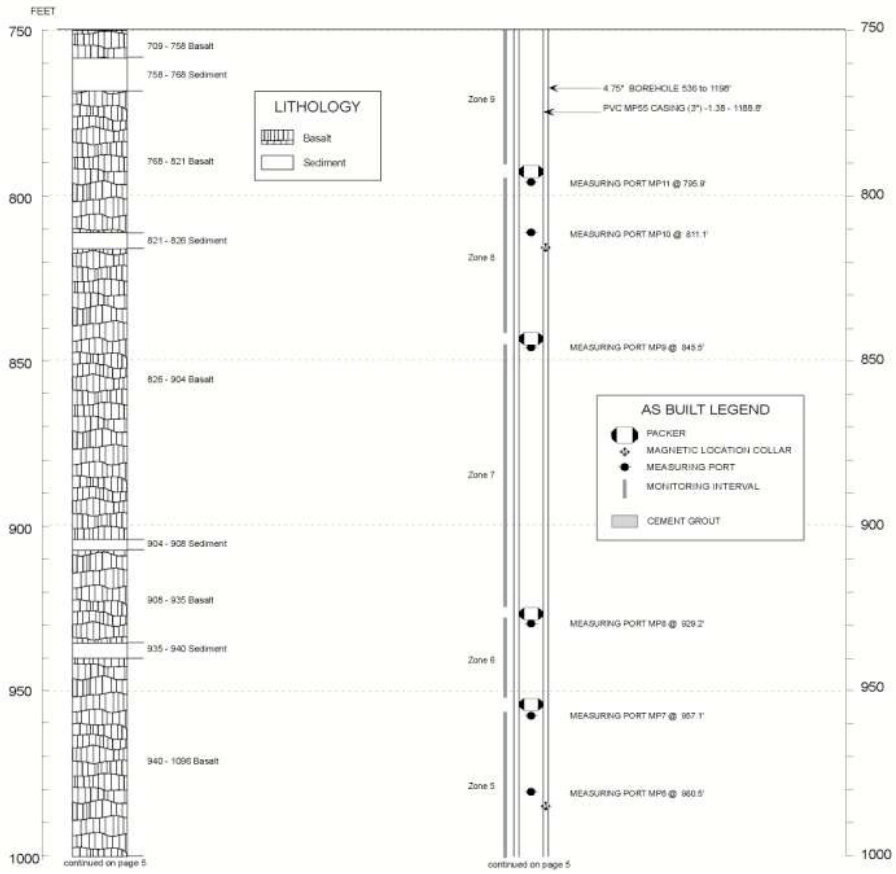


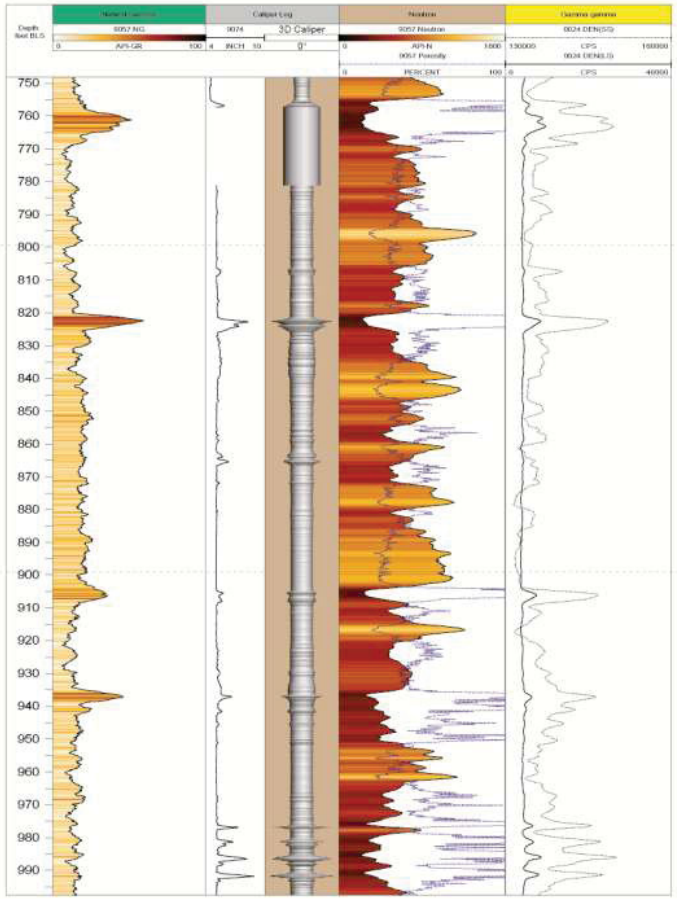
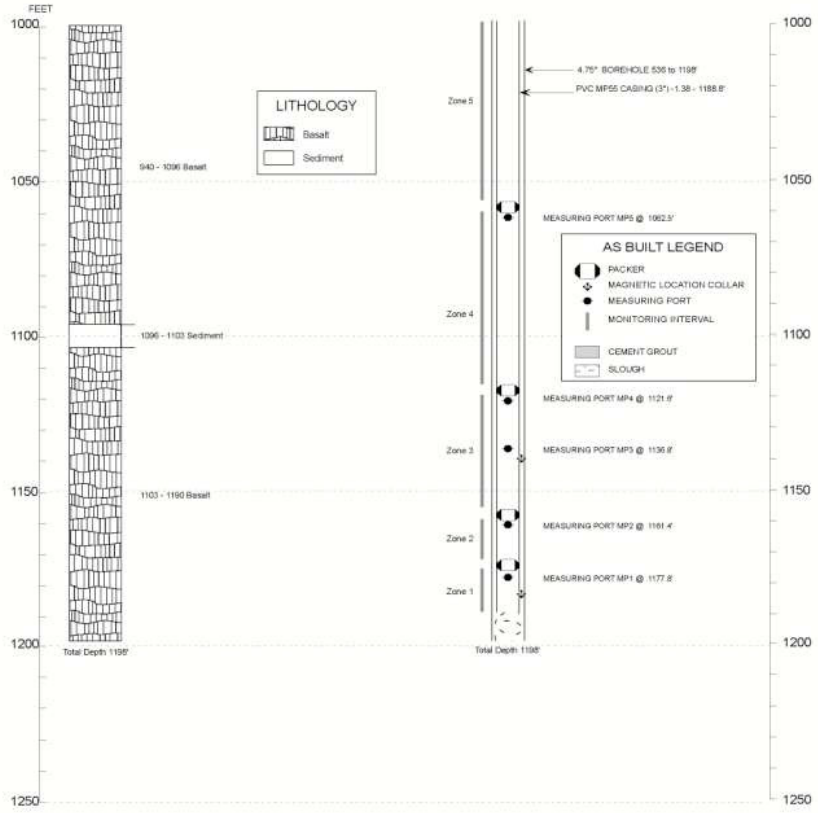


Figure A-2 continued.

WELL NAME: **USGS-131A**



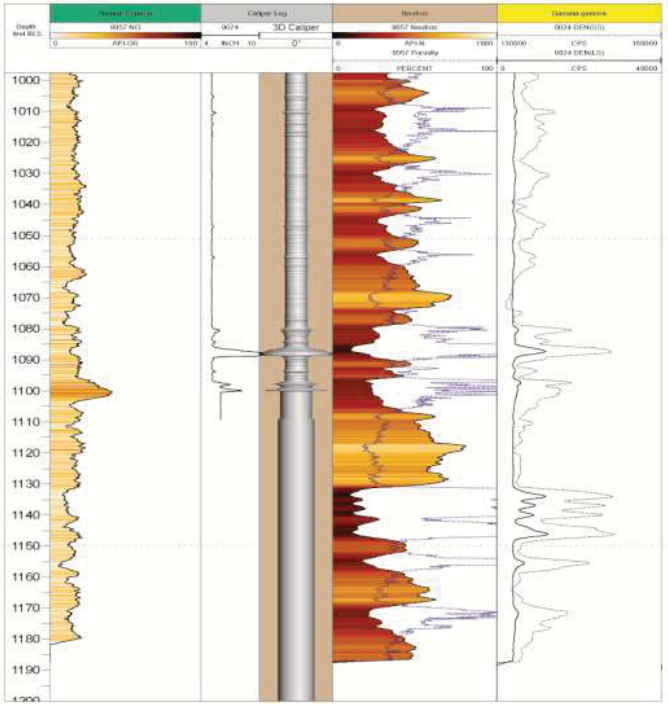
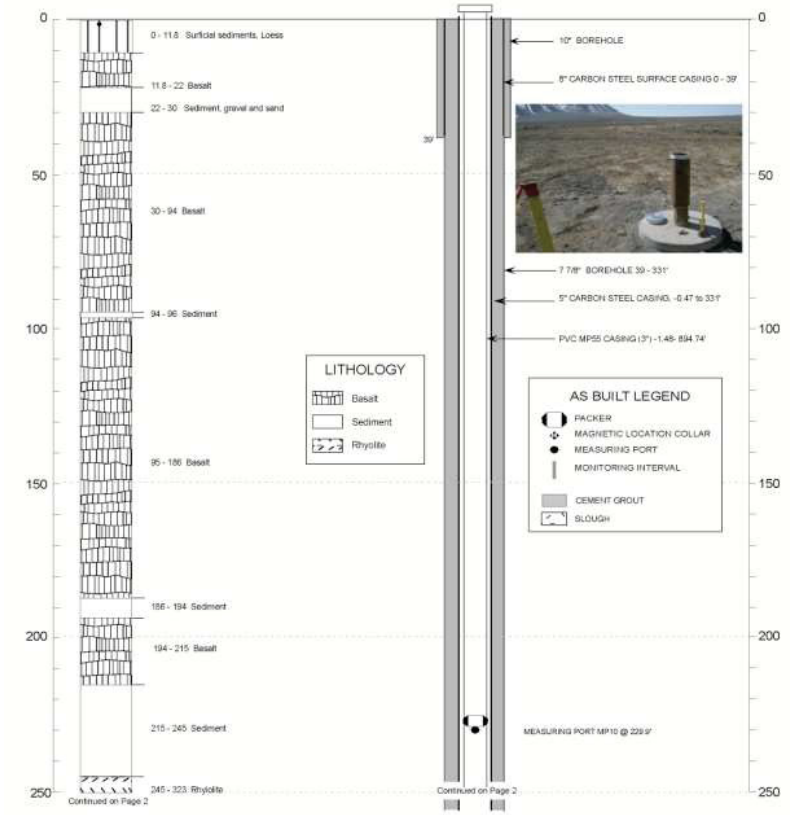


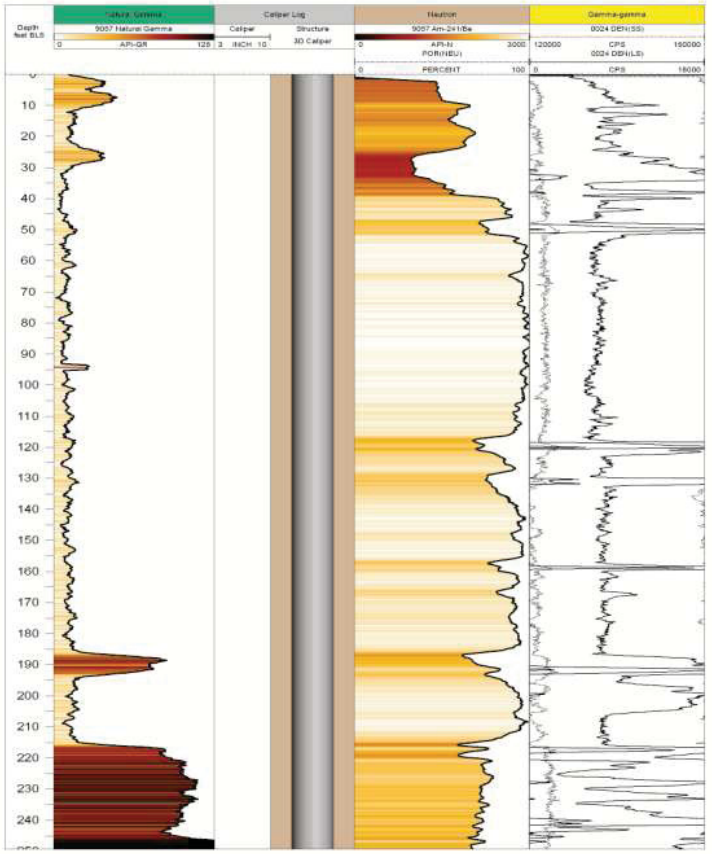
Figure A-2 continued.

WELL NAME: USGS-137A
WELL ID: 2240
Facility: South
Well Type: Monitoring
Well Status: Active
Year Drilled: 2012
Total Depth: 1317'
Start Date: 6/02/2012
End Date: 8/30/2012
Completion Depth: 1058'

Driller: USGS/M. Gilbert
Geologist: B.Twining
Drill Method: PQ/HQ Core
Drill Fluid: Drilling
Elevation: Air/Water Mist
5043.81(27)BC
5047.28(88)BC
5046.69(27)MP
5050.17(88)MP

Date Drawn: 1/28/2013
Water Level: 628'
Water Level Date: 08/26/2012
Water Level Access: Hole

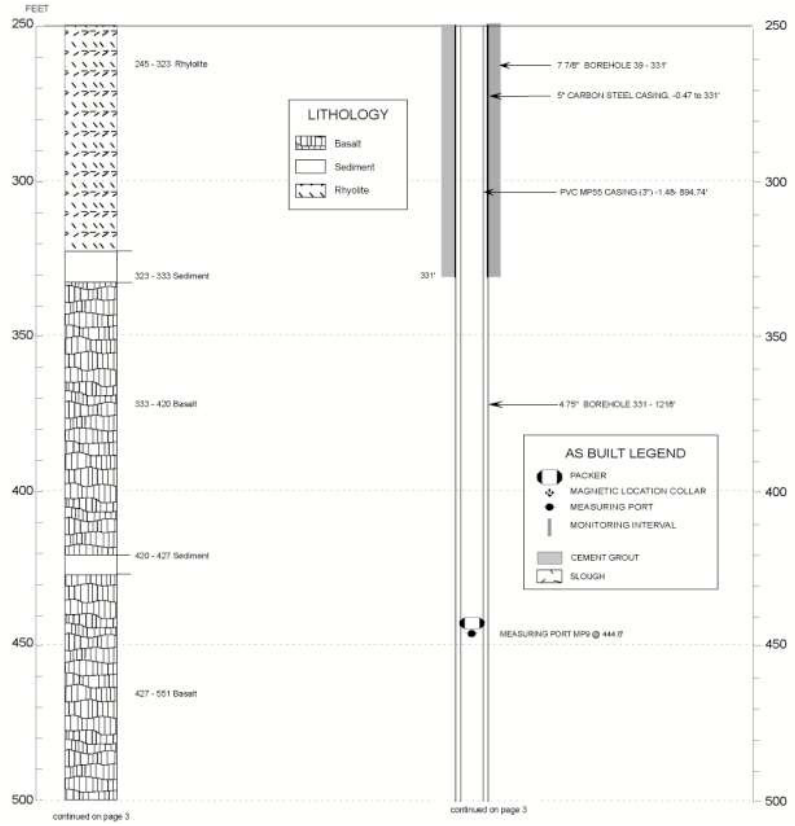




Page 1

Figure A-3. Construction diagram for new well USGS-137A.

WELL NAME: **USGS-137A**



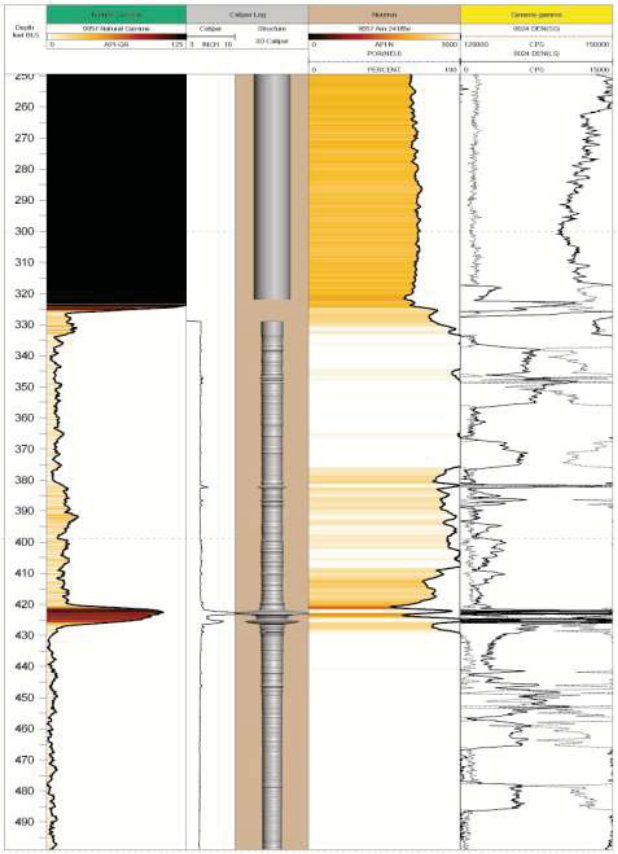
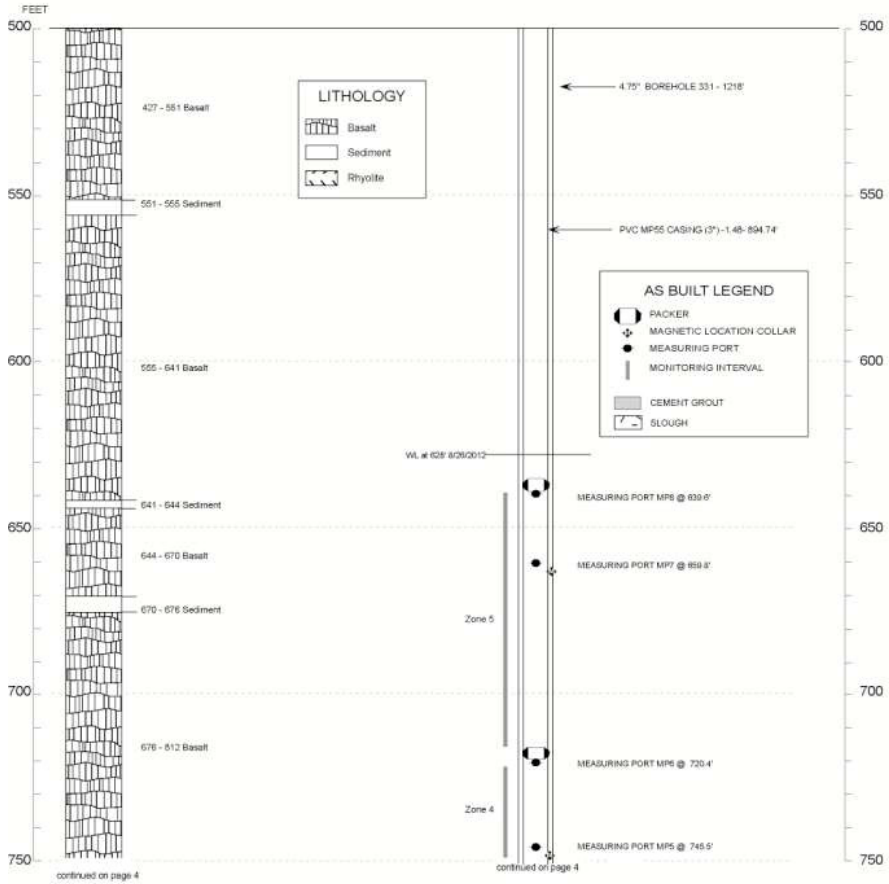


Figure A-3 continued

WELL NAME: **USGS-137A**



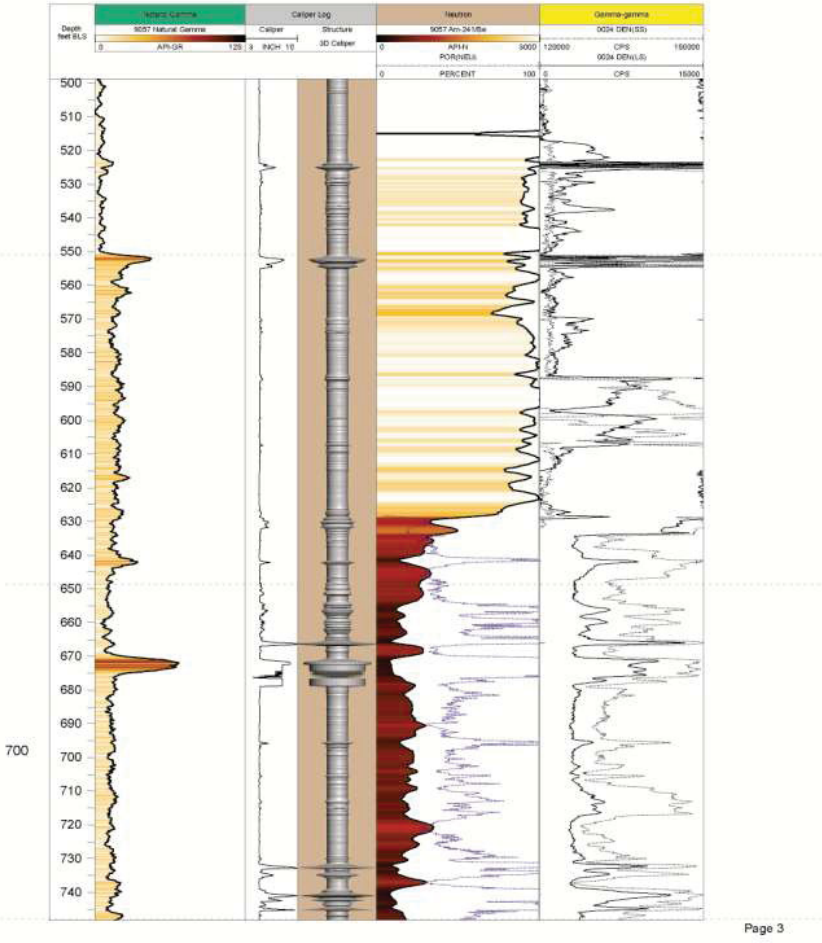
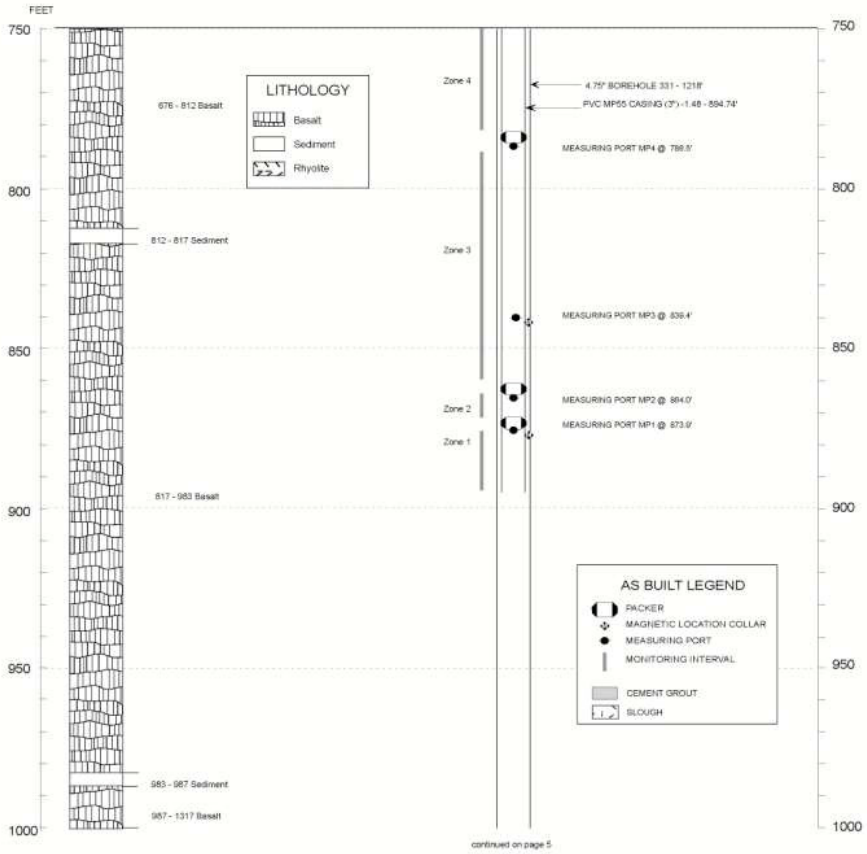
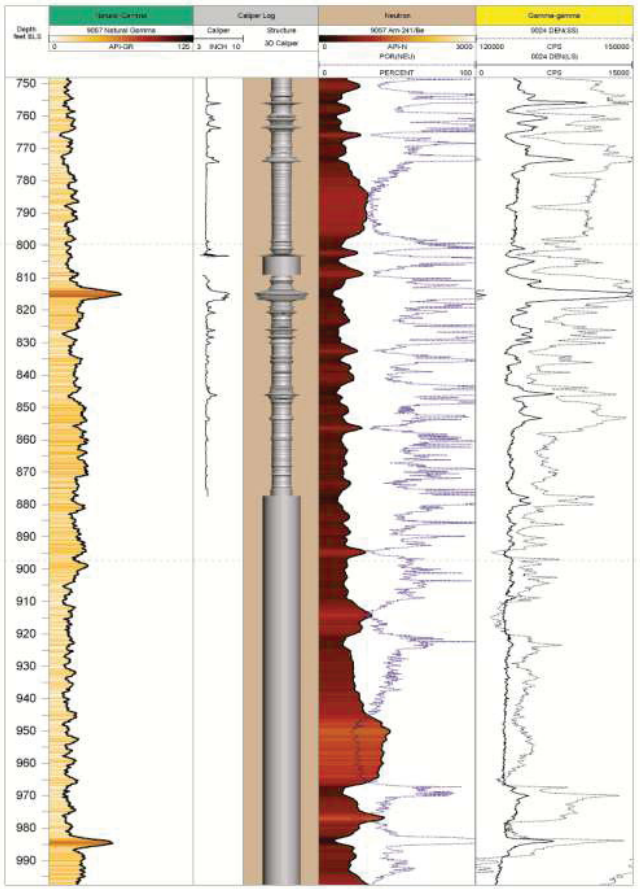


Figure A-3 continued.

WELL NAME: **USGS-137A**

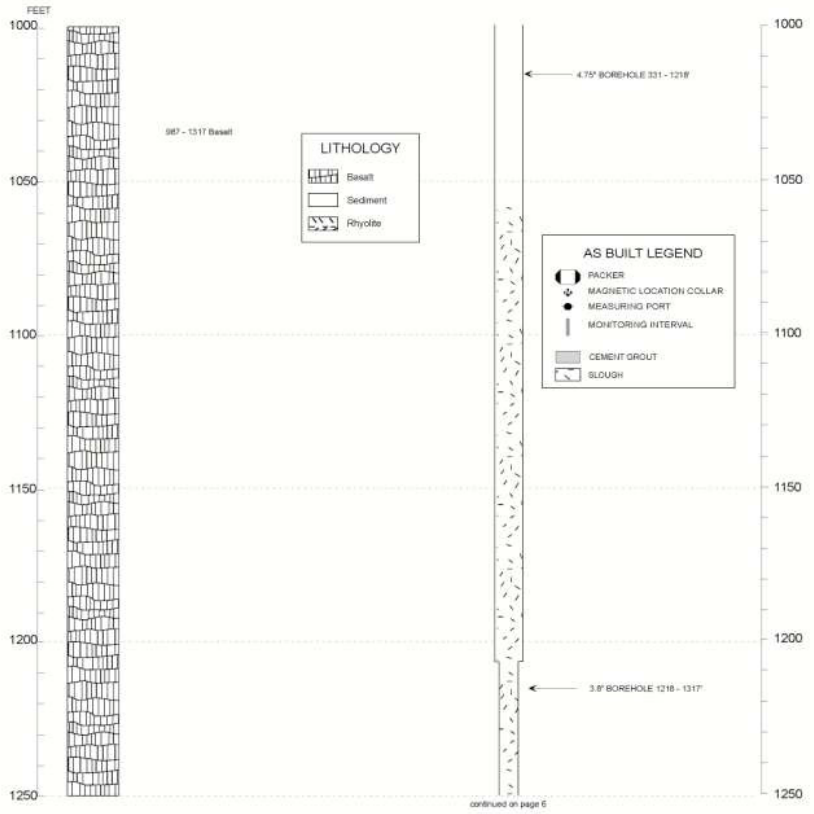


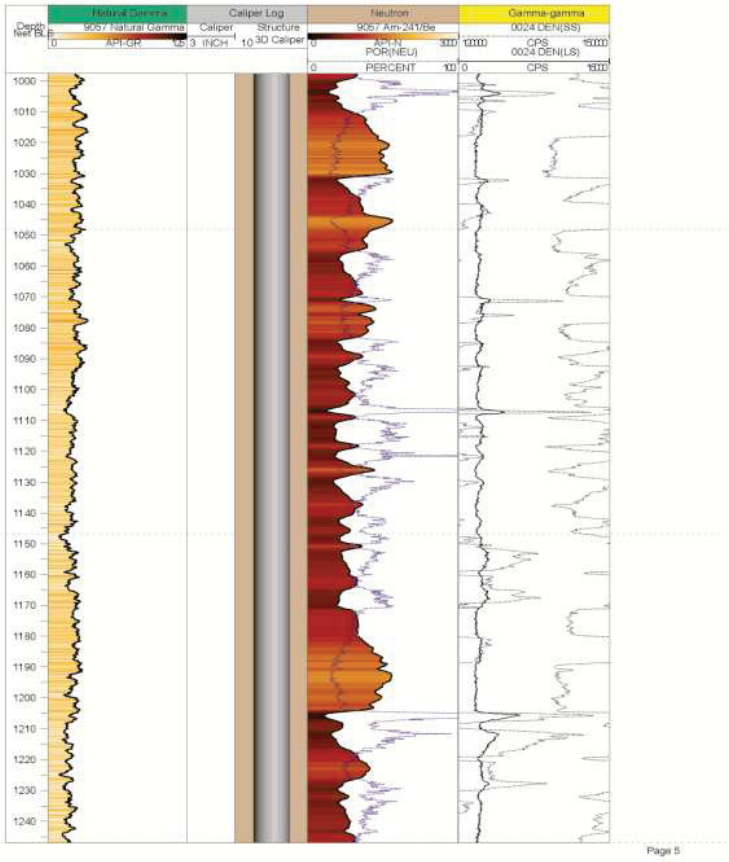


Page 4

Figure A-3 continued.

WELL NAME: **USGS-137A**





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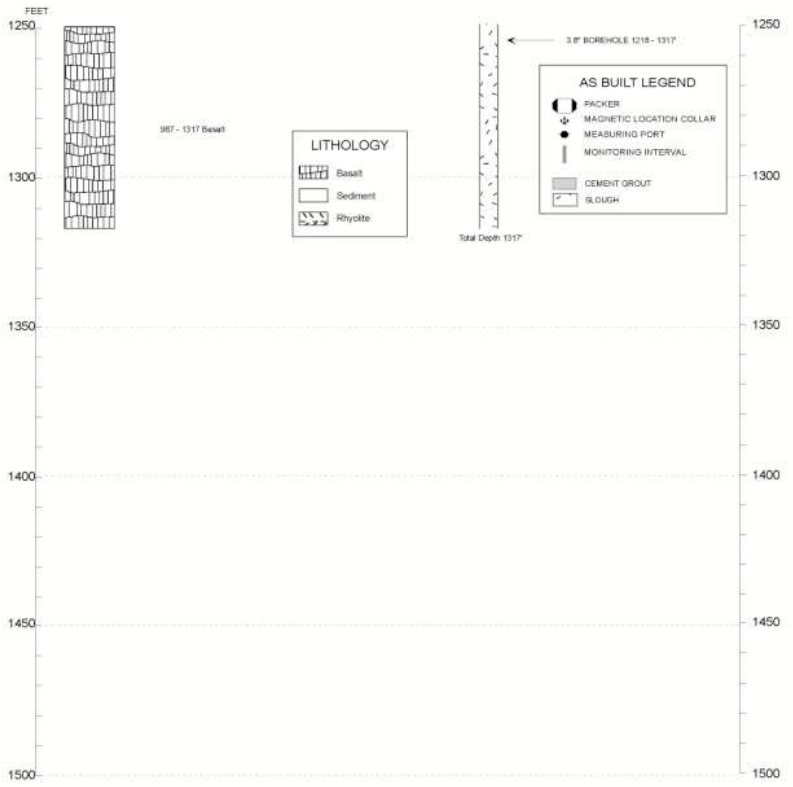

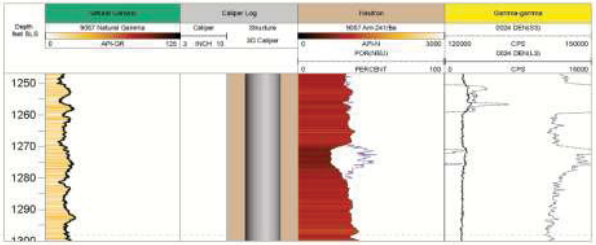

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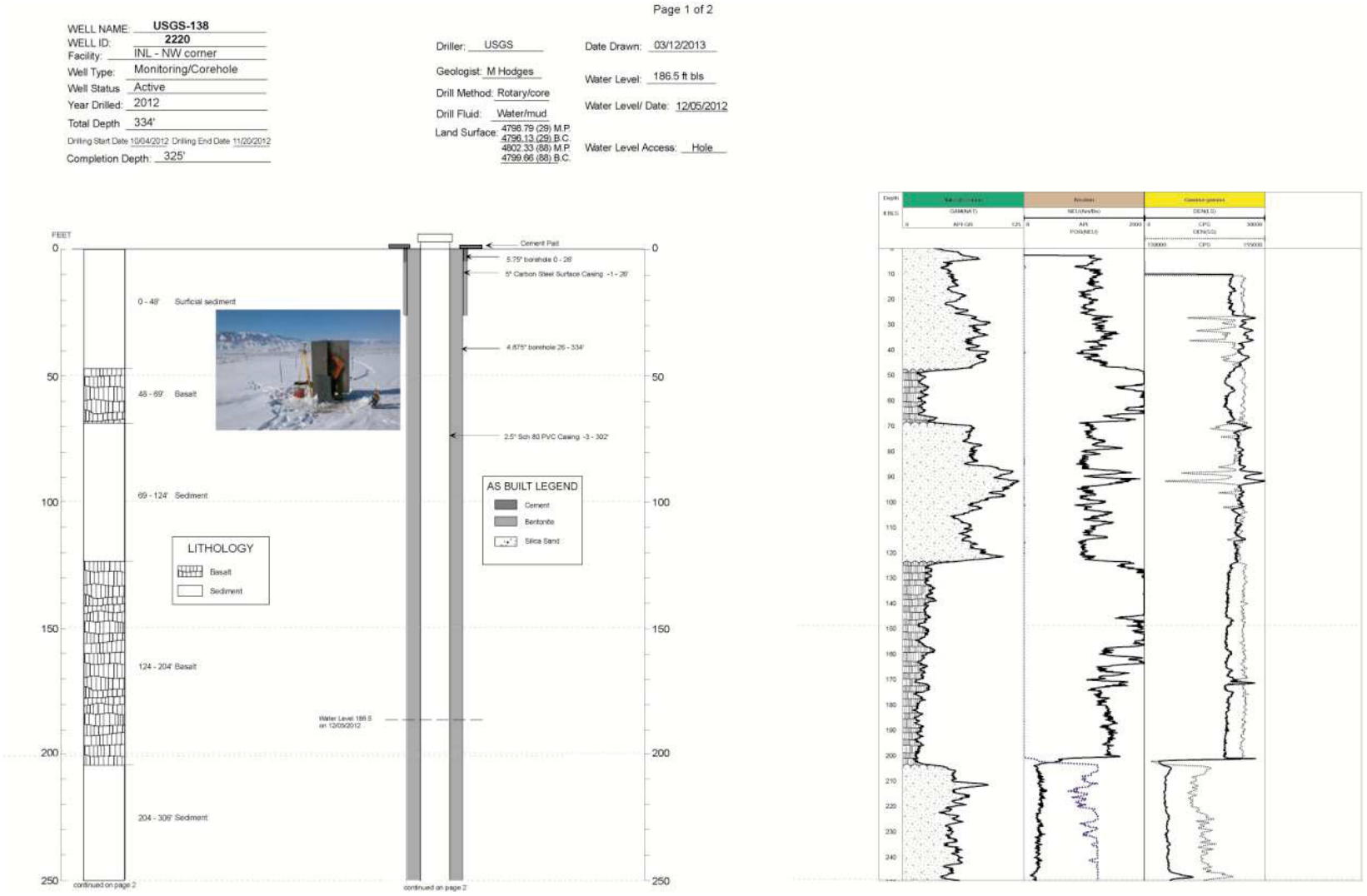
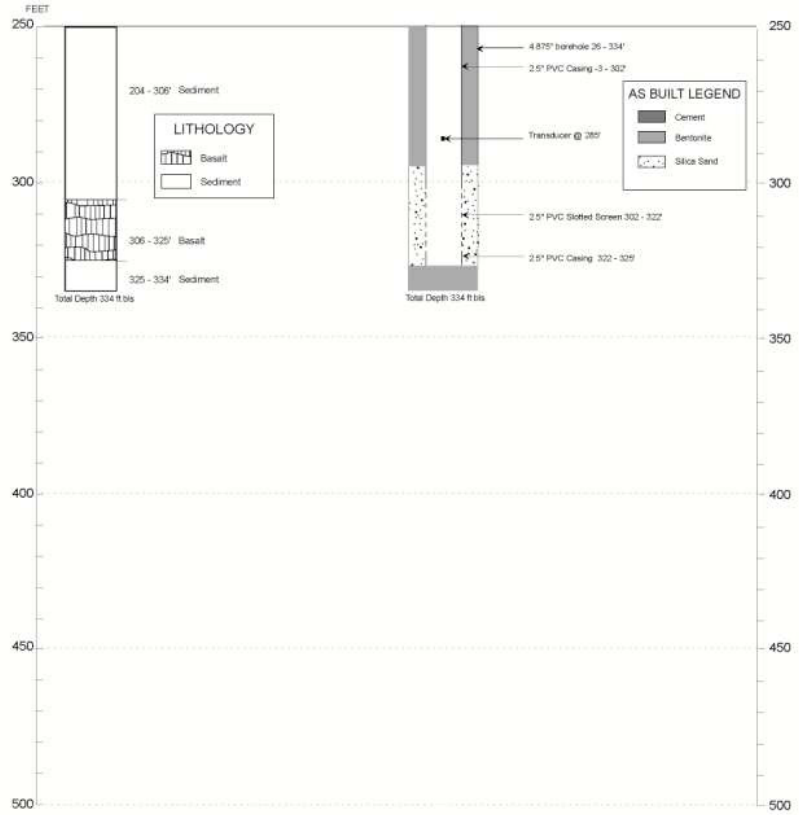


Figure A-4. Construction diagram for new well USGS-138.

WELL NAME: **USGS-138**



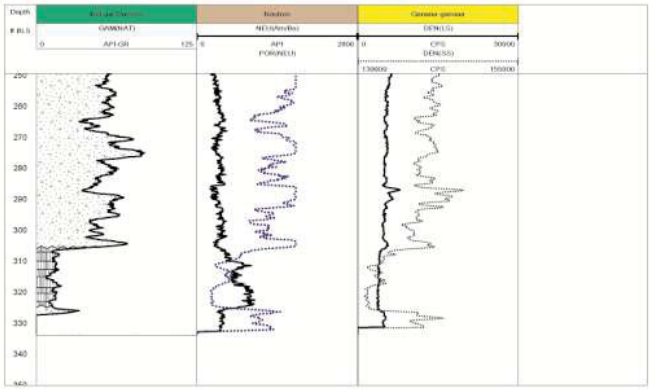


Figure A-4 continued.

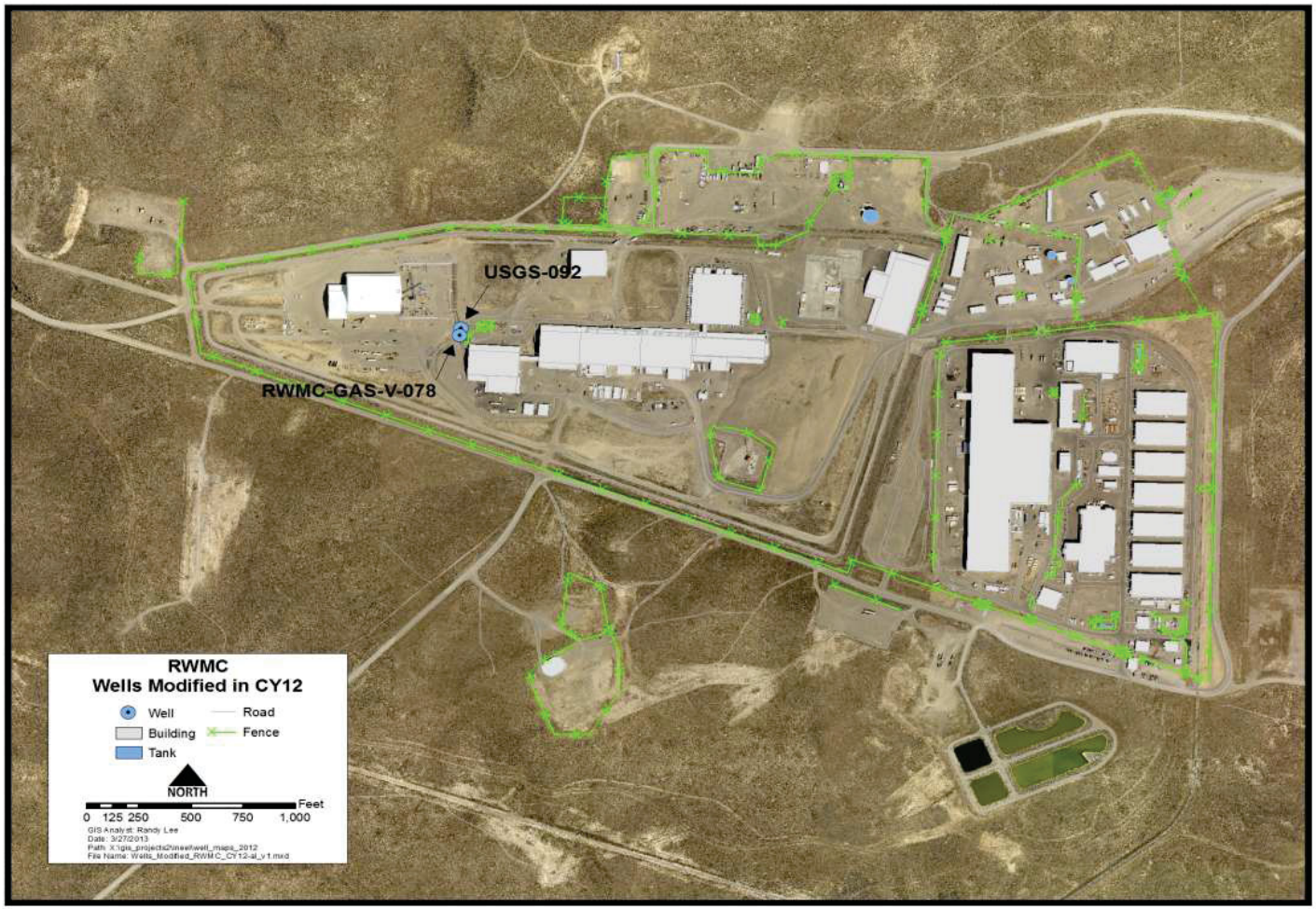


Figure A-5. Map showing location of modified wells RWMC-GAS-V-078 and USGS-092.

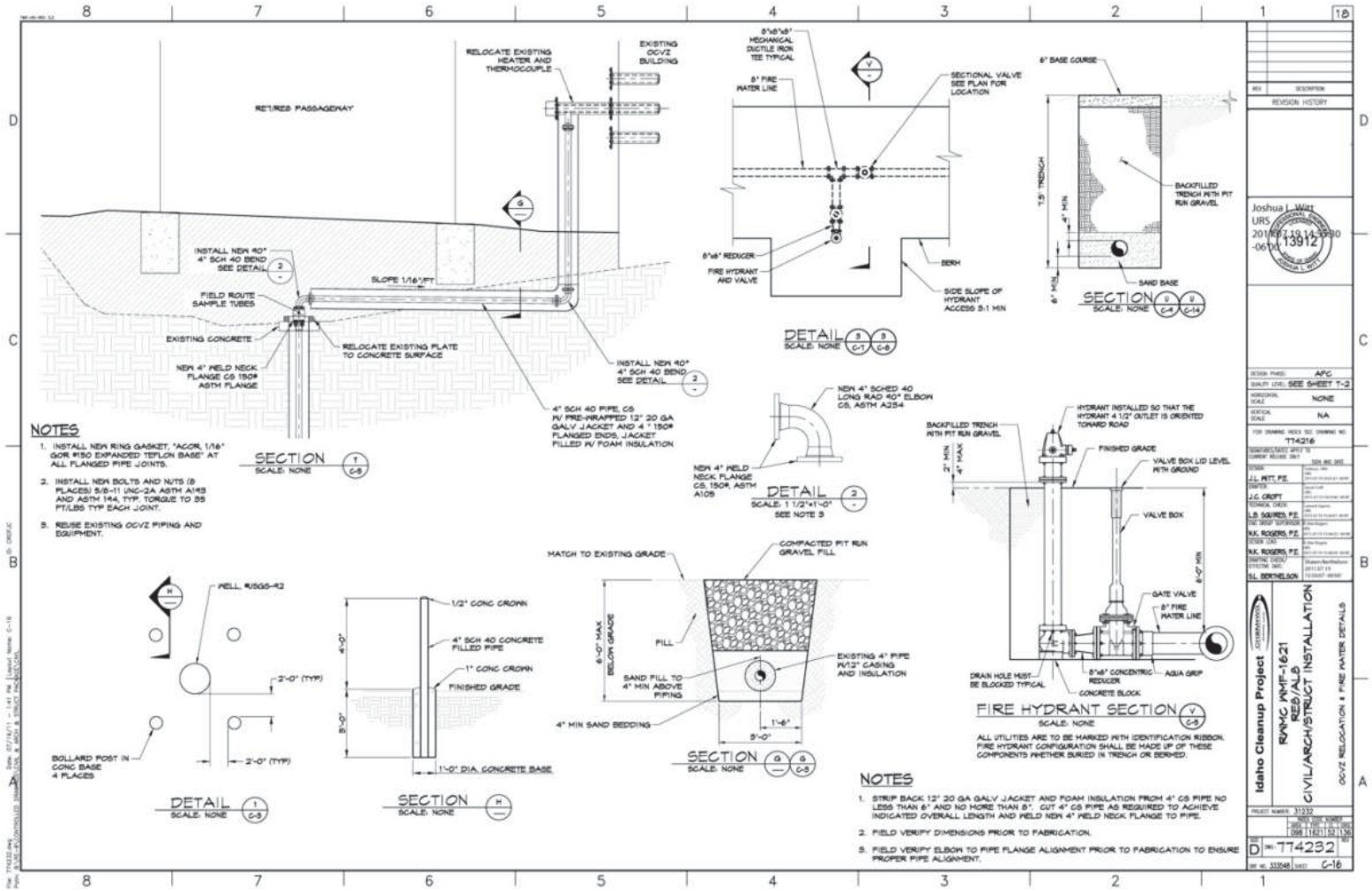


Figure A-6. Construction Drawing 774232 (Section "T ") for modification of RWMC-GAS-V-078 (7V).

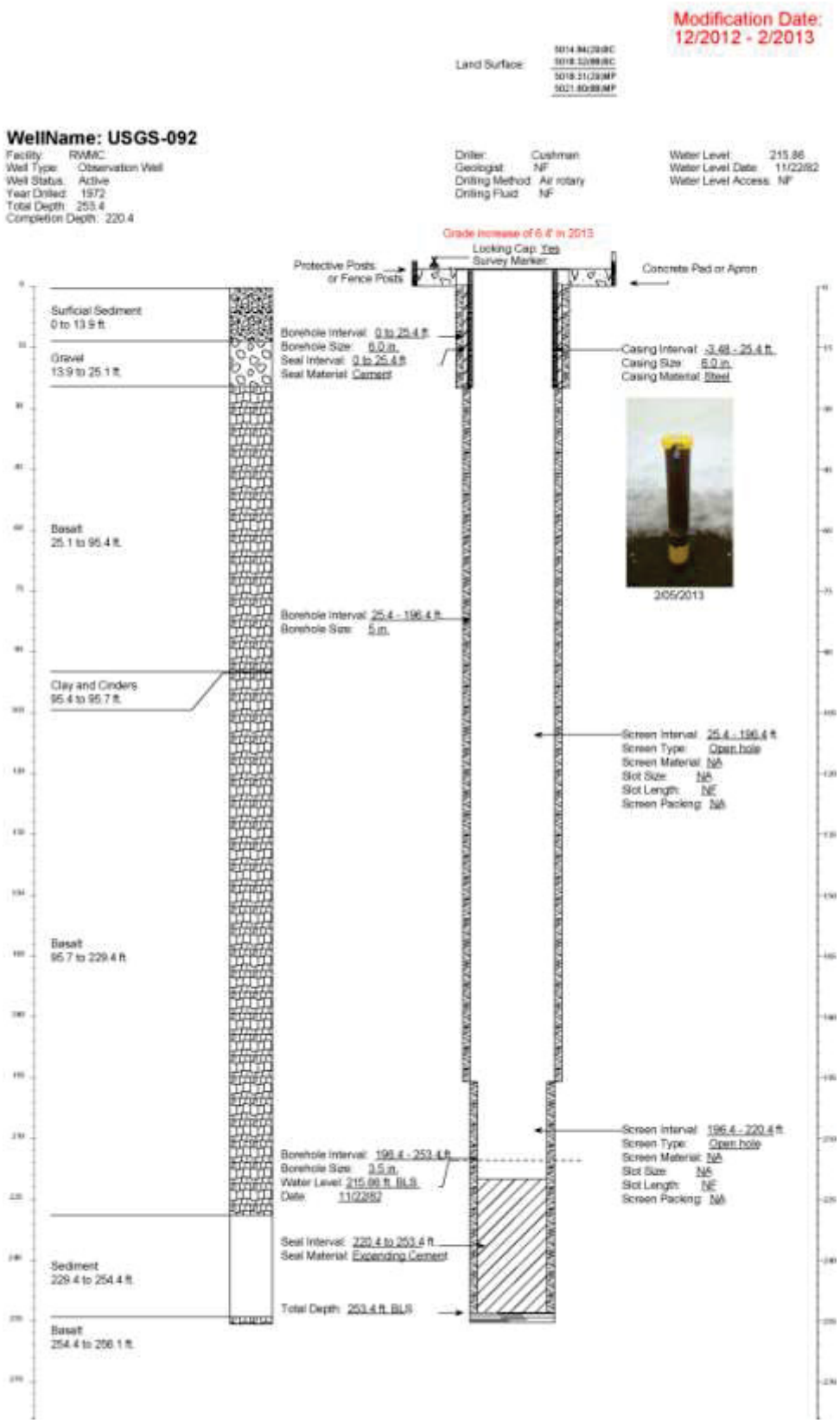


Figure A-7. Construction diagram of modification of USGS-092.