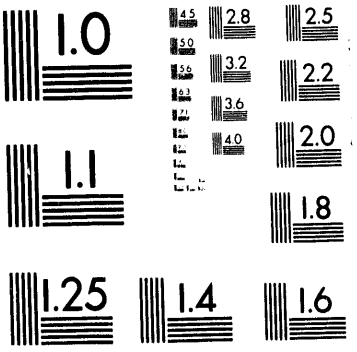
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Y-12

OAK RIDGE
Y-12
PLANT

MARTIN MARIETTA

Y/SUB/93-99928C(Y22)/2

FISCAL YEAR 1993 WELL PLUGGING AND ABANDONMENT PROGRAM, Y-12 PLANT, OAK RIDGE, TENNESSEE

September 1993

ENVIRONMENTAL MANAGEMENT DEPARTMENT
HEALTH, SAFETY, ENVIRONMENT, AND
ACCOUNTABILITY ORGANIZATION

Prepared by

Science Applications International Corporation
P.O. Box 2502, 800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37830

Under Purchase Order 30B-99928C-Y22

for the

Oak Ridge Y-12 Plant
Oak Ridge, Tennessee

Managed by

Martin Marietta Energy Systems, Inc.
for the
U.S. Department of Energy

Under Contract Number DE-AC05-84OR21400

MANAGED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

Y/SUB/93-99928C(Y22)/2

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93-185MS/092393

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FIGURES

TABLES

PLATES

ACRONYMS

API	American Petroleum Institute
BCBG	Bear Creek Burial Grounds
BGS	below ground surface
CME	Central Mining Equipment
CR	Chestnut Ridge
CRSP	Chestnut Ridge Security Pits
DOT	Department of Transportation
Energy Systems	Martin Marietta Energy Systems, Inc.
FID	flame ionization detector
FY	fiscal year
GWPP	Groundwater Protection Program
Highland	Highland Drilling Company
HSEA	Health, Safety, Environment, and Accountability Organization
ID	inside diameter
OD	outside diameter
OL	Oil Landfarm Area
OVA	organic vapor analyzer
PID	photoionization detector
PPE	personal protective equipment
PVC	polyvinyl chloride
SAIC	Science Applications International Corporation
SPAD	Steam Plant Ash Disposal
S3	S-3 Ponds Area
TD	total depth
TOWR	top of weathered rock
TOFR	top of fresh rock
WIPS	Walk in Pits Site

EXECUTIVE SUMMARY

This report is a synopsis of the progress of the well plugging and abandonment program at the Y-12 Plant, Oak Ridge, Tennessee, from December 1992 through August 20, 1993. A total of 70 wells and borings were plugged and abandoned during the period of time covered in this report. All wells and borings were plugged and abandoned in accordance with the Monitoring Well Plugging and Abandonment Plan for the U.S. Department of Energy, Y-12 Plant, Oak Ridge, Tennessee (HSW, Inc. 1991).

1. INTRODUCTION

In late November 1992, Science Applications International Corporation (SAIC) was authorized by Martin Marietta Energy Systems, Inc. (Energy Systems) to provide technical oversight for the plugging and abandonment of obsolete and damaged groundwater monitoring wells, piezometers, and core holes in the vicinity of the Y-12 Plant at Oak Ridge, Tennessee. The scope of the authorized oversight was to supervise drilling activities and to provide health and safety monitoring during those activities. Energy Systems provided procedures and guidelines for plugging and abandonment, waste disposal, and health and safety monitoring requirements. This report is a synopsis of the progress of the plugging and abandonment program from first implementation of activities on December 1, 1992, until ~ August 20, 1993.

The criteria for determining the need for plugging and abandonment of monitoring wells, piezometers, and core holes were stated in the plugging and abandonment plan (HSW, Inc. 1991). Plugging and abandonment of a well, piezometer, or boring occurred if (1) its construction did not meet current standards (substandard construction), (2) it was irreparably damaged or had deteriorated beyond practical repair, (3) its location interfered with or otherwise impeded site operations, construction, or closure activities, or (4) special circumstances existed as defined on a case-by-case basis and approved by the Y-12 Plant GWPP Manager.

Seventy monitoring wells, piezometers, and borings were plugged and abandoned in FY 1993 (Plate 1.1). Subsequent sections of this report discuss general geology, health and safety monitoring, and waste disposal. Descriptions of the field methods and procedures used in implementation of the plugging and abandonment program for FY 1993 are also provided in this report. Enclosed are short narratives describing activities at each abandonment site. Detailed activity reports and diagrams of all well plugging and abandonments are contained in Appendixes A and B, respectively.

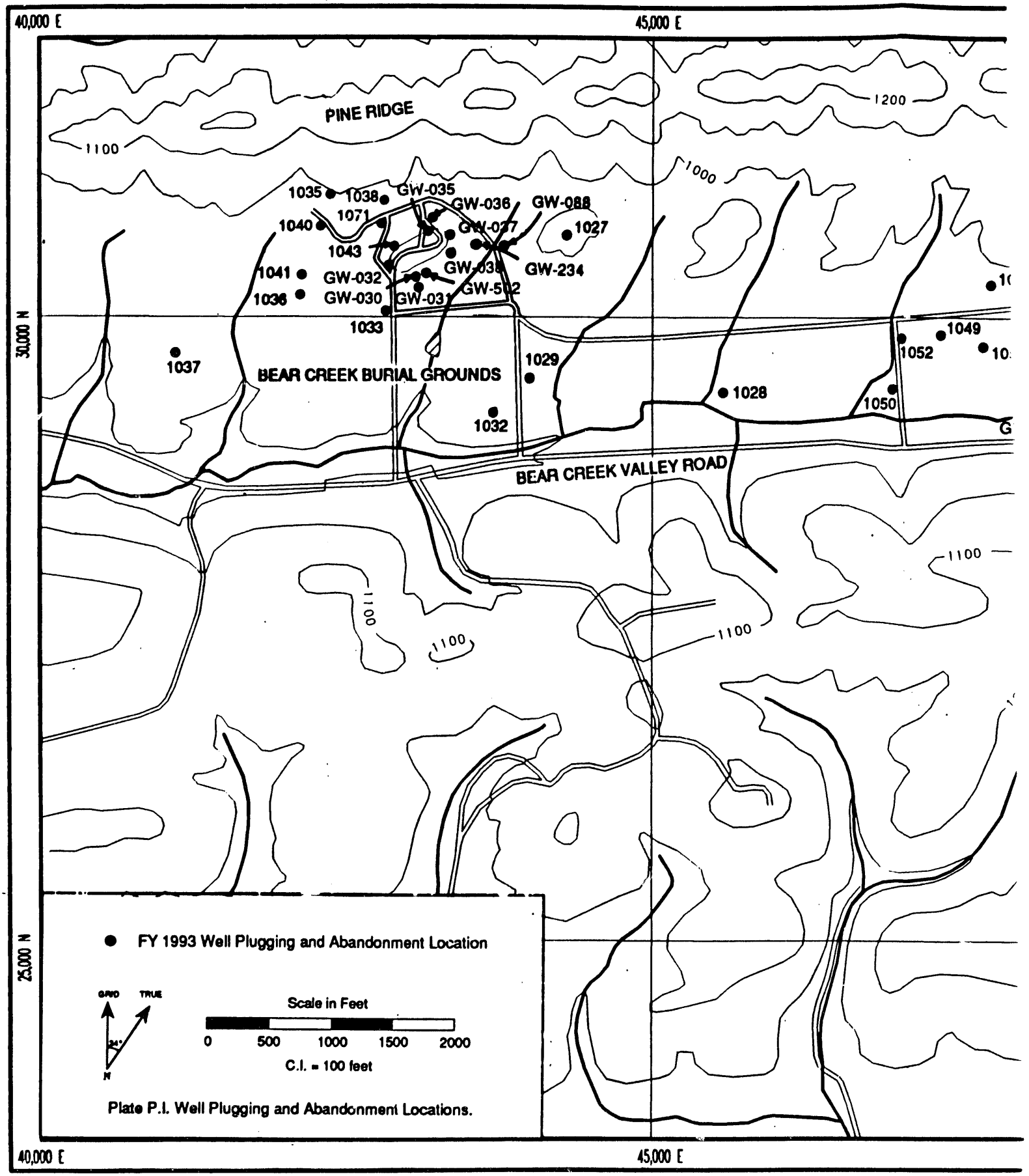
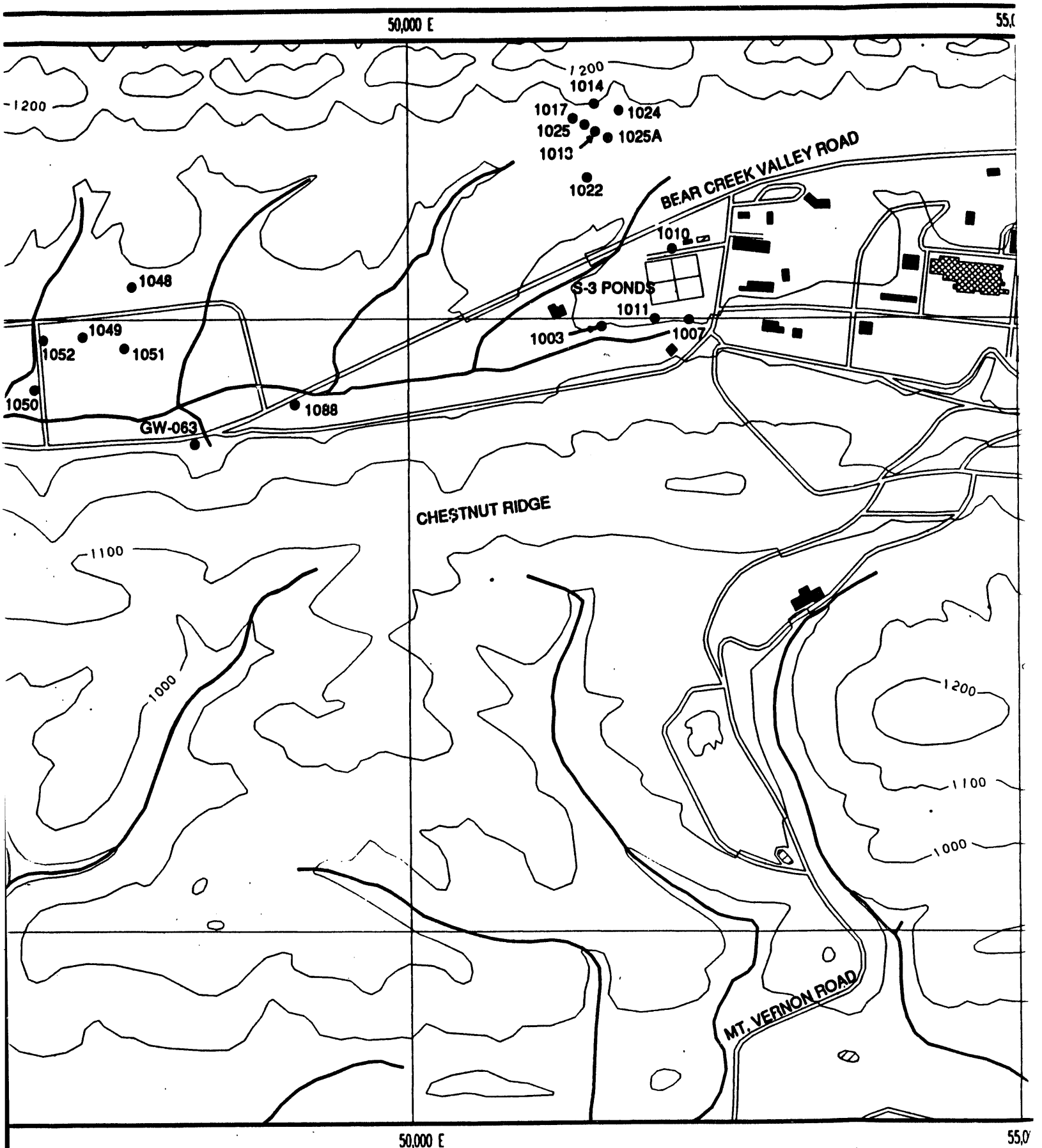


Plate P.I. Well Plugging and Abandonment Locations.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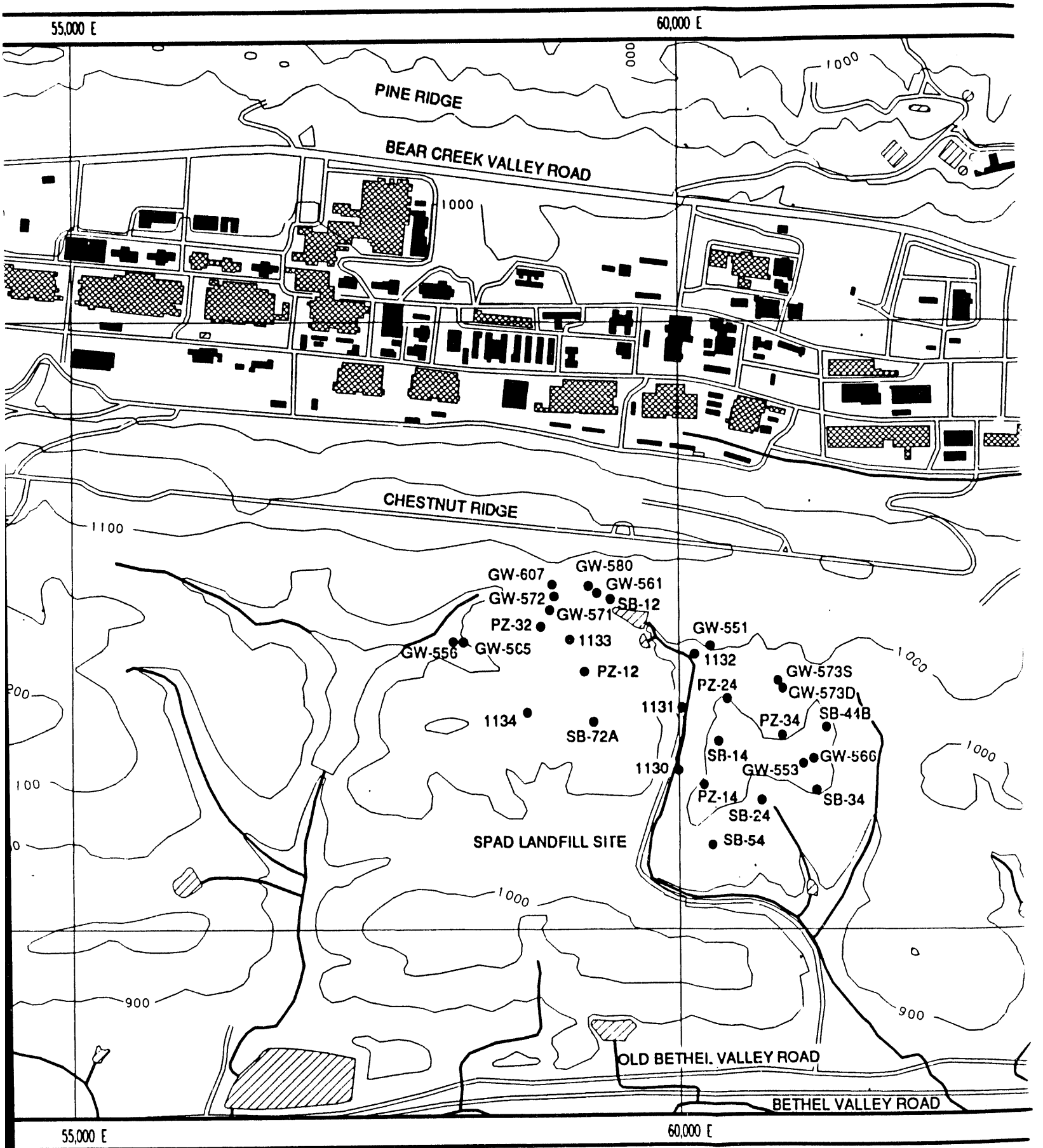
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GW-573D
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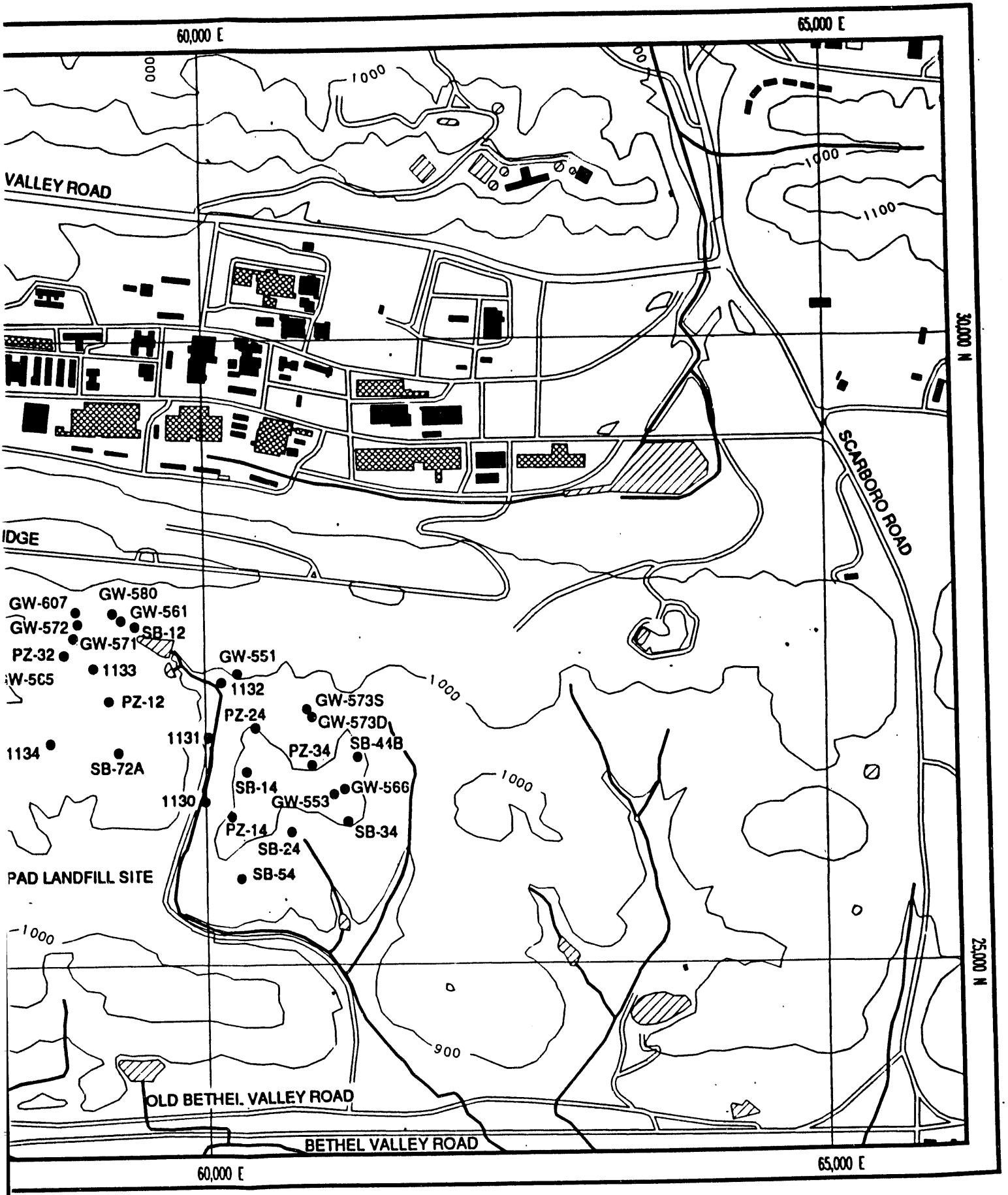
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BETHEL VALLEY ROAD
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2. GENERAL GEOLOGY

The Oak Ridge Y-12 Plant is located within Bear Creek Valley in the southern part of the Valley and Ridge Physiographic Province. This province is characterized by narrow elongated ridges and valleys trending northeast-southwest. Resistant sandstone, siltstone, and siliceous limestone and dolostone typically form ridges; valleys are commonly underlain by less resistant shale and soluble carbonates (Rodgers 1953).

The ages of bedrock units in the Y-12 Plant vicinity range from Cambrian to Ordovician. From oldest to youngest, the bedrock units are the Rome Formation, Conasauga Group, and Knox Group (Fig. 2.1). Formations in the Y-12 Plant vicinity strike N 47°E to N 67°E and dip 30° to 50° to the southeast (King and Haase 1987). The Rome Formation has a thickness of ~800 ft (Fig 2.1) and is composed of maroon to dark brown, interbedded sandstone, siltstone, and shale. The Conasauga Group contains six formations. These are composed of alternating layers and laminations of shale, siltstone, and limestone. These formations are, from oldest to youngest, the Pumpkin Valley Shale, Rutledge Limestone, Rogersville Shale, Maryville Limestone, Nolichucky Shale, and Maynardville Limestone (Fig. 2.1). The bedrock units are overlain by unconsolidated deposits of varying thickness (10-30 ft) and composition, which generally consist of fill, alluvium, colluvium, and in situ weathered bedrock (residuum).

The principal formation of interest within the Knox Group is the basal Copper Ridge Dolomite. The Copper Ridge Dolomite has an aggregate thickness of 900 to 1000 ft (Fig. 2.1) and consists of variable bedded, siliceous, often stylolitic and laminated dolostone with thin, bedded chert layers and thin interbeds of siltstone, silty shale, and limestone.

Age	Group	Formation	Approximate Thickness (ft)		
			King and Haase 1987	Milici 1973	McMaster 1963
Lower Ordovician	KNOX	Mascot Formation	Not Determined	400-800	3000 (undivided)
		Kingsport Formation		200-320	
		Longview Dolomite		250-450	
		Chepultepec Dolomite		725-880	
Middle & Upper Cambrian		Copper Ridge Dolomite		900-1000	
	CONASAUGA	Maynardville Limestone	418-450		1500 (undivided)
		Nolichucky Shale	422-550		
		Maryville Limestone	346-445		
		Rogersville Shale	90-120		
		Rutledge Limestone	90-120		
		Pumpkin Valley Shale	260-320		
Lower Cambrian		Rome	Not Determined		800+

Fig. 2.1. Stratigraphic units in the vicinity of the Y-12 Plant.

3. WELL PLUGGING AND ABANDONMENT

3.1 DRILLING CONTRACTORS

The principal drilling contractor for plugging and abandonment activities during FY 1993 was Highland Drilling Company (Highland). Highland subcontracted part of the plugging and abandonment carried out at the Steam Plant Ash Disposal (SPAD) Landfill Site to Law Engineering (Table 3.1). All other activities were conducted by Highland.

A variety of drilling and augering rigs were used by Highland during FY 1993. Law Engineering used a Central Mining Equipment (CME) 55 auger rig to plug and abandon wells PZ-14, PZ-24, PZ-34, SB-14, SB-24, SB-34, SB-44B, SB-54, GW-573S and GW-573D. A CME-75 core drilling rig was used by Law Engineering to remove 1.0-in. diameter piezometer tubing in wells GW-551 and GW-553. The remaining portions of GW-551 and GW-553 were removed by Highland using an Ingersoll Rand XL-750 air rotary rig. This air rotary rig was the principal drilling rig used during FY 1993 and was also used to plug and abandon wells PZ-12, PZ-32, SB-12, SB-72A, 1003, 1013, 1014, 1017, 1024, 1027, 1028, 1029, 1032, 1033, 1036, 1037, 1048, 1049, 1050, 1051, 1052, 1130, 1131, 1132, 1133, 1134, GW-063, GW-088, GW-234, GW-556, GW-561, GW-565, GW-566, GW-571, GW-572, GW-580, and GW-607. Another air rotary rig, an Ingersoll Rand T4W, was used by Highland to plug and abandon wells 1020, 1025 and 1025A. Highland used an Altec auger truck to plug and abandon wells 1007, 1010, 1011, and 1027. Due to logistics and mobility, a Ford 555B tractor with a McMillen Diggerhead™ auger attachment was used to plug and abandon wells 1035, 1038, 1040, 1041, 1043, 1071, GW-030, GW-031, GW-032, GW-035, GW-036, GW-037, GW-038, and GW-502.

3.2 PLUGGING AND ABANDONMENT METHODS

Four generalized plugging and abandonment methods, approved by the Tennessee Department of Environment and Conservation, were followed. The four methods are discussed in *Monitoring Well Plugging and Abandonment Plan for the Department of Energy Y-12 Plant, Oak Ridge, Tennessee* (HSW, Inc. 1991). These methods are applicable to different types of well or boring construction. Wells that were plugged and abandoned during FY 1993 required the use of all of these methods.

Method A is used for wells constructed of ≤ 7-in. outside diameter (OD) steel or stainless steel well casing, typically completed with 5- to 20-ft well screens and sand filter packs. Wells completed in bedrock may also have 8- to 12-in. OD steel or polyvinyl chloride (PVC) surface casing extending from ground surface to the top of bedrock. Some wells may also be completed with a conductor casing in place. This method involves the overwash and removal of casing with washover pipe. The borehole is reamed with a tricone bit at least 0.25 in. larger in diameter than the original bore. API Class A (Type I) neat cement is tremied to within 4 ft of the surface (if there is no surface casing or conductor casing) and, after verification of the depth to the grout plug, the remaining 4 ft of bore is capped using compacted noncontaminated soil. If the well was completed with surface casing, the first grout plug is tremied to the bottom of the surface casing and allowed to cure. The surface casing is then overwashed in the same manner as the inner casing, and grout is tremied from the bottom to within 4 ft of the surface. If the well was also completed with a conductor casing, it is removed in a manner similar to that for the surface casing. During FY 1993, method A was followed for the plugging and abandonment of wells GW-030, GW-031, GW-032, GW-035, GW-036, GW-037, GW-038, GW-063, GW-088, GW-234, GW-561, GW-565, GW-566, GW-571, GW-572, GW-573D, GW-573S, GW-580, and GW-607.

Method B is used for wells constructed of ≤ 7-in. OD steel or PVC well casing and completed with open-hole intervals in competent bedrock. The well casing typically extends from the ground surface to the top of the open-hole interval, which typically extends from 5 to 100 ft

Table 3.1. Summary of drilling contractor services provided at each abandoned well or boring

Well no.	Contractor	Service supplied
PZ-12	Highland Drilling Co.	Plugging and abandonment of a PVC piezometer
PZ-14	Law Engineering, Inc.	Plugging and abandonment of a PVC piezometer
PZ-24	Law Engineering, Inc.	Plugging and abandonment of a PVC piezometer
PZ-32	Highland Drilling Co.	Plugging and abandonment of a PVC piezometer
PZ-34	Law Engineering, Inc.	Plugging and abandonment of a PVC piezometer
SB-12	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
SB-14	Law Engineering, Inc.	Plugging and abandonment of a PVC monitoring well
SB-34	Law Engineering, Inc.	Plugging and abandonment of a PVC monitoring well
SB-44B	Law Engineering, Inc.	Plugging and abandonment of a PVC monitoring well
SB-54	Law Engineering, Inc.	Plugging and abandonment of a PVC monitoring well
SB-72A	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1003	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1007	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1010	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1011	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1013	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well

Table 3.1 (continued)

Well no.	Contractor	Service supplied
1014	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well
1017	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well
1022	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well
1024	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well
1025	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well
1025A	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well
1027	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well
1028	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1029	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1032	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1033	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well
1035	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well
1036	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well
1037	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1038	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1040	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well

Table 3.1 (continued)

Well no.	Contractor	Service supplied
1041	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1041	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1043	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well
1048	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well
1049	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1050	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1051	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1052	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1071	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1088	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well
1130	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1131	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1132	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1133	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
1134	Highland Drilling Co.	Plugging and abandonment of a PVC monitoring well
GW-030	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-031	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well

Table 3.1 (continued)

Well no.	Contractor	Service supplied
GW-032	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-035	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-036	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-037	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-038	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-063	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-088	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-234	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-502	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well
GW-551	Law Engineering, Inc.	Plugging and abandonment of the open interval of this monitoring well
	Highland Drilling Co.	Plugging and abandonment of the multiple steel casings of this open interval monitoring well
GW-553	Law Engineering, Inc.	Plugging and abandonment of the open interval of this monitoring well
	Highland Drilling Co.	Plugging and abandonment of the multiple steel casings of this open interval monitoring well
GW-556	Highland Drilling Co.	Plugging and abandonment of an open interval monitoring well
GW-561	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-565	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well

Table 3.1 (continued)

Well no.	Contractor	Service supplied
GW-566	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-571	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-572	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-573D	Law Engineering, Inc.	Plugging and abandonment of a stainless steel monitoring well
GW-573S	Law Engineering, Inc.	Plugging and abandonment of a stainless steel monitoring well
GW-580	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well
GW-607	Highland Drilling Co.	Plugging and abandonment of a stainless steel monitoring well

below the bottom of the well casing. The wells may also be completed with 8- to 12-in. OD steel or PVC surface casing extending from ground surface to the top of bedrock. Some wells may also be completed with a conductor casing. In method B, the open interval of the well is reamed by lowering a tricone drill bit through the casing. After reaming, the open interval is tremied with API Class A neat cement to the bottom of the well casing. After the initial plug has cured, the well casing is over washed or drilled out (depending on casing material) using a bit or washover pipe at least 0.25-in. diameter greater than the original bore. This upper portion of the bore is then filled using grout tremied to within 4 ft of the surface and capped as detailed in method A. During FY 1993, method B was used in the plugging and abandonment of wells 1013, 1014, 1017, 1020, 1022, 1024, 1025, 1025A, 1027, 1035, 1036, 1043, 1048, 1088, and GW-502.

Method C is used for wells constructed of 7-in. OD or smaller PVC well casing, typically completed with 5- to 20-ft well screens and sand filter packs. Wells completed in bedrock may also have 8- to 12-in. OD steel or PVC surface casing extending to bedrock in addition to conductor casing. In method C, the well casing is removed by either overwashing or (if the well casing material allows) by drilling out the well casing with a tricone roller bit. In both cases, the bore is reamed to at least 0.25 in. larger than the original diameter. The initial grout plug is created by placing API Class A neat cement by tremie to within 4 ft of the surface or to the bottom of surface casing. If surface casing or conductor casing is used in the well construction, removal is done as described in methods A and B. The bore is capped using compacted, noncontaminated soil to the surface. During FY 1993, method C was used in the plugging and abandonment of wells PZ-12, PZ-14, PZ-24, PZ-32, PZ-34, SB-12, SB-14, SB-24, SB-34, SB-44B, SB-54, SB-72A, 1003, 1007, 1010, 1011, 1028, 1029, 1032, 1037, 1038, 1040, 1041, 1049, 1050, 1051, 1052, 1071, 1130, 1131, 1132, 1133, and 1134.

Method D is a variation of method B that is used solely for exploratory core holes with 4.5-in. OD or smaller steel surface casings. The only variance from method B is that, in method D, the open interval of these core holes is not conditioned or reamed to expose fresh rock. This would require the prior removal of the surface casing with the resulting potential for bore collapse. In addition, open intervals are typically very deep and sometimes highly deviated from vertical. Rotary bits required for open interval reaming are not manufactured in a size small enough to ream NX core holes. The subsequent steps in the plugging and abandonment of wells using method D, from setting the initial grout plug to placing the cap, are similar to those given for method B. During FY 1993, method D was used in the plugging and abandonment of wells 1033, GW-551, GW-553, and GW-556.

The health and safety risk of working in the vicinity of the Walk in Pits Site (WIPS) and adjacent Bear Creek Burial Grounds (BCBG) "B" area necessitated a less intensive plugging and abandonment effort on the wells. The Y-12 GWPP Manager approved a modified plugging and abandonment work plan for the wells at the WIPS site that included: sealing the well casing in place, removing the well casing to ~ 4 ft below ground surface (BGS), then capping the site. In general, the wells at the WIPS site were sealed with cement-grout and/or bentonite aggregate and allowed to cure and/or hydrate. A pit was then excavated around the wellhead, and the casing stick-up was cut off and buried in the pit along with the protective posts. A detailed plugging and abandonment summary for each of the WIPS wells is found with the well summaries in Sect. 4. The wells that were plugged and abandoned at the WIPS were 1043, GW-030, GW-031, GW-032, GW-035, GW-036, GW-037, GW-038, and GW-502.

3.3 GROUTING PROCEDURES

Open Interval Wells

During plugging of the open-interval wells, the open intervals were cleaned of as much debris as possible, and API Class I (Type I) cement was either hand-mixed or delivered neat. Cement was tremied through 1.5-in. OD PVC tremie pipe. The plug of each open interval was brought up to the bottom of the innermost (deepest) casing of each well. The grout plug was allowed to cure overnight or 24 h before further plugging and abandonment activities were pursued at each well.

Following removal of casing and reaming of the borehole to expose fresh rock, cement grout was tremied to within ≤ 4 ft of the ground surface. Tremie pipe used was 1.5-in. OD PVC. Where bore depth was <20 ft BGS and/or danger of the bore bridging was negligible, neat grout was poured from the surface. The remaining bore (≤ 4 ft BGS) was subsequently filled with a compacted clay/soil cap after the plug had cured. Some abandoned wells were capped with gravel from the surrounding area to maintain use of the site as a parking or traffic area (wells 1003, 1007, 1010, and 1011).

Screened Monitoring Wells and Piezometers

Following removal of casing from these wells, neat cement grout was placed into the bore to within ≤ 4 ft of the bottom of surface casing (if no surface casing was present, grout was brought to within ≤ 4 ft of the surface). After the grout had cured, surface casings were removed, and neat cement grout was placed into the reamed bore to within 4 ft BGS. This grout was allowed to cure, and the remaining open bore was filled with a clay/soil plug.

Highland either hand-mixed API Class I (Type I) grout used in plugging and abandonment or used premixed cement delivered to the site of the same specifications. In bores >20 ft deep, grout was tremied through 1.5-in. OD PVC tremie pipe at a depth of ~ 10 to 20 ft from the bottom of the bore. Grouting of boreholes ≤ 20 ft deep or where the danger of bridging was negligible was accomplished by pouring or by pumping grout through a short hose into the bore.

3.4 WASTE MANAGEMENT PRACTICES

A waste management plan for the plugging and abandonment program was supplied by Energy Systems (Appendix C). Because the majority of the abandonment sites were outside areas of known or suspected contamination, drilling cuttings and water were discharged to the ground surface or to an excavated cuttings pit, provided that field screening criteria for radiation, volatile organics, and pH were not exceeded. Wells 1003, 1007, 1008, 1010, 1011, 1027, 1028, 1029, 1032, 1033, 1035, 1036, 1037, 1038, 1040, 1041, 1043, 1071, 1048, 1049, 1050, 1051, 1052, 1088, GW-063, GW-030, GW-031, GW-032, GW-035, GW-036, GW-037, GW-038, GW-234, and GW-502 were within areas of known or suspected contamination, and separate site-specific waste management plans were issued. Site-specific waste management plans for wells in the BCBG WIPS called for containerized disposal of personal protective equipment (PPE) and any contaminated equipment, with all casings and soils left at the site. Well 1011 (S-3 Ponds Functional Area) exhibited radioactive contamination below health and safety upgrade action levels but above waste disposal action levels, and contaminated portions of soil materials were containerized.

4. PLUGGING AND ABANDONMENT SUMMARIES

Seventy wells, piezometers, and borings were plugged and abandoned during FY 1993. A summary of the recorded well construction is given in Tables 4.1 and 4.2. (Y/TS-881). Occasional minor differences existed between reported construction and actual construction. These differences, as well as deviations from the plugging and abandonment procedures, are noted below. The location of each of the plugged and abandoned wells is shown on Plate 1.1.

PZ-12

PZ-12 was an obsolete piezometer of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The location of this piezometer also impeded construction activities. The 2.0-in. OD PVC/#40 casing and screen were removed, and the original well boring was enlarged to fresh material by reaming with a 10 5/8-in. diameter tricone roller bit to a depth of 73.5 ft BGS (2.0 ft deeper than the original bore). Type I Portland cement (2 yd) was tremied into the bore through 60 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~57 ft BGS. This grout was allowed to cure overnight and was tagged at 11.6 ft BGS. An additional 0.25 yd^3 of Portland cement was poured into the bore. This grout was allowed to cure overnight and was tagged at 0.5 ft BGS. A clay/soil cap was used to fill the remaining bore to the surface.

PZ-14

PZ-14 was an obsolete piezometer of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The location of this piezometer also impeded construction activities. The 2.0-in. OD PVC/#40 casing and screen were removed, and the original well boring was enlarged to fresh material by over-drilling the well riser with a 10 5/8-in. OD, 6 1/4-in. inside diameter (ID) hollow-stem auger to a depth of 93.6 ft BGS. Due to mechanical problems with the drill rig incurred from attempting to augur through a chert layer, the Health, Safety, Environment, and Accountability Organization (HSEA) allowed the remaining 3.4 ft of the original well to be abandoned in place. The resulting dressed bore was filled by inserting 80 ft of 1.5-in. OD PVC tremie pipe to a depth of ~77 ft BGS. Through this pipe, 2.5 yd^3 of Type I Portland cement was tremied. Upon extraction of the PVC tremie pipe, a bore collapse at ~20 ft BGS required the abandonment of 50 ft of the PVC tremie pipe within the bore. The grout was allowed to cure overnight and was tagged the following day at 21 ft BGS. An additional eight 94-lb sacks (~9.5 ft^3) of Portland cement were hand-mixed and poured into the bore. This grout was allowed to cure and was tagged at 4.5 ft BGS. The bore was plugged from a depth of 93.6 ft BGS to 4.5 ft BGS. A clay/soil cap was used to fill the remaining bore to the surface.

PZ-24

PZ-24 was an obsolete piezometer of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The location of this piezometer also impeded construction activities. The 2.0-in. OD PVC/#40 casing and screen were removed, and the original well boring was enlarged to fresh material by over-drilling the well riser with a 10 5/8-in. OD, 6 1/4-in. ID hollow-stem auger to a depth of 52.0 ft BGS (1.0 ft deeper than the original well boring) The resulting dressed bore was filled by inserting 40 ft of 1.5-in. OD PVC tremie pipe to a depth of ~37 ft BGS. Through this pipe, 16.3 ft^3 (12 94-lb sacks) of Type I Portland cement was tremied. The grout was allowed to cure overnight and was tagged the following day at 9 ft BGS. An additional three 94-lb sacks (~4.1 ft^3) of Portland cement were hand-mixed and poured into the bore. This grout was allowed to cure and was tagged at 1.9 ft BGS. A clay/soil cap was used to fill the remaining bore to the surface.

Table 4.1. Summary of abandoned well construction data, Part I (Jones, Harrington, and Field 1992)

Well no.	Y-12 Plant coordinates northing	Y-12 Plant coordinates easting	Surface elevation (ft MSL)[a]	Total depth (ft BGS)[b]	Functional area	Other names	Screened (S) Open (O)
PZ-12	N27175	E59740	Unknown	70.5	SPAD	None	S
PZ-14	N26175	E60212	Unknown	97.0	SPAD	None	S
PZ-24	N26908	E60400	Unknown	51.0	SPAD	None	S
PZ-32	N27586	E58886	Unknown	71.5	SPAD	None	S
PZ-34	N26627	E60887	Unknown	47.0	SPAD	None	S
SB-12	N27783	E59490	Unknown	19.9	SPAD	None	S
SB-14	N26580	E60323	Unknown	44.0	SPAD	None	S
SB-24	N26099	E60728	Unknown	20.0	SPAD	None	S
SB-34	N26253	E61150	Unknown	41.0	SPAD	None	S
SB-44B	N26655	E61235	Unknown	39.0	SPAD	None	S
SB-54	N25702	E60296	Unknown	21.0	SPAD	None	S
SB-72A	N26750	E59397	Unknown	96.0	SPAD	None	S
1003	N29939	E51595	1000.86	48	S3 ponds	YGMW-02/YMW-10/AP-03	S
1007	N29995	E52310	1007.8	18	S3 ponds	AP-07/YAP-03/W-03/No. 02	S
1010	N30556	E52206	1019.15	20	S3 ponds	AP-10/YAP-04/W-04/No. 06	S
1011	N29981	E52016	1006.52	22.5	S3 ponds	AP-11/YAP-05/W-05/No. 05	S
1013	N31611	E51496	1067.05	42	S-3	Y-04/AP-13	O
1014	N31759	E51522	1102.22	46.4	S-3	Y-05/AP-14	O
1017	N31683	E51399	1078.86	44.4	S-3	Y-08/AP-17	O
1022	N31280	E51512	1056.14	48	S-3	Y-13/AP-22	O
1024	N31681	E51703	1060.69	40.0	S-3	Y-15/AP-24	O
1025	N31581	E51554	1060.05	50	S-3	Y-16/AP-25	O
1025A	Unknown	Unknown	Unknown	Unknown	S-3	Unknown	O
1027	N30663	E44309	1022.98	100.0	BCBG	YGMW-05/BG-01/No. 07	O
1028	N29427	E45511	923.84	29.0	BCBG	YGMW-06/YMW-11/BG-02	S
1029	N29502	E44102	927.92	18.5	BCBG	YGMW-07/BG-03/No. 09	S
1032	N29243	E43748	917.74	57.0	BCBG	YGMW-10/YMW-01/BG-06	S
1033	N30016	E42899	948.28	160.0	BCBG	YGMW-11/BG-07	O
1035	N31011	E42430	1001.60	100.0	BCBG	YGMW-13/BG-09/No. 03	O
1036	N30197	E42173	944.30	100.0	BCBG	YGMW-14/BG-10/No. 06	O
1037	N29731	E41185	914.40	45.0	BCBG	YGMW-15/YMW-07/BG-11	S
1038	N31111	E42810	1008.16	26.0	BCBG	BG-12/No. 01	S
1040	N30766	E42331	966.69	23.0	BCBG	BG-14/No. 04/YBG2-4	S
1041	N30313	E42185	955.50	29.6	BCBG	BG-15/No. 05	S
1043	N30434	E42887	1009.07	150.0	BCBG/WIPS	BG-17/USGS A/YBG2-7	O
1048	N30288	E47771	981.65	100.0	OL	YGMW-17/OD-01/No. 13	O
1049	N29883	E47387	954.49	20.0	OL	YGMW-18/YMW-05/OD-02	S
1050	N29370	E46969	944.13	22.0	OL	YGMW-19/OD-03/No. 10	S
1051	N29797	E47777	963.67	28.0	OL	OD-04/No. 12	S

Table [illegible] (continued)

Well no.	Y-12 Plant coordinates northing	Y-12 Plant coordinates easting	Surface elevation (ft MSL)[a]	Total depth (ft BGS)[b]	Functional area	Other names	Screened (S) Open (O)
1052	N29836	E46990	948.91	22.0	OL	OD-05/No. 11	S
1071	N30961	E42826	980.35	21.0	BCBG	BG-13/No. 02	S
1088	N29342	E49162	960.93	117.7	OL	CO-6	O
1130	N26314	E59972	948.14	23.5	SPAD	None	S
1131	N26834	E60036	969.19	30.0	SPAD	None	S
1132	N27243	E60134	984.43	30.0	SPAD	None	S
1133	N27423	E59147	1060.81	24.0	SPAD	None	S
1134	N26814	E58819	1094.57	190.0	SPAD	None	S
GW-030	N30235	E43108	969.79	40.0	BCBG/WIPS	None	S
GW-031	N30240	E43109	970.11	70.0	BCBG/WIPS	None	S
GW-032	N30388	E42850	998.92	54.1	BCBG/WIPS	None	S
GW-035	N30712	E43183	993.94	62.0	BCBG/WIPS	None	S
GW-036	N30778	E43262	991.77	39.1	BCBG/WIPS	None	S
GW-037	N30685	E43346	1002.32	70.0	BCBG/WIPS	None	S
GW-038	N30533	E43373	1004.67	52.5	BCBG/WIPS	None	S
GW-063	N29016	E48257	958.89	35.0	OL	None	S
GW-088	N30578	E43768	956.66	30.0	BCBG	None	S
GW-234	N30620	E43621	947.36	16.5	BCBG	None	S
GW-502	N30269	E43114	977.81	260.0	BCBG/WIPS	None	O
GW-551	N27299	E60263	990.36	350.20	SPAD	None	O
GW-553	N26363	E61047	1045.26	599.3	SPAD	None	O
GW-556	N27359	E58159	982.46	354.5	SPAD	None	O
GW-561	N27811	E59323	1030.74	94.00	CR	None	S
GW-565	N27363	E58174	982.68	61.00	CR	None	S
GW-566	N26360	E61060	1045.62	188.00	CR	None	S
GW-571	N27672	E58936	1062.22	80.00	CR	None	S
GW-572	N27751	E58964	1072.09	74.0	CR	None	S
GW-573D	N27028	E60852	979.95	89.8	CR	None	S
GW-573S	N27044	E60847	980.04	15.0	CR	None	S
GW-580	N27846	E59309	1032.91	80.0	CR	None	S
GW-607	N27866	E58922	1072.86	151.3	CRSP	None	S

[a] MSL = mean sea level
[b] BGS = below ground surface

Table 4.2. Summary of abandoned well construction data, Part II (Jones, Harrington, and Field 1992)

Well no.	Protective casing Depth/O.D. (ft, BGS/in.)	Surface casing[a] type	Surface casing depth[a] O.D. (ft, BGS/in.)	TOWR[b] (ft, BGS)	TOFR[c] (ft, BGS)	Plugging and Abandonment method	Rock formations
PZ-12	None	PVC/#40	70.5./2.0	70.0	Unknown	C	Knox
PZ-14	None	PVC/#40	97.0/2.0	Unknown	Unknown	C	Knox
PZ-24	None	PVC	51.0/2.0	50	Unknown	C	Knox
PZ-32	None	PVC/#40	71.5/2.0	Unknown	Unknown	C	Knox
PZ-34	None	PVC	47.0/2.0	Unknown	Unknown	C	Knox
SB-12	None	PVC	19.9/2.0	Unknown	Unknown	C	Knox
SB-14	None	PVC	44.0/2.0	Unknown	Unknown	C	Knox
SB-24	None	PVC	20.0/2.0	Unknown	Unknown	C	Knox
SB-34	None	PVC	41.0/2.0	Unknown	Unknown	C	Knox
SB-44B	None	PVC	39.0/2.0	Unknown	Unknown	C	Knox
SB-54	None	PVC	21.0/2.0	Unknown	Unknown	C	Knox
SB-72A	None	PVC	96.0/2.0	84.5	Unknown	C	Knox
1003	None	PVC/#40	48.0/6.5	15.0	26.0	C	Nolichucky
1007	None	PVC/#40	18.1/6.5	Unknown	Unknown	C	Nolichucky
1010	None	PVC/#40	23.2/6.5	24.0	Unknown	C	Nolichucky/Maryville
1011	None	PVC/#40	20.0/6.5	Unknown	Unknown	C	Nolichucky
1013	None	Steel	28.0/6.5	28.0	Unknown	B	Con: Pumpkin Valley
1014	None	Steel	36.0/6.5	36.0	Unknown	B	Con: Pumpkin Valley
1017	None	Steel	29.0/6.5	29.0	Unknown	B	Con: Pumpkin Valley
1022	None	Steel	30.0/6.5	30.0	Unknown	B	Con: Rutledge
1024	None	Steel	20.0/6.5	20.0	Unknown	B	Con: Pumpkin Valley
1025	None	Steel	30.0/6.5	30.0	Unknown	B	Con: Pumpkin Valley
1025A	Unknown	Unknown	Unknown	Unknown	Unknown	B	Unknown
1027	None	PVC/#40	28.0/6.5	15.0	42.0	B	Maryville
1028	None	PVC/#40	29.0/6.5	2.2	12.2	C	Nolichucky
1029	None	PVC/#40	18.5/6.5	6.0	18.5	C	Nolichucky
1032	None	PVC/#40	57.0/6.5	3.0	38.0	C	Maynardville
1033	None	Steel/Gal.	110.0/6.5	7.0	45.0	D	Maryville
1035	None	PVC/#40	28.0/6.5	11.0	23.0	B	Pumpkin Valley
1036	None	PVC/#40	33.3/6.5	10.0	33.0	B	Maryville
1037	None	PVC/#40	45.0/6.5	0.0	15.0	C	Nolichucky
1038	None	PVC/#40	26.0/6.5	2.0	25.0	C	Pumpkin Valley
1040	None	PVC/#40	23.0/6.5	6.0	23.0	C	Rutledge
1041	None	PVC/#40	29.5/6.5	5.0	29.6	C	Maryville
1043	None	Steel	unk./6.62	Unknown	Unknown	B	Maryville

Table 4-2 (continued)

Well no.	Protective casing Depth/O.D. (ft, BGS/in.)	Surface casing[a] type	Surface casing depth[a] O.D. (ft, BGS/in.)	TOWR[b] (ft, BGS)	TOFR[c] (ft, BGS)	Plugging and Abandonment method	Rock formations
1048	None	PVC/#40	30.0/6.5	3.6	25.0	B	Maryville
1049	None	PVC/#40	20.0/6.5	1.0	22.0	C	Nolichucky
1050	None	PVC/#40	22.0/6.5	5.6	22.0	C	Maynardville
1051	None	PVC/#40	28.0/6.5	7.6	28.0	C	Nolichucky
1052	None	PVC/#40	22.0/6.5	4.0	22.0	C	Nolichucky
1071	None	PVC/#40	20.0/6.5	3.5	19.0	C	Rutledge
1088	None	Steel	Unk./6.5	Unknown	Unknown	B	Maynardville
1130	None	PVC/#40	23.5/4.0	Unknown	Unknown	C	Knox
1131	None	PVC/#40	30.0/4.0	Unknown	Unknown	C	Knox
1132	None	PVC/#40	27.6/4.0	Unknown	Unknown	C	Knox
1133	5.0/6.0	PVC/#40	24.0/4.0	Unknown	Unknown	C	Knox
1134	86.0/8.75	PVC/#40	189.0/4.0	81.9	85.3	C	Knox
GW-030	Unknown	SS/#304	37.8/2.37	0.0	38.0	A	Maryville
GW-031	Unknown	SS/#304	65.7/2.37	0.0	38.5	A	Maryville
GW-032	unk./4.0	SS/#304	49.5/2.37	0.0	28.6	A	Maryville
GW-035	None	SS/#304	59.1/2.37	0.0	17.0	A	Maryville
GW-036	2.1/6.62	SS/#304	36.9/2.37	1.5	Unknown	A	Rogersville
GW-037	2.7/6.62	SS/#304	66.5/2.37	1.5	39.0	A	Maryville
GW-038	3.3/6.62	SS/#304	51.2/2.37	3.7	Unknown	A	Maryville
GW-063	2.7/6.5	SS/#304	32.7/2.37	Unknown	16.7	A	Maynardville
GW-088	2.9/5.0	SS/#304	30.0/2.37	Unknown	Unknown	A	Maryville
GW-234	2.0/4.0	SS/#304	16.5/2.37	7.0	Unknown	A	Maryville
GW-502	unk./10.75	Steel/F25	223.7/6.62	0.0	32.5	B	Nolichucky
GW-551	90.5/6.5	Steel	145.0/1.0	Unknown	90.5	D	Knox
GW-553	90.5/6.5	Steel	361.0/2.0	Unknown	Unknown	D	Knox
GW-556	101.0/4.0 50.0/11.75 77.0/6.63 70.7/4.6	Steel	Unk./1.0	Unknown	70.3	D	Knox
GW-561[d]	None	PVC/#40	27.0/1.0	54.3	87.7	A	Knox
	None	SS/#304	89.9/4.0	Unknown	Unknown		Knox
GW-565	3.5/10.75	SS/#304	57.3/4.0	Unknown	46.5	A	Knox
GW-566	None	SS/#304	173.0/4.0	Unknown	67.0	A	Knox
GW-571	None	SS/#304	73.3/2.0	Unknown	22.0	A	Knox
GW-572	None	SS/#304	67.4/2.0	Unknown	Unknown	A	Knox
GW-573D	None	SS/#304	89.8/2.0	Unknown	Unknown	A	Knox
GW-573S	None	SS/#304	15.0/2.0	Unknown	Unknown	A	Knox

Table 4.2 (continued)

Well no.	Protective casing Depth/O.D. (ft, BGS/in.)	Surface casing[a] type	Surface casing depth[a] O.D. (ft, BGS/in.)	TOWR[b] (ft, BGS)	TOFR[c] (ft, BGS)	Plugging and Abandonment method	Rock formations
GW-580	None	SS/#304	76.7/2.0	Unknown	Unknown	A	Knox
GW-607	106.8/10.75	SS/#304	151.3/4.5	Unknown	107.0	A	Knox

[a] Surface casing denotes surface casing for open -nterval wells and well casing for screened-interval wells in this column.

[b] TOWR - Top Of Weathered Rock

[c] TOFR - Top Of Fresh Rock

d Second entry for GW-607 is for nested piezometer installed in the same original bore

PZ-32

PZ-32 was an obsolete piezometer of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The location of this piezometer also impeded construction activities. The 2.0-in. OD PVC/#40 casing and screen were removed, and the original well boring was enlarged to fresh material by reaming with a 10 5/8-in. diameter tricone roller bit to a depth of 73.7 ft BGS (2.2 ft deeper than the original bore). The resulting dressed bore was filled by inserting 60 ft of 1.5-in. OD PVC tremie pipe to a depth of ~ 57 ft BGS. Through this pipe, 2.0 yd^3 of Type I Portland cement was tremied. The grout was allowed to cure overnight and was tagged at 37.5 ft BGS. An additional 0.5 yd^3 of Portland cement was tremied into the remaining bore through 20 ft of 1.5-in. OD PVC tremie pipe installed to ~17 ft BGS. This grout was allowed to cure overnight and was tagged at 6 ft BGS. HSEA approved leaving the depth to the top of this plug at 6 ft BGS. A clay/soil cap was used to fill the remaining bore to the surface.

PZ-34

PZ-34 was an obsolete piezometer of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The location of this piezometer also impeded construction activities. The 2.0-in. OD PVC/#40 casing and screen were removed, and the original well boring was enlarged to fresh material by over-drilling the well riser with a 10 5/8-in. OD, 6 1/4-in. ID hollow-stem auger to a depth of 48.0 ft BGS (1.0 ft deeper than the original well boring) The resulting dressed bore was filled by inserting 40 ft of 1.5-in. OD PVC tremie pipe to a depth of ~37 ft BGS. Through this pipe, 16.3 ft^3 (12 94-lb sacks) of Type I Portland cement was tremied. The grout was allowed to cure overnight and was tagged the following day at 27 ft BGS. An additional ten 94-lb sacks (~13.6 ft^3) of Portland cement were hand-mixed and poured into the bore. This grout was allowed to cure and was tagged at 6.0 ft BGS. HSEA approved leaving the depth to the top of this plug at 6 ft BGS. A clay/soil cap was used to fill the remaining bore to the surface.

SB-12

SB-12 was an obsolete monitoring well of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The location of this monitoring well also impeded construction activities. The 2.0-in. OD PVC casing and screen were removed, and the original well boring was enlarged to fresh material by reaming with a 10 5/8-in. diameter tricone roller bit to a depth of 20.7 ft BGS (0.8 ft deeper than the original bore). The resulting dressed bore was filled by pouring seven 94-lb. sacks of Type I Portland cement into the bore. This grout was allowed to cure overnight and was tagged at 5.6 ft BGS. HSEA approved leaving the depth to the top of this plug at 5.6 ft BGS. A clay/soil cap was used to fill the remaining bore to the surface.

SB-14

SB-14 was an obsolete monitoring well of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The location of this monitoring well also impeded construction activities. The 2.0-in. OD PVC/#40 casing and screen were removed, and the original well boring was enlarged to fresh material by over-drilling the well riser with a 10 5/8-in. OD, 6 1/4-in. ID hollow-stem auger to a depth of 45.0 ft BGS (1.0 ft deeper than the original well boring) The resulting dressed bore was filled by inserting 40 ft of 1.5-in. OD PVC tremie pipe to a depth of ~ 37 ft BGS. Through this pipe, 16.3 yd^3 (12 94-lb sacks) of Type I Portland cement was tremied. The grout was allowed to cure overnight and was tagged the following day at 6.3 ft BGS. An additional two 94-lb sacks (~2.7 ft^3) of Portland cement were hand-mixed and poured into the bore. This grout was allowed to cure and was tagged at 1.2 ft BGS. A clay/soil cap was used to fill the remaining bore to the surface.

SB-24

SB-24 was an obsolete monitoring well of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The location of this monitoring well also impeded construction activities. The 2.0-in. OD PVC casing and screen were removed, and the original well boring was enlarged to fresh material by over-drilling the well riser with a 10 5/8-in. OD, 6 1/4-in. ID hollow-stem auger to a depth of 22.0 ft BGS (2.0 ft deeper than the original well boring) The resulting dressed bore was filled by inserting 20 ft of 1.5-in. OD PVC tremie pipe to a depth of ~16 ft BGS. Through this pipe 4.1 ft^3 (three 94-lb sacks) of Type I Portland cement was tremied. The grout was allowed to cure overnight and was tagged the following day at 5.8 ft BGS. HSEA approved leaving the depth to the top of this plug at 5.6 ft BGS. A clay/soil cap was used to fill the remaining bore to the surface.

SB-34

SB-34 was an obsolete monitoring well of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The location of this monitoring well also impeded construction activities. The 2.0-in. OD PVC casing and screen were removed, and the original well boring was enlarged to fresh material by over-drilling the well riser with a 10 5/8-in. OD, 6 1/4-in. ID hollow-stem auger to a depth of 42.0 ft BGS (1.0 ft deeper than the original well boring) The resulting dressed bore was filled by inserting 40 ft of 1.5-in. OD PVC tremie pipe to a depth of ~ 37 ft BGS. Through this pipe 16.3 ft^3 (12 94-lb sacks) of Type I Portland cement was tremied. The grout was allowed to cure overnight and was tagged the following day at 8.0 ft BGS. An additional three 94-lb. sacks of Type I Portland cement were mixed and poured into the bore and allowed to cure overnight. The following day, grout was tagged at 0.3 ft BGS. A clay/soil cap was used to fill the remaining bore to the surface.

SB-44B

SB-44B was an obsolete monitoring well of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The location of this monitoring well also impeded construction activities. The 2.0-in. OD PVC casing and screen were removed, and the original well boring was enlarged to fresh material by over-drilling the well riser with a 10 5/8-in. OD, 6 1/4-in. ID hollow-stem auger to a depth of 40.0 ft BGS (1.0 ft deeper than the original well boring) The resulting dressed bore was filled by inserting 30 ft of 1.5-in. OD PVC tremie pipe to a depth of ~ 27 ft BGS. Through this pipe 16.3 ft^3 (12 94-lb sacks) of Type I Portland cement was tremied. The grout was allowed to cure overnight and was tagged the following day at 2.3 ft BGS. A clay/soil cap was used to fill the remaining bore to the surface.

SB-54

SB-54 was an obsolete monitoring well of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The location of this monitoring well also impeded construction activities. The 2.0-in. OD PVC casing and screen were removed, and the original well boring was enlarged to fresh material by over-drilling the well riser with a 10 5/8-in. OD, 6 1/4-in. ID hollow-stem auger to a depth of 22.0 ft BGS (1.0 ft deeper than the original well boring) The resulting dressed bore was filled by inserting 20 ft of 1.5-in. OD PVC tremie pipe to a depth of ~ 17 ft BGS. Through this pipe 5.4 ft^3 (four 94-lb sacks) of Type I Portland cement was tremied. The grout was allowed to cure overnight and was tagged the following day at 5.1 ft BGS. HSEA approved leaving the depth to the top of this plug at 5.6 ft BGS. A clay/soil cap was used to fill the remaining bore to the surface.

SB-72A

SB-72A was an obsolete monitoring well of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The location

of this monitoring well also impeded construction activities. The 2.0-in. OD PVC casing and screen were removed, and the original well boring was enlarged to fresh material by reaming with a 10 5/8-in. diameter tricone roller bit to a depth of 98.3 ft BGS (2.3 ft deeper than the original bore). The resulting dressed bore was filled by inserting 90 ft of 1.5-in. OD PVC tremie pipe to a depth of ~ 87 ft BGS. Through this pipe, 3.5 yd^3 of Type I Portland cement was tremied. The grout was allowed to cure overnight and was tagged at 60.5 ft BGS. An additional 2.0 yd^3 of Portland cement was tremied into the remaining bore through 50 ft of 1.5-in. OD PVC tremie pipe installed to ~ 47 ft BGS. This grout was allowed to cure overnight and was tagged at 82.0 ft BGS. Apparently, the "grout level" tagged previously was an object bridging the bore instead of grout. HSEA approved the use of bentonite. Eight 50-lb. sacks of bentonite aggregate were poured into the bore and hydrated with 50 gal of potable water. After allowing ~ 7 h for complete hydration, the bentonite was tagged at 70.6 ft BGS. An additional 2.0 yd^3 of Type I Portland cement was tremied through 30 ft of 1.5-in. OD PVC tremie pipe installed to 28 ft BGS. The following day, grout was tagged at 22 ft BGS. A final 0.5 yd^3 of cement grout was poured into the bore. After allowing the grout to cure overnight, grout level was tagged at 2.9 ft BGS. A clay/soil cap was used to fill the remaining bore to the surface.

1003

Monitoring well 1003 was obsolete with substandard construction. The 6.5-in. OD PVC/#80 casing and screen were partially removed, and the original well boring was enlarged to fresh material by reaming the well riser with a 10 5/8-in. diameter tricone roller bit to a depth of 27.0 ft BGS. Due to the nature of the fill material in which the well was installed, the boring was unstable and repeatedly collapsed. HSEA gave permission to abandon the remainder of the bore (from ~ 27.0 ft BGS to 48.0 ft BGS) in place. The bore collapsed and filled from 27.0 ft BGS to 20.0 ft BGS as the drill was extracted. The remaining bore was filled by pouring 1.5 yd^3 of Type I Portland cement directly in from the surface. This grout was allowed to cure overnight and was tagged the following day at 7.5 ft BGS. An additional 0.25 yd^3 of grout was poured into the bore and allowed to cure. The final depth to grout was 1.0 ft BGS. The remaining bore was backfilled with gravel from the surrounding area to match the area usage with the permission of HSEA.

1007

Monitoring well 1007 was obsolete with substandard construction. The 6.5-in. OD PVC/#40 casing and screen were removed, and the original well boring was enlarged to fresh material by over-drilling the well riser with a 12-in. OD, 8-in. ID hollow-stem auger to a depth of 20.0 ft BGS (1.9 ft deeper than the original well boring) The resulting dressed bore was filled by pouring 16 94-lb sacks (18.9 ft^3) of Type I Portland cement. The grout was allowed to cure overnight and was tagged the following day at 3.0 ft BGS. A clay/soil cap was used to fill the remaining bore to the surface.

1010

Monitoring well 1010 was obsolete with substandard construction. The 6.5-in. OD PVC/#40 casing and screen were removed, and the original well boring was enlarged to fresh material by over-drilling the well riser with a 12-in. OD, 8-in. ID hollow-stem auger to a depth of 24.0 ft BGS (0.8 ft deeper than the original well boring).

The bore collapsed and filled from 24.0 ft BGS to 19.0 ft BGS as the drill was extracted. The remaining bore was filled by pouring 0.5 yd^3 of Type I Portland cement. The grout was allowed to cure overnight and was tagged the following day at 10.0 ft BGS. An additional five 94-lb sacks of Type I Portland cement were mixed and poured into the remaining bore. This grout was allowed to cure overnight and was tagged at 0.5 ft BGS. With the permission of HSEA, gravel from the surrounding parking lot was used to cap the remaining bore to the surface.

1011

Monitoring well 1011 was obsolete with substandard construction. The 6.5-in. OD PVC/#40 casing and screen were removed, and the original well boring was enlarged to fresh material by over-drilling the well riser with a 12-in. OD, 8-in. ID hollow-stem auger to a depth of 21.0 ft BGS (1.0 ft deeper than the original well boring) The resulting dressed bore was filled by pouring 0.5 yd^3 of Type I Portland cement. The grout was allowed to cure overnight and was tagged the following day at 3.7 ft BGS. A clay/soil cap was used to fill the remaining bore to the surface. During over-drilling of the casing, returned cuttings from 9.0 ft BGS to ~ 13 ft BGS exceeded on-site disposal criteria by exhibiting beta radiation emissions greater than 500 cpm above background. HSEA was notified, and the contaminated cuttings were drummed. Maximum beta emissions were ~ 700 cpm and did not exceed the criteria for an upgrade in PPE. All tools and materials that had the potential to come into contact with contaminants were screened to verify that they did not exceed 100 cpm above background levels before they were allowed to leave the site.

1013

Monitoring well 1013 was obsolete with substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The open interval of this well was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to 47.2 ft BGS (2.3 ft deeper than the actual depth of 44.9 ft BGS) and was plugged with four 94-lb sacks (4.7 cubic ft) of Type I Portland cement pumped through 40 ft of 1.5-in OD PVC tremie pipe installed to 37 ft BGS. This plug was allowed to cure overnight and was tagged the following day at 19.2 ft BGS (8.8 ft higher than the bottom of the steel surface casing). The 6.5-in. OD steel surface casing was washed over to a depth of 21.9 ft BGS with 9.5-in. OD, 8.25-in. ID washover pipe.

The total amount of casing extracted was 30.6 ft. The resulting bore was reamed to 30.8 ft BGS (2.8 ft deeper than the casing depth) with a 10 5/8-in. diameter tricone roller bit. This bore was then plugged by pumping fourteen 94-lb sacks (16.5 cubic ft) of Type I Portland cement through 30 ft of 1.5-in. OD PVC tremie pipe installed to 29 ft BGS. This plug was allowed to cure overnight and grout was tagged the following day at 2.9 ft BGS. The remainder of the bore was capped using clay/soil.

1014

Monitoring well 1014 was obsolete and of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The open interval of this well was reamed to a depth of 48.5 ft BGS (2.0 ft deeper than the original reported well depth) with a 6 1/8-in. diameter tricone roller bit. The dressed open interval was plugged with three 94-lb sacks of Type I Portland cement pumped through 30 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 29 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 34.5 ft BGS. The 6.5-in. OD steel surface casing was removed by overwashing with 9.5-in. OD, 8.25-in. ID washover pipe to a depth of 36.0 ft BGS.

The total amount of casing extracted was 37.0 ft (including 1.0 ft of casing stick-up that was cut off prior to over-drilling). The resulting bore was not reamed because the bore produced by overwashing was larger than the original well boring. The open bore was plugged by pumping ten 94-lb sacks (11.8 ft^3) of Type I Portland cement through 30 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 27 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 5.5 ft BGS. An additional two 94-lb sacks of Type I Portland cement (2.4 ft^3) were poured into the bore. This grout was allowed to cure overnight and was tagged at 1.5 ft BGS. The bore was capped with clay/soil.

1017

Monitoring well 1017 was obsolete with substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The open interval of this well was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to 47.5 ft BGS (3.0 ft deeper than the actual depth of 44.5 ft BGS) and was plugged with four 94-lb sacks (4.7 cubic ft) of Type I Portland cement pumped through 40 ft of 1.5-in OD PVC tremie pipe installed to 37 ft BGS. This plug was allowed to cure overnight and was tagged the following day at 21.0 ft BGS (8.0 ft higher than the bottom of the steel surface casing). The 6.5-in. OD steel surface casing was washed over to a depth of 23.0 ft BGS with 9.5-in. OD, 8.25-in. ID washover pipe.

The total amount of casing extracted was 28.7 ft. The resulting bore was reamed to 31.0 ft BGS (2.0 ft deeper than the casing depth) with a 10 5/8-in. diameter tricone roller bit. This bore was then plugged by pumping twelve 94-lb sacks (14.2 cubic ft) of Type I Portland cement through 30 ft of 1.5-in. OD PVC tremie pipe installed to 27 ft BGS. This plug was allowed to cure overnight and grout was tagged the following day at 1.5 ft BGS. The remainder of the bore was capped using clay/soil.

1022

Monitoring well 1014 was obsolete and of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The open interval of this well was reamed to a depth of 49.6 ft BGS (1.6 ft deeper than the original reported well depth) with a 6 1/8-in. diameter tricone roller bit. The dressed open interval was plugged with four 94-lb sacks of Type I Portland cement pumped through 50 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 49 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 27.7 ft BGS. The 6.5-in. OD steel surface casing was removed by overwashing with 9.5-in. OD, 8.25-in. ID washover pipe to a depth of 22.5 ft BGS.

The total amount of casing extracted was 31.0 ft (including 3.0 ft of casing stick-up cut off prior to over-drilling). The resulting bore was reamed to a depth of 31.0 ft BGS with a 9 7/8-in. diameter tricone roller bit. The open bore was plugged by pumping 12 94-lb sacks (14.6 ft^3) of Type I Portland cement through 20 ft of 1.5 -in. OD PVC tremie pipe installed to a depth of ~ 19 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 8.0 ft BGS. An additional 94-lb sack of Type I Portland cement (1.2 ft^3) was poured into the bore. This grout was allowed to cure overnight and was tagged at 2.0 ft BGS. The bore was capped with clay/soil.

1024

Monitoring well 1024 was obsolete and of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The open interval of this well was reamed to a depth of 43.2 ft BGS (3.2 ft deeper than the original reported will depth) with a 6 1/8-in. diameter tricone roller bit. The dressed open interval was plugged with four 94 lb sacks of Type I Portland cement pumped through 40 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~39 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 13.0 ft BGS. The 6.5-in. OD steel surface casing was removed by over washing with 9.5-in. OD, 8.25-in. ID washover pipe to a depth of 22.4 ft BGS.

The total amount of casing extracted was 20 ft. The open bore was plugged by pumping ten 94-lb sacks (11.8 ft^3) of Type I Portland cement through 20 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~19 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 3.0 ft BGS. The bore was capped with clay/soil.

1025

Monitoring well 1025 was obsolete with substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The open interval of this well was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to 51.5 ft BGS (1.5 ft deeper than the reported depth of 50.0 ft BGS) and was plugged with four 94-lb sacks (4.7 cubic ft) of Type I Portland cement pumped through 50 ft of 1.5-in OD PVC tremie pipe installed to 46 ft BGS. This plug was allowed to cure overnight and was tagged the following day at 30.6 ft BGS (0.6 ft below the bottom of the steel surface casing). The 6.5-in. OD steel surface casing was washed over to a depth of 22.0 ft BGS with 9.5-in. OD, 8.25-in. ID washover pipe.

The total amount of casing extracted was 29.6 ft. This bore was then plugged by pumping ten 94-lb sacks (11.8 cubic ft) of Type I Portland cement through 20 ft of 1.5-in. OD PVC tremie pipe installed to 19 ft BGS. This plug was allowed to cure overnight and grout was tagged the following day at 4.0 ft BGS. The remainder of the bore was capped using clay/soil.

1025A

Monitoring well 1025A was obsolete with substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The open interval of this well was reamed to fresh material using a 6 1/8-in. diameter tricone roller bit to 44.6 ft BGS (3.0 ft deeper than the actual depth of 41.6 ft BGS) and was plugged with three 94-lb sacks (3.5 cubic ft) of Type I Portland cement pumped through 40 ft of 1.5-in OD PVC tremie pipe installed to 38 ft BGS. This plug was allowed to cure overnight and was tagged the following day at 25.1 ft BGS (2.5 ft higher than the bottom of the steel surface casing). The 6.5-in. OD steel surface casing was washed over to a depth of 23.2 ft BGS with 9.5-in. OD, 8.25-in. ID washover pipe.

The total amount of casing extracted was 28.9 ft. The resulting bore was reamed to 30.3 ft BGS (2.7 ft deeper than the casing depth) with a 10 5/8-in. diameter tricone roller bit. This bore was then plugged by pumping fifteen 94-lb sacks (17.7 cubic ft) of Type I Portland cement through 30 ft of 1.5-in. OD PVC tremie pipe installed to 28.5 ft BGS. This plug was allowed to cure overnight and grout was tagged the following day at 5.8 ft BGS. An additional sack of cement was poured into the bore and allowed to cure. The top of cured grout was tagged at 2.0 ft BGS. The remainder of the bore was capped using clay/soil.

1027

Monitoring well 1027 was obsolete and of substandard construction. Well security was compromised by an absence of a locking mechanism to prevent unauthorized access. The location of this monitoring well also interfered with closure activities. The 6.5-in. OD PVC/#40 casing was removed, and the subtending open interval was enlarged to fresh material by reaming the well with a 10 5/8-in. diameter tricone roller bit to a depth of 101.5 ft BGS (1.5 ft deeper than the original depth). Due to the nature of the material in which the well was installed, the boring was unstable and repeatedly collapsed. The bore collapsed and filled from 101.5 ft BGS to 85.0 ft BGS as the drill was extracted. HSEA gave permission to abandon the collapsed portion of the bore in place. The remaining bore was filled by pouring 2.5 yd^3 of Type I Portland cement through 80 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 77 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 7.5 ft BGS. An additional 2.5 94-lb sacks of cement (~ 3 ft^3) of grout was poured into the bore and allowed to cure. The final depth to grout were 2.0 ft BGS. The remaining bore was capped with clay/soil.

1028

Monitoring well 1028 was obsolete and of substandard construction. The location of this monitoring well also interfered with closure activities. The 6.5-in. OD PVC/#40 casing and screen were removed and the borehole enlarged to fresh material by reaming the well with a 10 5/8-in.

diameter tricone roller bit to a depth of 30.2 ft BGS (1.2 ft deeper than the original depth). The resulting bore was filled by pouring 0.6 yd^3 of Type I Portland cement through 30 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 29 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 5.2 ft BGS. An additional 94-lb sack of cement (~ 1.2 ft^3) of grout was poured into the bore and allowed to cure. The final depth to grout was 2.2 ft BGS. The remaining bore was capped with clay/soil.

1029

Monitoring well 1029 was obsolete and of substandard construction. The location of this monitoring well also interfered with closure activities. The 6.5-in. OD PVC/#40 casing and screen were removed and the borehole enlarged to fresh material by reaming the well with a 10 5/8-in. diameter tricone roller bit to a depth of 19.5 ft BGS (1.0 ft deeper than the original depth). Due to the nature of the material in which the well was installed, the boring was unstable and filled from 19.5 ft BGS to 19.0 ft BGS as the drill was extracted. HSEA gave permission to abandon the collapsed portion of the bore in place. The remaining bore was filled by pouring four 94-lb sacks (5.4 ft^3) of Type I Portland cement directly into the boring. This grout was allowed to cure overnight and was tagged the following day at 2.2 ft BGS. The remaining bore was capped with clay/soil.

1032

Monitoring well 1032 was obsolete and of substandard construction. The location of this monitoring well also interfered with closure activities. The 6.5-in. OD PVC/#40 casing and screen were removed and the borehole enlarged to fresh material by reaming the well with a 10 5/8-in. diameter tricone roller bit to a depth of 59.0 ft BGS (2.0 ft deeper than the original depth). Due to the nature of the material in which the well was installed, the boring was unstable and filled from 59.0 ft BGS to 57.0 ft BGS as the drill was extracted. HSEA gave permission to abandon the collapsed portion of the bore in place. The remaining bore was filled by pumping ~ 1 yd^3 of Type I Portland cement through 50 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 49 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 21.0 ft BGS. An additional 10.5 ft^3 (eight 94-lb sacks) of Type I Portland cement was poured into the bore. This grout was allowed to cure overnight and was tagged at 4.7 ft BGS. An additional 0.3 sack of cement was poured into the bore, and the remaining bore was capped with clay/soil with a curing time less than 24 h.

1033

Monitoring well 1033 was obsolete and of substandard construction. The location of this monitoring well also interfered with closure activities. The open interval of this well was reamed to a depth of 162.0 ft BGS (2.0 ft deeper than the original well depth) with a 6 1/8-in. diameter tricone roller bit. The dressed open interval was plugged with nine 94-lb sacks of Type I Portland cement pumped through 140 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 137 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 99.9 ft BGS. The 6.5-in. OD galvanized steel surface casing was removed by overwashing with 9.0-in. OD, 8.5-in. ID washover pipe to a depth of 86.0 ft BGS. The resulting bore was reamed to a depth of 92 ft BGS with a 10 5/8-in. diameter tricone roller bit. Due to the nature of the material in which the well was installed, the boring was unstable and caved, trapping the bit. The drill rod was overwashed with 6.0-in. OD, 5.0-in. ID washover pipe to a depth of 66.4 ft BGS in order to free the tools. The tools were extracted from the boring, and HSEA gave permission to abandon the collapsed portion of the bore in place (from 99.9 ft BGS to 32.2 ft BGS) and to seal the remaining bore with bentonite to the measured predrilling piezometric surface level. The bore was sealed from 32.2 ft BGS to 18.4 ft BGS by pouring 47 50-lb sacks of bentonite aggregate directly from the surface. The remaining open bore was plugged by pumping eight 94-lb sacks (9.4 ft^3) of Type I Portland cement through 20 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 17 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 7.5 ft BGS. An additional 2.4 ft^3 (two 94-lb

sacks) of Type I Portland cement was poured into the bore. This grout was allowed to cure overnight and was tagged at 1.9 ft BGS. The bore was capped with clay/soil.

1035

Monitoring well 1035 was obsolete and of substandard construction. The location of this monitoring well also interfered with closure activities. Well 1028 was located in a radiological area, and in order to minimize the amount of waste generated, HSEA gave permission to plug the open interval of the well (28.0 ft BGS to 100.0 ft BGS) by pouring nineteen, 50 lb sacks of bentonite aggregate into the bore and hydrated with existing will water overnight. The following day, the top of the hydrated bentonite was tagged at 24.5 ft BGS. The 6.5-in. OD PVC/#40 casing was over-drilled and enlarged to fresh material with a 12-in. OD, 8-in. ID hollow-stem auger to a refusal depth of 18.3 ft BGS. The total amount of casing extracted was 13.4 ft (including 1.4 ft of casing stick-up cut off prior to over-drilling).

The bore collapsed and filled from 24.5 ft BGS to 17.0 ft BGS as the tools were extracted. HSEA gave permission to abandon the remaining 16.6 ft of PVC casing and the collapsed portion of the well in place. The remaining bore was filled by mixing and pouring nine 94-lb sacks (10.6 ft^3) of Type I Portland cement. The grout was allowed to cure overnight and was tagged the following day at 2.5 ft BGS. The bore was capped with clay/soil.

1036

Monitoring well 1036 was obsolete and of substandard construction. The location of this monitoring well also interfered with closure activities. The 6.5-in. OD PVC/#40 surface casing was removed, and the open interval was enlarged to fresh material by reaming the well with a 10 5/8-in. diameter tricone roller bit to a depth of 102.4 ft BGS (2.4 ft deeper than the original depth). Due to the nature of the material in which the well was installed, the boring was unstable and filled from 102.4 ft BGS to 88.0 ft BGS as the drill was extracted. HSEA gave permission to abandon the collapsed portion of the bore in place. The resulting bore was plugged by pouring 2.0 yd^3 of Type I Portland cement through 80 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 78 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 33.5 ft BGS. An additional 0.5 yd^3 of Type I Portland cement was tremied through 30 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 28 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 9.9 ft BGS. A further 0.1 yd^3 of cement was poured into the bore. This grout was allowed to cure overnight and was tagged at 2.5 ft BGS the following day. The bore was capped with clay/soil.

1037

Monitoring well 1037 was obsolete and of substandard construction. The location of this well also interfered with closure activities. The 6.5-in. OD PVC/#40 surface casing and screen were removed and the borehole was enlarged to fresh material by reaming the well with a 10 5/8-in. diameter tricone roller bit to a depth of 47.3 ft BGS (2.3 ft deeper than the reported original depth). At this depth, returned cuttings still were comprised of PVC and grout fragments. HSEA requested that drilling be continued until all of the casing was out, but to no deeper than 60 ft BGS. Reaming was continued to 60.0 ft BGS. The last observed PVC and grout fragments came from the 52- to 53-ft BGS interval. Due to the nature of the material in which the well was installed, the boring was unstable and filled from 60.0 ft BGS to 57.8 ft BGS as the drill was extracted. HSEA gave permission to abandon the collapsed portion of the bore in place. The resulting bore was plugged by pouring 1.25 yd^3 of Type I Portland cement through 50 ft of 1.5 -in. OD PVC tremie pipe installed to a depth of ~ 49 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 19.8 ft BGS. An additional 0.5 yd^3 of Type I Portland cement was tremied through 20 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 19 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 5.8 ft BGS. An additional 5.4 ft^3 (four 94-lb

sacks) of cement was poured into the bore. This grout was allowed to cure overnight and was tagged at 2.6 ft BGS the following day. The bore was capped with clay/soil.

1038

Monitoring well 1038 was obsolete and of substandard construction. The location of the well also interfered with closure activities. The 6.5-in. OD PVC/#40 casing was over-drilled and the borehole was enlarged to fresh material with a 12-in. OD, 8-in. ID hollow-stem auger to a refusal depth of 25.3 ft BGS (0.7 ft less than the reported total depth of 26.0 ft BGS). The total amount of casing extracted was 26.3 ft. The bore collapsed and filled from 26.3 ft BGS to 21.5 ft BGS as the tools were extracted. HSEA gave permission to abandon the collapsed portion of the well in place. The remaining bore was filled by pouring pre-mixed cement into the loader bucket of a backhoe and transporting to the site. Approximately 0.5 yd^3 of Type I Portland cement was poured through 20 ft of 1.5-in. OD PVC tremie pipe installed to ~ 19 ft BGS in this manner. The grout was allowed to cure overnight and was tagged at 2.7 ft BGS the next day. The bore was capped with clay/soil.

1040

Monitoring well 1040 was obsolete and of substandard construction. The location of the well also interfered with closure activities. The 6.5-in. OD PVC/#40 casing was over-drilled and the borehole was enlarged to fresh material with a 12-in. OD, 8-in. ID hollow-stem auger to a refusal depth of 23.0 ft BGS (the same depth as the reported total depth). The total amount of casing extracted was 16.5 ft (leaving 6.5 ft of casing in the bore). The bore collapsed and filled from 23.0 ft BGS to 21.5 ft BGS as the tools were extracted. HSEA gave permission to abandon the remaining 6.5 ft of casing and the collapsed portion of the well in place. The remaining bore was filled by pouring pre-mixed cement into the loader bucket of a backhoe and transporting to the site. Approximately 1.4 ft^3 of Type I Portland cement was poured through 20 ft of 1.5-in. OD PVC tremie pipe installed to ~ 18 ft BGS in this manner before it was determined that grout transport to the well in the backhoe bucket was inefficient. The grout was allowed to cure overnight and was tagged at 18.5 ft BGS the next day. An additional 10.9 ft^3 (eight 94-lb sacks) of cement was hand-mixed and tremied through 20 ft of 1.5-in. OD PVC pipe installed at a depth of ~ 18 ft BGS. A 10-ft section of tremie pipe was removed, and four more sacks of cement were tremied at a depth of ~ 8 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 2.5 ft BGS. The bore was capped with clay/soil.

1041

Monitoring well 1041 was obsolete and of substandard construction. The location of the well also impeded closure activities. The 6.5-in. OD PVC/#40 casing was over-drilled and the borehole was enlarged to fresh material with a 12-in. OD, 8-in. ID hollow-stem auger to a refusal depth of 30.0 ft BGS (0.4 ft less than the reported total depth). The total amount of casing extracted was 33.9 ft (including stick-up). The bore collapsed and filled from 30.0 ft BGS to 28.5 ft BGS as the tools were extracted. HSEA gave permission to abandon the collapsed portion of the well in place. The remaining bore was filled by pouring ~ 0.5 yd^3 of Type I Portland cement through 20 ft of 1.5-in. OD PVC tremie pipe installed to ~ 19 ft BGS . The grout was allowed to cure overnight and was tagged at 4.9 ft BGS the next day. An additional 94-lb sack of cement (1.2 ft^3) was mixed and poured into the bore. This grout was allowed to cure overnight and was tagged at 3.3 ft BGS the following day. The bore was capped with clay/soil.

1043

Well 1043 was an open-interval monitoring well with an open interval located between 150.0 ft and 100.0 ft BGS. The open interval and casing were sealed with Hole Plug™ to 79.8 ft BGS, then grouted to 1.1 ft BGS. The well was plugged and abandoned because its location impeded closure activities at the BCBG/WIP site.

1048

Monitoring well 1048 was damaged and of substandard construction. The well's location impeded closure activities for the BCBG/WIPS. The 6.5-in. OD PVC/#40 casing was removed, and the subtending open interval was enlarged to fresh material by reaming the well with a 10 5/8-in. diameter tricone roller bit to a depth of 101.5 ft BGS (1.5 ft deeper than the original depth). Due to the nature of the material in which the well was installed, the bore collapsed and filled from 101.5 ft BGS to 97.3 ft BGS. HSEA gave permission to abandon the collapsed portion of the bore in place. The remaining bore was filled by pouring 2.5 yd^3 of Type I Portland cement through 90 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 89 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 22.4 ft BGS. An additional 0.5 yd^3 of grout was poured into the bore and allowed to cure. The following day grout was tagged at 6.6 ft BGS. A final two 94-lb sacks of cement were mixed, poured into the bore, and allowed to cure overnight. The final depth to grout was 2.5 ft BGS. The remaining bore was capped with clay/soil.

1049

Monitoring well 1049 was obsolete, exhibited substandard construction, and impeded BCBG/WIPS closure activities. The 6.5-in. OD PVC/#40 casing and screen were removed and the borehole was enlarged to fresh material by reaming the well with a 10 5/8-in. diameter tricone roller bit to a depth of 22.3 ft BGS (2.3 ft deeper than the original depth). Due to the nature of the material in which the well was installed, the boring was unstable and filled from 22.3 ft BGS to 20.0 ft BGS as the drill was extracted. HSEA gave permission to abandon the collapsed portion of the bore in place. The remaining bore was filled by pouring 0.5 yd^3 of Type I Portland cement directly in the bore. This grout was allowed to cure overnight and was tagged the following day at 5.5 ft BGS. An additional 94-lb sack of cement (1.2 ft^3) was poured into the boring. This grout was allowed to cure overnight and was tagged the following day at 2.9 ft BGS. The remaining bore was capped with clay/soil.

1050

Monitoring well 1050 was obsolete, exhausted substandard construction, and impeded the BCBG/WIPS closure activities. The 6.5-in. OD PVC/#80 casing and screen were removed and the borehole was enlarged to fresh material by reaming the well with a 10 5/8-in. diameter tricone roller bit to a depth of 90.0 ft BGS (1.0 ft deeper than the original depth). Due to the nature of the material in which the well was installed, the boring was unstable and filled from 90.0 ft BGS to 80.0 ft BGS as the drill was extracted. HSEA gave permission to abandon the collapsed portion of the bore in place. A volume of 2 yd^3 of Type I Portland cement was tremied through 80.0 ft of 1.5-in OD PVC tremie pipe installed to ~ 77 ft BGS and allowed to cure overnight. The following day, grout was tagged at 36.2 ft BGS. HSEA gave permission to plug the interval of the bore where lost circulation zones were found during reaming(from 36.2 ft BGS to 15 ft BGS). Twenty-one 50-lb sacks of bentonite aggregate were poured into the bore. The top of unhydrated bentonite was tagged at ~ 16 ft BGS, and 50 gal of potable water was poured into the bore. During tagging of the bentonite, the weighted tape became hung in PVC casing debris, and 20 ft of fiberglass tape with the stainless steel weight were lost in the bore. The following day, the hydrated bentonite was tagged at 15.3 ft BGS. The remaining bore was filled by pouring 0.5 yd^3 of Type I Portland cement directly in the bore. This grout was allowed to cure overnight and was tagged the following day at 4.6 ft BGS. An additional 94-lb sack of cement (1.2 ft^3)was poured into the boring. This grout was allowed to cure overnight and was tagged the next day at 2.2 ft BGS. The remaining bore was capped with clay/soil.

1051

Monitoring well 1051 was obsolete with substandard construction and interfered with the BCBG/WIPS closure activities. The 6.5-in. OD PVC/#40 casing and screen were removed and the borehole was enlarged to fresh material by reaming the well with a 10 5/8-in. diameter tricone roller

bit to a depth of 29.5 ft BGS (1.5 ft deeper than the original depth). Due to the nature of the material in which the well was installed, the boring was unstable and filled from 29.5 ft BGS to 25.0 ft BGS as the drill was extracted. HSEA gave permission to abandon the collapsed portion of the bore in place. The remaining bore was plugged by pouring 0.5 yd^3 of Type I Portland cement directly in the bore. This grout was allowed to cure overnight and was tagged the following day at 4.8 ft BGS. An additional 94-lb sack of cement (1.2 ft^3)was poured into the boring. This grout was allowed to cure overnight and was tagged the following day at 2.3 ft BGS. The remaining bore was capped with clay/soil.

1052

Monitoring well 1052 was obsolete and of substandard construction. The location of this well interfered with the BCBG/WIPS closure activities. The 6.5-in. OD PVC/#80 casing and screen were removed and the borehole was enlarged to fresh material by reaming the well with a 10 5/8-in. diameter tricone roller bit to a depth of 23.0 ft BGS (1.0 ft deeper than the original depth). The bore was plugged by pouring 1.0 yd^3 of Type I Portland cement directly in the bore. This grout was allowed to cure overnight and was tagged the following day at 13.0 ft BGS. An additional 0.25 yd^3 of cement was poured into the bore and allowed to cure overnight. The following day grout was tagged at 5.0 ft BGS. A final 94-lb sack of cement (1.2 ft^3) was poured into the boring. This grout was allowed to cure overnight and was tagged the following day at 2.7 ft BGS. The remaining bore was capped with clay/soil.

1071

Well 1071 was a PVC, screened well completed to 20.0 ft BGS. This well was obsolete and of substandard construction, and impeded the BCBG/WIPS closure activities. The 6.5-in. OD casing was over-drilled with an 8.0-in. ID, 13.0-in. OD hollow-stem auger advanced to 22.0 ft BGS (1.0 ft beyond the TD of the well bore). The top 3.2 ft of well casing (including 2.3 ft of stick-up) was extracted from the borehole, with the remaining casing apparently ground up by the auger cutter. The borehole was grouted to 1.4 ft BGS with neat, Type I Portland cement and capped with native clay soil.

1088

Monitoring well 1088 was an obsolete well of substandard construction. Access to this well for the normal plugging and abandonment procedure would have necessitated excessive filling and grading to support a drill rig with subsequent removal of fill and regrading following abandonment; therefore, HSEA granted permission to plug the open interval and surface casing of this well in place. The open interval of the well was tagged at 115.4 ft BGS (the reported depth was 117.7 ft BGS) and seven 94-lb sacks of Type I Portland cement were tremied into the bore through 100 ft of 1.5-in. OD PVC tremie pipe. Due to a malfunction in the diaphragm pump, grouting was discontinued until the following day, when the top of grout was tagged at 124.7 ft BGS. Apparently the depth tagged previously had been the depth to an obstruction. Permission was granted by HSEA to use bentonite to plug the open interval of the well. Six 50-lb sacks of bentonite aggregate were poured into the bore; the top of the unhydrated bentonite was tagged at 21.7 ft BGS. The bentonite was allowed to hydrate for 4 h and was then tagged at 21.6 ft BGS. The remainder of the bore was plugged by mixing and pouring a 94-lb sack of Type I Portland cement (1.2 ft^3) through 20 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 19 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 3.2 ft BGS. A shallow excavation was made around the surface casing stick-up with a backhoe, and the 4.0-in. OD, 3.5-in. ID (originally reported as 6.5-in. OD) steel surface casing was cut off at a depth of 2.3 ft BGS. The remaining open interval of casing and the shallow excavation were capped with clay/soil.

1130

Monitoring well 1130 was obsolete, with substandard construction. The well location interfered with landfill construction. The 4.0-in. OD PVC/#40 casing and screen were removed and the borehole was enlarged to fresh material by reaming the well with a 10 5/8-in. diameter tricone roller bit to a depth of 25.0 ft BGS (1.5 ft deeper than the original depth). Due to the nature of the material in which the well was installed, the boring was unstable and filled from 25.0 ft BGS to 22.5 ft BGS as the drill string was extracted. HSEA gave permission to abandon the collapsed portion of the bore in place. The resulting bore was filled by pumping ~ 0.5 yd^3 of Type I Portland cement through 20 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 18 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 5.0 ft BGS. HSEA gave permission to cap the bore with the grout level at 5.0 ft BGS. The remaining bore was capped with clay/soil.

1131

Monitoring well 1131 was obsolete with substandard construction and interfered with landfill construction. The 4.0-in. OD PVC/#40 casing and screen were removed and the borehole was enlarged to fresh material by reaming the well with a 10 5/8-in. diameter tricone roller bit to a depth of 31.8 ft BGS (1.8 ft deeper than the original depth). The resulting bore was filled by pumping ~ 0.5 yd^3 of Type I Portland cement through 20 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 18 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 5.0 ft BGS. An additional 94-lb sack of cement was mixed and poured into the bore and allowed to cure overnight. The final grout level was tagged the following day at 2.5 ft BGS. The remaining bore was capped with clay/soil.

1132

Monitoring well 1132 was obsolete with substandard construction and interfered with landfill construction. The 4.0-in. OD PVC/#40 casing and screen were removed and the borehole was enlarged to fresh material by reaming the well with a 10 5/8-in. diameter tricone roller bit to a depth of 30.3 ft BGS (6.8 ft deeper than the original depth). The resulting bore was filled by pumping ~ 0.5 yd^3 of Type I Portland cement through 30 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 28 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 6.9 ft BGS. Approximately 0.1 yd^3 of additional cement was poured into the bore and allowed to cure overnight. The final grout level was tagged the following day at 1.6 ft BGS. The remaining bore was capped with clay/soil.

1133

Monitoring well 1133 was obsolete with substandard construction and interfered with landfill construction. The 4.0-in. OD PVC/#40 casing and screen were removed and the borehole was enlarged to fresh material by reaming the well with a 10 5/8-in. diameter tricone roller bit to a depth of 25.0 ft BGS (1.0 ft deeper than the original depth). The resulting bore was filled by pumping ~ 0.5 yd^3 of Type I Portland cement through 20 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 16 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 2.5 ft BGS. The remaining bore was capped with clay/soil.

1134

Monitoring well 1134 was a damaged monitoring well. The 4.0-in. OD PVC/#40 casing and screen were removed and the borehole was enlarged to fresh material by reaming the well with a 7 5/8-in. diameter tricone roller bit to a depth of 192.0 ft BGS (2.0 ft deeper than the original depth). Removal of the well revealed many lost circulation zones and voids. Approximately 1.5 yd^3 of Type I Portland cement was pump-tremied through 180 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 177 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 168.9 ft BGS. Permission was granted by HSEA to fill the 7 5/8-in. bore from 168.9 ft BGS

to the top of the first reported lost circulation zone with quartzite pea gravel. Approximately 1.5 tons of pea gravel was poured into the bore (to 101.5 ft BGS). Next, three 50-lb sacks of 3/8-in. diameter bentonite pellets were poured into the bore using well water in the bore to hydrate. To form a solid plug, two 94-lb sacks of Type I Portland cement were mixed and tremied through 80.0 ft of 1.5-in. OD PVC tremie pipe installed to ~ 76 ft BGS. This grout was allowed to cure overnight, and was tagged the next day at 85.3 ft BGS. The 8.75-in. OD steel surface casing was overwashed to a depth of 89.8 ft BGS with 13.5-in. OD, 13.0-in. ID washover pipe. A total of 86.0 ft of 7.75-in. OD, 8.25-in. ID steel surface casing was extracted from the bore. The remaining bore was dry and potential for bridging was minimal. Approximately 4.5 yd^3 of Type I Portland cement was poured into the bore. This grout was allowed to cure overnight and was tagged the following day at 79.1 ft BGS. Permission was granted by HSEA to fill the bore to the top of the first observed lost circulation zone with quartzite pea gravel. Approximately 9.5 tons of pea gravel were poured into the bore (to 14.1 ft BGS). Two 50-lb sacks of bentonite aggregate were poured into the bore and hydrated with potable water. The bentonite was allowed to hydrate overnight and was tagged the next day at 13.4 ft BGS. The remaining bore was plugged by mixing and pouring 13 94-lb sacks of Portland cement into the bore. This grout was allowed to cure overnight and was tagged the next day at 3.8 ft BGS. The bore was then capped with clay/soil.

GW-030

Well GW-030 was a stainless steel, screened well installed to 37.8 ft BGS. The well screen and riser were sealed with bentonite Hole Plug™ from total depth (TD) to 12.2 ft (displaced water level) BGS. The well casing was then sealed with 2% bentonite-cement grout from 12.2 ft to 3.0 ft BGS, removed to 3.0 ft BGS, and buried in the excavation as the well-site was capped with native clay soil. This well was plugged and abandoned because it interfered with the BCBG/WIPS closure activities.

GW-031

Well GW-031 was a stainless steel, screened well installed to 65.7 ft BGS. However, the well was located on the edge of an excavation where erosion had removed ~ 12.5 ft of soil and weathered bedrock. The screen and casing were filled with Hole Plug™ to the displaced water level (5.5 ft BGS). The casing was then topped off with 2% bentonite-cement grout to the present ground surface and removed. Finally, the slope was collapsed over the well site, creating a 2.5-ft-thick native clay soil cap. This well was plugged and abandoned because it interfered with the BCBG/WIPS closure activities.

GW-032

Well GW-032 was a stainless-steel, screened well installed on an approximate 40° angle from vertical to a TD of 49.5 ft BGS. The well screen and riser casing were grouted with 4% bentonite-cement grout from TD to ~ 20 ft BGS. The remainder of the casing from 20 ft to 4.0 ft BGS was filled with Hole Plug™ and allowed to hydrate. The casing was cut off to 4.0 ft BGS, and the site was capped with native clay soil. This well was plugged and abandoned because it interfered with the BCBG/WIPS closure activities.

GW-035

An effort was made to physically locate the GW-035 (a stainless-steel, screened well) well casing when the well evaded identification during preliminary reconnaissance efforts. During excavation of a pit over the staked well location, stainless steel well casing with a badly deformed collar was exposed at ~ 3.0 ft BGS. The well was subsequently decommissioned by removing ~ 1.0 ft of the damaged well casing, sealing its entire length (from 59.1 ft to 4.0 ft) with Hole Plug™, and refilling the excavation with native clay soil. This well was plugged and abandoned because it interfered with the BCBG/WIPS closure activities.

GW-036

Well GW-036 was a stainless steel, screened well installed to 36.9 ft BGS. The well screen and casing were sealed with Hole Plug™ to the displaced water level (25.5 ft BGS). From 25.5 ft to 3.6 ft BGS, the casing was grouted using a 2% bentonite-cement grout; the site was then capped with native clay soil. This well was plugged and abandoned because it interfered with the BCBG/WIPS closure activities.

GW-037

Well GW-037 was a stainless steel, screened well completed to 66.5 ft BGS. The well casing was sealed from TD to 31.2 ft BGS with Hole Plug™, then filled to 3.3 ft BGS with 2% bentonite-cement grout. The top 3.3 ft of casing was removed, and a cap of native clay soil was installed. This well was plugged and abandoned because it impeded BCBG/WIPS closure activities.

GW-038

Well GW-038 was a stainless steel, screened well installed to 51.2 ft BGS. The well was sealed from TD to 44.5 ft BGS, topped off with 2% bentonite-cement grout to 3.0 ft BGS, and capped. This well was plugged and abandoned because it impeded BCBG/WIPS closure activities.

GW-063

Monitoring well GW-063 was a damaged well. The 5.0-ft length of 6.5-in. OD steel protective casing and the 2.37-in. OD #304 stainless steel well casing were first overwashed to a depth of 36.0 ft BGS with a 7.0-in. OD, 6.25-in ID washover pipe. The protective casing was removed, but only 9.9 ft of the stainless steel well casing was retrieved. Permission was received to mill out the remaining stainless steel casing. The bore and fugitive casing were drilled out to a depth of 36.0 ft BGS using a 10 5/8-in. diameter tricone rotary bit. With permission from HSEA, two 50-lb buckets of 3/8-in. diameter bentonite pellets and 15 50-lb sacks of bentonite aggregate were poured into the bore and hydrated with 25 gal of potable water to plug a void encountered during drilling. The top of the unhydrated bentonite was tagged at 19.0 ft BGS. The bentonite plug was allowed to hydrate overnight and was tagged the following day at 18.7 ft BGS. The remaining bore was plugged with ~ 0.3 yd^3 of Type I Portland cement poured from the surface. This grout was allowed to cure overnight and was tagged the next day at 4.2 ft BGS. To finish plugging the bore, 0.5 sack of cement was mixed and poured into the bore. This grout was also allowed to cure overnight and was tagged the next day at 3.8 ft BGS. The bore was capped with clay/soil.

GW-088

Monitoring well GW-088 was a damaged well. The 5.0-ft length of 5.0-in. OD steel protective casing and the 2.37-in. OD #304 stainless steel well casing were first overwashed to a depth of 14.6 ft BGS with a 6.0-in. OD, 5.25-in ID washover pipe. The protective casing and 32.9 ft of 2.37-in. OD stainless steel well casing and screen were removed. The bore was reamed out to a depth of 32.0 ft BGS using a 10 5/8-in. diameter tricone rotary bit. The bore was plugged with ~ 1.0 yd^3 of Type I Portland cement poured from the surface. This grout was allowed to cure overnight and was tagged the next day at 4.5 ft BGS. To finish plugging the bore, 1.5 sack of cement was mixed and poured into the bore. This grout was also allowed to cure overnight and was tagged the next day at 4.0 ft BGS. The bore was capped with clay/soil.

GW-234

Well GW-234 was a shallow, stainless steel screened well installed to 16.5 ft BGS. The 2.37-in. OD well casing, along with a 5.0-ft section of 4.0-in. OD protective casing, was overwashed with 5.0-in. ID, 6.0-in. OD washover pipe to 10.9 ft BGS. After having lost circulation, the washover pipe was tripped out of the borehole, revealing that the slightly bent protective casing had wedged into the

washover bit, shearing the well casing at 2.0 ft BGS. Continued overwashing had deformed the well casing and pushed it deeper into the borehole. HSEA authorized the reaming of the present borehole and deformed well casing with a 10 5/8-in. diameter tricone bit. The hole was dressed to 17.5 ft BGS (1.0 ft beyond the reported TD) and filled with 2% bentonite-cement grout to 11.7 ft BGS. Hole Plug™ was used to bridge a lost circulation interval in the borehole from 11.7 ft to 3.2 ft BGS. The borehole was then topped off with more cement to 1.4 ft BGS and capped with native clay/soil. This well was plugged and abandoned because it was damaged.

GW-502

Well GW-502 was an open-interval monitoring well completed to 260.0 ft BGS, with surface casing to 223.7 ft BGS. The open interval and a large portion of the surface casing were sealed with Hole Plug™ from TD to 34.6 ft. BGS to 3.0 ft. BGS. The surface casing and protective casing were cut off at 3.0 ft BGS, and the site was capped with native clay soil. This well was selected for plugging and abandonment because it obstructed BCBG/WIPS closure activities.

GW-551

Monitoring well GW-551 was obsolete with substandard construction, and it obstructed landfill construction. The open interval of this well had been previously plugged from 350.2 ft BGS to 145.0 ft BGS. A CME 75 core drill with HQ (3.79-in. OD) drill rods was used to over-drill the 1.0-in. OD black steel tube to 145.9 ft BGS (0.9 ft deeper than the bottom depth of the black steel tube). A volume of 80 gal (~ five 94-lb sacks) of Type I Portland cement was tremied through the HQ drill rods at a depth of ~ 115.9 ft BGS. This grout was allowed to cure overnight and was tagged the next day at 67.7 ft BGS. The CME core drill was moved from the site, and all remaining work was conducted using an air rotary drill. The 6.5-in. OD steel surface casing was overwashed to a depth of 82.7 ft BGS using 9.0-in. OD, 8.5-in. ID washover pipe. Before the surface casing could be extracted, the remaining cement grout on the inside had to be drilled out to a depth of 97.0 ft BGS with a 6.25-in diameter tricone roller bit. The drill rig was still unable to pull the surface casing, and the 9.0-in. OD, 8.5-in. ID washover pipe was used to overwash the surface casing further to 90.4 ft BGS. A total of 91.1 ft of 6.5-in. OD steel surface casing was extracted. The resulting bore was reamed to 92.0 ft BGS using a 10 5/8-in. diameter tricone roller bit. A volume of 2 yd^3 of Type I Portland cement was tremied into the bore through 70 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 67 ft BGS. This grout was allowed to cure overnight and was tagged at 2.4 ft BGS after curing. The remainder of the bore was capped with clay/soil.

GW-553

Monitoring well GW-553 was obsolete with substandard construction, and it obstructed landfill construction. The open interval of this well had been previously plugged from 599.3 ft BGS to 361.0 ft BGS. A CME 75 core drill with HQ (3.79-in. OD) drill rods was used to over-drill the 1.0-in. OD black steel tube to 32.6 ft BGS. Because of the unforeseen amount of damage incurred to the core drilling tools and rig, over-drilling of the 1.0-in. OD steel pipe was halted. It was noted that the 4.5-in. OD steel surface casing was loose, and an attempt to pull the surface casing was made. A total of 101.0 ft of 4.5-in. OD steel casing was extracted. Also extracted was 152.0 ft of 1.0-in. OD black steel tube, which was grouted inside of the surface casing. The hole left by the casing extraction was tagged at 94.0 ft BGS. The HQ drill rod was used to continue drilling to 111.3 ft BGS. No further drilling was performed with the core drill due to caving of the bore. Permission was received from HSEA to abandon the bore in place from 111.3 ft BGS to 361.0 ft BGS. All further work was conducted using an air rotary drill. The 6.5-in. OD steel conductor casing was overwashed to a depth of 86.0 ft BGS using 9.0-in. OD, 8.5-in. ID washover pipe. A total of 93.4 ft of 6.5-in. OD steel surface casing was extracted. The resulting bore was reamed to 94.0 ft BGS using a 10 5/8-in. diameter tricone roller bit. A volume of 3 yd^3 of Type I Portland cement was tremied into the bore through 70 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 67 ft BGS. This grout was allowed to cure overnight and was tagged at 58.0 ft BGS after curing. An additional 3 yd^3 of grout was tremied into the bore through 40.0 ft of 1.5-in. OD PVC tremie pipe inserted to ~ 37 ft

BGS. This grout was also allowed to cure overnight and was tagged the following day at 12 ft BGS. A further 0.5 yd^3 of grout was poured into the bore and allowed to cure. The following day, grout level was tagged at 4.4 ft BGS. Permission was received from HSEA to cap the bore with the grout level at 4.4 ft BGS, and the remainder of the bore was capped with clay/soil.

GW-556

Monitoring well GW-556 was obsolete with substandard construction. Its location also impeded landfill construction. The open interval of this well had been previously plugged from 356.5 ft BGS to 272.6 ft BGS. The 6.5-in. OD steel conductor casing was overwashed to a depth of 72.0 ft BGS using 9.0-in. OD, 8.5-in. ID washover pipe. A total of 70.3 ft of 6.5-in. OD steel casing, 68.8 ft of 4.5-in. OD steel casing, and 69.3 ft of 1.0-in OD black steel pipe was extracted (casings were nested and grouted together). Permission was received from HSEA to abandon the remaining casings and bore in place from 272.6 ft BGS to 73.0 ft BGS. The resulting bore was reamed to 73.0 ft BGS using a 10 5/8-in. diameter tricone roller bit. Premixed cement grout was delivered to the site, and 0.5 yd^3 of Type I Portland cement was used to plug the bore and the intact casings extending it through 70 ft of 1.5-in. OD PVC tremie pipe installed to a depth of ~ 66 ft BGS. This grout was allowed to cure overnight and was tagged at 40.5 ft BGS. This plug was drilled out to the below the bottom of the 11.75-in. OD steel conductor casing using a 10 5/8-in. diameter tricone roller bit. The 11.75-in. OD steel conductor casing was overwashed to a depth of 47.0 ft BGS using a 14.5-in. OD, 13.0-in. ID washover pipe. All attempts to pull the 11.75-in. OD casing were unsuccessful, HSEA gave permission to unthread the casing and to extract as much as possible (leaving the remainder in the ground). Only 22.1 ft of 11.75-in. OD casing was removed. A volume of 2.5 yd^3 of grout was tremied into the bore through 50.0 ft of 1.5-in. OD PVC tremie pipe inserted to ~ 47 ft BGS. This grout was also allowed to cure overnight and was tagged the following day at 16.0 ft BGS. A further 0.5 yd^3 of grout was poured into the bore and allowed to cure. The following day grout level was tagged at 10.0 ft BGS. A final 0.5 yd^3 of cement was poured into the bore and allowed to cure. The final grout level was tagged at 3.7 ft BGS. The remainder of the bore was capped with clay/soil.

GW-561

Monitoring well GW-561 impeded the landfill construction at the SPAD site. At this well, both a screened well and a shallow piezometer were installed in the same borehole. The 4.0-in. OD PVC well casing was first overwashed to a depth of 54.3 ft BGS. Fragmented and twisted PVC casing was extracted. HSEA gave permission to ream out the remainder of the well and the piezometer in one pass. The remaining well casing and the 1.0-in. OD PVC piezometer were reamed out to a depth of 92.0 ft BGS using a 10 5/8-in diameter tricone roller bit. The bore was plugged by pumping 2.5 yd^3 of Type I Portland cement through 50 ft of 1.5-in OD PVC tremie pipe installed to ~ 47 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 21.0 ft BGS. Approximately 0.5 yd^3 of additional cement was poured into the bore and allowed to cure. The following day, the grout level was tagged at 17.5 ft BGS. A final 0.5 yd^3 of cement was poured into the bore and allowed to cure. The final grout level was tagged at 5.0 ft BGS. Permission was received from HSEA to cap the bore with the grout level at 5.0 ft BGS. The remainder of the bore was capped with clay/soil.

GW-565

Monitoring well GW-565 impeded the landfill construction at the SPAD site. The 4.5-in. OD, 4.25-in. ID stainless steel well casing and screen were overwashed to a depth of 62.5 ft BGS using 6.0-in. OD, 5.5-in. ID washover pipe. A total of 59.2 ft of twisted stainless steel casing was extracted, and the resulting bore was reamed to a depth of 62.0 ft BGS using a 10 5/8-in. diameter tricone roller bit. The bore was plugged by pumping 2.5 yd^3 of Type I Portland cement through 70. 0 ft of 1.5-in. OD PVC tremie pipe inserted to a depth of ~ 67 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 4.7 ft BGS. Permission was received from HSEA to cap the bore with the grout level at 4.7 ft BGS. The remainder of the bore was capped with clay/soil.

GW-566

Monitoring well GW-566 impeded the landfill construction at the SPAD site. The 4.0-in. OD, 3.75-in. ID stainless steel well casing and screen were overwashed to a depth of 142.5 ft BGS using 6.0-in. OD, 5.5-in. ID washover pipe. During overwash, the stainless steel casing became twisted and broke into fragments. The uppermost fragment was located ~ 20 ft BGS, and a taper tap attached to drill rods was used to extract casing fragments. A total of 65.9 ft of twisted stainless steel casing was extracted. HSEA gave permission to abandon the ~ 107 ft of casing remaining in the well (the original well was previously abandoned in place from the original TD of 174.0 ft BGS to 142.5 ft BGS). Four feet of 10.75-in. OD steel conductor casing was extracted, and the overwash bore was reamed to a depth of 95.0 ft BGS using a 10 5/8-in. diameter tricone roller bit. HSEA gave permission to halt reaming at this depth due to inability of the drilling equipment to drill the balled up casing without drifting from the original bore or hanging up. The bore was plugged by pumping 3.0 yd^3 of Type I Portland cement through 70.0 ft of 1.5-in. OD PVC tremie pipe inserted to a depth of ~ 65 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 44.0 ft BGS. An additional 3.0 yd^3 of cement was pumped through 40.0 ft of 1.5-in. OD PVC tremie pipe inserted to a depth of ~ 37 ft BGS. This grout was allowed to cure overnight and was tagged the next day at 3.0 ft BGS. The remainder of the bore was capped with clay/soil.

GW-571

Monitoring well GW-571 impeded the landfill construction at the SPAD site. The 2.0-in. OD stainless steel well casing and screen were overwashed to a depth of 39.0 ft BGS using 6.0-in. OD, 5.5-in. ID washover pipe. At 39.0 ft BGS; it was discovered that the casing was being crumpled by overwashing. Permission was received from HSEA to drill out the stainless steel casing using a roller bit. The remaining casing g was drilled out to a depth of 81.5 ft BGS (1.5 ft deeper than the original TD) with a 10 5/8-in. diameter tricone roller bit. It was discovered that the casing has been pushed aside by the roller bit, and a total of 83.3 ft of twisted casing was extracted. The bore was plugged by pumping 2.0 yd^3 of Type I Portland cement through 20.0 ft of 1.5-in. OD PVC tremie pipe inserted to a depth of ~ 17 ft BGS (no additional tubing could be inserted). This grout was allowed to cure overnight and was tagged the following day at 3.7 ft BGS. The remainder of the bore was capped with clay/soil.

GW-572

Monitoring well GW-572 impeded the landfill construction at the SPAD site. The 2.0-in. OD stainless steel well casing and screen were overwashed to a depth of 39.9 ft BGS using 6.0-in. OD, 5.5-in. ID washover pipe. It was discovered that the casing was being crumpled by overwashing. Permission was received from HSEA to ream the bore to 39.9 ft BGS and to abandon the remainder of the well in place. The bore was reamed to a depth of 39.9 ft BGS with a 10 5/8-in. diameter tricone roller bit. The bore was plugged by pumping 1.25 yd^3 of Type I Portland cement through 1.5-in. OD PVC tremie pipe. This grout was allowed to cure overnight and was tagged the following day at 8.6 ft BGS. Approximately 3.0 ft^3 of premixed cement was used to top off the grout level. This grout was allowed to cure overnight and was tagged at 2.1 ft BGS. The remainder of the bore was capped with clay/soil.

GW-573D

Monitoring well GW-573D impeded the landfill construction at the SPAD site. The 2.0-in. OD stainless steel well casing and screen were over-drilled to a depth of 70.0 ft BGS using a 10 5/8-in. OD, 6.25-in. ID hollow-stem auger. A total of 94.0 ft of stainless steel casing was extracted. The remaining well was over-drilled to 90.2 ft BGS with the hollow-stem auger. The resulting bore was plugged by pumping 2.5 yd^3 of Type I Portland cement through 80.0 ft of 1.5-in. OD PVC tremie pipe inserted to a depth of ~ 73 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 12.6 ft BGS. An additional four 94-lb sacks of cement (4.7 ft^3) were mixed and

poured into the bore. This grout was allowed to cure overnight and was tagged the following day at 3.8 ft BGS. The remainder of the bore was capped with clay/soil.

GW-573S

Monitoring well GW-573S impeded the landfill construction at the SPAD site. The 2.0-in. OD stainless steel well casing and screen were over-drilled to a depth of 16.0 ft BGS using 10 5/8-in. OD, 6.25-in. ID hollow-stem auger. A total of 5.5 ft of stainless steel casing was extracted. The remaining casing was not visible from the surface, and HSEA gave permission to abandon any remaining casing in place. The resulting bore was plugged by pumping 2.5 yd^3 of Type I Portland cement through 20.0 ft of 1.5-in. OD PVC tremie pipe inserted to a depth of ~ 18 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 3.7 ft BGS. The remainder of the bore was capped with clay/soil.

GW-580

Monitoring well GW-580 impeded the landfill construction at the SPAD site. The 2.0-in. OD stainless steel well casing and screen were overwashed to a depth of 79.6 ft BGS using 6.0-in. OD, 5.5-in. ID washover pipe. It was discovered that the casing had been pushed to one side by washover pipe. HSEA gave permission to abandon the casing in place. A volume of 1 yd^3 of Type I Portland cement was tremied through 20 ft of 1.5-in. OD PVC tremie pipe into the stainless steel casing, and an additional 1.0 yd^3 was poured into the pit excavated around the casing. This grout was allowed to cure overnight and was tagged the following day at 10.4 ft BGS. The grout was topped off with ~ 2 ft^3 of premixed grout. This grout was allowed to cure and was tagged at 4.5 ft BGS. Permission was received from HSEA to cap the bore with the grout level at 4.5 ft BGS. The remainder of the bore was capped with clay/soil.

GW-607

Monitoring well GW-607 impeded the landfill construction at the SPAD site. The 4.5-in. OD, 4.0-in. ID stainless steel well casing and screen were drilled out to a depth of 118.2 ft BGS using a 9 7/8-in. diameter tricone roller bit. HSEA granted permission to abort efforts to drill out the stainless steel casing due to the great degree of wear on the equipment. The 10.75-in. OD F/25 steel surface casing was overwashed to depth of 107.1 ft BGS using 13.5-in. OD, 12.25-in. ID washover pipe. A total of 107.2 ft of 10.75-in. OD steel conductor casing was extracted, and the overwash bore was reamed to a depth of 109.0 ft BGS using a 15-in. diameter hole opener(110.5 ft total depth of tool, but reaming cones reached 109.0 ft). The bore was plugged by pumping 2.5 yd^3 of Type I Portland cement through 90.0 ft of 1.5-in. OD PVC tremie pipe inserted to a depth of ~ 87 ft BGS. This grout was allowed to cure overnight and was tagged the following day at 32.0 ft BGS. Permission was received from HSEA to use bentonite to prevent grout loss in voids. Two 50-lb sacks of bentonite aggregate were poured into the bore and allowed to hydrate overnight. Hydrated bentonite was tagged the following day at 25.0 ft BGS. An additional 2.0 yd^3 of cement was pumped through 20.0 ft of 1.5-in. OD PVC tremie pipe inserted to a depth of ~ 17 ft BGS. This grout was allowed to cure overnight and was tagged the next day at 4.0 ft BGS. The remainder of the bore was capped with clay/soil.

5. QUALITY ASSURANCE

Quality control was closely monitored during all plugging and abandonment activities to ensure that borings and well abandonments conformed to Energy Systems plugging and abandonment procedures (Energy Systems 1991). All task-related activities were observed and documented by a registered professional geologist employed by SAIC. Any deviations were approved by the GWPP Manager. Drill rigs and all ancillary drilling equipment were steam cleaned before drilling operations at each site. During plugging and abandonment operations, equipment was routinely inspected for fuel and oil leaks, and a spill control kit was present during each abandonment.

Plastic sheeting and straw bale berms were used to contain normal drilling cuttings and water when abandonment activities occurred near surface waters. Only vegetable-oil-based or nonpetroleum thread lubricant (i.e., Kopr-Kote™ or Jet Lube™) was used when needed during drilling.

At all times when cuttings were circulated and available for collection, these were sampled continuously over 10- to 20-ft intervals. All samples were screened and inspected for comparison with expected well and boring materials.

6. HEALTH AND SAFETY

A Health and Safety Plan [Y/SUB/92-99928c(Y11/1)] was followed for all FY 1993 plugging and abandonment activities. All on-site personnel were in compliance with training requirements mandated by 29 CFR 1910.120, and all were enrolled in an annual health screening, occupational medical examination program. Additionally, all personnel present onsite during plugging and abandonment activities wore thermoluminescent dosimeter badges collected and monitored by Energy Systems. During the period of work covered by the annual report, no personnel received radiation exposure exceeding permissible limits based on field screening. Low potential for exposure to hazardous materials at all work sites allowed use of Level D personal protection. This protective level consisted of not less than steel-toed footwear, gloves, hard hats, hearing protection in the form of plugs or muffs, and safety glasses.

Technical oversight personnel provided health and safety monitoring at the work sites using monitoring equipment supplied and maintained by Energy Systems. Instrumentation used on-site typically consisted of an HNu Model HW-101 photoionization detector (PID), an OVA Model 108 or Model 128 flame ionization detector (FID), and Ludlum radiation meters. The HNu PID and OVA FID were used to detect ionizable organic vapors. Radiation detection instruments included a Ludlum Model 3 Survey Meter for detection of beta and gamma radiation with a Geiger-Mueller "pancake" type probe. Alpha radiation was monitored using a Ludlum Model 12 Count Ratemeter with a scintillation tube probe or an air probe.

In addition to screening for health and safety, drilling returns were screened per Energy Systems guidelines in a general waste management plan for drilling activities (Appendix C). This daily screening consisted of alpha, beta, and gamma radiation screening of composited drill cuttings. A headspace analysis of organic vapors and a pH measurement were also performed on this composited cuttings sample. Because grout cuttings often were a significant component of drilling returns during overwashing and borehole reaming, pH levels sometimes exceeded the upper bounds of waste-screening criteria. If grout cuttings were present, as identified visually, and no screening parameters other than pH exceeded guideline criteria, then no containment actions were taken. Screening results are contained in Appendix E.

Health and safety plan action levels (SAIC 1992) and waste management guideline values used during plugging and abandonment activities are presented in Table 6.1.

Table 6.1. Action levels used for health and safety monitoring during well plugging and abandonment

Parameter	Action Level
Waste Management Guidelines:	
pH	<4.0 and >10.5 standard units
Organic vapors	>5 ppm
Alpha radiation	>500 counts per minute
Beta/gamma radiation	>100 counts per minute
Health and Safety Plan:	
pH	Below 5 or above 9
Explosivity	>25% Lower Explosive Limit (LEL)
Organic vapors	>10 ppm in breathing zone
Radiation	>2 millirem/h, and/or an 8-h time-weighted average of 0.25 millirem/h at chest level

7. REFERENCES

Energy Systems (Martin Marietta Energy Systems, Inc.) 1991. Well Plugging and Abandonment Procedure, G-003, Rev. 0, October.

HSW, Inc. (HSW Environmental Consultants, Inc.) 1991. *Monitoring Well Plugging and Abandonment Plan for the Department of Energy Y-12 Plant, Oak Ridge, Tennessee,* Oak Ridge Y-12 Plant, Y/SUB/91-YP507C/6.

Jones, S.B., B.K. Harrington, and S.M. Field 1992. *Updated Subsurface Data Base for Bear Creek Valley, Chestnut Ridge, and Parts of Bethel Valley on the U.S. Department of Energy, Oak Ridge Reservation,* Y/TS-881, September.

King, H.L. and C.S. Haase 1987. *Subsurface - Controlled Geologic Map for the Y-12 Plant and Adjacent Areas of Bear Creek Valley,* ORNL/TM-10112.

Rodgers, J. 1953. *Geologic Map of East Tennessee with Explanatory Test,* Tennessee Division of Geology, Bulletin 58, Part II.

SAIC (Science Applications International Corporation) 1992. *Health and Safety Plan for Well Installation and Plugging and Abandonment Activities, Y-12 Plant, Oak Ridge, Tennessee.* Prepared for Martin Marietta Energy Systems, Inc., Y/SUB/92-99928c (Y11)/1, July.

APPENDIX A

Activity/Progress Reports

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. PZ-12

WELL PLUGGING and ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: SPAD Landfill Site

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Mark Baker - Highland Drilling Co.

DRILL: Ingersoll Rand XL-750

DATE: START: 3/10/93

FINISH: 3/18/93

METHOD: C

LOGGED BY: Victor R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3/10/93	1036	1050	Crew rigs up a 10 5/8-in. diameter tricone roller bit and stabilizer
			(total length = 9.2 ft). Stickup of casing previously removed. Table
			height = 2.6 ft.
	1050	1118	Begin reaming [2-in. outside diameter (OD), 1.75-in. inside diameter
			(ID)]. Use compressed air only. Advance to 6.6 ft below ground
			surface (BGS). Cuttings consist of 50% stiff, gritty, reddish-yellow
			(Munsel 7.5 YR 6/6) clay with 48% very dark gray (Munsel
			7.5 YR 3/0) angular grout chips and approximately 2% PVC
			fragments. Crew adds 25 ft of drill rod.
	1118	1123	Continue reaming, begin using potable water to circulate cuttings.
	1123	1148	Advance 20 ft BGS. Cuttings are 25% yellow (Munsel 10 YR 7/8)
			locally to very pale brown (Munsel 10 YR 8/2) gritty clay, with 70%
			angular chert fragments ranging in coloration from yellow to
			brownish-yellow (Munsel 10 YR 7/8 to 10 YR 7/1), ranging in size
			from 1/16-in. to 1-in. Remaining fraction = 5% PVC cuttings
			(Munsel N8).
	1148	1224	Resume reaming. Advance to 57 ft BGS. Cuttings similar to 0-20 ft
			interval. Coloration of clay changes from reddish-yellow (Munsel
			7.5 YR 7/8) to dark brown (7.5 YR 4/4). Driller requests oversight
			screen at table due to changes in cuttings. Breathing zone
			analysis yields 0.2 ppm organic vapors; beta/gamma at table
			= 60 cpm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. PZ-12

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT Continued

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3/10/93	1224	1304	Continue reaming. Advance to final depth of 73.5 ft BGS. Void
(cont.)			encountered from 72 ft to 73.5 ft BGS. Top of weathered rock at
			70 ft BGS. Cuttings almost entirely composed of angular chert
			fragments. A few exhibit iron oxide staining. Most are 1/16-in. to
			1-in. in size, and range in coloration from dark gray (Munsel
			2.5 YR 4/0) to light gray (2.5 YR 7/0). Those fragments exhibiting
			iron oxide stains or adhering clay are yellowish-brown (10 YR 5/6).
			Approximately 5% of cuttings comprised of stiff, gritty yellowish-
			brown clay. Crew breaks for lunch.
	1401	1457	Crew installs 60 ft of 1.5-in. outside diameter (OD) PVC tremie pipe
			to 57 ft BGS in drill bore. Prepare for grout delivery.
	1457	1648	Awaiting grout delivery.
	1648	1749	Grout delivery arrives. Tremie 2 yds^3 into bore. Grout at surface.
	1749	1759	Clean, secure site, and depart.
3/11/93	0922	0954	Tag grout level at 11.6 ft BGS, water level at 11 ft BGS.
	1348	1356	Grout delivery arrives. Pour approximately 0.25 yds^3 into bore.
			Circulating grout.
	1356	1432	Clean, secure site and depart.
3/16/93	am		Tag grout at 0.5 ft BGS.
3/18/93	1305	1312	Clay cap installed. Deviation of cap depth from 4.0 ft BGS to 0.5 ft
			BGS approved by Steve Jones (HSEA). P&A of PZ-12 complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. PZ-14
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 5

LOCATION: SPAD Landfill Site

DRILLERS: John Voekel/Jason Smith - Law Eng.

HELPERS: Jason Smith/Matthew Guyman - Law Eng.

DRILL: CME Model 55

DATE: START: 2/3/93

FINISH: 3/18/93

METHOD: C

LOGGED BY: Michael Klidzejs - SAIC
Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/3/93	1610	1700	Rig is moved into position over piezometer. Attempt to tag water
			level and find that piezometer is dry. Total depth of piezometer is
			100.5 ft below ground surface (BGS).
	1700	1708	Well protector pad and 2-ft column of cement are removed using
			the rig's mast winch. Stickup of PVC piezometer casing is cut off
			at 0.6 ft above ground surface. Rig up with first hollow-stem auger
			section and bit, total length 5.2 ft. Inside diameter (ID) is 6 1/4 in.,
			outside diameter (OD) is 10 5/8 in.
	1708	1823	Begin augering. Additional auger flight added sequentially at the
			end of each 5-ft interval. Cuttings consist of light brown (5YR 5/6)
			moist clayey soil and some cement cuttings. When adding fourth
			auger section, having drilled to approximately 15 ft BGS, notice
			that casing is not visible in stem of auger. Driller says that the
			process of bit grinding cement destroys PVC casing. Augering
			continues. Organic vapors in breathing zone = 0.0 ppm. Beta and
			gamma at borehole = 50 cpm, alpha = 40 cpm. Reach 24.2 ft BGS,
			stop for the day. Crew and oversight depart.
2/4/93	0805	0820	Technical oversight by T.J. Coffey (SAIC). Arrive at PZ-14 site.
			Wait on drillers.
	0820	0828	Drill crew arrives: Jason Smith (Law) is the driller, Matthew
			Guyman (Law) is the helper. Fuel drill.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. PZ-14
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/4/93	0828	0833	Start drill rig. Add auger flight.
(cont.)			
	0833	1105	Commence augering from 24.2 ft BGS. Auger to approximately 76 ft BGS. Cuttings throughout entire interval consist of: light brown (5YR 5/6) to moderate brown (5YR 4/4), moist, clayey soil/ residuum with small but abundant fragments of pale yellowish-orange (10YR 8/6) residual chert. No PVC or cement fragments observed this entire interval. Noted diminished returns between 34 ft and 40 ft BGS. Heavy chatter of auger flights and slow advance rate occasionally between 34 ft and 49 ft BGS. Augers begin binding in hole at approximately 76 ft BGS.
	1105	1206	Trip out of the hole, trying to turn augers. Lead auger flight out of the hole, recover 8.5-ft section of PVC well casing. Tag bottom of hole at 68.0 ft BGS (some caving of the bore has occurred).
	1206	1221	Break for lunch.
	1221	1346	Trip back into bore, turning augers in hole. Screening cuttings composite from 24.2 ft to 76.0 ft BGS: Alpha = 0 cpm, beta & gamma = 40 cpm (background), headspace = 0.3 ppm, and pH = N/A (no groundwater encountered).
	1346	1350	Have lead auger to approximately 60 ft BGS. Augers will not turn, but will free-fall into hole. Driller suspects a problem with the drill rig clutch.
	1350	1424	Drill crew departs to phone their office with status.
	1424	1520	Drillers return. Lay rig mast down to work on cable pulley. Waiting for S. Wilkerson (Law) to arrive.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. PZ-14
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/4/93	1520	1620	Sam arrives, assists drill crew in working on rig. Determine that
(cont.)			a slip-clutch went out. Having another shipped overnight. Will
			install first thing 2-5-93. Oversight departs.
2-5-93	0905	0956	Arrive at PZ-14 site. Drill crew onsite replacing slip-clutch.
	0956	1016	Continue tripping augers into the bore.
	1016	1143	At 76.0 ft BGS, commence augering. Auger to 93.0 ft BGS.
			Cuttings slow to appear at surface. Cuttings consist of light brown
			(5YR 5/6), moist, clayey soil/residuum with small fragments of
			white (N9) to pale yellowish-orange (10YR 8/6). Organic vapor
			readings fluctuating from 0.2 to 1.8 ppm (may be humidity
			effects).
	1143	1149	Interrupt augering to make adjustments to the part replaced this
			morning.
	1149	1158	Continue augering. Auger from 93.0 ft to 93.6 ft BGS.
	1158	1202	Break down. Possible broken chain in rig drive box. Shut off drill
			rig.
	1202	1316	Drillers depart to report status to office. Screening cuttings from
			76.0 ft to 93.6 ft BGS: Alpha = 10 cpm, beta & gamma = 40 cpm,
			headspace = 0.3 ppm, and pH = 8.6.
	1316	1441	Drill crew returns and begins dismantling drill rig head to make
			repairs. Obviously, no more drilling will occur today. Oversight
			departs.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. PZ-14
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/8/93	0805	0810	Meeting with Tim Coffey (SAIC), Bill Thedford (HSEA), and Steve Jones (HSEA) concerning status of PZ-14. Steve Jones agreed to trip out of the borehole at 93.6 ft instead of 98 ft due to the mechanical problems the rig was encountering when trying to go through the chert layer at this depth.
	0810	0851	Technical oversight by S.L. Abston (SAIC). Arrived at PZ-14. J. Voekel and S. Smith (both of Law), were on site working on rig.
	0851	1005	Trip out of borehole. Lead auger flight out of borehole, recover 5-ft section of PVC well casing.
	1005	1040	Break down rig to move to next site. Tag bottom of hole at 92 ft BGS (some caving of the borehole has occurred).
	1040	1130	Drill crew moves augers to steam cleaning area and leaves site to get a load of water.
	1130	1200	Break for lunch.
	1200	1240	Awaiting the arrival of the cement truck to grout borehole. Drillers place eight 10-ft sections of 1.5-in. OD PVC tremie pipe down borehole.
	1240	1257	Tremie 2.5 cubic yds of grout using the drill pump into borehole. Cement truck departs site.
	1257	1315	Drill crew cleaning site and pulling tremie pipe. Lose 50 ft of tremie pipe in the borehole due to collapse around the pipe at approximately 20 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. PZ-14
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/8/93	1315	1430	Break down drill rig and move off site to steam clean augers and
(cont.)			rig.
2/9/93	1322	1328	Tagged grout level in borehole at 21 ft BGS.
3/12/93	1300	1335	Greg Shillings and Steve Brown (Highland) mixed eight sacks
			(10.9 cubic ft) of cement with 2% bentonite by volume and poured
			into borehole.
3/16/93	1525	1531	Tagged grout level in borehole at 4.5 ft.
3/18/93	1415	1430	Capped borehole with clay after receiving permission from
			S. Jones (HSEA) to deviate from the maximum of 4 ft depth to
			grout procedure.
			P&A of PZ-14 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. PZ-24
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 3

LOCATION: SPAD Landfill Site	DATE: START: 2/9/93
DRILLERS: John Voekel - Law Engineering	FINISH: 3/18/93
HELPERS: Shawn Smith - Law Engineering	METHOD: C
DRILL: CME 55	LOGGED BY: Susan Abston - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/9/93	1328	1440	Technical oversight by Susan Abston (SAIC). Arrive at PZ-24 site.
			Tag bottom of well at 50.7 ft below ground surface (BGS). Drill
			crew, John Voekel and Shawn Smith (both of Law), begin drilling.
	1440	1545	Removed 4 ft section of protective casing using drill rig's mast
			cable. Install hollow-stem auger section and bit. Total length of
			5.2 ft. Inside diameter (ID) 6 1/4-in. Outside diameter (OD) is
			10 5/8-in. Begin augering. Additional auger flights added
			sequentially at the end of each 5-ft interval. Chert layer between
			17 ft -18.5 ft BGS. Drill to 20 ft BGS.
	1545	1629	Continue drilling. Several chert layers between 19 ft and 24 ft BGS.
			Resistant chert layer at 30 ft BGS. Drill to 34 ft BGS.
	1629	1640	Resistant layer from 34 ft to 36 ft BGS.
	1640	1735	Continue drilling. Encounter moisture at 49 ft BGS. Resident layer
			encountered at 50 ft BGS. Drilled to 52 ft BGS. Cuttings
			throughout entire interval consist of light brown (5YR 5/6) to
			moderate brown (5YR 4/4), moist, clayey soil/residuum with small
			chert fragments and PVC fragments. Beta/Gamma readings
			= 70 cpm, and Alpha reading = 0 cpm.
	1735	1745	Tripping augers out of borehole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. PZ-24
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/9/93	1745	1800	Stop tripping out of borehole to drain water tank and secure site. pH
(cont.)			readings = 7.8 and Organic vapor readings = 0.6 ppm. Drill crew
			departs site.
2/10/93	0800	0840	Arrive at PZ-24 site. Drill crew J. Voekel and S. Smith (Law) arrive
			at site. Drillers continue to trip remaining augers out of borehole.
			Recovered 8.1 ft of well pipe with last augers. Remainder of well
			pipe destroyed during augering of borehole.
	0840	0945	Drill crew moves auger to steam cleaning area and departs for a
			load of water. Upon return, load grout. Tagged bottom of PZ-24
			at 47.3 ft BGS. Some cave-in at bottom of borehole.
	0945	1033	Mixed twelve sacks (16.3 ft^3) of 2% bentonite-cement grout with
			drill rig pump and tremied it into borehole through 40 ft of 1 1/2-in.
			PVC tremie pipe.
	1033	1100	Pull out tremie pipe and cleanup.
	1100	1200	Break for lunch. Oversight leaves site.
	1200	1325	Oversight returns to site. Drillers steam clean augers.
2/11/93	1245	1300	Tagged grout level at 9 ft BGS.
3/12/93	1110	1130	S. Brown and G. Shillings (both of Highland) mixed three sacks
			(4.1 ft^3) of 2% bentonite-cement grout and poured into borehole.
3/17/93	1535	1542	Tagged grout level at 1.9 ft BGS in borehole.
3/18/93	1357	1404	S. Brown and G. Shillings (both of Highland) capped borehole with
			clay/soil.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. PZ-24
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3/18/93			P&A of PZ-24 is complete.
(cont'd)			

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. PZ-32
WELL PLUGGING and ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 2

LOCATION: SPAD Landfill Site

DRILLERS: Hubert Hall - Highland Drilling

HELPERS: Bob Bowers - Highland Drilling

DRILL: Ingersoll Rand XL-750

DATE: START: 1/22/93

FINISH: 2/1/93

METHOD: C

LOGGED BY: V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1/22/93	1334	1432	Technical oversight by V.R. Harness - SAIC. Crew setting up rig
			on PZ-32. Protective casing removed with part of PVC riser
			(2.0-in. outside diameter). Crew rigs up 10 5/8-in. tricone roller
			bit. Bit and stabilizer = 9.2 ft length.
	1432	1519	Commence drilling out PVC casing. Table height = 2.2 ft.
			Compressed air only. Advance to 12 ft below ground surface
			(BGS).
	1519	1621	Begin use of water in drilling. Returns comprised of stiff yellowish-
			brown clay residuum with occasional angular to subangular chert
			fragments intermingled with grout and PVC fragments. Advance
			to 55 ft BGS. Crew partially trips out tools, secures site. All depart.
1/25/93	0818	0847	Awaiting crew.
	0847	0941	Trip tools back down. Resume drilling out well. Advance to
			73.7 ft BGS. Clean out bore and trip out.
	0941	1108	Grout delivery arrives. Insert 60 ft of 1.5-in. outside diameter
			(OD), PVC tremie pipe to 57 ft BGS. Pump tremie 2 cubic yds of
			Type I neat cement grout into bore with hand-powered diaphragm
			pump. No grout visible from surface.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. PZ-32
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT Continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1/25/93	1108	1220	Clean-up, secure site. Will allow grout to cure overnight before
(cont.)			adding more. Cuttings are N8 (Munsel) grey chert fragments with
			reddish-brown stiff clay. No grout or PVC fragments. Depart site.
1/26/93	0854	0902	Tag cured grout at 37.5 ft BGS. Grout delivery scheduled for 1100
			hours. Depart site.
	1156	1215	Insert 20 ft of 1.5-in. OD PVC tremie pipe to 17 ft BGS. Grout is
			pumped until circulating from bore. Clean-up and secure site.
			Depart.
1/27/93	0839	0845	Tag grout level at 6 ft BGS. Deviation from 4 ft BGS approved by
			Steve Jones - HSE.
2/1/93	1101	1130	Remainder of bore is filled with clay cap. P&A of PZ-32 is
			complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. PZ-34
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 2

LOCATION: SPAD Landfill Site	DATE: START: 2/10/93
DRILLERS: John Voekel - Law Engineering	FINISH: 3/18/93
HELPERS: Shawn Smith - Law Engineering	METHOD: C
DRILL: CME 55	LOGGED BY: Susan Abston - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/10/93	1300	1325	Technical oversight by S. L. Abston (SAIC). Arrive at PZ-34 site.
			Tag the bottom of well at 46.5 ft below ground surface (BGS). Well
			information reports Total Depth (TD) of PZ-34 at 47.0 ft BGS.
	1325	1353	Drill crew moves drill rig onsite and fills water tank.
	1353	1400	Drill crew removes 4-in. diameter protective casing and 3.3-ft well
			pipe using the drill rig mast cable.
	1400	1402	Prepare to drill. Adding first hollow-stem auger flight and bit. Total
			length 5.2 ft. Inside diameter (ID) 6 1/4-in. Outside diameter (OD)
			10 5/8-in.
	1402	1545	Commence augering from 0.0 ft BGS. Auger to approximately
			48 ft BGS. Cuttings throughout entire interval consist of light
			brown (5YR 5/6) to moderate brown (5YR 4/4), moist, clayey soil/
			residuum with small fragments of chert, grout, and PVC.
	1545	1615	Trip out of the borehole. Lead auger flight out of borehole, recover
			39.1 ft of PVC well casing. Beta/Gamma readings = 60 cpm, and
			Alpha readings = 20 cpm.
	1615	1655	Preparing site to grout borehole. Tag borehole at 46.6 ft BGS.
			Some cave-in at bottom of borehole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. PZ-34
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/10/93	1655	1730	Mix and tremie12 sacks (16.3 cubic ft) of 2% bentonite-cement
(cont.)			grout into borehole using the drill rig pump and 40 ft of
			1.5-in. diameter PVC tremie pipe.
	1730	1810	Clean equipment used during grouting, and secure site. Drill crew
			and oversight depart from site. pH in composite sample is 10.8,
			which is above the limit of 10.5 due to grout fragments in the grab
			sample. Organic vapors = 0.4 ppm.
2/11/93	0830	0845	Arrive at PZ-34 site. Tag grout at 27 ft BGS in borehole.
	0845	1115	Drill crew waiting on water to steam clean equipment.
	1115	1145	Oversight departs site for lunch and returns.
	1145	1300	Drill crew steam cleans equipment and prepares to move to next
			site.
3/12/93	1430	1530	Steve Brown and Greg Shillings (both of Highland) mix 10 sacks
			(13.6 cubic ft) of 2% bentonite-cement grout and pour into
			borehole.
3/16/93	1545	1552	Tag grout level in borehole at 6.0 ft BGS.
3/18/93	1345	1350	Steve Brown and Greg Shillings cap borehole with clay soil after
			receiving permission from Steve Jones (HSEA) to deviate from
			the maximum of 4 ft depth to grout.
			P&A of PZ-34 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-12
WELL PLUGGING and ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 2

LOCATION: SPAD Landfill Site

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Bob Bowers - Highland Drilling Co.

DRILL: Ingersoll Rand XL-750 Drillmaster

DATE: START: 1/25/93

FINISH: 2/1/93

METHOD: C

LOGGED BY: V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1/25/93			Technical oversight by V.R. Harness-SAIC. Crew setting up rig.
			Protective casing and part of PVC riser removed.
1/26/93	0902	1043	Crew rigs up 9.2 ft long stabilizer and bit assembly. Bit is
			10 5/8-in. diameter tricone roller bit. Removed protective casing is
			4-in. square metal housing 3.5 ft long. PVC riser (2.0-in OD)
			removed with protective casing to 10 ft below ground surface
			(BGS).
	1043	1046	Begin drilling out PVC casing. Breathing zone analysis (BZA) with
			OVA = 0.2 ppm. Beta/gamma measurement at table = 50 cpm.
			Table height = 2.5 ft.
	1046	1058	Advance to 3.7 ft BGS, air only. Organic vapor analysis of moist
			clay cuttings = 3.0 ppm. Beta/gamma measurement at table =
			45 cpm.
	1058	1113	Advance to 14 ft BGS, BZA = 0.2 ppm. Began using water to drill
			at 3.7 ft BGS. Concrete delivery arrives.
	1113	1115	Advance to 17.2 ft BGS. Beta/Gamma at table = 50 cpm.
	1115	1136	Advance to 20.7 ft BGS. Clean bore, trip out. Move rig to allow
			grout delivery mixer access. Bore is shallow so grout will be poured
			from surface (no danger of bridging).

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-12
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT Continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1/26/93	1136	1154	Pour bore full of neat Portland Type I cement grout. Secure site
(cont.)			and depart. Cuttings comprised of grout and PVC fragments
			with weathered chert fragments.
1/27/93	0833	0838	Tag cured grout at 5.6 ft BGS. Approval to deviate from 4 ft BGS
			cap depth given by Steve Jones - HSEA.
2/1/93	1101	1130	Remainder of bore capped with clay, P&A of SB-12 complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-14
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 3

LOCATION: SPAD Landfill Site	DATE: START: 2/8/93
DRILLERS: John Voekel - Law Engineering	FINISH: 3/18/93
HELPERS: Shawn Smith - Law Engineering	METHOD: C
DRILL: CME 55	LOGGED BY: Susan Abston - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/8/93	1415	1430	Technical oversight by S.L. Abston (SAIC). Arrive at SB-14 site.
			Drill rig is moved into position over piezometer.
	1430	1500	Tag total depth (TD) of piezometer at 39.2 ft below ground surface
			(BGS). Well information states TD of SB-14 at 44.0 ft BGS.
			Unable to tag bottom of piezometer due to silt in the bottom.
	1500	1510	Remove 4 ft of well protective casing using drill rig's mast cable.
			PVC casing stickup of piezometer is at 0.5 ft above ground surface.
	1510	1512	Install hollow steam auger section and bit. Total length is 5.2 ft.
			Inside diameter (ID) is 6 1/4-in., and outside diameter (OD) is
			10 5/8-in.
	1512	1550	Begin augering. Additional auger flights added sequentially at the
			end of each 5-ft interval. Cuttings become wet at ≈19.5 ft BGS. Drill
			to 34.7 ft BGS, and stop for the day. Cuttings consist of light brown
			(5YR 5/6) moist, clayey soil/residuum with some weathered chert
			fragments and grout fragments. Beta/Gamma readings = 60 cpm,
			and Alpha readings = 30 cpm.
	1550	1600	Drill crew secures site and departs.
	1600	1708	Screening cuttings (see Well Cuttings Field Screening/Disposal
			Sheet). Composite grab sample pH of 10.8. High pH likely due
			to grout in soil sample.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-14
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/9/93	0750	0810	Arrive at SB-14 site. Have augered 34.2 ft BGS.
	0810	0821	Drill crew (Law) arrives and prepares to continue drilling.
	0821	0845	Commence augering from 34.2 ft BGS. Auger to 45 ft BGS. Cuttings throughout entire interval consist of light brown (5YR 5/6), moist, clayey soil/residuum. Organic vapors reading = 0.6 ppm.
	0845	0900	Trip one auger out of borehole.
	0910	0911	Pulled 34.6 ft of 2-in. PVC well pipe out of borehole. Bottom portion of well screen broke lead auger.
	0911	1000	Pull remaining nine flights of augers; 5.4 ft of well pipe inside lead auger.
	1000	1008	Tagged bottom of borehole at 45 ft BGS.
	1008	1020	Drill crew departs site to get water, cement, and bentonite in order to grout hole.
	1020	1028	Drill crew returns to site and places 40 ft of 1 1/2-in. PVC tremie pipe into the borehole and prepares to mix grout.
	1028	1155	Mix 12 sacks (16.3 cubic ft) of 2% bentonite-cement grout with pump on drill rig and tremie it down borehole.
	1155	1215	Remove tremie pipe and clean equipment and site.
	1215	1245	Break for lunch.
	1245	1315	Move drill and equipment off site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-14
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/9/93 (cont.)	1315	1440	Steam clean augers and equipment.
2/10/93	0916	0945	Tagged grout in borehole at 6.3 ft BGS.
3/12/93	1038	1110	Greg Shillings and Steve Brown (both of Highland) mixed 2 sacks
			(2.7 cubic ft) of bentonite-cement grout and poured into borehole
			to top off.
3/16/93	1531	1535	Tagged grout in borehole at 1.2 ft BGS.
3/18/93	1404	1415	G. Shillings and S. Brown capped borehole with clay (soil).
			P&A of SB-14 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-24
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 2

LOCATION: SPAD Landfill Site	DATE: START: 2/17/93
DRILLERS: John Voekel - Law Engineering	FINISH: 3/18/93
HELPERS: Shawn Smith - Law Engineering	METHOD: C
DRILL: CME 55	LOGGED BY: Susan Abston - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-17-93	0830	0845	Technical oversight by S. L. Abston (SAIC). Arrived at SB-24.
			Tag bottom of well at 20.7 ft below ground surface (BGS) with
			3.5 ft of stickup of well pipe. Depth of 20 ft BGS reported in well
			information. Depart site.
	1255	1410	Return to SB-24 site. John Voekel and Shawn Smith move rig to
			site with the assistance of the backhoe, which is operated by
			Steve Brown (Highland). Drill crew moves augers to site.
	1410	1426	Prepare rig for drilling. Remove 4-in. diameter protective casing
			using the drill rig mast cable. Pulled 5.0 ft of well pipe with the
			protective casing. Used cable to pull the remaining 19.2 ft of well
			pipe screen and end plug. Added first hollow-stem auger flight
			and bit. Total length 5.2 ft. Inside diameter (ID) 6 1/4-in. Outside
			diameter (OD) 10 5/8-in. Commenced augering from 0.0 ft BGS.
	1426	1452	Additional auger flights added sequentially at the end of each
			5-ft interval. Augered to 22.0 ft BGS. Cuttings throughout section
			consist of light brown (5YR 5/6), moist, clayey soil/residuum with
			fragments of chert.
	1452	1506	Trip out of borehole. Lead auger flight out of borehole. Beta/
			Gamma reading = 60 cpm, and Alpha reading = 40 cpm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-24
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/17/93	1506	1520	Tag bottom of borehole at 20.7 ft BGS. Some cave-in of borehole.
(cont'd)			Place 20 ft of 1.5-in. OD PVC tremie pipe in borehole (4 ft of
			stickup). Mix and tremie three sacks (4.1 cubic ft) of 2% bentonite-
			cement grout into borehole using the drill rig pump.
	1520	1600	Clean equipment used during grouting and break down rig to
			move off site. pH reading = 9.6, and Organic vapor reading
			= 0.0 ppm.
2/18/93	1025	1035	Tag grout level in borehole at 5.8 ft BGS.
3/18/93	1515	1530	Steve Brown and Greg Shillings (both of Highland) cap borehole
			with clay/soil after receiving permission from Steve Jones (HSEA)
			to deviate from the maximum of 4 ft depth to grout.
			P&A of SB-24 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-34
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 2

LOCATION: SPAD Landfill Site	DATE: START: 2/11/93
DRILLERS: John Voekel - Law Engineering	FINISH: 3/18/93
HELPERS: Shawn Smith - Law Engineering	METHOD: C
DRILL: CME 55	LOGGED BY: Susan Abston - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/11/93	1239	1300	Technical oversight by S. L. Abston (SAIC). Arrive at SB-34. Tag
			bottom of well at 40.9 ft below ground surface (BGS). Waiting on
			drill crew to finish steam cleaning: John Voekel, driller (Law), and
			Shawn Smith, helper (Law).
	1300	1328	Move drill rig onsite and remove 4-in. diameter protective casing
			using the drill rig mast cable.
	1328	1511	Adding first hollow-stem auger flight and bit. Total length 5.2 ft.
			Inside diameter (ID) 6 1/4-in. Outside diameter (OD) 10 5/8-in.
			Commence augering from 0 ft BGS. Auger to 42 ft BGS. Cuttings
			through section consist of light brown (5YR 5/6) to moderate
			brown (5YR 4/4), moist, clayey soil/residuum with fragments of
			chert, grout, and PVC.
	1511	1600	Trip out of borehole. Lead auger flight out of borehole. Recovered
			16 ft of PVC well pipe. The remaining well pipe was destroyed
			during augering. Beta/Gamma reading = 70 cpm, and Alpha
			readings = 40 cpm.
	1600	1617	Preparing to mix grout for borehole. Placed 40 ft of 1.5-in.
			diameter PVC tremie pipe in borehole.
	1617	1650	Mix and tremie twelve sacks (16.3 ft^3) of 2% bentonite-cement
			grout into borehole using the pump on the drill rig.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-34
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/11/93	1650	1733	Clean equipment used during grouting and secure site. Drillers
(cont'd)			and oversight depart site. The pH in composite sample is 10.6 due
			to grout fragments in the grab sample. Organic vapor reading is
			0.1 ppm.
2/12/93	0800	1145	Drill crew onsite to move equipment and steam clean.
2/17/93	1600	1636	Tag grout level at 8 ft BGS in borehole.
3/12/93	1335	1400	Steve Brown (Highland) and Greg Shillings (Highland) mix three
			sacks (4.1 ft^3) of 2% bentonite-cement grout and pour into
			borehole.
3/16/93	1542	1543	Tag grout level in borehole at 0.3 ft BGS.
3/18/93	1430	1505	Steve Brown and Greg Shillings cap borehole with clay soil.
			P&A of SB-34 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-44B
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 2

LOCATION: SPAD Landfill Site	DATE: START: 2/12/93
DRILLERS: John Voekel - Law Engineering	FINISH: 3/18/93
HELPERS: Shawn Smith - Law Engineering	METHOD: C
DRILL: CME 55	LOGGED BY: Susan Abston - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/12/93	1050	1145	Technical oversight by S. L. Abston (SAIC). Arrived at SB-44B.
			Tag bottom of well at 39.0 ft below ground surface (BGS). Waiting
			on drill crew to finish steam cleaning.
	1145	1200	Move drill rig to site and prepare to drill.
	1200	1230	Break for lunch.
	1230	1245	Remove 4-in. diameter protective casing using drill rig mast cable.
			Add first hollow-stem auger flight and bit. Total length 5.2 ft. Inside
			diameter (ID) 6 1/4-in. Outside diameter (OD) 10 5/8-in.
	1245	1415	Commence augering from 0 ft BGS. Auger to 40 ft BGS. Cuttings
			throughout section consist of light brown (5 YR 5/6), moist, clayey
			soil/residuum with fragments of chert and grout.
	1415	1500	Trip out of borehole. Lead auger flight out of borehole. Recovered
			42 ft of PVC well pipe (39 ft plus 3 ft of stickup).
	1500	1510	Preparing to mix grout for borehole. Placed 30 ft of 1.5-in.
			diameter PVC tremie pipe in borehole.
	1510	1540	Mix and tremie 12 sacks (16.3 cubic ft) of 2% bentonite-cement
			grout into borehole using the pump on the drill rig. At 1520, pH of
			composite grab sample was 10.6 due to the grout fragments in
			the sample. Organic vapors were at 11.0 ppm due to alcohol

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-44B
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/12/93			anti-freeze used to winterize the drill rig. Beta/Gamma reading
(cont.)			was 60 cpm and Alpha was 30 cpm.
	1540	1600	Clean equipment used during grouting and secure site. Oversight
			and drill crew depart site.
2/16/93	0810	0955	Drill crew breaks down rig to move to next site, and steam cleans
			equipment.
2/17/93	1655	1700	Tag grout level in borehole at 2.3 ft BGS.
3/18/93	1338	1345	Steve Brown (Highland) and Greg Shillings (Highland) cap bore-
			hole with clay soil.
			P&A of SB-44B is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-54
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 2

LOCATION: SPAD Landfill Site	DATE: START: 2/16/93
DRILLERS: John Voekel - Law Engineering	FINISH: 3/18/93
HELPERS: Shawn Smith - Law Engineering	METHOD: C
DRILL: CME 55	LOGGED BY: Susan Abston - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/16/93	0915	1330	Technical oversight by S. L. Abston (SAIC). Arrived at SB-54. Tag
			bottom of well at 17 ft below ground surface (BGS) with 3.5 ft of
			stickup. Log of boring reports total depth of well to be 21 ft BGS.
			Not able to move drill rig onsite because of slippery road brought
			on by abundant rain fall recently. Winched drill rig up near site but
			backhoe not available to move rig onsite until tomorrow. Secure
			site and depart.
2/17/93	0805	0935	Oversight and drill crew onsite waiting on backhoe to move rig into
			position over well hole.
	0935	1015	Greg Shillings (Highland) onsite with backhoe and move drill rig
			into position over well bore.
	1015	1025	Moving augers and cement to site.
	1025	1040	Setting rig up to drill. Remove 4-in. diameter protective casing
			using drill rig mast cable. Pulled 5.4 ft of well casing with protective
			casing. Used cable to pull 19.1 ft of casing with end plug.
	1040	1103	Add first hollow-stem auger flight and bit. Total length 5.2 ft. Inside
			diameter (ID) 6 1/4-in. Outside diameter (OD) 10 5/8-in. Com-
			mence augering from 0.0 ft BGS. Auger to 22 ft BGS. Cuttings
			throughout section consist of light brown (5YR 5/6) to dark yellow-
			ish orange (10YR 6/6), moist to saturated, clayey soil/residuum

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-54
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/17/93	1040	1103	with fragments of chert and some grout fragments. Beta/Gamma
(cont'd)			reading = 60 cpm and Alpha reading = 40 cpm.
	1103	1130	Trip out of borehole.
	1130	1154	Tag bottom of borehole at 19.2 ft BGS. Some cave-in of bottom
			of borehole. Prepare to mix grout for borehole. Placed 20 ft of
			1.5-in. diameter PVC tremie pipe in borehole (4 ft of stickup).
			Mixed and tremied four sacks (5.4 ft^3) of 2% bentonite-cement
			grout into borehole using drill rig pump.
	1154	1225	Clean equipment used during grouting, and break down rig to
			move to next site.
	1458	1505	Composite grab sample is 10.7 pH due to grout fragments in the
			sample. Organic vapors = 10.2 ppm due to alcohol anti-freeze
			used to winterize drill rig.
2/18/93	1035	1045	Tag grout level in borehole at 5.1 ft BGS.
3/18/93	1505	1515	Steve Brown (Highland) and Greg Shillings (Highland) cap bore-
			hole with clay soil after receiving permission from Steve Jones
			(HSEA) to deviate from the maximum of 4 ft depth to grout.
			P&A of SB-54 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-72a
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 5

LOCATION: SPAD Landfill Site	DATE: START: 3/8/93
DRILLERS: Rick Mayberry - Highland Drilling Co.	FINISH: 3/18/93
HELPERS: Paul McCormick - Highland Drilling Co.	METHOD: C
DRILL: Ingersoll Rand XL-750 Drillmaster	LOGGED BY: Dwight Hollon (SAIC)/ Victor R. Harness (SAIC)

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3/8/93	0815	0918	Technical oversight by D. Hollon (SAIC). Arrive at SB-72a site.
			Was called by T. Coffey (SAIC) and told that Highland would not
			be at the site until approximately 0900 hours. Left the site to go
			to the Biology Building (Y-12 Plant) to get an Alpha meter and a
			beta and gamma meter.
	0918	0933	Return to SB-72a site. Personnel at the site are R. Phillips,
			P. McCormick, R. Mayberry, D. Key (all of Highland) and B.
			Thedford (HSE).
	0933	0941	Measured bit and stabilizer to be 9.2 ft. Table height measured
			to be 2.2 ft. Crew will ream a 2-in. outside diameter (OD) PVC
			casing in an 8-in. OD grouted hole with a 10 5/8-in. OD tricone bit.
			Beta and gamma survey of the rig is 30 cpm: background is
			30 cpm.
	0941	0955	Reaming begins. Cuttings consist of grout, clayey soil, and PVC.
			HNu survey of the breathing zone at 6.5 ft BGS is 0 ppm.
	0955	1011	Bit and stabilizer down to 7.0 ft BGS. Crew works to get bushings
			seated. Table height adjusted to 2.4 ft. Add drill rod.
	1011	1053	Reaming continues. Water added to flush cuttings from the hole
			at 1026 hrs. At 13.8 ft BGS, rig shimmies as drilling becomes
			harder. HNu surveys of the breathing zone at 16.8 ft BGS and
			25 ft BGS both read 0.2 ppm. Increase in water encountered at

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-72a
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3/8/93			26 ft BGS. Depth is 31.8 ft BGS at 1048 hrs. Beta and gamma
(cont.)			scan of the cuttings is 30-40 cpm; background 30 cpm. Lithology:
			chert, white (N9), medium light gray to dark gray (N6-N4) and
			black (N1). Minor amounts of grout, medium dark gray (N4).
			Minor PVC cuttings.
	1053	1109	Add drill rod, continue reaming. Drill to 51.6 ft BGS. Returns are
			sporadic throughout this interval. HNu survey of the breathing
			zone is 0.2 ppm at 36 ft BGS. Slight shimmying of the rig at 40.8 ft
			BGS. Lithology: chert, black (N1), white, (N9) medium light gray
			to medium gray (N6-N5). No grout fragments, no PVC cuttings.
	1109	1123	Add drill rod, continue reaming. Borehole may be collapsing.
			Informed R. Phillips (Highland) that there was an absence of grout
			in the cuttings. Was told by him to continue.
	1123	1135	Reaming continues. HNu surveys of the breathing zone at 53 ft
			BGS and 63 ft BGS are 0 ppm. R. Mayberry (Highland), reports
			that drilling is felt to be on the PVC casing. If drill bit were in
			residuum the drilling would be faster because it is soft.
	1135	1145	At 70.8 ft BGS rig shimmies and bounces. Shimmying continues
			to 73.5 ft BGS. Lithology: Chert, black (N1), white (N9), medium
			light gray to medium gray (N6-N5). No grout.
	1145	1148	B. Thedford (HSEA) and R. Phillips (Highland) on site. B. Thedford
			(HSEA) agreed with decision to continue reaming.
	1148	1200	Drilled depth is 81.8 ft BGS. Add drill rod, continue reaming. Rig
			shimmies at 83.0 ft BGS. At 1158 hrs. visitors leave. Lithology:
			chert, black (N1), white (N9), medium light gray to medium gray,
			(N6-N5) black (N1), weathered sandstone. No grout. No PVC

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-72a
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3/8/93			cuttings.
(cont.)			
	1200	1206	HNu survey of the breathing zone at 84.0 ft BGS is 0 ppm. Top of
			weathered rock at 84.5 ft BGS. Lithology: Dolostone, medium
			gray to brownish gray (N5-5 YR 4/1). Cuttings contain weathered
			veins and staining. Chert, black (N1), white (N9), medium light
			gray to dark gray (N6-N4). No PVC cuttings. No grout.
	1206	1216	Increase in water encountered between 84.5 ft and 85 ft BGS.
			Returns sporadic. Ratty drilling from 84.5 ft to 87.8 ft BGS and
			88.8 ft to 89.0 ft BGS. Soft interval from 89.0 to 92.0 ft BGS.
			Stringer at 92.8 ft BGS locked up drilling bit. Drilling became
			slightly smoother from 96 ft BGS to 98.3 ft BGS. Stopped drilling
			at 98.3 ft BGS. Lithology: Dolostone, medium gray to brownish-
			gray (N5-5 YR 4/1). Chert, black (N1), white (N9), medium light
			gray to dark gray (N6-N4). Cuttings contain weathered veining
			features. No PVC cuttings. No grout.
	1216	1227	HNu survey of the breathing zone at 98.3 ft BGS is 0.2 ppm. Beta
			and gamma scan of all cuttings were 50-60 cpm; background
			50 cpm. Alpha scan of all cuttings was 0-20 cpm; background
			0-20 cpm.
	1227	1330	Crew pulls 50 ft off of bottom. Will eat lunch and get tremie pipe
			afterwards. Calculate 2.25 yds^3 of grout to fill borehole to the top.
			R. Mayberry (Highland) orders for 3.5 yds^3 of grout. Leave site
			with S. Abston (SAIC), who will oversee grouting.
	1330	1400	HNu survey of the headspace sample is 8 ppm. Sample cuttings
			were not totally dry; condensation was observed on the sides of
			the jar and, an alcohol odor was noticed when drilling began.
			Consulted with V. Harness (SAIC), and he contributed the reading

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-72a
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3/8/93			to the factors stated above. V. Harness (SAIC) will oversee
(cont.)			grouting instead of S. Abston (SAIC). Leave SPAD landfill site.
	1400	1432	Oversight provided by V. R. Harness (SAIC). Crew installs 90 ft
			of 1.5-in. OD PVC tremie pipe to 87 ft BGS. Awaiting grout
			delivery.
	1432	1529	Grout arrives, pump tremie 3.5 yds^3 of neat, Type I Portland
			cement into bore. Grout level observed at approximately 30 ft
			BGS and is visibly dropping.
	1529	1537	Clean up, secure site, and depart.
3/9/93	0830	0845	Last night crew raised tremie above grout and left in bore at 27 ft
			BGS. Tag mud in bore at 12 ft BGS. Attempted tagging grout
			through tremie, maximum sounding depth = 60.5 ft BGS.
	1612	1630	Tremie 2 yds^3 into bore. Grout level visible at approximately 20 ft
			BGS. Secure site and depart.
3/10/93	0854	0905	Tagged grout at 82 ft BGS! Received permission from Bill
			Thedford and Kevin Jago (HSE) to use Hole Plug™ in this bore.
	0905	0923	Getting Hole Plug™ and potable water.
	0923	1025	Slowly pour eight 50 lb sacks (5.5 ft^3) of Hole Plug™ into bore and
			hydrate with 50 gallons of potable water. Will allow Hole Plug™
			to hydrate for 4-6 hrs. Tag water at 30 ft BGS and bentonite at
			70.6 ft BGS. Depart site.
	1759	1818	Crew installs 30 ft of 1.5-in. OD PVC tremie line to 28 ft BGS.
			Remainder of pipe had damaged threads. Crew tremies 2 yds^3

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. SB-72a
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3/10/93			into bore. Circulate grout.
(cont.)			
	1818	1826	Secure site, depart.
3/11/93	0908	0922	Tag grout level at 22 ft BGS, no water. Calculate 0.5 yds^3 required
			to fill remainder of bore. Depart.
	1326	1337	Pour approximately 0.5 yds^3 of neat, Portland Type I cement into
			bore. Secure site and depart.
3/12/93	0855	0900	Tag grout level at 2.9 ft BGS. Bore is ready for clay cap. Depart.
3/18/93	1253	1305	Remaining open bore plugged with clay soil. Plugging and
			abandonment of SB-72a is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1003

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: S-3 Ponds Functional Area

DRILLER: Hubert Hall - Highland Drilling Co.

HELPERS: Greg Anderson, Steve Brown

DRILL: Ingersoll-Rand XL-750

DATE: START: 5-20-93

FINISH: 5-24-93

METHOD: C

LOGGED BY: V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-20-93	0904	0923	Technical oversight by Victor R. Harness (SAIC). Crew and
			oversight arrive at 1003 hr. Crew successfully pulls up 2 guard
			posts with no concrete anchor, but third post requires being cut
			with oxy-acetylene torch. Hydrogen sulfide odor from well bore
			and holes where posts were pulled up. Breathing zone analysis
			(BZA) and vapor check in well = 0.0 ppm = background (BCK).
	0923	0940	Setting up rig. Casing is 6.5-in. outside diameter (OD) PVC/#80
			and stickup height = 2.4 ft. Tag a soft bottom inside well at 38.7 ft
			below ground surface (BGS). Screening of weighted probe on
			tape gives 0.0 ppm organic vapors, 50 cpm beta gamma = BCK
			and 0 cpm alpha = BCK.
	0949	0953	Steve Jones (HSEA) on site, states no excavation permit is
			needed and all paperwork is complete. Screen interior of well
			casing for organic vapors, results = 0.0 ppm. Jones requests
			continuous monitoring of BZA due to our location. Crew begins
			excavating small circulation pit.
	0953	1041	Crew rigging up 10 5/8-in. diameter tricone roller bit with
			subadapter. Total length = 4.6 ft. Crew departs for supplies and
			returns.
	1041	1105	Return to site. BZA around excavated cuttings pit (3 ft wide x 4 ft
			deep x 6 ft long) = 0.0 ppm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1003
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-20-93	1105	1117	Begin drilling with compressed air only. Table height = 2.4 ft.
(cont.)			
	1117	1130	Advance to 2 ft BGS. Area accountability manager for Energy
			Systems, Bill Lambdon, arrives; rig shut down. Crew and rig begin
			stand-by while we are cleared to work in this area.
	1130	1148	Stand by.
	1148	1200	Steve Jones (HSEA) calls to instruct us to sign out and take lunch
			break. All depart.
	1301	1329	All return to site, all clear to continue. Resume drilling. Beta/
			gamma of excavated pit soils = 80 cpm. Add 25-ft drill rod and
			advance to 27 ft BGS. Clean bore and trip out. BZA from 2 ft to
			27 ft BGS never strayed above 0.0 ppm. Cease drilling to install
			portable dikes around table to control cuttings/water run off.
	1329	1336	Awaiting crews return with portable dikes.
			Description of 0 ft to 27 ft cuttings:
			25% (by volume) is comprised of saprolitic rock fragments.
			Siliceous, punky, ranging in coloration from moderate yellowish
			brown (10YR 5/4) to dark yellowish orange (10YR 6/6). 70% of
			sample is medium dark gray (N4) finely crystalline dolomitic
			limestone which is aggregate transported to site. 5% of sample is
			PVC cuttings.
	1336	1341	Crew returns with PVC dikes and begins installing them.
	1341	1350	Trip tools in, resume drilling. Hole has collapsed to 13 ft BGS. The
			predominant fill material we have drilled through so far makes for

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1003
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-20-93			an unstable hole with lots of potential to cave and possibly hang
(cont.)			up the tools. Hole at surface has already washed out to 2 ft across.
			After crew adds 25-ft drill rod to continue drilling at 27 ft, they find
			bit has become hung by the hole collapsing.
	1350	1401	Steve Jones (HSEA) instructs us to withdraw tools and to tremie
			grout into hole.
	1401	1410	Tag fill in bore at 20 ft BGS and water at 18 ft. Grout delivery is
			here, waiting so decision is made to pour grout immediately before
			hole collapses.
	1410	1429	Pour 1.5 cubic yds of neat, Type I Portland cement into bore. Bore
			seems to be taking grout. Final liquid grout level is 6 ft BGS.
	1429	1503	Additional grout ordered for 5-21-93 at 1100 hr. Secure site and
			depart.
5-21-93	0940	0944	Tag depth to grout at 7.5 ft BGS. Depart.
	1252	1258	Grout delivery arrives. Pour 0.25 cubic yds into bore. Grout to
			surface. Depart.
5-24-93	1350	1400	Tag depth to grout at 1 ft BGS. Crew caps bore with clay and
			backfills cuttings pit. Clean site and depart.
			P&A of 1003 complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1007

Alternate Names:
AP-07 W-03
YAP-03 No. 2

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: S-3 Ponds Functional Area

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Greg Anderson - Highland Drilling Co.

DRILL: Altec Auger Truck

DATE: START: 5-25-93

FINISH: 5-27-93

METHOD: C

LOGGED BY: V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-25-93	0930	0956	Arrive at site. Technical oversight by V.R. Harness (SAIC). Crew
			unloading hollow-stem auger flights. Auger is 8.0-in. inside
			diameter (ID) and 12.0-in. outside diameter (OD). First flight (with
			bit) is 5.3 ft in length and subsequent flights are 5 ft long. Well
			casing is 6.5-in. OD PVC/#40 extending 2.1 ft above surface.
			Guard posts are creosote-treated poles. Break off riser stickup at
			ground surface. Depth to water = 11.9 ft below ground surface
			(BGS). Well total depth = 18.1 ft BGS. Breathing zone analysis
			around uncapped well = 0.0 ppm. Organic vapors inside casing
			stickup = 0.0 ppm. Background (BCK) radiation: beta/gamma =
			60 cpm, alpha = 0 cpm.
	0956	1013	Rig up first auger flight and begin augering. Advance to 4.5 ft
			BGS. Beta/gamma of returns: at 2 ft BGS = 80 cpm, at 3 ft BGS
			= 100 cpm, at 4 ft BGS = 60 cpm. BZA: at 2 ft BGS = 0.0 ppm,
			at 3 ft BGS = 0.0 ppm, at 4.5 ft BGS = 0.0 ppm. Alpha at 4.5 ft BGS
			= 0 cpm.
	1013	1037	Add second flight of hollow-stem auger. Resume augering.
			Advance to 9 ft BGS. Beta/gamma: at 5 ft BGS = 70 cpm, at 7 ft
			BGS = 60 cpm, at 7.6 ft BGS = 60 cpm. BZA: at 5 ft BGS =
			0.0 ppm, at 7.0 ft BGS = 0.0 ppm at 7.5 ft BGS = 0.0 ppm, at 9 ft
			BGS = 100 cpm. Organic vapors beside auger = 25 ppm at 9 ft
			BGS and 40 ppm inside casing but BZA 1 ft away = 0.0 ppm. Slight
			odor near open bore similar to ammonia.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1007
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-25-93	1037	1051	Let bore ventilate until organic vapors inside bore = 2 ppm.
(cont.)			
	1051	1054	Add 3rd auger flight and resume augering. Advance to 15 ft BGS.
			BZA at 13 ft BGS = 0.0 ppm. Organic vapors at 0.5 ft distance from
			bore at 15 ft BGS = 4 ppm. Organic vapors inside bore = 8 ppm.
			Beta/gamma at 15 ft BGS = 90 cpm. Returns become muddy at
			15 ft BGS. Alpha at 15 ft = 20 cpm.
	1054	1116	Allow bore to ventilate.
	1116	1126	Rig up 4th auger flight and resume augering. Advance to 20 ft
			BGS. BZA: at 17 ft BGS = 0 ppm, at 18 ft 0 ppm. Organic vapors
			at 18 ft BGS (0.5 ft from bore) = 2 ppm. Beta/gamma: at 17 ft BGS
			= 80 cpm, at 18 ft BGS = 80 cpm, at 20 ft BGS = 80 cpm. Alpha
			at 20 ft BGS = 20 cpm.
			Description of 0.0 to 20.0 ft returns:
			Reddish-brown fill material with wood, metal and ceramic debris.
			Angular chert fragments and weathered shale fragments. Satura-
			tion at 15 ft BGS.
	1126	1206	Trip out augers. Casing fragmented. Crew cleans and secures
			site. Depart.
	1411	1442	Crew mix and pour 16 (18.9 cubic ft) sacks of neat, Type I Portland
			cement into bore. Grout to surface.
5-27-93	am		Tag cement at 3 ft BGS. Crew plugs with clay and removes guard
			posts.
			P&A of 1007 complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1010

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: S3 Ponds Functional Area

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Greg Anderson, Steve Brown - Highland

DRILL: Altec Auger Truck

DATE: START: 5-21-93

FINISH: 5-27-93

METHOD: C

LOGGED BY: V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-21-93	0944	1008	Technical oversight by V.R. Harness-SAIC. Arrive at site. Crew setting up auger truck. Measure background (BCK) parameters: beta/gamma = 60 cpm, alpha = 0 cpm, organic vapors = 0.0 ppm. Crew will be augering with 8.0-in. inside diameter (ID) and 12-in. outside diameter (OD) auger.
	1008	1047	Awaiting return of crew with cable choker replacement used to secure rotation motor.
	1047	1120	Fabricating choker from cable and clamps. Tag bottom of well at 23.3 ft below ground surface (BGS). Casing stick up is 1.3 ft of PVC/#40, 6.5-in. OD.
	1120	1131	Rig up first flight of auger with bit. Length = 5.3 ft. All subsequent flights are 5 ft long. Total of 5 flights = 25.3 ft.
	1131	1147	Begin augering. Advance to 4 ft BGS. Breathing zone analysis (BZA) = 0.2 ppm. Organic vapors 2 ft inside casing = 15 ppm. Adding auger flight.
	1147	1206	Advance to 10 ft BGS. At 5 ft BGS beta/gamma = 50 cpm. At 7 ft BGS, beta/gamma = 60 cpm. Adding auger flight. BZA at 10 ft BGS = 0.0 ppm. Organic vapors 2 ft inside casing = 4.0 ppm.
	1206	1233	Resume. Engine quits. Break for possible repair.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1010
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-21-93	1206	1233	Description of 0 ft to 10 ft auger returns:
(cont.)	(cont.)	(cont.)	
			Olive brown (2.5 Y 4/4) silty, clayey loam with 0.5 mm to 3 cm dark
			gray (2.5 Y 4/0) angular chert fragments and occasional fragments
			of dolostone aggregate from surface.
	1233	1245	Resume. Crew failed to switch gas tanks, problem corrected.
			Advance to 15 ft BGS. Beta/gamma = 50 cpm. 10 ft to 15 ft returns
			a continuation of 0 ft to 10 ft interval with more moisture. Returns
			beginning to ball up. Adding auger flight. BZA = 0.0 ppm, organic
			vapors 2 ft inside casing = 1 ppm.
	1245	1347	Shut down rig due to lightning. Lunch break.
	1347	1413	Resume. Advance to 20 ft. Beta/gamma at 18 ft =50 cpm, at 16 ft,
			80 cpm. BZA at 20 ft = 0.0 ppm. Adding auger flight. Returned
			cuttings continuation from preceding interval. Rock fragments had
			increased to 6 ft BGS. From 16 ft to 20 ft no rock fragments.
			Returns are mud.
	1413	1439	Resume. Advance to target depth of 24 ft BGS (refusal). Last 4 ft
			slow advance. Beta/gamma at 22 ft = 60 cpm, at 23 ft = 80 cpm;
			at 24 ft = 80 cpm.
			Description of 20 ft to 24 ft sample: Olive brown (2.5 Y 4/4) moist
			clay with quartz sand from well sand pack.
	1439	1542	Trip out. Extract a total of 23.2 ft of PVC/#40 casing and screen
			(minus 1.3 ft stick up, which would bring total to 24.5). Bottom 10 ft
			of casing is saw-slotted every 6-in. water audibly running into open
			hole. Secure site and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1010
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-24-93	1039	1041	Tag open hole to 19 ft BGS. Depart.
	1518	1530	Grout delivery arrives. Pour 0.5 cubic yds into bore. Cement to
			surface but level dropping. Secure site and depart.
5-25-93	0857	0902	Tag grout at 10 ft BGS, depart.
	1301	1700	Crew mixes and pours 5, 94-lb. sacks of neat, Type I Portland
			cement into bore. Crew uses oxy-acetylene torch to cut off
			protective posts. Secure site and depart.
5-27-93	am		Grout at 0.5 BGS. Crew spreads adjacent parking lot gravel
			over hole.
			P & A of 1010 complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1011

Alternate Names: AP-11, YAP-05, W-05, No. 05

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: S3 Ponds Functional Area

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Greg Anderson, Steve Brown - Highland

DRILL: Altec Auger Truck

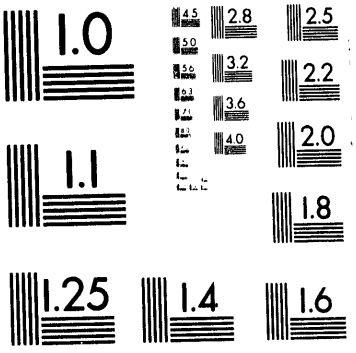
DATE: START: 5-24-93

FINISH: 5-25-93

METHOD: C

LOGGED BY: V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-24-93	1302	1328	Technical oversight by V.R. Harness-SAIC. Arrive at site. Crew positioning auger truck. Well stick-up is broken but remains in place. Remove 3.7 ft length of 6.5-in. outside diameter (OD) PVC/ #40 casing. Breathing zone analysis (BZA) = 0.0 ppm. Background (BCK) radiation: beta/gamma = 60 cpm, alpha = 0 cpm. Tag bottom of well at 20 ft BGS. Beta/gamma around well = BCK.
	1328	1333	Rig up with 8.0-in. inside diameter (ID), 12.0-in. outside diameter (OD), hollow-stem auger. First flight with bit = 5.3 ft length. All subsequent flights = 5.0 ft length. Begin augering. Soil is brown silty loam with gravel aggregates and concrete fragments. Advance to 5 ft below ground surface (BGS), alpha = 0 cpm.
	1333	1348	Add second auger flight. Resume augering and advance to 9 ft BGS. At 9 ft BGS returns are medium dark gray (N4) moist clay with beta/gamma = 700 cpm.
	1348	1408	Stop rig. Crew on standby, upwind and 15 ft away from bore. Radiation is beta and is undetectable from 2 ft away. Contacting Kevin Jago, HSE for directive.
	1408	1431	Radiation is at 4200 decays per minute (dpm) or 3900 dpm above BCK. Upgrade level for personal protective equipment is 5000 dpm above BCK. Jago (HSE) instructs us to go ahead but that returns >500 cpm above BCK must be drummed. Awaiting delivery of US DOT approved 55-gal. drums.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Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1011
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-24-93	1445	1450	Advance to 13 ft BGS, maximum 600 cpm beta/gamma,
(cont.)			returns containerized.
	1450	1456	Continue to 15 ft BGS, maximum beta/gamma level of returns
			drops to 200 cpm. Add auger flight and resume.
	1456	1514	Advance to target depth of 21 ft BGS. Collect composited sample
			of returns from 0-21 ft BGS, radiation of this composite, beta/
			gamma = 200 cpm, alpha = 0 cpm.
	1514	1603	Trip out. Extract 20 ft of PVC/#40. Bottom-most 10 ft of casing
			saw-slotted every 6-in. of length to form screen. Grout delivery
			arrives. Pour 0.5 cubic yards of grout into bore. Cement at surface.
	1603	1618	Screen all auger flights, extracted casing, tools, boots, and gloves
			which may have contacted contaminated returns. All clean and
			not over 160 cpm (100 cpm + 60 cpm BCK). Secure site
			and depart.
5-25-93	1208	1273	Tag grout at 3.7 ft BGS. Depart.
	1430	1700	Crew cuts protective posts with oxy-acetylene torch. Hole capped.
			Secure site and depart.
			P & A of 1011 complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1013

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: S3 Ponds Functional Area

DRILLERS: Hubert Hall - Highland Drilling Company
Steve Brown/Russell Jones - Highland
HELPERS: Drilling Company

DRILL: Ingersoll Rand T4W

DATE: START: 8-4-93

FINISH: 8-10-93

METHOD: B

LOGGED BY: Tim J. Coffey - SAIC
Susan L. Abston - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-4-93	0820	0825	Arrive at site. Technical oversight provided by Susan L. Abston
			(SAIC). Tag bottom of 1013 at 44.9 ft below ground surface
			(BGS). Records report total depth as 42 ft BGS (discrepancy).
	0825	0905	Crew arrives; driller Hubert Hall; helpers, Randy Phillips and
			Russell Jones of Highland Drilling Co. Rig up 0.8 ft long, 6 1/8-
			in. diameter tricone roller bit. Table height = 3.5 ft. Torch pull
			holes in well casing. Casing is 6.5-in. outside diameter (OD) and
			6.25-in. inside diameter (ID).
	0905	0928	Trip down tools. Ream open interval of well to 47.2 ft BGS.
			Analysis of organic vapors in breathing zone = 0.0 ppm initially
			and 0.0 ppm at 30 ft BGS. Encountered blackish water at
			approximately 25 ft BGS. Description of composited returns:
			blackish-brown to gray shale (N4) with 60% of volume comprised
			of grout fragments.
	0928	1005	Trip out tools. Tag bore at 47.2 ft BGS. Insert 40 ft of 1.5-in. OD
			PVC tremie pipe to 37 ft BGS.
	1005	1026	Mix and tremie 4 sacks of neat, Type I Portland cement. Cement
			to cure overnight before over washing casing. Secure site and
			depart.
8-5-93	0918	0938	Technical oversight by T.J. Coffey (SAIC). Arrive at 1013 site.
			Drill crew has already rigged up with an 8.0-in. ID, 9.5-in. OD

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1013
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-5-93			washover pipe; length = 24.5 ft, length of drilling subadapter =1.0
(cont.)			ft, total length of washover assembly = 25.5 ft. Tag cement level
			in well at 19.2 ft BGS. Table height = 3.6 ft. B. Thedford (HSEA)
			and R. Phillips (Highland) arrive on site.
	0938	0958	Commence over wash. Over wash surface casing from ground
			surface to 21.9 ft BGS. Washover pipe binding on casing at 9.5 ft
			BGS, and again at approximately 11.5 ft BGS. Ratty and hard
			drilling at 21.7 ft BGS (annular cement). Cuttings from 0.0 ft to
			21.9 ft BGS consist primarily of: grayish-red (5R 4/2) and medium
			dark gray (N4), thinly laminated shale; greenish-black (N2) massive
			micrite; and dark greenish-gray (5GY 4/1) and light olive gray
			(5Y 6/1) banded, glauconitic, fine-grained sandstone to sandy
			shale along with grayish-orange (10YR 6/2) to light brown
			(5YR 5/6) clayey soil. No cement fragments were observed while
			over washing the casing.
	0958	1015	At 21.9 ft BGS. Flushing borehole clean. Now observing scattered
			cement fragments in returns.
	1015	1027	Trip washover pipe out of the hole, and rig down.
	1027	1034	Attempt to pull casing. Casing is sluggish at first, then pulls out
			easily. Pull all of casing out of the hole.
	1034	1050	Driller's helper departs to get another chain to lay casing down.
			Screening cuttings from 0.0 ft to 21.9 ft BGS (see Well Cuttings
			Field Screening/Disposal Sheet).
	1050	1055	Helper returns with chain. Lay casing down on ground. A total of
			30.6 ft of casing extracted from this well.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1013
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-5-93	1055	1102	Rig up with a 10-5/8-in. diameter tricone bit on a subadapter;
(cont.)			length of assembly = 6.3 ft, table height = 3.5 ft. Add drill rod.
	1102	1106	Trip into borehole. Encounter resistance at 22.3 ft BGS: begin
			reaming portion of hole that was not cut with the washover pipe.
			Ream to 27.8 ft BGS. Cuttings from this interval are almost
			exclusively medium light gray (N6) cement fragments with minor
			dark reddish-brown (10R 3/4), weathered shale and dark yellowish-
			orange (10YR 6/6) clayey soil.
	1106	1111	At 27.8 ft BGS. Add drill rod.
	1111	1113	Continue reaming borehole. Ream from 27.8 ft to 30.8 ft BGS.
			Cuttings from this interval include approximately equal amounts of
			grayish-red (5R 4/2), thinly laminated shale and greenish-black
			(5G 2/1)/light olive gray (5Y 6/1), banded, glauconitic, fine-grained
			sandstone to sandy shale with minor weathered rock fragments
			and olive gray (5Y 4/1), rounded, uncured cement lumps.
	1113	1118	At 30.8 ft BGS. Clean out borehole.
	1118	1124	Trip out, rig down bit and subadapter assembly. Tag bottom of
			hole at 30.8 ft BGS. Calculate a borehole volume to 4.0 ft BGS of
			17.3 cubic ft, equivalent to 14.7 sacks of Type I Portland cement.
	1124	1214	Run 3, 10.0-ft sections of 1.5-in. OD PVC tremie pipe into the
			borehole to approximately 29 ft BGS. Set up diaphragm hand
			pump. Mix and pump-tremie 14 sacks (16.5 cubic ft) of neat,
			Type I Portland cement into the borehole. Circulate 100% cement.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1013
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-5-93	1214	1253	Pull out tremie pipe. Clean up. Screening cuttings from 22.3 ft to
(cont.)			30.8 ft BGS (see Well Cuttings Field Screening/Disposal Sheet).
			Crew to remain on site to steam clean drill rig and move to next
			location. Oversight departs.
8-6-93	0950	0955	At 1013 site. Tag cement level at 2.9 ft BGS. Borehole is ready
			to be capped.
8-10-93	1026	1030	Borehole is capped with clay soil.
			P&A of 1013 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1014

Alternate Names: Y-05/AP-14

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: S3 Ponds Functional Area

DRILLERS: Hubert Hall - Highland Drilling

HELPERS: Steve Brown/Rick Thomas - Highland

DRILL: Ingersoll-Rand XL-750

DATE: START: 7-15-93

FINISH: 7-27-93

METHOD: B

LOGGED BY: S.L. Abston - SAIC
V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
7-15-93	0920	1005	Arrive at site. Technical oversight provided by S.L. Abston (SAIC).
			Tag bottom of bore at 46.5 ft below ground surface (BGS). Rig up
			6 1/8-in. diameter tricone roller bit 0.8 ft long.
	1005	1020	Trip in bit and tools. Table height = 2.2 ft. Breathing zone analysis
			indicates 0.4 ppm organic vapors. Background organic vapors
			0.0 ppm. Background radiation = 60 cpm beta/gamma and 0 cpm
			alpha. Ream to 48.5 ft BGS. Description of reaming cuttings: 50%
			medium dark gray shale (N4) with white (N1-N2) grout fragments.
	1020	1030	Trip out tools. Pass technical oversight to V.R. Harness - SAIC and
			depart site.
	1030	1130	Crew inserts 30 ft of 1.5-in. OD PVC tremie pipe to 29 ft BGS. Mix
			and tremie 3 sacks of neat, Type I Portland cement. Will allow
			cement to cure overnight before overwash. Secure site and
			depart.
7-16-93	0832	0953	Arrive on site. Crew rigs up 9.5-in. OD (at bit) 8.25-in. ID washover
			pipe. 24.6 ft of washover pipe. Length with subadapter = 25.5 ft.
			Table height = 2.0 ft. The steel 6.5-in. OD surface casing stickup
			= 0.5 ft. Grout level tagged with weighted tape at 34.5 ft BGS.
			Bottom of surface casing at 36.4 ft BGS. Crew torches pull holes
			in casing.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1014
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
7-16-93	0953	1028	Begin overwash. Advance to 23.5 ft BGS. Trip out.
(cont.)			
	1028	1045	Rig down washover pipe. Description of 0.0 to 23.5 ft BGS
			overwash sample: 75% yellow (10YR 7/8) plastic, silty clay. 25%
			dark gray (5Y 4/1) calcareous shale.
	1045	1200	Attempt to pull casing. Crew attempting to pull again. Casing
			tears.
	1200	1407	Crew departs for lunch and tools to facilitate casing pull.
	1407	1416	Crew returns with a fabricated lifting bell to fit over casing and pull.
			During subsequent pull attempt casing shears again.
	1416	1439	Crew decides to get more washover pipe and overwash casing
			deeper. Will be prepared to resume next working day. Secure site
			and depart.
7-19-93	0840	0911	Arrive at site. Crew unloads second piece of washover pipe 9.5-in.
			OD, 8.25-in. ID. Length = 16.5 ft.
	0911	0917	Rig up second piece of washover pipe. Total length of washover
			in string = 41.1 ft. Table height = 2.0 ft. Begin overwash.
	0917	0944	Advance to 36 ft BGS.
	0944	1115	Trip out. Description of 23.5 to 36 ft BGS overwash cuttings
			sample = 95% dark gray (N4) calcareous shale with (N7) white
			grout fragments.
	1115	1210	Extract 37 ft of 6.5-in. OD steel surface casing (1.0 ft of this was
			stickup). Tag bore firm at 37 ft BGS. Calculate 18 sacks to fill 37 ft

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1014
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
7-19-93			of 9.5-in. hole. No reaming because overwash hole is 1.0-in.
(cont.)			larger than original hole and because grout of open interval was
			at 34.5 ft (up into surface casing).
	1210	1231	Crew departs for lunch and to assemble grouting supplies. Secure
			site and depart.
	1449	1538	Return to site. Insert 30 ft of 1.5-in. OD PVC tremie pipe to 27 ft
			BGS. Mix and tremie 10 sacks of neat Type I Portland Cement.
			Circulating grout.
	1538	1552	Secure site and depart.
7-20-93	0849	0911	Tag grout at 5.5 ft BGS. Depart.
	1021	1049	Mix and pour 2 sacks of cement into bore. Liquid grout at 1.5 ft
			BGS. Depart.
7-23-93	0858	0902	Tag cement at 1.5 ft BGS. Depart.
7-27-93	1030	1035	Cap well with clay/soil.
			P&A of 1014 complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1017

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: S3 Ponds Functional Area

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Steve Brown - Highland Drilling

DRILL: Ingersoll-Rand XL-750

DATE: START: 7-20-93

FINISH: 8-10-93

METHOD: B

LOGGED BY: T.J. Coffey - SAIC
V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
7-20-93	0820	0911	Technical oversight provided by V.R. Harness (SAIC). Crew setting up drill rig.
	0911	1054	A hydraulic valve malfunctions. Crew departs to get parts and replace valve. No leak.
	1054	1121	Rig repaired. Rig up 6 1/8-in. diameter tricone roller bit to ream open interval of well.
	1121	1131	Table height = 3 ft. Begin reaming. Encounter stagnant water at 15 ft below ground surface (BGS). Advance to 47.5 ft BGS.
	1131	1147	Insert 40 ft of 1.5-in. outside diameter (OD) tremie pipe into bore to approximately 37 ft BGS. Calculate 4 sacks of cement required to fill open interval (4.72 cubic ft).
	1147	1209	Mix and tremie cement. Secure site and depart.
7-21-93	0818	0844	Technical oversight by T.J. Coffey - SAIC. Arrive at 1017 site. Tag cement level at 21.0 ft BGS (8.0 ft above the top of the reported bottom of casing). Crew is digging a cuttings pit, and replacing batteries on the drill rig.
	0844	0850	Rig up with a 24.5-ft -long section of 8.0-in inside diameter (ID), 9.5-in. OD washover pipe; length of subadapter = 1.0 ft, table height = 2.9 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1017
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
7-21-93	0850	0854	Commence overwash with compressed air and water. Overwash
(cont.)			casing to 4.0 ft BGS. Returns from 0.0 to 1.5 ft BGS consist of
			grayish-brown (5YR 3/2) to dusky brown (5YR 2/2) surface soil.
			From 1.5 ft to 4.0 ft BGS, the cuttings are: medium dark gray (N4)
			to medium bluish-gray (5B 5/1) fresh shale fragments with pale
			yellowish-orange (10YR 8/6), clayey soil, and moderate brown
			(5YR 3/4) agglomerations of small rock fragments and iron oxide
			cement.
	0854	0930	At 4.0 ft BGS. Shut off drill rig, waiting for auditors who will be on-
			site at approximately 0930 hrs to observe Plugging and
			Abandonment.
	0930	1022	Start drill rig. Continue overwash. Overwash casing from 4.0 ft to
			17.7 ft BGS. At 6.5 ft BGS, appear to be making more water than
			what is being added. K. Jago (HSEA) arrives at site with auditors:
			P. Barndt (DOE), B. Hedberg (Analysas), and H. Crabtree (TOA)
			at 0938 hrs. Rate of advance appears to slow at 9.0 ft BGS. The
			cuttings from 4.0 ft to 15.0 ft BGS are the same as the 1.5-ft to 4.0-ft
			interval. The cuttings from 15.0 ft to 17.7 ft BGS are the same as
			above, but include fragments of light gray (N7) cement. Advance
			rate slows again at 16.8 ft BGS.
	1022	1109	Subadapter weld breaks. Shut down drill rig. Depth of washover
			pipe is 17.7 ft BGS. D. Hewitt (Highland) is called to come to site
			and re-weld subadapter. While waiting, auditors examine the site
			and scrutinize the P&A procedures with K. Jago (HSE) and
			oversight.
	1109	1232	D. Hewitt (Highland) arrives. Makes repairs on subadapter.
	1232	1310	Crew breaks for lunch.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1017
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
7-21-93	1310	1353	Resume overwash. Table height = 2.8 ft. Overwash casing from
(cont.)			17.7 ft to 23.0 ft BGS. Cuttings consist of: dark yellowish-orange
			(10YR 6/6), weathered shale and dark reddish-brown (10R 3/4),
			weathered sandy shale; dark gray (N3) to dark greenish-gray
			(5GY 4/1), thinly laminated, calcareous shale; and light gray (N7)
			to very light gray (N8) cement fragments. Observe a musty odor
			at about 21 ft BGS: breathing zone analysis = 1.0 - 1.2 ppm. At
			22.0 ft BGS, have less water circulating from hole. Water truck
			runs out of water.
	1353	1416	At 23.0 ft BGS. Flush borehole clean.
	1416	1435	Break connection and trip washover pipe out of the hole. S. Jones
			(HSEA) returns to site with auditors.
	1435	1440	D. Hewitt burns lifting holes in top of casing.
	1440	1551	Attach fabricated lifting device and attempt to pull casing: casing
			is loose enough to pull. Remove lifting device and pull casing to
			top of mast with chain. Burn hole in casing, allow water to drain,
			S. Jones (HSEA) and auditors depart. Continue pulling casing.
			Extract a total of 28.7 ft of 6.5-in. OD steel casing in 2 pieces.
	1551	1558	Crew retrieves drill bit and stabilizer from the last P&A site.
	1558	1606	Rig up with a 9 7/8-in. diameter tricone bit and subadapter; length
			= 6.3 ft. Plan to ream remainder of cased portion of well on
			7-22-93. Clean up, secure site, and depart.
7-22-93	1339	1402	Technical oversight assumed by V.R. Harness (SAIC). Arrive at
			site. Crew rigs up 9 7/8-in. diameter tricone roller bit. Bit and
			subassembly = 6.2 ft long. Table height = 3.0 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1017
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
7-22-93	1402	1412	Begin reaming bore. Encounter water at 20 ft BGS. Top of fill in
(cont.)			bore encountered at 26 ft BGS. Advance to 31 ft BGS.
	1412	1500	Trip out tools. Calculate 10 sacks of cement required to plug bore.
	1500	1504	Mix 12, 96-lb. sacks of Type I Portland cement to 15.6 lb/gal
			thickness. Insert 30 ft of 1.5-in. OD PVC tremie pipe to 27 ft BGS.
	1504	1608	Pump 12 sacks of cement into bore. Secure site and depart.
7-23-93	0912	0928	Tag grout at 1.5 ft BGS. Depart site.
8-10-93	1032	1035	Borehole capped with clay/soil.
			P&A of 1017 complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1022

Alternate Names: Y-13/AP-22

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: S3 Ponds Functional Area

DRILLERS: Hubert Hall - Highland Drilling

HELPERS: Steve Brown/Mark Baker - Highland

DRILL: Ingersoll-Rand XL-750

DATE: START: 7-13-93

FINISH: 7-27-93

METHOD: B

LOGGED BY: V.R. Harness - SAIC / T.J. Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
7-13-93	0815	0832	Arrive at site. Technical oversight provided by V.R. Harness (SAIC). Crew setting up site. Rig up 6 1/8-in. diameter tricone roller bit to ream open interval.
	0832	0841	Tripping in 6 1/8-in. bit. Bit is 0.8 ft long. Table height = 3.0 ft.
	0841	0845	At 22.6 ft below ground surface (BGS). Have encountered no water and no resistance. Add 25 ft drill rod and resume tripping in.
	0845	0850	Advance to 47 ft BGS, encounter first resistance to advance rate. Returning organic debris. Encountered water at 23 ft BGS.
	0850	0902	Continue advance to 49.6 ft BGS (1.6 ft below original TD) cleaning hole.
	0902	0915	Trip out tools. Calculate 20 ft of 6 1/8-in. open interval will require 4.0 cubic ft of grout.
	0915	0931	Crew departs for cement.
	0931	0952	Crew returns with cement. Insert 50 ft of 1.5-in. OD PVC tremie pipe into bore to 46 ft BGS.
	0952	1010	Crew mixes and pump tremie 4, 96-lb. sacks of neat, Type I Portland cement into bore.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1022
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
7-13-93	1010	1025	Will allow grout to cure overnight before removing casing.
(cont.)			Description of 30 to 49.6 ft BGS reaming cuttings: 95% greenish-
			black (5GY 2/1) silty shale with 5% rotten wood, bark, and organic
			debris. Secure site and depart.
7-14-93	0810	0846	Arrive at site. Tag grout in bore at 27.7 ft BGS. Await crew.
	0846	1011	Crew arrives. Rig up fabricated washover pipe 9.5-in. OD (at bit),
			8.25-in. ID, washover pipe is 25.5 ft from bit to subattachment.
			Pipe alone is 24.6 ft long. Torch pull holes in well casing (6.5-in.
			OD steel).
	1011	1028	Begin overwash. Table height = 3 ft. Breathing zone analysis =
			0.0 ppm. Advance to 22.5 ft BGS (maximum depth attainable with
			1st washover pipe segment).
	1028	1041	Crew cleans bore and trips out washover pipe.
	1041	1100	Description of 0.0 to 22.5 ft overwash cuttings sample: 90% dark
			grey shale (2.58 4/0) blotchy with irregular fracture. 5% light
			yellowish-brown (2.5Y 6/4) weathered shale, 5% white (2.5Y 8/0)
			grout fragments. Accessory organic debris. Shales observed are
			very uniform in texture with unweathered fragments being
			calcareous and reacting with both 10% HCL and Aligarin-Red.
	1100	1129	Calculate 14 sacks of grout required to fill 30 ft of 9 7/8-in. reamed
			bore. Crew extracts 31 ft of 6.5-in. OD, 6.25-in. ID steel surface
			casing (3 ft of this was stickup).
	1129	1305	Crew departs for lunch and to get grout.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1022
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
7-14-93	1305	1325	Crew returns with 9 7/8-in. diameter tricone roller bit to ream
(cont.)			washover bore. Bit and subadapter = 6.2 ft long. Rig up bit and
			commence reaming. Table height = 3.0 ft.
	1325	1333	Ream to 31 ft BGS. Encountered standing water at 16.2 ft.
	1333	1359	Trip out tools. Description of reaming cuttings: grout fragments =
			45%, shale (of same composition as 0.0 to 22.5 overwash sample)
			= 55%. Tag bore at 31.5 ft BGS.
	1359	1427	Plan to grout tomorrow. Crew secures site and departs.
7-15-93	1130	1202	Arrive at site. Insert 20 ft of 1.5-in. OD PVC tremie pipe to 19 ft
			BGS. Mix and pump tremie 12 sacks of neat Portland Type I
			cement into bore. Grout to surface but seems to be dropping
			slightly.
	1202	1214	Clean, secure site. Depart.
7-16-93	0852	0904	Tag depth to grout at 8 ft BGS. Depart site.
7-20-93	1021	1049	Mix and pour 1 sack of cement grout into bore. Secure site and
			depart. Liquid grout level at 1.5 ft BGS.
7-27-93	1036	1040	Technical oversight assumed by T.J. Coffey (SAIC). Grout level
			at 2 ft BGS. Well capped with clay/soil.
			P&A of Well 1022 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1024

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: S3 Ponds Functional Area

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Steve Brown/Randy Phillps - Highland

DRILL: Ingersoll Rand-T4W

DATE: START: 8-18-93

FINISH: 8-20-93

METHOD: B

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-18-93	0825	0847	Arrive at 1024 site. Drilling rig set up over well location. Rig and down-hole equipment appears to have been adequately steam cleaned. Measure depth of well at 37.8 ft below top of casing (BTOC) = 37.0 ft below ground surface (BGS). Water level is 2.5 ft BTOC = 1.7 ft BGS. Note: Subsurface Data Base (Y/TS-881) reports total depth (TD) of well to be 40.0 ft. Crew arrives and performs pre-work equipment inspections.
	0847	0850	Thread a 6 1/8-in. diameter tricone bit onto a drill rod; length of bit is 0.5 ft, length of drill rod plus bit is 25.5 ft, table height = 3.0 ft.
	0850	0854	Trip bit into well, encounter water almost immediately: foul, black water returns.
	0854	0856	Encounter resistance at approximately 20 ft BGS, commence reaming open interval. Ream from 20.0 ft to 22.5 ft BGS.
	0856	0900	At 22.5 ft BGS. Add drill rod.
	0900	0905	Continue reaming open interval. Ream from 22.5 ft to 42.5 ft BGS. Returning black sediment at 34.0 ft BGS. Hard, ratty drilling (advance rate decreases) at 37.0 ft BGS.
	0905	0913	At 42.5 ft BGS. Clean out borehole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1024
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-18-93	0913	0920	Trip out, rig down bit. Tag bottom of reamed hole at 43.2 ft BGS.
(cont.)			Calculate a borehole volume (to 20 ft BGS) of 4.7 cubic ft,
			equivalent to 4.0 sacks of Type I Portland cement.
	0920	0928	Run 4, 10.0-ft sections of 1.5-in. outside diameter (OD) PVC
			tremie pipe into the borehole to 38.5 ft BGS.
	0928	0944	Mix and pump-tremie 4 sacks (4.7 cubic ft) of neat, Type I Portland
			cement into the borehole.
	0944	1005	Complete. Pull out tremie pipe. Clean up, secure site, and depart.
8-19-93	0824	0852	Arrive at 1024 site. Tag cement level at 13.8 ft BTOC - 13.0 ft BGS.
	0852	0905	Crew arrives and performs pre-work equipment inspections.
	0905	0912	Rig up with a section of 9.5-in. OD, 8.0-in. inside diameter (ID)
			washover pipe; length = 24.5 ft, length of subadapter = 1.0 ft, total
			length = 25.5 ft, table height = 3.1 ft.
	0912	0932	Commence over wash. Over wash casing with compressed air
			only from the ground surface to 22.4 ft BGS. Encounter a small
			amount of water at 6.4 ft BGS: cuttings became muddy. Cuttings
			from 0.0 ft to 6.4 ft BGS consist of grayish-brown (5YR 3/2) to light
			brown (5YR 5/6), moist, clayey soil and subsoil. Cuttings from 6.4
			ft to 18.0 ft BGS return in a pale yellowish-brown (10YR 6/2), wet,
			clayey slurry. At 18.0 ft, the cuttings dry up and the washover pipe
			encounters resistance: suspect the bedrock surface. A large
			amount of water is encountered at 20.0 ft BGS. Cuttings from 18.0
			ft to 22.4 ft consist primarily of medium dark gray (N4) laminated
			shale; with minor amounts of medium dark gray (N4) to dark
			greenish-gray (5G 4/1), massive micrite, and grayish-red (5R 4/2),

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1024
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-19-93			thinly laminated shale. Interval also contains rare lumps of olive
(cont.)			gray (5Y 4/1) uncured cement.
	0932	0945	At 22.4 ft BGS. Add water and flush out borehole.
	0945	0952	Interrupt operations to scrape thick mud from around well location
			with dozer.
	0952	1005	Trip out washover pipe. Casing has dropped down into the
			borehole approximately 3 ft. Crew needs a special clamp that
			grips the casing wall. The clamp is at another site and will take
			some time to retrieve.
	1005	1253	Waiting for clamp to be brought to site. C. Green (Energy Systems
			Internal Auditing) is onsite briefly. She examines R. Phillip's drilling
			certification, asks several questions about the drill rig, then de-
			parts. Break for lunch.
	1253	1319	Clamp arrives at site. Pull casing up above ground surface. Burn
			a lifting hole in well casing. Extract 20.0 ft of 6.5-in OD steel casing.
			Tag bottom of hole at 22.5 ft BGS. Calculate a borehole volume (to
			4.0 ft BGS) of 9.1 cubic ft, equivalent to 7.7 sacks of Type I Portland
			cement.
	1319	1333	Lower mast on drill rig, and move rig off site.
	1333	1336	Run 2, 10.0-ft sections of 1.5-in. OD PVC tremie pipe into the
			borehole to 19.0 ft BGS.
	1336	1415	Mix and pump-tremie 10 sacks (11.8 cubic ft) of neat, Type I
			Portland cement into the borehole. Circulate approximately 50%
			cement.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1024
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-19-93	1415	1436	Pull out tremie pipe. Cleanup. Secure site and depart.
(cont.)			
8-20-93	1353	1400	Technical oversight by V.R. Harness - SAIC. At 1024 site. Tag
			cement level at 3.0 ft BGS. Borehole capped with clay soil.
			P&A of 1024 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1025

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 4

LOCATION: S3 Ponds Functional Area

DRILLERS: Russell Jones - Highland Drilling Co.

HELPERS: Steve Brown - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 7-26-93

FINISH: 8-10-93

METHOD: B

LOGGED BY: Timothy Coffey - SAIC, Victor Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
7-26-93	1246	1256	Arrive at site, drill rig already positioned over well. Note: Well was originally labelled "No Number/Unknown." The inside of the surface casing was marked "Y-16", which, according to the Subsurface Data Base (Y/TS-881) is another name for well 1025. This well will henceforth be referred to as 1025. Drill rig has been steam-cleaned. Casing stick-up = 1.2 ft. Tag bottom of well at 44.8 ft below ground surface (BGS).
	1256	1307	Crew arrives and completes positioning rig over the well.
	1307	1311	Thread a 6.25-in. diameter tricone bit to the end of a 25-ft drill rod; length of bit = 0.8 ft, table height = 2.9 ft.
	1311	1328	Trip bit into casing. Encounter water at approximately 19.5 ft BGS.
	1328	1344	Begin to return to rock fragments at 30 ft BGS. Commence reaming open interval. Ream from approximately 30.0 ft to 47.9 ft BGS. Observe foul smelling, black returns from about 45 ft to end of rod.
	1344	1348	Continue reaming open interval. Ream from 47.9 ft to 51.5 ft BGS. Reaming becoming more difficult at 48.9 ft BGS: suspect bottom of open interval/TD of well.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1025
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
7-26-93	1348	1415	At 51.5 ft BGS. Clean out borehole. S. Brown (Highland) departs
(cont.)			to get pump to cement reamed open interval. Screening cuttings
			from 30.0 ft to 51.5 ft BGS (see Well Cuttings Field Screening/
			Disposal Sheet). Description of cuttings:
			Predominantly grayish-red (5R 4/2) and medium gray (N5),
			thinly laminated shale; with common greenish-gray (5GY 6/1)
			and dark greenish-gray (5GY 4/1), banded, very fine-grained
			sandstone and sandy shale. Minor amounts of leaves, pine
			needles, small mammal bones, and hair.
	1415	1419	Begin tripping out of the well. Rod comes unthreaded at the top
			of the mast. Shut off rig.
	1419	1433	Wait for S. Brown to return.
	1433	1504	Steve returns to site. Crew using chain wrench to break connection
			at the table. Lack of tools at the site is slowing the work. Continue
			tripping rods and bit out of the well.
	1504	1521	Hydraulic hose on carousel arm bursts while stacking a rod. Shut
			off drill rig. Less than 8 oz. of hydraulic fluid spilled. None of the
			fluid reaches the ground, but pools up at several locations on the
			rig. Using oil absorbent pads on pooling fluid. Crew departs for
			tools and replacement hose. Secure site. Oversight departs.
7-27-93	0914	0925	Arrive at 1025 site, right behind drill crew. Crew puts new hydraulic
			hose on rig.
	0925	0937	Start up drill rig, continue tripping out of the well. Tag bottom of well
			at 51.5 ft BGS. Calculate the volume of the reamed open interval
			at 4.6 cubic ft, equivalent to 4.0 sacks of neat, Type I Portland
			cement.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1025
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
7-27-93	0937	0943	Run 5, 10.0-ft sections of 1.5-in. inside diameter (ID) PVC tremie
(cont.)			pipe into the well to approximately 46 ft BGS.
	0943	1019	Mix and gravity tremie (attempted to use diaphragm pump to
			tremie cement, but rubber bladder is stretched and worn and will
			not work) 4 sacks (4.7 cubic ft) of neat, Type I Portland cement into
			the well. Circulate water.
	1019	1028	Complete. Pull out tremie pipe. Clean up. Secure site and depart.
7-28-93	0831	0835	Arrive at 1025 site. Tag cement level at 30.6 ft BGS (0.6 ft below
			bottom of surface casing). Depart site.
8-2-93	1359	1451	Technical oversight assumed by Victor R. Harness (SAIC). Crew
			rigging up 25.5 ft length of 9.5-in. outside diameter (OD) (at bit)
			8.25-in. ID washover pipe.
	1440	1451	Commence overwash. Table height 3.0 ft.
	1451	1549	Advance to 22 ft BGS and trip tools out. Will attempt to pull casing
			tomorrow. Returned cuttings from 0 ft to 22.0 ft BGS are: 75% dark
			gray to gray (N4 to N5) silty shale with 25% strong brown
			(7.5 YR 5/8) silty shale. No cement fragments in returns.
	1549	1615	Secure and depart site.
8-3-93	0840	0906	Arrive at 1025 site. Crew trips in washover and cleans out hole.
			Trip out washover and remove from rig.
	0906	1019	Crew torches pull hole in casing. Extract 29.6 ft of 6.5-in. OD,
			6.25-in. ID steel casing from hole. Tag bore at 30 ft BGS, no water
			in hole. Top of grout is 30.6 ft BGS. Minor borehole collapse has

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1025
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-3-93			occurred. Decide to grout.
(cont.)			
	1019	1032	Insert 20 ft of 1.5-in. OD PVC tremie pipe. Mix and pump tremie
			10 sacks of neat, Portland Type I cement into hole, circulate grout.
	1032	1045	Secure and depart site.
8-4-93	1031	1044	Tag cured grout in bore at 4.0 ft BGS.
8-10-93	1030	1032	Borehole is capped with clay soil.
			P&A of 1025 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1025A

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 5

LOCATION: S3 Ponds Functional Area

DRILLERS: Hubert Hall/Randy Phillips - Highland Drilling Co.

HELPERS: Russell Jones/Steve Brown - Highland

DRILL: Ingersoll-Rand T4W

DATE: START: 8-6-93

FINISH: 8-10-93

METHOD: B

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-6-93	0918	1000	Arrive at well site, drillers arrive shortly after. It is raining hard: plan to wait a while to see if the rain lets up. Drill rig is positioned over the well.
	1000	1016	The rain appears to be letting up. Inspect drill rig: rig appears to have been adequately steam cleaned. Tag bottom of well at 43.5 ft below top of casing (BTOC) = 42.2 ft below ground surface (BGS). This well has no markings or tags to indicate its name/ number. HSEA to designate the Well 1025A. Drill crew spreads plastic under drill rig.
	1016	1024	Thread a 6 1/8-in. diameter tricone bit onto one of the drill rods. Length of the bit is 0.8 ft.
	1024	1031	Trip into well. Return water is black. Begin to get rock fragments in returns at approximately 30-31 ft BGS, suspect top of open interval at this point: commence reaming open interval. Ream to 44.6 ft BGS. Foul, black returns beginning at about 39 ft BGS (sediment/debris accumulation at bottom of well). Ratty drilling (suspect bottom of open interval) at 41.6 ft BGS. Cuttings from about 31 ft to 44.6 ft BGS consist primarily of approximately equal amounts of grayish-red (5R 4/2), thinly laminated shale and dark greenish-gray (5GY 4/1) and light olive gray (5Y 6/1), to light brownish gray (5YR 6/1), banded, glauconitic, fine-grained sandstone to sandy shale.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1025A
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-6-93			gray (5Y 6/1), to light brownish gray (5YR 6/1), banded, glauconitic,
(cont.)			fine-grained sandstone to sandy shale.
	1031	1035	At 44.6 ft BGS. Clean out borehole.
	1035	1043	Trip out. Remove 6 1/8-in. bit. Tag bottom of borehole at 44.6 ft
			BGS. Calculate the volume of the reamed open interval (assume
			casing to 30 ft BGS) of 3.2 cubic ft, equivalent to 2.7 sacks of Type I
			Portland cement.
	1043	1057	Run 4, 10.0-ft sections of 1.5-in. outside diameter (OD) PVC
			tremie pipe into borehole to approximately 38 ft BGS. Mix and
			pump tremie 3 sacks (3.5 cubic ft) of neat, Type I Portland cement
			into the borehole.
	1057	1113	Complete. Pull out tremie pipe. Clean up, secure site, and depart.
8-9-93	0827	0900	Arrive at 1025A well site. Tag cement level at 25.1 ft BGS. Drill
			crew arrives.
	0900	0922	Rig up with a section of 8.0-in. inside diameter (ID), 9.5-in. OD steel
			washover pipe; length = 24.5 ft, length of subadapter = 1.0 ft, total
			length = 25.5 ft. Table height = 4.7 ft.
	0922	0942	Commence over wash with compressed air only. Over wash
			casing from ground surface to 20.8 ft BGS. Slightly ratty drilling at
			approximately 11.0 ft BGS. Lithology change at 15.8 ft BGS as
			cuttings also become moist. Cuttings from 0.0 ft to 15.8 ft BGS
			consist of pale brown (5YR 5/2) to grayish-brown (5YR 3/2),
			weathered, thinly laminated shale; dark greenish-gray (5G 4/1)
			glauconitic sandstone with dark yellowish-brown (10YR 4/2) soil.
			Casing begins to bind in washover pipe at 17.0 ft BGS. Begin to

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1025A
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-9-93			observe cement fragments in returns at about 17.5 ft BGS.
(cont.)			Cuttings from 15.8 ft to 20.8 ft BGS are predominantly grayish-red
			(5R 4/2), thinly laminated shale and dark greenish-gray (5G 4/1),
			and light olive gray (5Y 6/1), banded, fine-grained, glauconitic
			sandstone to sandy shale; plus fragments of pinkish-gray
			(5YR 8/1) cement.
	0942	0945	At 20.8 ft BGS. Add drill rod. Plan to continue until subadapter
			contacts casing.
	0945	0948	Continue over wash. Over wash casing from 20.8 ft to 23.2 ft BGS.
			Cuttings are the same as the 15.8 ft to 20.8 ft interval described
			above with a possible increase in the volume of cement fragments.
	0948	0958	At 23.2 ft BGS (subadapter contacting the top of the casing).
			Rotating washover pipe to help loosen cement on casing.
	0958	1009	Trip out, rig down washover pipe. Screen cuttings from 0.0 ft to
			23.2 ft (see Well Cuttings Field Screening/Disposal Sheet). Need
			a burning permit to continue.
	1009	1145	Trying to contact someone to issue a burn permit. Waiting.
	1145	1206	B. Thedford (HSEA) arrives and issues a burn permit.
	1206	1230	Break for lunch.
	1230	1316	Begin burning holes in casing to attempt pull. Run out of oxygen
			before completing first hole. R. Phillips (Highland) calls to shop to
			get oxygen bottle. Crew departs to get cement, performing
			various maintenance and clean up tasks at drill site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1025A
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-9-93	1316	1411	R. Phillips departs to pick up oxygen bottle.
(cont.)			
	1411	1420	Randy returns, completes burning holes in casing.
	1420	1425	Attach chain to casing and attempt to pull: chain pulls through one
			of the holes.
	1425	1430	Burn 2 more holes in casing.
	1430	1444	Make second attempt to pull casing: Casing extraction very
			sluggish, then pulls up 0.2 ft to 0.3 ft and stops. Casing finally
			pulled out of borehole and layed down on ground. A total of 28.9 ft
			of 6.5-in. OD steel casing extracted from the borehole.
	1444	1455	Rig up with a 10 5/8-in. diameter tricone bit on a subadapter
			assembly; length = 6.3 ft, table height = 4.6 ft.
	1455	1458	Trip into borehole with compressed air only. Encounter water at
			20.5 ft BGS. Encounter resistance (cement)/ratty drilling at 23.2 ft
			BGS.
	1458	1501	Commence reaming. Ream from 23.2 ft to 25.7 ft BGS. Add water
			at 25.7 ft BGS. Cuttings this interval consist predominantly of: pale
			yellowish-brown (10YR 6/2) cement fragments (>80%); minor
			grayish-red (5R 4/2), thinly laminated shale; and rare dark greenish-
			gray (5G 4/1) glauconitic sandstone along with grayish-brown
			(5YR 3/2) soil.
	1501	1509	At 26.7 ft BGS, clean out borehole.
	1509	1511	Continue reaming with compressed air and water. Ream from
			26.7 ft to an estimated 29.7 ft BGS. Cuttings in this interval: (90%)

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1025A

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
8-9-93			grayish-red (5R 4/2), thinly laminated shale plus minor amounts of
(cont.)			dark greenish-gray (5G 4/1), bedded, fine-grained glauconitic
			sandstone and olive green (5Y 4/1), uncured cement lumps, and
			rare amounts of pale yellowish-brown (10YR 6/2), cured cement
			fragments.
	1511	1515	At 29.7 ft BGS, clean out borehole.
	1515	1527	Trip out, rig down bit and subadapter assembly. Tag bottom of
			reamed hole at 30.3 ft BGS. Calculate a borehole volume to 4.0 ft
			BGS of 16.2 cubic ft, equivalent to 13.7 sacks of Type I Portland
			cement.
	1527	1530	Run 3, 10.0-ft sections of 1.5-in. OD PVC tremie pipe into borehole
			to 28.5 ft BGS. Set up diaphragm hand pump.
	1530	1623	Mix and pump tremie 15 sacks (17.7 cubic ft) of neat, Type I
			Portland cement into the hole. Circulate 100% cement.
	1623	1633	Pull out tremie pipe. Clean up. Secure site and depart.
8-10-93	0838	0843	Arrive at 1025A site. Tag cement level at 5.8 ft BGS. Calculate
			a borehole volume to 4.0 ft BGS of 1.1 cubic ft, equivalent to
			0.9 sacks of Type I Portland cement. Depart site.
	0933	0942	Return to site. Mix and pour 1 sack of neat, Type I Portland cement
			into borehole. Liquid grout to 2.0 ft. BGS.
	1024	1026	Borehole is capped, by hand, with clay soil.
			P&A of well 1025A is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1027 Alt. Names: YGMW-05 BG-01 No. 7
WELL REHABILITATION ACTIVITY/PROGRESS REPORT	PAGE 1 of 4

LOCATION: Y-12 Burial Grounds	DATE: START: 4-28-83
DRILLERS: Hubert Hall-Highland Drilling Co.	FINISH: 5-5-93
HELPERS: Greg Anderson, Jim Gallaher - Highland	METHOD: R
DRILL: Ingersoll Rand XL-750	LOGGED BY: V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-28-93	1121	1130	Arrive at site. Technical oversight by V.R. Harness-SAIC.
			Setting up rig. Beta/gamma radiation at well = 80 cpm. Crew
			departs for supplies and lunch.
	1130	1245	Lunch break. David Wright (Highland) arrives and states that he
			has ordered 2.5 cubic yards of cement for this well (to be
			delivered 4-29-93 at 1200 hours).
	1245	1315	Crew returns. Using backhoe to excavate cuttings pit. Exca-
			vated soils show beta/gamma = 60 cpm = background (BCK).
			Breathing Zone Analysis (BZA) around excavation = 0.0 ppm =
			BCK.
	1315	1320	Crew installs plastic sheeting under rig. Rig up 10 5/8-in.
			diameter tricone roller bit with stabilizer. Length of assembly =
			9.2 ft. Table height = 2.4 ft.
	1320	1325	Begin drilling out PVC casing. Casing stick-up was damaged
			prior to arrival and casing was broken off flush with ground
			surface. Advance to 7.0 ft below ground surface (BGS) with
			compressed air only.
	1325	1351	Add 25 ft of drill rod to string and resume drilling. BZA=0.0 ppm.
			Radiation at table = BCK for both beta/gamma and alpha.
			Advance to 31.8 ft BGS. Begin using potable water at 30 ft BGS.
			Encounter top of weathered rock at 28 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1027
WELL REHABILITATION ACTIVITY/PROGRESS REPORT continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-28-93			BZA at 25 ft BGS = 0.0 ppm. Beta/gamma and alpha both = BCK
(cont.)			at 25 ft BGS.
	1351	1359	Add 25 ft of drill rod and resume drilling. Advance to 40 ft BGS.
			BZA=0.0 ppm, beta/gamma = BCK. Drilling becomes harder at
			40 ft BGS.
	1359	1407	Advance to 56.8 ft BGS. Encounter a series of small voids
			between 46.5 and 56.8 ft BGS.
	1407	1420	Add 25 ft of drill rod and resume drilling. Advance to 62.2 ft BGS.
			BZA = 0.0 ppm.
	1420	1426	Advance to 81.8 ft BGS. Cease drilling at David Wright's request.
			Crew required by Energy Systems to place erosion controls at
			another site.
			Description of cuttings:
			0 ft to 32 ft BGS: light olive brown (5 GY 2/1) calcitic siltstone with
			brownish gray (5 YR 4/1) silty shale and some PVC cuttings.
			56 ft to 81.8 ft BGS: Greenish black (5 GY 2/1) silty shale.
	1426	1503	Secure site and depart.
4-29-93	0800	0837	Arrive at site. Trip tools back into hole. BZA = 0.0 ppm, beta/
			gamma = 60 cpm and alpha = 0 cpm at table (both = BCK). Bit
			clogs at 56.8 ft BGS.
	0837	0853	Trip tools back out, unclog bit, trip back in.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1027
WELL REHABILITATION ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-29-93	0853	0905	Driller departs to get a 55-gal. drum in order to facilitate addition of
			Quik-Foam™.
	0905	0911	Receive permission from Steve Jones (HSEA) to use minor
			amounts of Quik-Foam™ to facilitate drilling. Trip down. Resume
			drilling at 81.8 ft BGS.
	0911	0918	Temporarily generated too much foam with Quik-Foam™. Advance
			to 96 ft BGS where bit became hung up.
	0918	1030	Trip out tools, remove stabilizer and reattach tricone bit directly to
			drill rod. Secure site and depart for lunch.
	1200	1233	Return to site, trip tools back in.
	1233	1249	Resume drilling, advance to 101.5 ft BGS (target depth). Void from
			96 to 101.5 ft BGS. Circulation was not lost but returned cuttings
			insufficient to screen.
	1249	1306	Trip out tools.
	1306	1320	Sounding bore with weighted tape reveals that hole has bridged at
			85 ft BGS. Consensus is that further drilling will only loosen the
			sides of the hole more. Crew installs 80 ft. of 1.5-in. OD PVC tremie
			pipe to 77 ft BGS.
	1320	1505	Awaiting grout delivery.
	1505	1535	Grout arrives. Gravity tremie 2.5 cubic yds of neat, Type I Portland
			cement into bore. Grout to surface.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1027
WELL REHABILITATION ACTIVITY/PROGRESS REPORT continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-29-93	1535	1546	Secure site and depart.
(cont.)			
4-30-93	0830	0900	Depth to grout tagged at 7.5 ft BGS. Depart.
	1348	1406	Crew arrives and mixes 2.5 sacks of neat grout which is poured into
			bore. Depart.
5-3-93	0746	0750	Oversight by T. Coffey (SAIC). Arrive at 1027 site. Tag cement
			level at 2.0 ft BGS. Borehole is ready to be capped.
5-5-93	1000	1020	Borehole 1027 is capped with clay soil.
			P&A of 1027 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1028

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Burial Grounds

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Greg Anderson - Highland Drilling Co.

DRILL: Ingersoll Rand XL 750

DATE: START: 5-6-93

FINISH: 5-17-93

METHOD: C

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-6-93	1444	1454	At 1028 site. Drill crew onsite. Drill rig positioned over well. Crew has already rigged up with a 10 5/8-in. diameter tri-cone bit on a subadapter only; length=4.6 ft, table height=2.4 ft Crew cuts off casing (originally a stick-up of 3.1 ft) flush with the ground surface.
	1454	1456	Commence reaming casing and borehole with compressed air only. Ream to 2.2 ft below ground surface (BGS). Encounter water at 2.0 ft BGS. Cuttings consist of dark yellowish-brown (10 YR 4/2) to moderate yellowish-brown (10 YR 5/4), moist, clayey soil with medium light gray (N6) cement fragments and white (N9) PVC fragments.
	1456	1458	At 2.2 ft BGS. Add drill rod.
	1458	1511	Continue reaming casing and borehole with compressed air only. Ream from 2.2 ft to 27.2 ft BGS. Cuttings from 2.2 ft to 12.2 ft BGS are a continuation of the 0.0 to 2.2 ft interval with the addition of pale brown (5 YR 5/2) to light olive gray (5Y 5/2), weathered and stained shale fragments. Drilling becomes very hard (rate decreases) at 12.2 ft BGS (fresh bedrock). Adding water at 14.2 ft BGS. Drilling alternating between ratty and smooth from 15.5 ft BGS to 20.2 ft BGS. Cuttings from 12.2 ft to 27.2 ft BGS consist of very dusky purple (5P 2/2) and medium dark gray (N4), thinly laminated shale; medium gray (N5) cement fragments; and white (N9) PVC fragments. Between 20.2 ft and 27.2 ft BGS,

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1028
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-6-93	1458	1511	cuttings include coarse grains of angular sand (filter pack).
(cont.)			Detect sewage-like odor at 22.2 ft BGS. Breathing zone analysis
			(BZA) = 0.2 ppm.
	1511	1516	At 27.2 ft BGS. Clean out borehole.
	1516	1518	Trip bit out to ground surface. Will complete reaming on 5-7-93.
	1518	1541	Shut off drill rig. Clean up, secure site, and depart.
5-7-93	0933	0948	Arrive at 1028 site, crew onsite waiting. Trip into borehole to
			27.2 ft BGS (table height remains at 2.4 ft).
	0948	0951	Clean out borehole. Add drill rod.
	0951	0954	Commence reaming casing and borehole with air and water.
			Ream from 27.2 ft to 30.2 ft BGS. Cuttings are a continuation of
			the 12.2 to 27.2 ft interval (includes coarse grains of angular
			sand).
	0954	0959	At 30.2 ft BGS. Clean out borehole.
	0959	1005	Trip out, rig down stabilizer. Tag bottom of borehole at 30.2 ft
			BGS (clean). Calculate a borehole volume to 4.0 ft BGS of
			16.2 cubic ft = 0.6 cubic yds.
	1005	1016	Secure rig and move off site. Cement order scheduled for
			1100 hrs.
	1016	1112	Waiting for cement. Run 3, 10.0-ft sections of 1.5-in. outside
			diameter (OD) PVC tremie pipe into borehole to 29.0 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1028
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-7-93	1112	1128	Cement truck arrives. Tremie cement into borehole. Circulate
(cont.)			100% cement.
	1128	1135	Pull out tremie pipe. Clean up, secure site, and depart.
5-10-93	0751	0758	Arrive at 1028 site. Tag cement level at 5.2 ft BGS. Calculate
			a borehole volume to 4.0 ft BGS of 0.6 cubic ft, equivalent to
			0.4 sacks of 2% bentonite-cement grout. Depart site.
5-11-93	1409	1422	At 1028 site. Mix and pour 1 sack (1.4 cubic ft) of 2% bentonite-
			cement grout into borehole. Depart site.
5-12-93	1228	1236	At 1028 site. Tag cement level at 2.2 ft BGS. Borehole is ready
			to be capped. Depart.
5-17-93	1000	1030	Borehole 1028 is capped with clay soil.
			P&A of 1028 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1029
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 2

LOCATION: Bear Creek Burial Grounds

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Greg Anderson - Highland Drilling Co.

DRILL: Ingersoll Rand XL-750

DATE: START: 5-5-93

FINISH: 5-7-93

METHOD: C

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-5-93	0800	0812	Arrive at 1029 site. Casing stickup = 1.0 ft. Water level at 10.5 ft
			below ground surface (BGS). Bottom of well measured at 17.8 ft
			BGS. Crew arrives, reports B. McMaster (HSEA) gave approval
			to decommission this well without the use of a cuttings pit.
	0812	0816	Rig up with a 10 5/8-in. diameter tricone bit on a subadapter only
			(no stabilizer); length = 4.6 ft, table height = 2.3 ft.
	0816	0817	Commence reaming casing and borehole with compressed air
			only. Ream to 2.3 ft BGS. Cuttings consist of dark yellowish-
			brown (10YR 4/2) to dusky brown (5YR 2/2), moist, clayey soil
			with minor amounts of undifferentiated gravel (approximately
			1.0-in. diameter), and PVC fragments.
	0817	0821	At 2.3 ft BGS. Add drill rod.
	0821	0827	Continue reaming casing and borehole with compressed air only.
			Ream to 19.5 ft BGS. Cuttings from 2.3 ft to 8.3 ft BGS consist
			of dark yellowish-orange (10YR 6/6) to moderate yellowish-
			brown (10YR 5/4), dry to moist, clayey subsoil/residuum and PVC
			fragments. No cement fragments. Encounter moisture at 12.0 ft
			BGS. Cuttings from 8.3 ft to 19.5 ft BGS consist of pale brown
			(5YR 5/2) to light olive gray (5Y 5/2), thinly laminated, stained,
			weathered shale. No PVC or cement fragments. No cement
			fragments observed over entire borehole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1029

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-5-93	0827	0830	At 19.5 ft BGS. Clean out borehole.
(cont.)			
	0830	0840	Trip out, rig down bit and subadapter. Tag bottom of borehole at
			19.0 ft BGS (0.5 ft of fill). Oversight departs.
	0934	0946	Return to 1029 site. No PVC casing visible in borehole. Calculate
			a borehole volume to 4.0 ft BGS of 9.3 cubic ft = 0.3 cubic yds.
			Depart site.
	1602	1606	Return to 1029 site with cement truck. Pour cement (dry hole) into
			borehole, fill to within 1 ft of ground surface. Depart site.
5-6-93	0731	0735	Arrive at 1029 site. Tag cement level at 10.0 ft BGS. A large
			fragment of PVC casing is visible in borehole at approximately 2 ft
			BGS. Calculate a borehole volume to 4.0 ft BGS of 3.7 cubic ft,
			equivalent to 2.7 sacks of 2% bentonite-cement grout. Depart site.
	1130	1141	Technical oversight by Victor Harness (SAIC). Return to 1029 site.
			Extract approximately 6 ft long shard of PVC casing from borehole.
			Mix and pour 4 sacks (5.4 cubic ft) of 2% bentonite-cement grout
			into the borehole. Cement to 0.5 ft BGS. Depart site.
5-7-93	0737	0741	Oversight resumed by Timothy Coffey (SAIC). Arrive at 1029 site.
			Cement level at 2.2 ft BGS. Borehole is ready to be capped.
			Depart site.
			Borehole 1029 capped with clay soil on 5-7-93.
			P&A of 1029 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1032

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 3

LOCATION: Bear Creek Burial Grounds

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Greg Anderson - Highland Drilling Co.

DRILL: Ingersoll Rand XL-750

DATE: START: 5-5-93

FINISH: 5-7-93

METHOD: C

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-5-93	0950	1016	Arrive at 1032 site. Crew on site. Rig is set up over the well, already rigged up with a 10 5/8-in. diameter tricone bit on a subadapter only; length = 4.6 ft, table height = 2.6 ft. Casing stickup = 2.4 ft. Bottom of the well = 52.4 ft below ground surface (BGS). Water level at 10.5 ft BGS. Excavating cuttings pit. Note: The driller reported having detected a sewage-like odor when first digging the pit. Scan of pit, pit walls, and excavated material with HNu resulted in reading of 0.5 ppm (max.).
	1016	1018	Commence reaming casing and borehole with compressed air only. Ream to 2.0 ft BGS. Cuttings consist of moderate brown (5YR 4/4), dry to moist, clayey surface soil with approximately 50% light gray (N7) to medium gray (N5) cement fragments.
	1018	1021	At 2.0 ft BGS. Add drill rod.
	1021	1026	Continue reaming casing and borehole with compressed air only. Ream from 2.0 ft to 27.0 ft BGS. Encounter slight moisture at 4.0 ft BGS. Obvious weathered bedrock encountered at 6.0 ft BGS. Cuttings from 2.0 ft to 6.0 ft BGS the same as reported previously. Encounter water at 11.0 ft BGS. Add water at 17.0 ft BGS. Cuttings from 6.0 ft to 27.0 ft BGS consist of light olive gray (5Y 5/2), thinly laminated, weathered and stained shale and moderate yellowish-brown (10YR 5/4), massive weathered micrite. Interval also contains medium light gray (N6) cement fragments and white (N9) PVC fragments.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1032
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-5-93	1026	1030	At 27.0 ft BGS. Clean out borehole. Add drill rod.
(cont.)			
	1030	1047	Continue reaming casing and borehole with compressed air and
			water. Ream from 27.0 ft to 52.0 ft BGS. Hard drilling and ratty
			from 29.0 ft to 32.0 ft BGS. Cuttings from 27.0 ft to 37.0 ft BGS
			same as above. PVC fragments increasing this interval. Cuttings
			from 37.0 ft to 47.0 ft BGS consist predominantly of medium gray
			(N5), massive micrite and intramicrite; PVC fragments; and cement
			fragments. Cuttings from 47.0 ft to 52.0 ft BGS are same as above,
			but include coarse, angular grains of sand (filter pack).
	1047	1053	At 52.0 ft BGS. No obvious slotted PVC fragments yet. Clean out
			borehole. Add drill rod.
	1053	1058	Continue reaming casing and borehole with compressed air and
			water. Ream from 52.0 ft to 59.0 ft BGS are same as above.
			Drilling very hard and ratty from 57.5 ft to 59.0 ft BGS (have milled
			through casing and are now drilling fresh hole).
	1058	1103	At 59.0 ft BGS. Clean out borehole.
	1103	1128	Trip out, rig down bit and subadapter. Tag bottom of borehole at
			57.0 ft BGS (2.0 ft of fill). Rig down drill rig. Calculate a borehole
			volume to 4.0 ft BGS of 32.9 cubic ft = 1.2 cubic yds.
	1128	1135	Move drill rig off location.
	1135	1143	Run 5, 10.0-ft sections of 1.5-in. outside diameter (OD) PVC
			tremie pipe into borehole to 49.0 ft BGS. Cement scheduled for
			1330 hrs. Depart site.
	1330	1532	Return to 1032 site. Waiting for cement.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1032
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-5-93	1532	1555	Cement truck finally arrives at 1032 site. Tremie cement into
(cont.)			borehole. Water level rises, but never above about 2 ft BGS.
	1555	1602	Halt cement tremie. Pull out tremie pipe. Clean up. A portion of
			this load was for another borehole, so cement truck departs to fill
			that hole.
	1607	1623	Cement truck returns to 1032 site with small amount of cement
			remaining. Crew places 1, 10.0-ft section of 1.5-in. OD PVC tremie
			pipe in borehole. Tremie the rest of the load into the borehole. Still
			no circulation of water, water rose to maximum height of 1 ft BGS.
	1623	1631	Pull out tremie pipe. Clean up, secure site, and depart.
5-6-93	0735	0743	Arrive at 1032 site. Tag cement level at 21.0 ft BGS. Calculate a
			borehole volume to 4.0 ft BGS of 10.5 cubic ft, equivalent to
			7.7 sacks of 2% bentonite-cement grout. Depart site.
	1146	1202	Technical oversight by Victor Harness (SAIC). At 1032 site. Mix
			and pour 8 sacks (10.9 cubic ft) of 2% bentonite-cement grout into
			borehole. Cement to ground surface. Depart site.
5-7-93	0741	0747	Oversight resumed by Timothy Coffey (SAIC). Arrive at 1032 site.
			Tag cement level at 4.7 ft BGS. Calculate a borehole volume to
			4.0 ft BGS of 0.4 cubic ft, equivalent to 0.3 sacks of 2% bentonite-
			cement grout. Depart site.
	1228	1231	Return to 1032 site with cement truck. Pour cement into borehole,
			fill to approximately 2 ft BGS. Depart.
			Borehole 1032 capped with clay soil on 5-7-93 with less than 24-hr
			cure time on latest cement.
			P&A of 1032 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1033

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Burial Grounds

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Jim Gallaher, Steve Brown, Mark Baker

DRILL: Ingersoll-Rand XL-750

DATE: START: 4-5-93

FINISH: 4-27-93

METHOD: Air Rotary

LOGGED BY: V.R. Harness - SAIC
T.J. Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-5-93	1328	1347	Technical oversight provided by V.R. Harness (SAIC). Depth to water = 7.7 ft below top of casing (BTOC) = 5.3 ft below ground surface (BGS).
	1347	1409	Crew installs 3.8-ft length of 11.75-in. outside diameter (OD), 11.25-in. inside diameter (ID) steel conductor around surface casing by pushing casing down with the backhoe bucket. Remove protective posts with backhoe. Measure background (BCK) radiation. Beta & gamma = 80 cpm (maximum) and alpha = 0 cpm. Measurement of radiation from excavated protective posts = BCK.
	1409	1429	10.5 tons of 3- to 5-in. gravel is delivered and placed around well location and in drainage ditch to build up site for drill rig. Cut off 2.3 ft of casing stickup. Surface casing is 6.5-in. OD, 6.0-in. ID steel.
	1429	1546	The attempt to move the rig onto the site was partially completed. Will continue tomorrow. Secure site and depart.
4-6-93	0852	0921	Crew delivers dozer. Use dozer to help maneuver rig into position. Backhoe used to excavate small cuttings pit. Siltation fencing installed along three sides of excavated pit (downgradient). Pit will be enlarged as needed but will be kept as small as possible (verbal communication with Steve Jones - HSEA).
	0921	1018	Raise mast on rig. Crew departs to collect water truck and other materials.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1033
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 14

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-6-93	1018	1032	Crew returns and unloads 2 additional 25 ft sections of drill rod.
(cont.)			Site is flagged off. Awaiting delivery of 6-in bit.
	1135	1245	Calculate 9.8 cubic ft or approximately 9, 50-lb sacks of cement
			required to fill open interval of well. Crew breaks for lunch and to
			get cement.
	1245	1304	John Young (Highland) delivers 0.8 ft long, 6-in. diameter tricone
			roller bit. Crew rigs this bit up and trips into well.
	1304	1307	Table height = 2.4 ft. Trip into well 23.4 ft BGS. Displaced water
			screened at table: alpha = 0 cpm, beta & gamma = 80 cpm.
			Breathing zone analysis (BZA) = 0.2 ppm.
	1307	1312	Add second 25 ft drill rod. Trip in to 48.4 ft BGS. BZA @ 50 ft =
			0.2 ppm. Displaced well water becomes black and has a metallic
			odor.
	1312	1316	Add third 25 ft drill rod. Trip in to 73.4 ft BGS. Displaced water is
			draining through gravel pad and into ditch rather than into pit.
			Screening of water at table: beta & gamma = 80 cpm. BZA @
			73.4 ft BGS = 0.0 ppm. Displaced water becoming yellowish-
			brown and losing metallic odor. Trip up 25 ft.
	1316	1332	Crew spreads plastic sheeting under table to prevent loss of water
			into ditch.
	1332	1337	Trip back in. Plastic sheeting under table successfully diverting
			water into pit. Pit already filling. Screening of displaced well water:
			alpha = 0 cpm, beta & gamma = 60 cpm. BZA = 0.0 ppm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1033
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 14

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-6-93	1337	1340	Crew enlarges pit to approximately 6 ft (deep) x 6 ft (wide) x 8 ft
(cont.)			(long).
	1340	1346	Add fourth, 25 ft drill rod. Trip into bore to 98.4 ft BGS. Displaced
			water becoming greenish-black. BZA @ 98.4 ft = 0.2 ppm.
	1346	1351	Add fifth, 25-ft drill rod. Trip in to 100.3 ft BGS where first
			resistance is met. Commence reaming.
	1351	1401	Ream to 123.4 ft BGS. Add sixth, 25-ft drill rod. Screening of
			displaced well water @ 111 ft BGS: alpha = 50 cpm, beta &
			gamma = 45 cpm. Returned water turning greenish-brown with an
			oily film.
	1401	1405	Ream to 148.4 ft BGS with almost no cuttings returned to surface.
			BZA @ 148.4 ft BGS = 0.2 ppm. Screen of displaced water: alpha
			= 20 cpm, beta & gamma = 50 cpm. Add seventh, 25-ft piece of
			drill rod.
	1405	1416	Ream to 154 ft BGS. BZA exhibited momentary 20 ppm hit. Shut
			rig down. Caught water sample. Organic vapors (non-sealed)
			emanating from sample = 10-15 ppm. Seal sample for head space
			analysis (HSA).
	1416	1438	Steve Jones (HSEA) and Tom McDermott (DOE) arrive. HSA of
			sealed water sample = 40 ppm. Resealed sample. Oversight
			departs site to get flame ionization detector to check results given
			by photoionization detector. Crew and rig on stand-by.
	1513	1527	Oversight returns with OVA. HSA of sample with OVA yields
			900 ppm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1033
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 14

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-6-93	1527	1543	Continuous monitoring of breathing zone, by oversight and Steve
(cont.)			Jones (HSEA) using both HNu and OVA as crew trips back in.
			Ream to 162 ft BGS. BZA remainder of drilling does not exceed
			0.0 ppm. Water sample from earlier exhibits a separated, lighter-
			than-water oily film of amber coloration.
	1543	1620	Trip out tools. Retrieve composited cuttings sample from 100 to
			162 ft BGS. Comprised of blocky, slightly silty shale of blackish-
			green (5G 2/1 Munsell) coloration. Secure site and depart.
4-7-93	0837	0851	Arrive on site. Continuous monitoring of breathing zone by
			oversight using OVA during all drilling activities begun. Trip tools
			down to 162 ft BGS to insure that bore is open. Screening of
			displaced water: alpha = 20 cpm, beta & gamma = 80 cpm. BZA
			= 2.0 ppm
	0851	0918	Trip out tools. Organic vapors 0.25-in. from drill rods with OVA =
			40-50 ppm, however; 6-in. away undetectable. BZA remains at
			2.0 ppm
	0918	0956	All tools out of ground. At table: alpha = 40 cpm, beta & gamma
			= 80 cpm. BZA = 1.2 ppm. Crew cleans, assembles and inserts
			140 ft of 1.5-in. OD PVC tremie line to 137 ft BGS.
	0956	1028	Crew mixes and tremies nine, 50-lb sacks of neat Type I Portland
			cement into reamed open bore. Circulating blackish-green, turbid
			water. BZA = 1.0 ppm.
	1028	1047	Crew removes and cleans tremie line. Will allow grout to cure
			24 hrs. Secure site and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1033
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 14

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-7-93	1543	1558	Return to site to enlarge pit for over wash. Pit excavated to 8 ft
(cont.)			wide x 8 ft long x 6 ft deep. Rearrange original silt fence and add
			an additional supplemental silt fence downgradient of first.
			Screening of excavated soil: alpha = 40 cpm, beta & gamma =
			90 cpm. New pit flagged. Secure site and depart.
4-8-93	0832	0906	Tag grout at 100 ft BTOC = 99.9 ft BGS. Since 6.5-in OD surface
			casing is reported to extend to 110 ft BGS, this should be
			adequate.
	0906	0918	Crew rigging up first section of 9-in. OD, 8.5-in. ID washover pipe.
			Total length of first piece = 21.5 ft. Washover bit comprises 3.6 ft
			of this length, and attached subadapter is an additional 2.5 ft long.
			Screening at table: alpha = 40 cpm, beta & gamma = 50 cpm.
	0918	0926	Commence over wash with compressed air only. Table height =
			2.9 ft. Advance to 3 ft BGS.
	0926	0944	Continue over wash begin use of water. Advance to 7 ft BGS. BZA
			@ 7.0 ft BGS = 0.0 ppm. Returns are shale chips in yellowish-
			brown muddy water. Conductor casing is loose.
	0944	0950	Pause in over wash while crew secures conductor casing by
			chaining to rig. Screening at table: alpha = 40 cpm, beta & gamma
			= 75 cpm (both approximately equivalent to background).
	0950	1012	Resume over wash at 7.0 ft BGS. Additional washover pipe
			delivered; tally:
			4 pieces: 21.1 ft
			21.1 ft
			20.9 ft
			16.6 ft

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1033
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 6 of 14

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-8-93			Advance to 25 ft BGS.
(cont.)			
	1012	1122	Collect 0 to 25 ft sample. Description: Blocky shale of light
			brownish-gray coloration (10YR 3/2) with staining and partings
			colored very dark grayish-brown (10YR 3/2) to yellow (10YR 7/8).
			Approximately 4% of sample collected is comprised of a gritty,
			plastic clay of gray color (10YR 5/1). Minor metal shavings and
			several pale yellow (2.5Y 7/3) shale fragments are accessory.
			Screening at table: alpha = 20 cpm, beta & gamma = 70 cpm).
			Crew breaking loose subadapter to add washover pipe to string.
	1122	1128	Hydraulic hose to power tong wrench begins leaking. Spill control
			mats are used to control leak. Approximately 0.5 pint of hydraulic
			fluid spilled on ground. Absorbent mats were placed on spill.
	1128	1305	Rig down for repairs and crew lunch break.
	1305	1343	Crew resumes efforts to break loose subadapter. At table, beta &
			gamma = 80 cpm, BZA = 0.0 ppm.
	1343	1400	Crew rigging up second piece of washover pipe. Length = 21.1 ft.
			Total length of washover in string = 46.2 ft.
	1400	1425	Resume over wash, initial BZA = 0.0 ppm. Rapid advance to 45 ft
			BGS. Circulation water becoming blackish-green at 43 ft BGS.
			BZA at 43 ft = 2.0 ppm; at 45 ft = 0.0 ppm. Screening at table @
			45 ft: alpha = 20 cpm, beta & gamma = 75 cpm. Description of
			composited cuttings from 25 to 45 ft BGS: Shale fragments similar
			to 0 to 25 ft interval but coloration from light yellowish-brown
			(2.5Y 6/3) to grayish brown (2.5Y 5/2). Staining coloration similar
			also but slightly darker; to dark brown (7.5YR 3/3). Notably
			different is 1 to 2% of sample is finely layered friable siltstone;

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1033
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 7 of 14

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-8-93			unstained siltstone is pinkish white (7.5YR 8/2); stained coloration
(cont.)			ranges from reddish yellow (5YR 6/8) to very dark gray (5YR 3/1).
	1425	1503	Crew breaking loose subadapter to add third piece of washover
			pipe (21.1 ft length). New total length of washover pipe will be
			67.3 ft. BZA = 0.0 ppm.
	1503	1530	Resume over wash at 45 ft BGS, initial BZA = 0.0 ppm. Rapidly
			advance to 64 ft BGS. Collect 45 ft to 64 ft sample. Sample
			description is continuation of 25- to 45-ft interval. BZA @ 64 ft
			BGS = 0.0 ppm.
	1530	1600	Rig head is leaking. Approximately 2 pints of hydraulic fluid spilled
			on ground before spill control can take place. Crew will repair seal
			Monday morning . Secure site and depart.
4-12-93	0834	1007	At site. Randy Phillips (Highland) says crew will drain excess fluid
			and try to continue drilling down because head repairs will take
			several days. If leakage worsens, crew will stop for repairs. Crew
			draining hydraulic fluid from head into buckets. Spill controls in
			place.
	1007	1010	Resume over wash at 64 ft BGS. Table height = 2.0 ft. Screening
			at table: alpha = 20 cpm, beta & gamma = 70 cpm, and BZA =
			0.5 ppm. Advance to 65 ft BGS.
	1010	1029	Crew breaking loose subadapter to add fourth piece of washover
			pipe (20.9 ft length) for a total length of washover = 88.2 ft. Collect
			64 ft to 65 ft sample. Sample lithology is a continuation of 45 ft to
			64 ft interval.
	1029	1051	Rigging up 20.9 ft piece of washover pipe. BZA = 0.0 ppm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1033
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 8 of 14

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-12-93	1051	1118	Resume over wash at 65 ft BGS; initial BZA = 2.0 ppm lowering to
(cont.)			0.5 ppm as accumulated water is blown out. Advance to 75 ft BGS;
			BZA @ 75 ft BGS = 0.0 ppm.
	1118	1234	Head began leaking again and showed signs of leak rate increasing.
			Spill control mats were already in place . Rig shut down for repairs.
			Description of 65 to 75 ft BGS sample is a continuation of previous
			interval but contains 5% greenish black (5GY 2/1) to medium dark
			gray (N4) micaceous, calcareous, fine siltstone. Oversight departs.
4-19-93	0831	0911	Crew on site, rigging up.
	0911	1037	Rig on. Screening at table: alpha = 20 cpm, beta & gamma =
			70 cpm. BZA (initial) = 0.0 ppm. Crew changing drill head oil, spill
			controls in place, used oil contained in buckets to be taken off site.
	1037	1129	BZA = 2.0 ppm. Resume over wash at 75 ft BGS. Advance to 86 ft
			BGS. Collect 75 to 86 ft sample (continuation of previous interval).
			BZA at 85 ft BGS was 4.0 ppm due to dead formation oil (black)
			in returns (characteristic odor) dropping to 0.0 ppm at 86 ft BGS.
			Cutting pit enlarged by about 2 ft in width and length.
	1129	1230	Crew breaking out and rigging up fifth and final piece of washover
			pipe on site (16.0 ft length) for a total of 104.68 ft of tools.
	1230	1316	Lunch break.
	1316	1322	Resume breakout. After subadapter broken loose, casing is found
			to have slipped into hole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1033
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 9 of 14

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-19-93	1322	1353	Top of casing tagged at approximately 36 ft BGS. Crew departs
(cont.)			to locate a mechanical packer of suitable size to fish up casing.
			Will resume in morning. Secure site and depart.
4-20-93	0841	0854	Crew arrives at site with a 6-in. diameter mechanical packer and
			tubing. Length of packer = 4 ft. Tubing is 2.38-in. OD, 2.0-in. ID
			swab tube.
	0854	0906	Crew rigs up packer and 22.7 ft of tubing and lowers into bore.
			Screen at table: alpha = 20 cpm, beta & gamma = 50 cpm. BZA =
			0.0 ppm.
	0906	0918	Packer set and casing raised.
	0918	0928	Dropped casing, trip packer back into bore.
	0928	0939	Crew goes to get additional short pieces of swab tube. 22.7 ft long
			piece doesn't allow casing to be raised high enough to secure.
	0939	0945	Crew rigs up 3, 4-ft long pieces of tube and one 8-ft piece for 20 ft
			total length. Add 4-ft long packer and trip back into bore.
	0945	1003	Set packer and raise casing.
	1003	1014	Casing secured while packer and tubing rigged down; BZA =
			0.0 ppm. Surface of casing screened: alpha = 20 cpm, beta &
			gamma = 80 cpm. Safe to cut casing.
	1014	1039	Extract 52.2 ft of 6.5-in. OD well casing in 3 pieces (21.4 ft, 29 ft,
			and 2.8 ft). Bottommost piece shows no evidence of ever being
			attached to any more casing. Casing installed appears to have
			been of inferior quality. Was installed pitted and poorly made at

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1033
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 10 of 14

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-20-93			foundry. No evidence of corrosion attributable to post installation
(cont.)			factors, other than minor oxidation/reduction of iron.
	1039	1238	Crew locates 6.5-in. diameter tricone bit, rigs up and trips in inside
			washover pipe to try and tag any additional casing.
	1238	1257	Trip into 98 ft BGS. No casing encountered. Trip out. BZA @ 98 ft
			BGS = 0.0 ppm.
	1257	1440	Crew tripping out washover pipe.
	1440	1523	Crew rigs up 10 5/8-in. diameter tricone roller bit and stabilizer
			(9.2 ft total length) to ream bore in morning. Grout delivery
			(2.5 cubic yds) ordered for 1200 hrs tomorrow. Secure site and
			depart.
4-21-93	0819	0849	Rig up to begin reaming. Table screen: alpha = 20 cpm, beta &
			gamma = 80 cpm, BZA = 0.0 ppm.
	0849	0854	Commence reaming. Table height = 2.4 ft. Advance to 31.8 ft
			BGS. BZA @ 31.8 ft = 0.0 ppm.
	0902	0905	Add 25 ft of drill rod. Resume reaming. Advance to 56.8 ft BGS.
			BZA @ 56.8 ft = 0.0 ppm.
	0905	0916	Add 25 ft of drill rod. Resume reaming. Advance to 81.8 ft BGS.
			BZA @ 81.8 ft = 1.0 ppm.
	0916	0938	Add 25 ft of drill rod. Resume reaming. Part of crew enlarging pit
			slightly. Advance to 92 ft BGS. Circulation of cuttings is poor.
			Steve Jones (HSE) gives permission to use minimal amount of
			Quik-Foam™.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1033

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-21-93	0938	0957	Trip bit up to 84 ft BGS. Part of crew goes to get Quik-Foam™.
(cont.)			
	0957	1010	Small amount of Quik-Foam™ added with no results.
	1010	1019	Part of crew departs to get fresh Quik-Foam™.
	1019	1030	Adding minor amount of Quik-Foam™.
	1030	1034	Foam is circulating but air pressure is building up and shutting off
			the rig compressor before any cuttings are blown out.
	1034	1047	Tripping in, no foam in circulation water. Advance to 92 ft BGS.
			At 86 ft BGS lose circulation. Pressure blow outs develop 30 ft
			northeast of rig (foam).
	1047	1104	Halt advance. Inform Steve Jones (HSE) that we cannot get
			circulation and cannot drill further without regaining circulation.
			He gives permission to use Hole Plug™ bentonite in 86 to 91 ft
			BGS interval and grout hole.
	1104	1152	Begin trip out. Bit and stabilizer hangs. All of circulation coming
			out blowout holes, none out of bore.
	1152	1245	Pull bit with difficulty up to 78.6 ft BGS. Part of crew departs for
			auxiliary compressor and water truck. Driller continues to try
			freeing bit.
	1245	1518	Manage to get bit to 66.6 ft BGS. Still stuck. Crew rigs up auxiliary
			compressor in an attempt to blow out obstructing material.
			Unsuccessful at attempt. Bit still hung. Shut down rig to consider
			alternatives. Secure site and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1033
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 12 of 14

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-22-93	0816	0935	Crew resumes attempts to free bit. Tag rubble on top of bit and
			stabilizer at 33 ft BGS. Table screen: alpha = 0 cpm, beta &
			gamma = 50 cpm, BZA = 0.0 ppm. Oversight departs.
	1005	1057	Technical oversight assumed by T.J. Coffey (SAIC). Crew
			adding Quik-Foam™ directly into drill rod. Crew working tools up
			and down to attempt to free bit and stabilizer. Water pump on rig
			is apparently not working. No circulation from bore, all from blow-
			out vents.
	1057	1125	Continue working to free bit. Return of partial circulation.
	1125	1130	Shut down rig. Crew will attempt to over wash drill rods to free up.
	1130	1305	Crew departs to eat lunch and collect materials.
	1305	1315	Crew returns. Lowers drill bit as far as possible (84 ft BGS).
			Begins rigging up 6.0-in. OD, 5.0-in. ID washover pipe. Three
			pieces of washover pipe at site (15.2 ft, 24.7 ft and 24.7 ft) for a
			total of 64.6 ft. Subadapter = 1.8 ft length.
	1315	1325	Washover bit (6.0-in. dia.) will not fit over drill rods. Crew rigs
			down, some depart for additional washover pipe.
	1325	1345	Remaining crew repairing water pump on rig.
	1345	1440	Having found no additional bits which will fit this pipe, crew uses
			oxy-acetylene torch to cut off internal cutting nubs on existing bit.
	1440	1500	Pump repaired, washover bit modified. Trip washover pipe down
			bore over drill rods.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1033
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 13 of 14

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-22-93	1500	1513	Encounter rubble at 36.7 ft BGS. Over wash easily with
(cont.)			Quik-Foam™ to 41.7 ft BGS.
	1513	1544	Break out subadapter and additional washover pipe for tool length
			of 66.4 ft BGS.
	1544	1607	Resume over wash. Encounter difficult drilling at 53.1 ft BGS.
			Lose circulation at 53.3 ft BGS. Past 53.3 ft, advance easily to
			61.0 ft BGS. Hard drilling from 61.0 ft to 66.4 ft BGS. Circulation
			restored as large quantity of foam belches out of the borehole
			collar covering everything and everyone within 10 ft of the hole.
	1607	1748	Trip out and rig down washover pipe.
	1748	1848	Trip out drill rods and bit/stabilizer assembly. Secure site and
			depart.
4-23-93	0805	0847	Crew arrives. Rig down bit and stabilizer. Tag debris in bore at
			32.2 ft BGS. Shut down rig.
	0847	0900	Steve Jones (HSEA) gives permission to fill bore with Hole Plug™
			to water level (12.3 ft BGS).
	0900	0956	Pour 37, 50-lb sacks of Hole Plug™ into bore. Top of unhydrated
			bentonite at 24.6 ft BGS.
	0956	1026	Mobilize rig off site.
	1026	1044	Pour 10 more sacks of Hole Plug™ into bore. Top of unhydrated
			bentonite @ 18.7 ft BGS. Secure site and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1033
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 14 of 14

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-23-93	1402	1408	Return to site. Tag hydrated bentonite level at 18.4 ft BGS.
(cont.)			Bentonite swelled 0.3 ft upon hydration.
	1408	1412	Install 20 ft of 1.5-in OD, PVC tremie pipe to 17 ft BGS.
	1412	1439	Mix and tremie 8, 50-lb sacks of 2% bentonite cement. Water level
			raised to 1 ft BGS, but no circulation. Secure site and depart.
4-26-93	1158	1203	Tag cement level at 7.5 ft BGS. Depart.
	1527	1530	Arrive at site. Extract conductor casing.
	1530	1600	Mix and pour 2 sacks of 2% bentonite-cement grout. Secure site
			and depart.
4-27-93	0823	0830	Technical oversight assumed by V.R. Harness (SAIC). Tag grout
			at 1.9 ft BGS (below original surface). Depart.
	1405	1411	On site. Cap installed with backhoe. Depart. P&A of 1033
			completed.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1035
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 3

LOCATION: Bear Creek Burial Grounds	DATE: START: 5-10-93
DRILLERS: Steve Brown-Highland Drilling Co.	FINISH: 5-17-93
HELPERS: Greg Shillings-Highland Drilling Co.	METHOD: B
DRILL: Ford 555B Backhoe with McMillan Digger-head auger motor	LOGGED BY: Timothy Coffey-SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-10-93	1231	1310	Arrive at 1035 site. Casing stickup = 2.0 ft. Water level is approximately 25 ft. below ground surface (BGS). Plan to plug open interval with Hole Plug™ (this is a deviation, previously approved by S. Jones-HSEA). Calculate the open-hole volume to base of casing of 14.1 cubic ft., equivalent to 20.5 sacks of Hole Plug™. Slowly pour 19 sacks (13.1 cubic ft.) of Hole Plug™ into the borehole while continuously tamping with a weighted tape to prevent bridging. Circulate water. Fill to 27.8 ft. BGS. Depart site.
5-11-93	0759	0807	Arrive at 1035 site. Tag hydrated Hole Plug™ level at 24.5 ft. BGS (Hole Plug™ swelled 3.3 ft.). Cut off 1.4 ft. of casing stick-up. Rig up an 8.0-in. inside diameter (ID), 12.0-in. outside diameter (OD) initial hollow-stem auger flight with a 13.0-in. diameter cutterhead; total length = 5.3 ft.
	0807	0923	Commence augering. Additional auger flights added sequentially at the end of each 5.0-ft. interval. Auger to 17.3 ft. BGS. Cuttings from 0.0 ft. to 8.0 ft. BGS consist of grayish-brown (5YR 3/2) to moderate brown (5YR 3/4), moist, clayey soil with common gravel fragments from near beginning of interval. No cuttings returned: 8.0 ft. to 10.0 ft. BGS. Augering appears to be becoming difficult at 9.5 ft. BGS. While adding auger flight at 10.0 ft. BGS, observed that casing has slipped down into borehole slightly. Water returned at 10.3 ft. BGS. Cuttings from 10.0 ft. to 17.3 ft. BGS consist of pale brown (5YR 3/2), moist (often

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1035
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-11-93	0807	0923	wet) clayey soil/residuum and light olive gray (5Y 5/2) weathered
(cont.)			shale with few fragments of white (N9) PVC casing.
	0923	0940	Auger refusal at 17.3 ft. BGS. Trip augers out of the borehole.
	0940	1035	All auger flights out of the ground, cutterhead is jammed with soil/
			residuum, and a length of casing is hung within the bottom-most
			flight. Working to clear auger of casing and debris.
	1035	1043	Bottom-most auger cleared. Extract 9.0 ft. of PVC casing.
	1043	1120	Trip augers into borehole.
	1120	1127	At 17.3 ft. BGS. Continue augering. Auger from 17.3 ft. to 18.3 ft.
			BGS. No cuttings returned.
	1127	1140	Auger refusal at 18.3 ft. BGS. Trip augers out of the borehole.
			Extract an additional 3.0 ft. of casing. Total casing removed from
			borehole=13.4 ft. (includes 1.4 ft. of stick-up cut off prior to
			augering operations). Tag bottom of borehole at 17.0 ft. BGS
			(1.3 ft. of fill). Calculate a borehole volume to 4.0 ft. BGS of
			10.3 cubic ft., equivalent to 7.5 sacks of 2% bentonite-cement
			grout.
	1140	1150	Pull out protective posts. Depart site.
5-14-93	1133	1207	At 1035 site. Mix and pour (bore is dry with little danger of
			bridging) 9 sacks (12.2 cubic ft.) of 2% bentonite-cement grout
			into borehole. Cement level to 2.0 ft. BGS.
	1207	1212	Clean up, secure site, and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1035
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-17-93	0830	0900	Cured cement level at approximately 2.5 ft. BGS. Borehole is capped with clay soil.
			P&A of 1035 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1036
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 4

LOCATION: Bear Creek Burial Grounds

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Steve Brown/Greg Shillings - Highland

DRILL: Ingersoll-Rand XL-750

DATE: START: 5-3-93

FINISH: 5-17-93

METHOD: B

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-3-93	0805	0847	Arrive at 1036 site. Drill rig is set up over well location. Casing stickup = 0.5 ft. Tag bottom of well at 98.2 ft below ground surface (BGS). Wait on drill crew.
	0847	0852	Crew arrives and moves water truck onto location.
	0852	0856	Rig up with a 10 5/8-in. diameter tricone bit on a subadapter only; length = 4.6 ft, table height = 2.2 ft.
	0856	0859	Commence reaming casing and borehole with compressed air only. Ream to 2.4 ft BGS. Cuttings consist of moderate brown (5YR 4/4) to dusky brown (5YR 2/2), moist, loamy soil and white (N9) PVC fragments.
	0859	0903	At 2.4 ft BGS. Add drill rod.
	0903	0918	Continue reaming casing and borehole with compressed air only. Ream from 2.4 ft to 27.4 ft BGS. Strong odor of organic decay at 18.0 ft BGS: breathing zone analysis (BZA) = 0.0 ppm. Encounter water at 18.0 ft BGS (cuttings begin to ball up). Cuttings from 2.4 ft to 18.0 ft BGS consist of moderate brown (5YR 4/4) to light brown (5YR 5/6), dry to moist, clayey subsoil; medium light gray (N6) cement fragments; and white (N9) PVC fragments. Adding water. Cuttings from 18.0 ft to 27.4 ft BGS consist of light olive gray (5Y 5/2) to pale yellowish-brown (10YR 6/2), thinly laminated, weathered shale with minor very pale orange (10YR 8/2),

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1036
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-3-93			massive weathered micrite; and small amounts of white (N9) PVC
(cont.)			fragments. No cement fragments observed this interval.
	0918	0922	At 27.4 ft BGS. Add drill rod.
	0922	0932	Continue reaming casing and borehole with compressed air and
			water. Ream from 27.4 to 52.4 ft BGS. Cuttings from 27.4 to
			33.0 ft BGS consist of moderate yellowish-brown (10YR 5/4) to
			dark yellowish-brown (10YR 4/2), weathered shale and pale
			yellowish-brown (10YR 6/2), massive, weathered micrite. Interval
			contains minor PVC fragments, but no cement fragments. Ratty
			drilling at 33.0 ft BGS (fresh bedrock). Cuttings from 33.0 ft to
			52.4 ft BGS consist of predominantly medium dark gray (N3),
			thinly laminated shale; minor dark gray (N2), massive micrite with
			blebs of sparite; and pinkish-gray (5YR 8/1) granular calcite. No
			grout fragments observed this interval, and PVC fragments ceased
			returning at approximately 34.0 ft BGS. Foul odor at 38.0 ft BGS:
			BZA = 0.3 ppm.
	0932	0949	At 52.4 ft BGS. Clean out borehole. Add drill rod. Driller states he
			needs to use Quik-Foam™ to help circulate cuttings. Call to
			S. Jones (HSE) who grants approval to use Quik-Foam™.
	0949	0953	Continue reaming casing and borehole with compressed air,
			water, and Quik-Foam™. Ream from 52.4 ft to 77.4 ft BGS.
			Cuttings consist of medium dark gray (N3), thinly laminated shale;
			brownish-gray (5YR 4/1) to light olive gray (5Y 6/1), massive to
			laminated micrite; and pinkish-gray (5YR 8/1) granular calcite. No
			PVC fragments or cement fragments this interval. Begin to
			enlarge cuttings pit with the backhoe.
	0953	0957	At 77.4 ft BGS. Clean out borehole. Add drill rod.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1036
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-3-93	0957	1006	Continue reaming as above. Ream from 77.4 ft to 102.4 ft BGS.
(cont.)			Cuttings are the same as above with an increasing amount of
			calcite. Drilling rate decreases at 94.0 ft BGS.
	1006	1012	At 102.4 ft BGS. Clean out borehole.
	1012	1028	Trip out, rig down stabilizer. Tag bottom of borehole at 88.0 ft BGS
			(14.4 ft of fill). Any further cleaning will likely continue to fill bottom
			of hole with debris.
	1028	1053	Rig down drill rig, and move offsite. Calculate a borehole volume
			from 88.0 ft to 4.0 ft BGS of 51.7 cubic ft = 1.9 cubic yds. Cement
			(2.0 cubic yds) ordered for 1400 hrs.
	1053	1124	Run 8, 10.0-ft sections of 1.5-in. outside diameter (OD) PVC
			tremie pipe to 78.0 ft BGS. Note: The cuttings were collected in
			two composites: 1) the dry, soil cuttings obtained when reaming
			with air only (0.0 ft to 18.0 ft BGS), and 2) rock cuttings obtained
			when reaming with air, water, and Quik-Foam™ (18.0 ft to 102.4 ft
			BGS) and later dried. The headspace analysis of the dry cuttings
			(#1) was in excess of 200 ppm. Breathing Zone Analyses over
			same interval (at 4.0 ft and 18.0 ft BGS) read 0.0 ppm. Cuttings
			sample sealed again. Notify S. Jones (HSEA). Note: Second
			headspace analysis of dry cuttings yielded a reading of 160 ppm.
			Headspace analysis of rock cuttings measured 1.8 ppm. Crew
			breaks for lunch, oversight departs.
	1451	1530	Return to 1036 site as cement truck arrives. Gravity tremie entire
			load (2.0 cubic yds) into borehole. Circulate approximately 50%
			cement.
	1530	1542	Pull out tremie pipe. Clean up, secure site, and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1036
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-4-93	0809	0815	Arrive at 1036 site. Tag cement level at 33.5 ft BGS. Calculate a
			borehole volume to 4 ft BGS of 18.6 cubic ft = 0.7 cubic yds. Depart
			site.
5-5-93	0845	0853	Arrive at 1036 site the same time as cement truck. Cement truck
			having difficulty getting to well because of slick road. Crew uses
			dozer to scrap surface of road.
	0853	0911	Cement truck at well, gravity tremie neat, Type I Portland cement
			into borehole through 1.5-in. OD PVC tremie pipe at approximately
			28 ft BGS. Circulate 100% cement.
	0911	0916	Pull out tremie pipe. Clean up, secure site, and depart.
5-6-93	0750	0759	Arrive at 1036 site. Tag cement level at 9.9 ft BGS. Calculate a
			borehole volume to 4.0 ft BGS of 3.7 cubic ft, equivalent to
			2.7 sacks of 2% bentonite-cement grout or 0.1 cubic yds of
			cement. Depart site.
5-7-93	1217	1223	At 1036 site, pour neat, Type I Portland cement from truck into
			borehole, fill to within 1 ft of ground surface. Depart site.
5-10-93	0805	0809	Arrive at 1036 site. Tag cement level at 2.5 ft BGS. Borehole is
			ready to be capped. Depart site.
5-17-93	0900	0930	Borehole 1036 is capped with clay soil.
			P&A of 1036 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1037

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Burial Grounds

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Greg Shillings/Greg Anderson - Highland

DRILL: Ingersoll Rand XL-750

DATE: START: 5-4-93

FINISH: 5-7-93

METHOD: C

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-4-93	0836	0853	Arrive at 1037 site. Driller onsite positioning rig over well. Casing
			stickup = 2.9 ft. Water level at 4.4 ft below ground surface (BGS).
			Tag bottom of well at 35.5 ft BGS. Note: The subsurface data
			base (Y/TS-881) reports the total depth (TD) of 1037 to be 45.0 ft
			BGS with the screen from 35.0 ft to 45.0 ft BGS. Rig up with a 10
			5/8-in. diameter tricone bit on a subadapter only; length = 4.6 ft,
			table height = 2.4 ft.
	0853	0917	Fuel drill rig and move water truck onto location.
	0917	0921	Commence reaming of casing and borehole with compressed air
			only. Ream to 2.2 ft BGS. Cuttings consist of: moderate brown
			(5YR 4/4), moist, clayey soil; medium gray (N5) to medium light
			gray (N6) cement fragments; and white (N9) PVC fragments.
	0921	0925	At 2.2 ft BGS. Add drill rod.
	0925	0936	Continue reaming casing and borehole with compressed air only.
			Drill rig table height adjusted to 2.6 ft. Ream from 2.2 ft to 27.0 ft
			BGS. Encounter water at 4.0 ft BGS. Ratty drilling at 9.7 ft BGS
			(adding water). Bit drops from 10.3 ft to 11.7 ft BGS. Cuttings from
			2.2 ft to 13.0 ft BGS consist predominantly of dark yellowish-
			orange (10YR 6/6) to grayish-orange (10YR 7/4), moist, clayey
			subsoil with dark yellowish-brown (10YR 4/2) to light olive gray
			(5Y 5/2) weathered shale; medium light gray (N6) cement frag-
			ments; and white (N9) PVC fragments. Abrupt lithology change

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1037
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-4-93			at 13.0 ft BGS. Cuttings from 13.0 ft to 27.0 ft BGS consist of very
(cont.)			dusky purple (5P 2/2) and dark gray (N3), thinly laminated shale
			with brownish-gray (5YR 4/1), pelletal biomicrite and massive
			micrite with sparite blebs. Interval still contains cement and PVC
			fragments. Driller observes a musty odor at 16.0 ft BGS: breathing
			zone analysis (BZA) = 0.4 ppm.
	0936	0942	At 27.0 ft BGS. Clean out borehole. Add drill rod.
	0942	1000	Continue reaming casing and borehole with compressed air and
			water. Ream from 27.0 ft to 47.3 ft BGS. Drilling becoming very
			hard/ratty at 31.5 ft BGS. Cuttings from 27.0 ft to 35.0 ft BGS
			consist of the same shale and limestone lithologies as previously,
			with minor amount of grayish-pink (10R 8/2), granular calcite.
			Interval still contains PVC and cement fragments. Cuttings from
			35.0 ft to 47.3 ft BGS are the same as above, including coarse,
			angular filter pack sand grains. Ratty drilling at 44.0 ft BGS.
	1000	1006	At 47.3 ft BGS. Clean out borehole.
	1006	1020	Trip out rig down stabilizer. Tag bottom of hole at 47.3 ft BGS. No
			evidence of slotted PVC fragments (screen) yet, also, are still
			returning cement fragments. Suspect that well may be deeper
			than reported in data base.
	1020	1030	Call to S. Jones (HSE) to report status and suspicions regarding
			depth of well casing. Steve states to continue reaming to 60 ft BGS
			and see if PVC casing continues.
	1030	1042	Start up drill rig and trip into borehole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1037
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-4-93	1042	1044	At bottom of borehole (47.3 ft BGS). Continue reaming casing and
(cont.)			hole with compressed air and water. Ream to 52.0 ft BGS.
			Cuttings consist of the same shale and limestone lithologies of
			above with cement and PVC fragments continuing.
	1044	1048	At 52.0 ft BGS. Clean out borehole. Add drill rod.
	1048	1052	Continue reaming casing and borehole with air and water. Ream
			from 52.0 ft to 60.0 ft BGS. Cuttings consist primarily of very dusky
			purple (5P 2/2) and dark gray (N3), thinly laminated shale, brownish-
			gray (5YR 4/1) micrite with blebs of sparite and black (N1)
			pelmicrite. PVC fragments no longer returned at approximately
			52 ft BGS, cement fragments stopped at about 53 ft BGS.
	1052	1058	At 60.0 ft BGS. Clean out borehole.
	1058	1110	Trip out, rig down stabilizer. Tag bottom of borehole at 57.8 ft BGS
			(2.2 ft of fill in hole).
	1110	1203	Rig down and move rig offsite, get stuck in mud. Crew using dozer
			to pull rig off of location. Calculate a borehole volume to 4.0 ft BGS
			of 33.4 cubic ft = 1.2 cubic yards.
	1203	1300	Crew breaks for lunch, oversight departs.
	1300	1348	Return to 1037 site. Run 5, 10.0-ft sections of 1.5-in. outside
			diameter (OD) PVC tremie pipe into borehole to 49.0 ft BGS.
			Cement (1.25 yds) scheduled for 1300-1330 hrs. Wait on cement.
	1348	1412	Cement truck arrives. Gravity tremie entire load (1.25 cubic yds)
			into borehole. Circulate water.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1037
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-4-93	1412	1420	Pull out tremie pipe. Clean up, secure site, and depart.
(cont.)			
5-5-93	0744	0751	At 1037 site. Tag cement level at 19.8 ft BGS. Calculate a borehole
			volume to 4.0 ft BGS of 9.8 cubic ft = 0.4 cubic yds. Depart site.
	0916	0918	Return to 1037 site. Run 2 sections of 1.5-in. OD PVC tremie pipe
			into borehole to 19.0 ft BGS.
	0918	0930	Gravity tremie cement from truck into borehole. Circulate cloudy
			water.
	0930	0932	Pull out tremie pipe. Clean up, secure site, and depart.
5-6-93	0743	0750	At 1037 site. Tag cement level at 5.8 ft BGS. Calculate a borehole
			volume to 4.0 ft BGS of 1.1 cubic ft, equivalent to 0.8 sacks of 2%
			bentonite-cement grout. Depart site.
	1220	1234	Technical oversight by Victor Harness (SAIC). At 1037 site. Mix
			and pour 4 sacks (5.4 cubic ft) of 2% bentonite-cement grout into
			borehole. Cement to ground surface. Depart site.
5-7-93	0747	0753	Oversight resumed by Timothy Coffey (SAIC). Arrive at 1037 site.
			Tag cement level at 2.6 ft BGS. Borehole is ready to be capped.
			Depart site.
			Borehole 1037 capped with clay soil on 5-7-93.
			P&A of 1037 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1038

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 2

LOCATION: Bear Creek Burial Grounds

DRILLERS: Steve Brown-Highland Drilling Co.
Greg Shillings/Greg Anderson

HELPERS: Highland Drilling Co.

DRILL: Ford 555B Backhoe with McMillan Digger-head

DATE: START: 5-12-93

FINISH: 5-14-93

METHOD: C

LOGGED BY: Timothy Coffey-SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-12-93	0840	0905	Arrive at 1038 site. Remove continuous water level measuring
			device and box from wellhead. Casing stick-up=2.3 ft. Water
			level is approximately 3 ft below ground surface (BGS). Total
			depth of the well is reportedly 26.0 ft BGS. Beta and gamma scan
			of well site yields a background radiation reading of 60 cpm.
			Crew rigs up an 8.0-in. inside diameter (ID), 12.0-in. outside
			diameter (OD) initial hollow-stem auger flight with a 13.0-in.
			diameter cutter head; total length=5.3 ft.
	0905	1128	Commence augering. Additional auger flights added sequentially
			at the end of each 5.0-ft interval. Auger from 0.0 ft to 25.3 ft BGS.
			Encounter moisture at 7.0 ft BGS where cuttings begin to ball up.
			Cuttings from 0.0 ft to 10.0 ft BGS consist of grayish-brown (5YR
			3/2) to dark yellowish-brown (10YR 4/2), dry, clayey soil containing
			light brown (5YR 5/6) fragments of thinly laminated weathered
			shale. Breathing zone analysis (BZA) at 7.0 ft BGS read 4.0 ppm
			momentarily, then dropped and levelled off at 0.6 ppm. At 13.0 ft
			BGS, augering becoming difficult, advance is slow. Also at 13.0
			ft (and beyond), cuttings returns are sporadic. Encounter water at
			16.0 ft BGS. Cuttings from 10.0 ft to 17.0 ft BGS generally consist
			of a pale brown (5YR 5/2) to a dark greenish-gray (5GY 4/1) slurry.
			Encounter additional water at 17.0 ft BGS. Cuttings from 17.0 ft to
			25.3 ft BGS returned in a dusky yellowish-green (10GY 3/2) to a
			light olive gray (5Y 5/2) slurry. Observed a dark substance on the
			cuttings at 23.5 ft BGS, have observed a similar phenomenon that
			the drillers refer to as shale fines. BZA=0.0 ppm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1038
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-12-93	1128	1136	Auger refusal at 25.3 ft BGS (0.7 ft short of the reported well
(cont.)			depth). Remove auger bell, and attempt to pull casing. Extract
			26.3 ft of 6.5-in. OD PVC well casing. Along with the cut-off stick-
			up section, a total of 28.3 ft of casing is recovered.
	1136	1145	Begin tripping augers out of the borehole. Remove one auger
			flight.
	1145	1305	Break for lunch.
	1305	1331	Return to 1038 site. Continue tripping out augers.
	1331	1345	All auger flights out of the borehole, tag the bottom at 21.5 ft BGS
			(3.8 ft of fill). Calculate a borehole volume to 4.0 ft BGS of 13.7
			cubic ft=0.5 cubic yds, or equivalent to 10.1 sacks of 2%
			bentonite-cement grout. Pull out protective posts. Clean up,
			secure site, and depart.
5-13-93	1430	1518	Arrive at 1038 site. Run 2, 10.0-ft sections of 1.5-in. OD PVC
			tremie pipe into the borehole to 19.0 ft BGS. Fill front bucket of
			backhoe with cement from cement truck and tremie into bore-
			hole. Circulate water.
	1518	1520	Circulate 100% cement. Pull out tremie pipe. Clean up, secure
			site, and depart.
5-14-93	0900	0905	At 1038 site. Tag cement level at 2.7 ft BGS. Borehole is ready
			to be capped.
			Borehole is capped with clay soil on 5-14-93.
			P&A of 1038 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1040

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Burial Grounds

DRILLERS: Steve Brown - Highland Drilling Co.

HELPERS: Greg Shillings/Greg Anderson - Highland

DRILL: Ford 555 B Backhoe with McMillan Diggerhead auger motor

DATE: START: 5-10-93

FINISH: 5-17-93

METHOD: C

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-10-93	1311	1314	Arrive at 1040 site. Preliminary radiological scan of the 1040 site
			showed elevated readings (background of 80 cpm). One backhoe
			bucket of gravel has been spread around well head for shielding.
			Casing stick-up = 0.9 ft. Water level is approximately 10 ft below
			ground surface (BGS). Tag bottom of well at 22.2 ft BGS. Rig up
			an 8.0-in. inside diameter (ID), 12.0-in. outside diameter (OD) lead
			hollow-stem auger flight with a 13.0-in. diameter cutterhead; total
			length = 5.3 ft.
	1314	1426	Commence augering. Additional auger flights added sequentially
			at the end of each 5.0-ft interval. Auger from 0.0 ft to 23.0 ft BGS.
			Cuttings from 0.0 ft to 6.0 ft BGS consist of grayish-brown
			(5YR 3/2) to dark yellowish-brown (10YR 4/2), moist, clayey soil
			containing fragments of undifferentiated gravel, and weathered
			shale. Augering becoming difficult at 11.0 ft BGS. Additional
			moisture encountered at 12.0 ft BGS as cuttings begin to ball up.
			Cuttings from 6.0 ft to 12.0 ft BGS are the same as the 0.0 to 6.0 ft
			interval with increasing amount of weathered shale. Encountered
			water at 14.3 ft BGS, and again at 16.0 ft BGS. Cuttings from
			12.0 ft to 23.0 ft BGS consist of pale brown (5YR 5/2), thinly
			laminated, weathered shale fragments in a moderate yellowish-
			brown (10YR 5/4) clayey slurry.
	1426	1451	Auger refusal at 23.0 ft BGS. Trip augers out of the borehole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1040
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-10-93	1451	1455	All augers out of the ground. Casing came out of the borehole with
(cont.)			tools, but came loose and dropped back into the hole.
	1455	1500	Extract 16.5 ft of PVC well casing by hand (includes 0.9 ft of casing
			stickup). The remaining 5.6 ft of casing stays at the bottom of the
			borehole (the casing had broken). Tag the bottom of the borehole
			at 21.5 ft BGS (1.5 ft of fill). Calculate a borehole volume to 4.0 ft
			BGS of 13.7 cubic ft, equivalent to 10.1 sacks of 2% bentonite-
			cement grout.
	1500	1503	Pull out protective posts. Clean up, secure site, and depart.
5-13-93	1422	1426	Arrive at 1040 site. Run 2, 10.0-ft sections of 1.5-in. OD PVC
			tremie pipe into borehole to 19.0 ft BGS. Plan to fill front bucket
			of backhoe with cement from truck and tremie borehole.
	1426	1430	Tremie the equivalent of approximately 1 sack (1.4 cubic ft) of 2%
			bentonite-cement grout into borehole. Losing too much cement
			out of the backhoe bucket in transit. Will have to mix cement by
			hand. Pull out tremie pipe. Clean up, secure site, and depart.
5-14-93	0905	0911	At 1040 site. Tag cement level at 18.5 ft BGS. Calculate a
			borehole volume to 4.0 ft BGS of 11.3 cubic ft, equivalent to
			8.3 sacks of 2% bentonite-cement grout. Run 2 10.0-ft sections of
			1.5-in. OD PVC tremie pipe into borehole to 18.0 ft BGS.
	0911	0940	Mix and gravity tremie 8 sacks (10.9 cubic ft) of 2% bentonite-
			cement grout into borehole. Run out of water.
	0940	0953	Crew goes to get more water.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1040
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-14-93	0953	1010	Crew returns. Pull out 1 section of tremie pipe. Mix and gravity
(cont.)			tremie an additional 2 sacks (2.7 cubic ft) of 2% bentonite-cement
			grout into the borehole.
	1010	1016	Crew goes to get more cement.
	1016	1025	Crew returns. Mix and tremie an additional 2 sacks (2.7 cubic ft)
			of 2% bentonite-cement grout into the borehole. Used a total of
			12 sacks (16.3 cubic ft) of cement. Circulate 100% cement.
	1025	1030	Pull out tremie pipe. Cleanup, secure site, and depart.
5-17-93	0900	0930	Cured cement level at approximately 2.5 ft BGS. Borehole is
			capped with clay soil.
			P&A of 1040 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1041

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 3

LOCATION: Bear Creek Burial Grounds

DRILLERS: Steve Brown - Highland Drilling Co.

HELPERS: Greg Shillings/Jim Gallaher - Highland

DRILL: Ford 555B Backhoe with McMillan Diggerhead

DATE: START: 5-6-93

FINISH: 5-17-93

METHOD: C

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-6-93	0840	0908	Arrive at 1041 site. Crew onsite attaching McMillan Diggerhead auger motor to backhoe boom. Casing stickup = 3.5 ft. Water level at 10.2 ft below ground surface (BGS). Tag well bottom at 29.6 ft BGS.
	0908	0915	Cut off casing stickup flush with ground surface. Rig up lead auger flight; 8.0-in. inside diameter (ID) hollow-stem auger, 13.0-in. outside diameter (OD) cutting picks, length = 5.3 ft.
	0915	0932	G. Shillings (Highland) departs to get tools that they do not have.
	0932	1124	Commence augering. Additional auger flights added sequentially at the end of each 5.0-ft interval. Auger from 0.0 ft to 30.0 ft BGS. Cuttings from 0.0 ft to 6.0 ft BGS consist of light brown (5YR 5/6), moist, clayey soil with fragments of undifferentiated gravel. Cuttings from 6.0 ft to 16.8 ft BGS consist of moderate yellowish-brown (10YR 5/4) to dark yellowish-orange (10YR 6/6), moist to wet, clayey subsoil with fragments of light olive gray (5Y 5/2), weathered, thinly laminated shale. Encounter water at 10.5 ft BGS (cuttings balling up). Water flowing out of borehole at 16.8 ft BGS. Cuttings becoming fewer. Cuttings from 16.8 ft to 30.0 ft BGS consist of dark yellowish-orange (10YR 6/6), wet, clayey subsoil with weathered shale fragments as above. Augering becoming difficult at 28.5 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1041
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-6-93	1124	1130	Auger refusal at 30.0 ft BGS. Remove auger bell. Attempt to pull
(cont.)			out casing by hand - unable to.
	1130	1250	Crew breaks for lunch, oversight departs.
	1250	1258	Return to 1041 site. Attempt to pull casing with ratchet clamp and
			chain. Clamp is tearing up casing.
	1258	1323	Trip augers out of the borehole.
	1323	1340	Pull out a total of 33.9 ft of 6.5-in. OD PVC casing (0.8 ft more than
			reported casing plus stickup). Bottom of the well may have been
			at 30.4 ft BGS. Tag bottom of the borehole at 28.5 ft BGS (1.5 ft of
			fill). Calculate a borehole volume to 4.0 ft BGS (using a borehole
			diameter of 12.0-in.) of 19.2 cubic ft = 0.7 cubic yds.
	1340	1345	Pull out protective posts. Clean up, secure site, and depart.
5-7-93	1145	1156	Arrive at 1041 site with cement truck. Run 2, 10.0-ft sections of
			1.5-in. OD PVC tremie pipe into the borehole to 19.0 ft BGS.
	1156	1211	Gravity tremie neat Type I Portland cement into the borehole.
			Circulate 100% cement.
	1211	1216	Pull out tremie pipe. Clean up, secure site, and depart.
5-10-93	0803	0809	Arrive at 1041 site. Tag cement level at 4.9 ft BGS. Calculate a
			borehole volume to 4.0 ft BGS of 0.6 cubic ft, equivalent to
			0.4 sacks of 2% bentonite-cement grout. Depart site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1041
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-11-93	1344	1402	At 1041 site. Mix and pour 1 sack (1.4 cubic ft) of 2% bentonite-
			cement grout into the borehole. Fill to approximately 3 ft BGS.
			Depart.
5-12-93	1236	1240	At 1041 site. Tag cement level at 3.3 ft BGS. Borehole is ready
			to be capped. Depart site.
5-17-93	0930	1000	Borehole 1041 is capped with clay soil.
			P&A of 1041 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1043

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 3

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

FOREMAN: Greg Shillings - Highland Drilling

HELPERS: Paul McCormick/James Gallaher - Highland

DRILL: Ford 555 Backhoe

DATE: START: 2-9-93

FINISH: 2-12-93

METHOD: B

LOGGED BY: T.J. Coffey/T.J. Long - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-9-93	1404	1415	Arrive at 1043 site. This well has a float type of continuous water
			level recording device attached to the wellhead. Remove device.
			Well is open, scan for organic vapors anyway: 0.0 ppm. Scan
			wellsite with rad meters: beta & gamma = 60 cpm, alpha = 0 cpm.
			Measure water level at 29.5 ft below top of casing (BTOC) =
			27.1 ft below ground surface (BGS). Tag bottom of well at 154.2 ft
			BTOC = 151.8 ft BGS. Note: the Subsurface Database reports
			the total depth (TD) of 1043 to be 150.0 ft. Calculate a well volume
			to 4 ft BGS of 29.0 cubic ft, equivalent to 42.0 sacks of Hole
			Plug™.
	1415	1432	Slowly pour 21 sacks (14.5 cubic ft) of Hole Plug™ into 1043 well
			casing. Organic vapor scan at well collar detects 1.6 ppm while
			pouring Hole Plug™ into well casing.
	1432	1436	Tag Hole Plug™ level at 84.1 ft BTOC = 81.7 ft BGS.
2-10-93	1003	1030	Arrive at 1043 site. Tag hydrated Hole Plug™ level at 79.8 ft BGS
			(Hole Plug™ swelled 1.9 ft). Scan wellsite with rad meters: alpha
			= 0 cpm, beta & gamma = 50 cpm. Calculate a well volume to 4 ft
			BGS of 14.9 cubic ft, equivalent to 10.9 sacks of 2% bentonite-
			cement grout.
	1320	1330	Return to 1043 site. Run 7, 10 ft joints of 1.5-in. outside diameter
			(OD) PVC tremie pipe into well to 67.0 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1043
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-10-93	1330	1405	Mix and gravity tremie 5 sacks (6.8 cubic ft) of 2% bentonite-
(cont.)			cement grout (first batch) into well. Continue to scan wellsite: beta
			& gamma = 70 cpm, alpha = 0 cpm. Remove one, 10 ft section of
			tremie pipe.
	1405	1450	Mix and gravity tremie an additional 5 sacks (6.8 cubic ft) of 2%
			bentonite-cement grout into the well. No water circulation. Water
			level was observed to rise while cement was running, then fell
			when cement stopped. Water appeared at ground surface outside
			of well casing (weep hole?) during tremie of last sack of cement.
	1450	1459	Remove tremie pipe and clean up.
2-11-93	1300	1310	Tag cement level in well at 21.3 ft BGS. Calculate a well volume
			to 4 ft BGS of 3.4 ft, equivalent to 2.5 sacks of 2% bentonite-
			cement grout.
2-12-93	1000	1038	Arrive at well 1043 site. Using backhoe, excavate a pit around the
			well. While excavating, the top 3.5 ft of well casing simply fell off
			- it had not been threaded securely to the last piece of casing (the
			lack of water circulation out of the well collar during grouting
			operations was the result of water escaping from this poorly
			secured casing joint). Pull out 3 protective posts with excessive
			concrete anchors. Screening soil and excavation: organic vapors
			= less than 1.0 ppm, alpha = 0 cpm, beta & gamma = 90 cpm (a
			small area of soil at about 1.5 ft BGS read a maximum of 900 cpm).
	1038	1040	Tag level inside well casing at 8.0 ft BTOC or 9.1 ft BGS (apparently
			mud and soil dropped into the well during excavation of the pit).
			Beta & gamma scan of excavation = 100 cpm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1043
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-12-93	1040	1100	Mix and pour 2 sacks (2 cubic ft) of 2% bentonite-cement grout into
(cont.)			the well. Fill to the top of the casing (1.1 ft BGS).
	1100	1113	Push posts (3), well casing piece, and cement fragments into pit
			and fill in excavation. Capping well with less than 24 hrs grout cure
			time approved by S. Jones (HSEA).
	1113	1118	Dress up site with tractor's loading bucket. Scan ground surface:
			organic vapors = 0.0 ppm, beta & gamma = 90 cpm, and alpha =
			0 cpm. Beta & gamma 900 cpm "hot spot" buried under cement
			and clean soil.
			P&A of well 1043 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1048

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Oil Landfarm Functional Area

DRILLERS: H. Hall - Highland Drilling Co.

HELPERS: R. Phillips, G. Anderson - Highland

DRILL: Ingersoll-Rand XL 750 Drillmaster

DATE: START: 5/12/93

FINISH: 5/25/93

METHOD: B

LOGGED BY: D. Hollon (SAIC), V. Harness (SAIC)

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5/12/93	0739	0800	Arrive on site. Scan drill site with radiation meters. Beta/gamma scan reads 50 to 80 cpm; background reads 50 cpm. Alpha scan of the site reads 0 cpm; background reads 0 cpm. Measure bit and stabilizer rod to be 4.6 ft in length.
	0800	0847	Crew: H. Hall and R. Phillips on site. S. Jones (HSEA) present to inspect the site. States that the crew has permission to use Quick Foam™ as needed, and that there is no need for a pit. Steve Jones leaves the site. Bottom of the hole tagged at 99.6 ft below ground surface (BGS). Table height is 3.1 ft. Will be using a 10 5/8-in. outer diameter (OD) tricone bit to ream a 6.5 -in. OD PVC casing in a 7.5-in. OD hole.
	0847	0900	Commence drilling. Water level is at 9.0 ft BGS. HNu survey of the breathing zone reads 0.2 ppm from 1.5 ft to 11.5 ft BGS.
	0900	0906	Drill to 26.5 ft BGS and make connection. Beta/gamma scan of the cuttings from 1.5 to 11.5 ft BGS and 11.5 to 20 ft BGS reads 50 to 60 cpm. Alpha scan reads 0 cpm. Weathered, moderate yellowish brown to light brown (10YR 5/4 - 5YR 5/6) shale and light brown soil. PVC cuttings present.
	0906	0910	Top of fresh bedrock at 30.5 ft BGS. HNu survey of the breathing zone reads 0.2 ppm. Drillhole is producing approximately 20 gallons per minute of water. Noticed intermittent sheen on the return water.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1048
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
05/12/93	0910	0919	HNu survey of the breathing zone at 36.5 ft BGS reads 0.2 ppm.
(cont.)			Small void system from 43.5 ft to 45.5 ft BGS. Made connection
			at 51.5 ft BGS. Lithology: 26.5 ft to 30.5 ft BGS is weathered
			shale, medium gray to dark greenish gray (N5-5GY 4/1). 30.5 ft
			to 51.5 ft BGS is unweathered shale, dark greenish gray, greenish
			black, and medium bluish gray (5G 4/1, 5GY 2/1, 5B 5/1), friable
			and fissile with minor staining on the cuttings and fractures. Minor
			PVC fragments present.
	0919	0957	H. Hall believes that Quick Foam™ is needed to clean out the
			cuttings from the hole. Stopped drilling operations to have
			R. Phillips to go and get the Quick Foam™ at the pipeyard.
			Beta/gamma scan of the cuttings from 20 ft to 51.5 ft BGS reads
			50 to 90 cpm. Alpha scan reads 0 cpm.
	0957	1007	Asked S. Jones what needs to be done about the observance of
			an intermittent sheen on the return water. Was told to monitor for
			Health and Safety parameters and continue drilling.
	1007	1018	Quick Foam™ added to drilling water. H. Hall cleans out the
			borehole. Hole is producing 20 to 30 gallons per minute when
			using the compressed air from the drill rig.
	1018	1021	Hole cleaned out to 51.5 ft BGS.
	1021	1039	Resume drilling. HNu survey of the breathing zone at 56 ft BGS
			is 1 ppm. The alcohol from the Quick Foam™ can easily be
			detected. Hard drilling zone at 66.5 ft BGS. HNu survey of the
			breathing zone reads 0.4 ppm at 70 ft BGS. Connection made at
			76.5 ft BGS. Cuttings from 51.5 ft to 76.5 ft BGS reads 50 to
			90 cpm; background reads 50 cpm. Alpha scan reads 0 cpm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1048
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
05/12/93	1039	1047	Connection made and drilling resumes. Hard drilling zone at
(cont.)			79.5 ft BGS. HNu survey from 81 ft to 88 ft BGS reads 0.2 to
			0.4 ppm.
	1047	1051	HNu survey of the breathing zone from 90 ft to 96 ft BGS reads
			0.8 ppm. Drilling ends at 101.5 ft BGS; 1.5 ft below the original well
			depth of 100 ft BGS. Beta/gamma scan of the cuttings from 76 ft
			to 101.5 ft BGS reads 50 to 90 cpm. Alpha scan reads 0 to 10 cpm.
			Lithology: Shale, greenish black to dark greenish gray to bluish
			gray (5G 4/1-5GY 2/1-5B 5/1). Pelmicrite and intramicrite interbeds,
			medium gray to medium dark gray (N5-N4). Weathering and
			fractures present on some cuttings. Very minor amounts of PVC.
	1051	1110	Clean out the borehole. Driller reported approximately 6 ft of fill
			was in the hole after letting the hole sit for a few minutes without
			circulating. Says that the hole is as clean as it is ever going to be.
	1110	1115	Pulling the tools out of the hole.
	1115	1248	Hydraulic line to the rig breaks, operations stop. Absorbent spill
			pads used to contain spilled fluid on drill rig and ground surface.
			Crew assesses the impact of the broken hose. R. Phillips does not
			believe that plugging and abandoning operations can be
			completed today. HNu survey of the headspace is 0.2 ppm. The
			pH of the water reads 7.5. Will tag the bottom of the hole tomorrow
			to see how much fill has accumulated into it. Plans are made for
			cement to be on the site in the morning. Depart the site.
5/13/93	0816	0828	Arrive at 1048. H. Hall on the site. R. Phillips and G. Anderson
			arrive on the site at 0825 hr. The rig is repaired and the crew plans
			to tag the top of the fill and then determine if the hole needs to be
			cleaned out further or if grouting operations can begin.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1048
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5/13/93	0828	0830	Rig is started and the crew begins lowering the drill rods into the
(cont.)			borehole.
	0830	0857	Crew can not get the drill rod to unthread from the drilling head.
			The crew breaks a 16-in. pipe-wrench before deciding to get a
			burning permit to heat up the drill rods and help them to break the
			connection. R. Phillips leaves to get a burning permit.
	0857	0941	R. Phillips returns with a burning permit and the crew begins to
			unseize the connection. Connection between the drilling head
			and the drill rod was finally broken at 0925 hr. Crew trips into the
			borehole to 97.3 ft BGS, where the bit stops at the top of fill.
	0941	0946	Called T. Coffey (SAIC) to inquire if the amount of fill in the hole
			(4.2 ft) was suitable so that grouting operations could begin.
			Explained to him that additional cleaning of the hole would
			probably cause an increase of washout in the hole due to the soft
			shale. He agreed and stated for crew to begin grouting operations.
	0946	1123	Crew rigs down and moves the water truck and drill rig from the
			site. R. Phillips (Highland) orders 2.5 cubic yards of cement for
			the hole. Calculation 2.3 cubic yards of cement required to fill
			borehole to 4 ft BGS. H. Hall and G. Anderson install 1.5-in. OD
			PVC tremie pipe to 89.5 ft BGS.
	1123	1206	Cement truck arrives. Gravity tremie cement into borehole.
			Water circulation attained throughout.
	1206	1230	Tremie pipe removed. Secure site and depart.
5/14/93	0805	0828	Arrive at 1048. Tag top of cement at 22.4 ft BGS. Calculate a
			borehole volume to 4.0 ft BGS of 11.4 cubic ft = 0.4 cubic yds.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1048
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
05/21/93	1003	1100	Pour 0.5 cubic yard of cement into borehole.
5/24/93	0947	0950	Tag cement level at 6.6 ft BGS.
	1300	1400	G. Shillings mixes two sacks (2.7 cubic ft) of 2% bentonite-
			cement grout and pours into borehole.
05/25/93	0904	1000	Tag top of cement at 2.5 ft BGS. G. Shillings and S. Brown
			(Highland) cap borehole with clay soil.
			P&A of 1048 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1049

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Burial Grounds

DRILLERS: H. Hall - Highland Drilling Co.

HELPERS: G. Anderson - Highland Drilling Co.

DRILL: Ingersoll-Rand XL 750 Drillmaster

DATE: START: 5/14/93

FINISH: 5/21/93

METHOD: C

LOGGED BY: D. Hollon - SAIC, T. Coffey - SAIC, V. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5/14/93	0828	0847	Arrive at 1049. Drill rig positioned over the well. H. Hall and
			G. Anderson (both of Highland) are on the site and getting the rig
			ready to drill.
	0847	0850	Measure the bottom of the hole to be at 16.5 ft below ground
			surface (BGS); water level approximately 7 ft BGS. Will be using
			a 10 5/8-in. outer diameter (OD) tricone bit to ream a 6.5 -in. OD
			PVC casing in a 7.5-in. OD hole; total length = 4.6 ft.
	0850	0852	Table height = 2.3 ft. Reaming operations begin.
	0852	0855	HNu survey of the breathing zone reads 0.2 ppm at approximately
			2.3 ft above the ground surface.
	0855	0903	Drilling connection made. Water at 6.0 ft BGS. Drilled to 22.3 ft
			BGS. Possible cavities at approximately 14 ft to 18 ft BGS (the bit
			dropped faster than expected through this interval). Drilling rate
			decreased (hard rock) at about 22 ft BGS. HNu survey of the
			breathing zone reads 0.0 ppm. Lithology 0 ft to 7.3 ft BGS: Reddish
			brown soil. Weathered, friable and fissle shale, pale brown
			(5YR 5/2), grout and PVC fragments.
	0903	0959	Driller cleans out the hole. Trip out, rig down stabilizer. Move the
			rig offsite. Beta and gamma scan of the drill cuttings reads 50 to
			90 cpm; background reads 50 cpm. Alpha scan reads 0 cpm.
			Lithology 7.3 ft to 22.3 ft BGS: Weathered shale, grayish olive

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1049
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5/14/93			green to dusky brown (5GY 3/2 - 5YR 2/2). White (N9) quartz
(cont.)			sandpack and PVC fragments present.
	0959	1020	The pH of the cuttings composite reads 9.9. The HNu survey of the
			headspace reads 0.6 ppm. Bottom of hole 20 ft BGS (2.3 ft of fill).
			Calculate a borehole volume to 4.0 ft BGS of 9.9 cubic ft, equivalent
			to 7.2 sacks of 2% bentonite-cement grout. Cement delivery
			scheduled for approximately 1430 hrs. Clean up and depart site.
	1145	1200	Return to 1049 site. Drillers install 2 10.0-ft sections of 1.5-in. OD
			PVC tremie pipe to 19 ft BGS. Depart site.
	1502	1517	T. Coffey (SAIC) assumes technical oversight. Return to 1049 site
			with cement truck. Tremie cement into the borehole. Circulate water.
	1517	1530	Cement truck empty. Circulate approximately 50% cement. Clean-
			up site and pull out tremie pipe. Depart site.
5/17/93	1306	1311	At 1049 site. Tag cement level at 5.5 ft BGS. Calculate a borehole
			volume to 4.0 ft BGS of 0.9 cubic ft, equivalent to 0.7 sacks 2%
			bentonite-cement grout.
5/18/93	1300	1400	V. Harness (SAIC) assumes technical oversight. G. Shillings and
			S. Brown (both of Highland) mix and pour one sack (1.4 cubic ft) of
			2% bentonite-cement grout into the borehole.
5/21/93	0908	0917	Tag cement at 2.9 ft BGS.
	0917	1000	G. Shillings and S. Brown (both of Highland) cap the borehole with
			clay soil.
			P&A of 1049 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1050

Alt. Names:
YGMW-19
OD-03
No. 10

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 4

LOCATION: Oil Landfarm Functional Area

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Steve Brown, Randy Phillips

DRILL: Ingersoll Rand XL-750

DATE: START: 5-17-93

FINISH: 5-25-93

METHOD: C

LOGGED BY: V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-17-93	0808	0822	Technical oversight provided by V.R. Harness (SAIC). Arrive at site, awaiting crew.
	0822	0909	Crew arrives with backhoe, begin excavating cuttings pit. Beta/gamma survey of excavated soil = 60 cpm = background (BCK), alpha = 0 cpm = BCK, Breathing Zone Analysis (BZA) = 0.0 ppm. Casing stickup = 1.85 ft above ground, casing is PCV/#80 6.5-in. OD sewer pipe. Protective posts have no grout to anchor them.
	0909	0938	Cuttings pit is finished at 8 ft long x 6 ft wide x 10 ft deep. Well is in Maynardville Fm and large units of water are expected. At a depth of approximately 9 ft below ground surface (BGS) saprolitic shaly clay becomes greenish gray (5GY 6/1) with indistinct gray (5Y 5/1) mottling to 1 cm diameter.
	0938	0947	Start drilling rig. Rigging up 10 5/8-in. diameter tricone roller bit without stabilizer. Length of bit and subadapters = 4.6 ft.
	0947	0952	Commence drilling stickup. Table height = 2.6 ft. Advance to 2 ft BGS with compressed air only. BZA = 0.0 ppm.
	0952	1005	Add 25 ft of drilling rod to string. Resume drilling and advance to 23 ft BGS using water. Top of fresh rock at 20 ft BGS. Void in weathered rock from 15 to 19 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1050
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-17-93			Description of 0 to 2 ft BGS cuttings:
(cont.)			
			Moist yellowish-brown silty loam with PVC cuttings.
			Description of 2 to 23 ft BGS cuttings:
			80% (by volume) = dark gray (N3), slightly dolomitic limestone to
			dolostone, finely crystalline with no primary textures preserved.
			15% pale yellow (2.5Y 7/4) to light olive brown (2.5Y 5/4) stiff silty
			clay. 5% light olive gray (5Y 5/2) to light olive brown (2.5Y 5/4)
			shale containing visible micaceous component and red (10R 5/8)
			iron oxide staining.
	1005	1038	Drill head begins leaking oil. Rig shut down, spill controls de-
			ployed.
	1038	1118	Crew changes rig head oil.
	1118	1124	Trip back in, encounter water at 18 ft BGS. Head still leaking oil.
			Shut down for lunch and repairs.
	1318	1329	Rig back up and resume drilling at 23 ft BGS.
	1329	1334	Advance to 27 ft BGS. Void from 25 ft to 26.5 ft BGS. Clean bore,
			add 25 ft of drilling rod and resume drilling.
	1334	1422	Receive permission to use minimal amount of Quick Foam™ to
			facilitate drilling from Bruce McMaster (HSE representative). Ad-
			vance to 52 ft BGS. Mud filled voids from 30 to 32 ft BGS, voids
			from 37 to 37.5 ft BGS, and 39 to 40 ft BGS. Drilling becoming hard
			at 43 ft BGS. Head begins leaking slightly again at 49.5.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1050
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-17-93			Description of 23 to 45 ft BGS cuttings:
(cont.)			
			50% (by volume) of sample is dark gray (N3) finely crystalline
			dolomitic limestone which has been largely silicified. 25% of sample
			is dark yellowish-brown (10YR 4/2) to moderate brown (5YR 3/4)
			finely crystalline dolomitic limestone with blebs and surfaces of fine
			subhedrial quartz. 25% of sample is light olive gray shale similar to
			0 to 23 ft interval.
	1422	1437	Crew attempts to control leak and continue drilling so that repairs
			can be moved off site. Advanced to 65 ft BGS after adding 25 ft drill
			rod.
	1437	1520	At 65 ft BGS. Unable to contain leak. Shut down rig for repairs. 45
			to 65 ft sample similar to 23 to 45 ft sample. Secure site and depart.
			Highland will contact SAIC when rotation motor has been replaced.
5-18-93	1402	1409	Receive notification from Highland Drilling. Arrive at site.
	1409	1416	Rig on, trip back into hole.
	1416	1514	Resume drilling at 65 ft BGS. Advance to 90 ft BGS (target depth)
			wash out bore, trip out. Cuttings are a continuation of the 45 to 65 ft
			interval.
	1514	1553	Mobilize rig offsite. Crew inserts 80 ft of 1.5-in. OD PVC tremie pipe
			to 77 ft BGS. Secure site and depart.
5-19-93	0858	0905	Tag bore around tremie line at 80 ft BGS. Bore has large pieces of
			PVC casing coming loose from sides providing partial obstruction.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1050
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-19-93	1145	1215	Grout delivery at well. Tremie 2 cubic yds into bore with grout not
(cont.)			visible at surface. Secure site and depart.
5-20-93	0848	0850	Grout tagged at 36.2 ft BGS. Depth verified by 3 separate measure-
			ments. All voids observed during drilling were above 37.5 ft BGS.
			Received permission from Steve Jones (HSE) to use Hole Plug™
			bentonite to plug hole from 36.2 to 15 ft BGS where all voids were
			located. Depart.
	1020	1032	Poured 21, 50-lb sacks of 3/8-in. diameter Shur-Plug™ bentonite.
			Top of unhydrated bentonite tagged with tremie pipe at approxi-
			mately 16 ft BGS. Lost 20 ft of fiberglass tape and stainless steel
			weight in well at 26 ft BGS. Hydrate bentonite with 50 gals. of
			potable water. Depart.
5-21-93	0917	0934	Tag top of hydrated bentonite at 15.3 ft BGS. Depart.
	1000	1030	Grout delivered to well and poured. 0.5 cubic yd. fills bore to
			surface. Depart.
5-24-93	0943	0947	Tag grout at 4.6 ft BGS. Depart.
	1300	1400	Crew mixes and pours 1 sack of neat grout into well. Depart.
5-25-93	0914	0919	Tag grout at 2.2 ft BGS. Depart.
	0925	0930	Cuttings pit filled and bore capped with clay. Depart.
			P&A of 1050 complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1051

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 3

LOCATION: Oil Land Farm Functional Area

DRILLERS: H. Hall - Highland Drilling Co.

HELPERS: G. Anderson - Highland Drilling Co.

DRILL: Ingersoll-Rand XL 750 Drillmaster

DATE: START: 5/14/93

FINISH: 5/21/93

METHOD: C

LOGGED BY: D. Hollon, T. Coffey, V. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5/14/93	1020	1047	Drill rig moved onto the 1051 site. Crew prepares the rig to drill.
			Measured the bottom of the hole at 25.0 ft below ground surface
			(BGS), obvious sediment accumulation. Subsurface Data Base
			(Y/TS-881) reports the well TD of 28.0 ft BGS.
	1047	1048	Rig is leveled up, the bottom hole assembly consisting of a bit on
			a subadapter (total length = 4.6 ft) is attached to the drilling head,
			and the table height is 3.1 ft. Will be using a 10 5/8-in. outside
			diameter (OD) tricone bit to ream 6.5 -in. OD PVC casing in a
			7.5-in. diameter hole.
	1048	1104	Drilling commences. Drill from 0.0 ft to 26.5 ft BGS. HNu surveys
			of the breathing zone read 0.4 ppm from 7 ft to 10 ft BGS; 0.4 ppm
			from 15 ft to 20 ft BGS; 0.4 ppm from 20 ft to 26 ft BGS. Beta/
			gamma scan of the cuttings from 0 ft to 20.5 ft BGS reads 50 cpm;
			background reads 30 cpm. Lithology: 0 ft to 1.5 ft BGS is reddish
			brown clay; 1.5 ft to 11.5 ft BGS is weathered grayish brown to
			greenish gray (5YR 3/2 - 5 GY 6/1) shale, bentonite, and PVC;
			11.5 ft to 20.5 ft BGS is weathered grayish brown to greenish gray
			(5YR 3/2 - 5 GY 6/1) shale, and PVC fragments.
	1104	1107	Connection made. Drilled to 29.5 ft BGS. Top of unweathered
			rock at 29.0 ft BGS. HNu survey of the breathing zone reads
			0.4 ppm. The drill hole is producing approximately 25 to 30 gallons
			of water per minute when using the compressed air from the drill
			rig. Lithology: Weathered, friable, fissile grayish brown, dusky

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1051
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
05/14/93			brown and dusky green (5YR 3/2, 5YR 2/2, 5G 3/2) shale,
(cont'd)			medium gray (N5) micrite, and PVC. No grout or sand pack
			encountered in the drillhole.
	1107	1131	Driller cleans the hole. Trip out, rig down bit and stabilizer. Rig
			is moved offsite. Beta/gamma scan of the cuttings from 20.5 ft to
			29.5 ft BGS reads 60 cpm; background reads 50 cpm. Alpha scan
			of the cuttings from 0 to 29.5 ft BGS reads 0 to 10 cpm.
	1131	1145	R. Phillips (Highland) notices that the hole has collapsed at the
			top. Install 30 ft of 1.5-in. OD PVC tremie pipe to 25 ft BGS.
	1145	1234	HNu survey of the composite headspace analysis reads 0.4 ppm.
	1346	1415	Arrive at Biology Building to perform pH test on the cuttings. The
			pH of the cuttings from well 1051 is 5.3.
	1415	1457	T. Coffey (SAIC) assumes technical oversight. Calculate a
			borehole volume to 4.0 ft BGS of 12.9 cubic ft, equivalent to
			9.5 sacks of 2% bentonite-cement grout. Cement truck arrives
			onsite. Tremie cement into the borehole. Circulate muddy water.
	1457	1502	Circulate 100% cement. Pull out tremie pipe. Clean-up, secure
			site, and depart.
5/17/93	1303	1306	At 1051 site. Tag cement level at 4.8 ft BGS. Calculate a borehole
			volume to 4.0 ft BGS of 0.5 cubic ft, equivalent to 0.4 sacks of 2%
			bentonite-cement grout.
5/18/93	1300	1400	V. Harness (SAIC) providing technical oversight. G. Shillings and
			S. Brown (both of Highland) mix and pour one sack (1.4 cubic ft)
			of 2% bentonite-cement grout into the borehole.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1051
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5/21/93	0910	0917	Tag cement level at 2.3 ft BGS.
	0917	1000	Borehole capped with clay soil.
			P&A of 1051 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1052

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 2

LOCATION: Oil Landfarm Functional Area

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Randy Phillips, Greg Anderson

DRILL: Ingersoll Rand XL-750

DATE: START: 5-19-93

FINISH: 5-25-93

METHOD: C

LOGGED BY: V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-19-93	0844	0858	Technical oversight supplied by V.R. Harness (SAIC). Arrive at site. Rig is positioned over well after protective casings are pulled up. No concrete anchors on protective posts. Tag depth of well at 21.9 ft below top of casing or 20.8 feet below ground surface (BGS). Stickup = 1.1 ft of PVC/#80 casing 6.5-in. outside diameter (OD).
	0858	0942	No ID tag on well. Bruce McMaster (HSE representative) verified well identification. Setting up to drill. Rigging up 10 5/8-in. diameter tricone rotary bit without stabilizer. Bit & subadapter length = 4.6 ft. Background (BCK) screening parameters: alpha = 0 cpm, beta/gamma = 60 cpm, organic vapors = 0 ppm.
	0942	0954	Begin drilling with compressed air only. Table height = 2.4 ft. Water level in well is at ground surface. Advance to 23 ft BGS. Clean out hole using water and trip out. Top of weathered rock = 14 ft BGS.
	0954	1022	Highland orders grout delivery for 1100 hours.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1052
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-19-93			Description of 0 to 23 ft cuttings:
(cont.)			
			90% (by volume) is silty shale to shaly siltstone. Silty shale
			coloration ranges from light olive gray (5Y 5/2) to dark gray
			(5Y 4/1). Shaly siltstone coloration ranges from olive (5Y 5/3) to
			olive gray (5Y 4/2) with some strong brown (7.5YR 5/8) iron oxide
			staining. 10% of sample is comprised of large PVC cuttings and
			some stiff, silty clay ranging from white (5Y 8/2) or pale yellow
			(5Y 8/3) to reddish yellow (7.5YR 7/8).
	1022	1131	Awaiting grout delivery.
	1131	1140	Grout arrives. 1 cubic yd of neat, Type I Portland cement poured
			into 1052 bore. Circulate grout. Secure site and depart.
5-20-93	0850	0852	Tag cement at 13 ft BGS. Depart site.
5-21-93	1130	1200	Crew pours 0.25 cubic yds into bore. Secure site and depart.
5-24-93	0941	0943	Tag cement at 5 ft BGS, depart.
	1300	1400	Crew mixes and pours 1 sack of cement into 1052, secures site
			and departs.
5-25-93	0910	0919	Tag cement at 2.7 ft BGS, depart.
	0925	1000	Crew caps 1052 with clay soil.
			P&A of 1052 complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1071

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Burial Grounds

DRILLERS: Steve Brown - Highland Drilling Co.

HELPERS: Greg Shillings/Greg Anderson - Highland

DRILL: Ford 555B Backhoe with McMillan Diggerhead

DATE: START: 5-12-93

FINISH: 5-14-93

METHOD: C

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-12-93	1351	1400	Arrive at 1071 site. Scan of location with beta & gamma meter
			indicates background to be 150 cpm. Position backhoe over well.
			Casing stick-up=2.3 ft. Water level is at approximately 7.0 ft
			below ground surface (BGS). Rig up the 8.0-in. inside diameter
			(ID), 12.0-in. outside diameter (OD) initial hollow-stem auger
			flight with 13.0-in. diameter cutterhead; total length=5.3 ft. Cut
			off 1.4 ft of casing stick-up.
	1400	1404	Commence augering. Auger from 0.0 ft to 5.0 ft BGS. Cuttings
			consist of moderate brown (5YR 4/4), moist, clayey soil with
			weathered shale fragments. Begin to see PVC fragments at 5.0
			ft BGS.
	1404	1417	At 5.0 ft. BGS. Pull out initial auger flight, section of casing
			jammed in end of flight. Remove 3.2 ft. of 6.5-in. OD PVC casing
			from auger. Trip back into borehole. Add auger flight.
	1417	1545	Resume augering. Additional auger flights added sequentially at
			the end of each 5.0-ft interval. Auger from 5.0 ft to 22.0 ft BGS.
			Hard augering at 6.0 ft BGS (suspect that cutterhead is breaking
			up the well casing). Encounter a small amount of water at 8.0 ft
			BGS as cuttings begin to ball up. Observe a sewage-like odor at
			approximately 9.0 ft BGS, breathing zone analysis (BZA)=0.0
			ppm. Cuttings from 5.0 ft to 10.0 ft BGS are the same as the 0.0
			to 5.0 ft interval. No cuttings returned from 10.0 ft to 12.5 ft BGS.
			Cuttings sporadic to end of boring. Cuttings from 12.5 ft BGS to

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1071
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-12-93	1417	1545	end of borehole consist primarily of dark yellowish-orange (10YR
(cont.)			6/6) to moderate yellowish-brown (10YR 5/4), wet, clayey, soil
			(slurry) and weathered shale. Frequently observe sewage odor
			to end of boring, BZA never exceeds 0.5 ppm.
	1545	1604	At 22.0 ft BGS (1.0 ft deeper than well bore). Stop augering. Trip
			augers out of the borehole.
	1604	1610	All auger flights out of the borehole. Tag borehole bottom at 17.0
			ft BGS (5.0 ft of fill). Calculate a borehole volume to 4.0 ft. BGS
			of 10.2 cubic ft=0.4 cubic yds, equivalent to 7.5 sacks of 2%
			bentonite-cement grout. Clean up, secure site, and depart.
5-13-93	1520	1525	At 1071 site. Run 1, 10.0-ft section of 1.5-in. OD PVC tremie pipe
			into borehole to 9.0 ft BGS.
	1525	1609	Fill front bucket of backhoe with cement from cement truck and
			tremie into borehole. Circulate water.
	1609	1631	Circulate 100% cement. Pull out tremie pipe. Clean up, secure
			site, and depart.
5-14-93	0945	0950	At 1071 site. Tag cement level at 1.4 ft BGS. Borehole is ready
			to be capped.
			Borehole is capped with clay soil on 5-14-93.
			P&A of 1071 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1088

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Oil Landfarm Functional Area

DRILLERS: Greg Shillings - Highland Drilling Co.

HELPERS: Steve Brown/James Gallaher - Highland

DRILL: Not Applicable

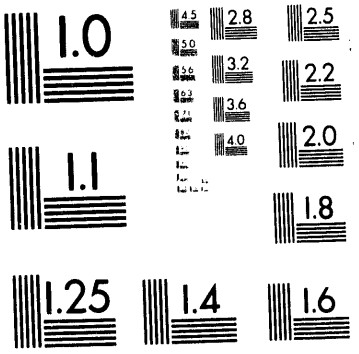
DATE: START: 6-8-93

FINISH: 6-15-93

METHOD: B

LOGGED BY: V. Harness/T. Coffey-SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
6-8-93	0908	0925	Technical oversight by V. Harness (SAIC). Arrive at 1088 site. Well site is such that positioning an air rig over the well is impossible. HSE personnel have directed that plugging and abandonment of the well will consist of: filling/sealing open interval and casing with cement grout, cutting off casing below ground surface (BGS), and capping with clay soil. The protective posts will be cut off flush with the ground surface. Tag bottom of well at 115.4 ft BGS. Note: The subsurface data base (Y/TS-881) reports the total depth of 1088 at 117.7 ft BGS. Calculate a well volume of 9.4 cubic ft, equivalent to 6.9 sacks of 2% bentonite-cement grout.
	0925	0950	Crew arrives. Run 10, 10.0-ft sections of 1.5-in. outside diameter (OD) PVC tremie pipe into the well to 98.0 ft BGS.
	0950	1145	Mix and tremie 7 sacks (8.3 cubic ft) of neat, Type I Portland cement into the well using diaphragm hand pump. Pump pressures up. Crew removes 30 ft of tremie pipe and continues tremie of cement from 68.0 ft BGS. No circulation of cement or water.
	1145	1154	Pull out tremie pipe. Clean up and depart site.
6-11-93	0831	0840	Technical oversight by T. Coffey (SAIC). Arrive at 1088 site. Tag cement level/bottom of well at 124.7 ft BGS. No explanation for well now being 9.3 ft deeper than prior to the commencement of P&A activities. Noted that surface casing is 4.0-in. OD, 3.5-in. inside diameter (ID) not 6.5-in. OD as reported in the subsurface data base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6.3

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Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1088
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
6-11-93	00831	0840	(Y/TS-881). Calculate an open-interval volume to 25.0 ft BGS
(cont.)			(assumed approximate depth of surface casing) at 4.9 cubic ft,
			equivalent to 7.1 sacks of Hole Plug™. Depart site.
6-14-93	0830	0908	Arrive at 1088 site. G. Shillings (Highland) onsite. Slowly pour 6
			sacks (4.1 cubic ft) of Hole Plug™ into the well while continuously
			tamping with a weighted tape to prevent bridging. Fill well to 21.7
			ft BGS. Hole Plug™ to hydrate a minimum of 4 hrs. Depart site.
	1539	1557	Return to 1088 site. Tag hydrated Hole Plug™ level at 21.6 ft (Hole
			Plug™ swelled 0.1 ft). Calculate a casing volume to 4.0 ft BGS of
			0.9 cubic ft, equivalent to 0.6 sack of 2% bentonite-cement grout.
			Wait on crew.
	1557	1600	Crew arrives. Run 2, 10.0-ft sections of 1.5-in. OD PVC tremie
			pipe into the well to 19.0 ft BGS.
	1600	1613	Mix and gravity tremie 1 sack (1.4 cubic ft) of 2% bentonite-cement
			grout. Circulate water, then 100% cement.
	1613	1619	Pull out tremie pipe. Clean up and depart site.
6-15-93	0732	0736	At 1088 site. Tag cement level at 3.2 ft below top of casing =2.6
			ft BGS. Depart site.
	1440	1457	Return to 1088 site with the crew and backhoe. Crew cuts off
			protective posts flush with the ground surface.
	1457	1512	With the backhoe, excavate a pit around the surface casing to a
			depth of approximately 2.5 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1088
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
6-15-93	1512	1523	Cut 2.9 ft from the surface casing and remove from pit. Top of
(cont.)			casing is now 2.3 ft BGS.
	1523	1530	Fill in pit with clay soil, and dress up site with the front bucket of the
			backhoe. Depart site.
			P&A of 1088 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1130
WELL PLUGGING and ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 3

LOCATION: SPAD Landfill Site

DRILLERS: Hubert Hall - Highland Drilling

HELPERS: Scott Gilbert/Steve Brown - Highland Drilling

DRILL: Ingersoll Rand XL-750

DATE: START: 12/2/92

FINISH: 12/15/92

LOGGED BY: Timothy Coffey - SAIC
Michael Klidzejs - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12/2/92	1340	1423	Arrive at 1130 site. Crew working to clear brush and fallen trees
			from around well head. Crew pulls out protective posts (3), and
			removes concrete pad and well head protection.
	1423	1450	Move drill rig onto site, position over well. Begin setting up site.
			Raise mast on drill rig. Measure water level in well at 6.1 ft below
			ground surface (BGS). Tag bottom of well at 24.0 ft BGS.
	1450	1528	Move bit and stabilizer to site and begin rigging up with 10 5/8-in.
			diameter tri-cone bit and stabilizer; length = 9.2 ft. Continue to set
			up drill rig.
	1528	1600	Waiting for steam cleaner.
	1600	1633	Having trouble getting decent stream of water out of steam
			cleaner - nozzle appears to be plugged. Cleaned. Steam clean
			stabilizer and drill rig.
	1633	1655	Winterize drill rig, secure site, and depart.
12/3/92	0905	0930	Arrive at 1130 site, drill crew arrives immediately afterwards.
			Start up drill rig. Finish rigging up bit and stabilizer; table height
			= 3.2 ft. Rig up water system to drill rig.
	0930	0939	Add 1 drill rod to rig carousel.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1130
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12/2/92	0939	1010	Commence reaming with air only. Will mill PVC well casing, and
(cont.)			ream bore to fresh rock in one operation. Ream from 0.0 ft to 6.0 ft
			BGS. Encounter a small amount of water at 2.5 ft BGS (mud
			surging out of bore). Cuttings consist of: Light brown (5 YR 5/6)
			to dusky brown (5 YR 2/2), moist, clayey soil/residuum with pale
			yellowish-orange (10 YR 8/6) residual chert fragments; medium
			gray (N5) cement fragments; white (N9) PVC fragments. Organic
			vapors in breathing zone = 0.2 ppm (jumps to 2.0 ppm at hole collar
			due to alcohol antifreeze use in drill rig).
	1010	1014	At 6.0 ft BGS, add drill rod.
	1014	1025	Continue reaming with air only. Ream from 6.0 ft to 8.5 ft BGS.
			Cuttings this interval consist of: Light brown (5 YR 5/6) to
			moderate brown (5 YR 4/4), moist, clayey soil with pale yellowish-
			orange (10 YR 8/6) to grayish black (N2) residual chert fragments.
			Cement fragments are rare in this interval. Detect a strange odor
			emanating from bore - smells like burning plastic. Organic vapor
			reading at hole collar is jumpy, but reads up to 5.0 ppm. The odor
			comes and goes.
	1025	1051	Trying to get rod bushings into the rig table (the stabilizer may be
			starting to deviate out of the well).
	1051	1107	Continue reaming. Adding water to help circulate cuttings. Ream
			from 8.5 ft to 25.0 ft BGS. Cuttings consist of: Light brown
	1107	1126	(5 YR 5/6) to moderate brown (5 YR 4/4), clayey soil with pale
			yellowish-orange (10 YR 8/6), grayish-black (N2), and moderate
			reddish-brown (10 R 4/6) residual chert fragments.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1130
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12/3/92	1126	1145	At 25.0 ft BGS. Clean out borehole. Trip out and rig down bit and
(cont.)			stabilizer. Tag bottom of bore at 22.5 ft BGS. Calculate hole
			volume of 12.7 cubic ft, equivalent to 10.8 sacks neat cement.
	1145	1206	Lower mast on drill rig. Clean up site.
	1423	1433	Run 2 sections of 1.5-in. outside diameter (OD) PVC tremie pipe
			into the bore, bottom at 18.4 ft BGS. Depart site, move to next
			location.
	1433	1445	Technical oversight by Mike Klidzejs - SAIC. Cement truck
			arrives at 1130 site, begins pouring cement into trough at well
			head.
	1445	1449	Pump cement from trough through tremie pipe into well bore.
			Circulate 50% cement out of the bore.
	1350	1352	Pull out tremie pipe. Clean up and secure site. Depart site.
			Note: Headspace and pH readings exceeding the action levels
			due to alcohol used as anti-freeze in drilling rig and high cement
			content in the cuttings, respectively. Steve Jones (HSEA)
			informed of the readings.
12/4/92	1350	1352	Oversight resumed by Timothy Coffey - SAIC. Tag cement level
			in 1130 at 5.0 ft BGS. Report findings to S. Jones.
12/15/92	1624	1626	Mike Klidzejs - SAIC inspects 1130. Hole filled to ground surface
			with soil.
			P&A of 1130 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1131

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 4

LOCATION: SPAD Landfill Site

DRILLERS: Hubert Hall - Highland Drilling

HELPERS: Steve Brown - Highland Drilling

DRILL: Ingersoll Rand XL-750

DATE: START: 12/3/92

FINISH: 12/15/92

LOGGED BY: Timothy Coffey - SAIC
Michael Klidzejs - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12/3/92	1214	1232	Technical oversight by Timothy Coffey. Arrive at 1131 site. Crew removes pad, posts, and wellhead protection. Crew using backhoe to prepare site for drill rig.
	1232	1337	Wait for steam cleaner.
	1337	1405	Steam clean drill rig and stabilizer. Measure water level in 1131 at 9.8 ft below ground surface (BGS). Tag bottom of well at 27.5 ft BGS (feels like an accumulation of sediment).
	1405	1418	Move drill rig onto site, position rig over 1131 wellhead. Prepare to drill. P&A of 1131 will be in the same manner as well 1130. Removal of well and reaming of bore into fresh material will be done at the same time.
	1418	1423	Rig up with a 10 5/8-in. diameter tricone bit and stabilizer; length = 9.2 ft, table height = 2.6 ft.
	1423	1501	Commence reaming with air only. Ream from 0.0 ft to 6.4 ft BGS. Cuttings from 0.0 to 2.0 ft BGS consist of predominantly medium gray (N5) to dark gray (N3) cement fragments with abundant white (N9) PVC fragments. At 2.0 ft BGS, cuttings are of: moderate yellowish-brown (10 YR 5/4), dry soil continuing with cement and PVC fragments.
	1501	1504	At 6.4 ft BGS, add drill rod.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1131
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12/3/92	1504	1518	Continue reaming with air only. Ream from 6.4 ft to 9.4 ft BGS.
(cont.)			Cuttings in this interval are the same as the 2.0 to 6.4 ft. interval.
	1518	1526	Driller attempts to add water. Unable to push water through the
			drill rig air/water system. Air is leaking around miss-matched plug
			in air tank.
	1526	1552	Shut off drill rig. It is unsafe to continue with incorrect plug in air
			tank. Driller looks for a correct size plug in tool kits. Screen
			cuttings from 0.0 to 9.4 ft BGS.
	1552	1600	Unable to find plug, will stop here for the day. Winterize drill rig.
			Clean up, secure site, and depart. Note: Cuttings sample
			registered a pH reading of 12.1 due to the cement fragments in the
			sample. Notified S. Jones - HSE of results.
12/4/92	0753	0824	Technical oversight assumed by Michael Klidzejs. Oversight
			arrives on site. Highland crew arrives on site at 0815 and prepares
			to drill. Air tank plug replaced.
	0824	0854	Rig is started. Table height is measured at 2.6 ft. Breathing zone
			surveyed: HNu - giving erratic readings from 0.2 to 15 ppm due
			to presence of alcohol-based antifreeze from drill rig. Beta and
			gamma background = 50 - 60 cpm. Alpha background = 10 cpm.
	0824	0854	Drilling is delayed due to clogged air port on tri-cone bit. Stabilizer
			and bit are tripped out and the air exhaust ports are cleaned. Trip
			back down and add rod. Notice strong alcohol smell from
			antifreeze left in system. Blow hole clean.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1131
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12/4/92	0854	0915	Begin drilling at 9.4 ft BGS. Cuttings from 9.4 to 11.4 ft BGS consist
(cont.)			of predominant cement and PVC fragments, some minor light gray
			micritic limestone also present. Cuttings samples collected at
			16.4, 21.0, and 27 ft BGS. All similar. Organic vapors in breathing
			zone at 11.4 ft BGS reads 0.0 ppm. Beta and gamma = 70 cpm.
			Reach TD of 31.6 ft BGS.
	0915	1010	Blow hole clean. Tag bottom at 31.8 ft BGS. Cuttings prepared
			for screening. Alpha emission rate of cuttings composite = 0 cpm.
			Beta and gamma = 60 cpm. Cuttings composite placed under foil
			for head space analysis at 1003.
	1010	1136	Scott Gilbert-Highland leaves site to fill water tank. Head space of
			1131 cuttings composite reads 2.4 ppm. pH = 9.6.
	1136	1154	Scott Gilbert returns with water tank. Rig, stabilizer, bit and
			equipment decontaminated. Rig moved off of hole.
12/7/92	0900	0910	Technical oversight assumed by Tim Coffey. Arrive at 1131 site.
			Cement truck and drill crew arrive at site.
	0910	0930	Attempt to pump cement/grout from trough to bore by tremie.
			Pump appears to be frozen. Working to thaw same.
	0930	0946	Begin to tremie cement/grout into 1131. Cement level to ground
			surface.
	0946	0948	Pull up tremie. Grout allowed to cure until next day.
12/9/92	0805	0807	Michael Klidzejs tags cement level at 5.0 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1131
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12/11/92	1345		Additional cement poured into 1131 opening to bring level above
			4 ft.
12/14/92	0821	0830	Cement level tagged at 2.5 ft BGS by Michael Klidzejs.
12/15/92	1443	1500	Steve Brown-Highland fills 1131 with soil by backhoe blade.
	1628	1630	Michael Klidzejs inspects 1131. Hole filled to ground surface with
			soil.
			P&A of 1131 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1132

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: SPAD Landfill Site

DRILLERS: Hubert Hall - Highland Drilling

HELPERS: Steve Brown - Highland Drilling

DRILL: Ingersoll Rand XL-750

DATE: START: 12/4/92

FINISH: 12/15/92

LOGGED BY: Timothy Coffey - SAIC
Michael Klidzejs - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12/4/92	1118	1241	Technical oversight by Michael Klidzejs. Gravel truck arrives and
			dumps gravel at 1132 site. Crew spreads gravel over site with
			back-hoe blade. Rig moved into position over well. Rig up with 10
			5/8 in. diameter tricone bit and stabilizer, length = 9.2 ft, table
			height = 3.7 ft. Casing stick-up of unknown length removed by
			Highland Drilling Company during site preparation on 12-3-92
			before stick-up length could be measured. Casing stick-up, as
			reported in the subsurface data base (Y/TS-881), is 2.4 ft.
	1241	1305	Begin drilling. Beta and gamma around rig = 70 cpm (background
			= 30 cpm) Alpha = 10 cpm (background = 5 cpm). Table height is
			adjusted to 3.9 ft. Advance stabilizer and bit to 5.3 ft BGS. Cutting
			sample of 0-4 ft BGS interval collected. Sample consists of
			medium gray (N5) cement fragments and white (N9) PVC fragments.
			Trip up, add rod.
	1305	1412	Continue drilling. Advance to 30.3 ft BGS. Health and safety
			screenings taken in breathing zone at 6.3, 11, 19.3, and 26 ft BGS.
			Greatest values observed: organic vapors = 0.2 beta and gamma
			= 60 cpm. Five cuttings samples taken during drilling all contained
			medium gray (N5) cement fragments and white (N9) PVC fragments.
			Two samples taken at 28.3 and 30.3 ft BGS consisted of filter pack
			sand in mud.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1132
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12/4/92	1412	1530	Crew decontaminates rig, stabilizer, bit and tools. Tag bottom of
(cont.)			hole at 30.3 ft BGS. Screen cuttings samples; Beta and gamma
			= 60 cpm, alpha = 20 cpm. Composite of cuttings placed under foil
			for head space analysis.
	1530	1545	Headspace analysis of cuttings composite = 0.0 ppm, pH = 10.3.
			Crew places 3, 10-ft. sections of tremie pipe down hole. Stick-up
			of tremie pipe = 2 ft. Crew and oversight depart.
12/7/92	0948	0953	Tim Coffey provides technical oversight. Pump set up at 1132 site.
	0953	1010	Cement/grout pumped into tremie pipe. Cement level to ground
			surface.
	1010	1025	Tremie pipe removed. Site is cleaned and secured. Oversight
			departs.
12/8/92	1139	1142	Michael Klidzejs tags cement level at 6.9 ft BGS.
12/11/92	Appx.		Additional cement poured into 1132 opening to bring level above
	1345		4 ft BGS.
12/14/92	0821	0830	Cement level tagged at 1.6 ft BGS by Michael Klidzejs.
12/15/92	1443	1500	Steve Brown - Highland fills 1132 with soil by back-hoe blade.
	1626	1628	Michael Klidzejs inspects 1132. Hole filled to ground surface with
			soil
			P&A of 1132 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1133
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 2

LOCATION: SPAD Landfill Site	DATE: START: 3/3/93
DRILLERS: Hubert Hall - Highland Drilling Co.	FINISH: 3/18/93
HELPERS: Greg Shillings - Highland Drilling Co.	METHOD: C
DRILL: Ingersoll Rand XL-750	LOGGED BY: Victor R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3/3/93	1004	1020	Crew rigs up 10 5/8-in. diameter tricone roller bit. Bit and
			stabilizer = 9.2 ft long. Table ht = 2.7 ft. Riser stickup and surface
			protective casing removed previously. Summary of items re-
			moved: 4.5-in. outside diameter (OD), 4.0-in. inside diameter (ID)
			PVC riser removed to 3.5 ft below ground surface (BGS) and 5 ft
			lengths of 6-in. protective casing with hinged lid. Begin drilling/
			reaming.
	1020	1030	Advance to 5 ft BGS, air only. Breathing zone analysis near table
			= 4 ppm. This level of organic vapors attributable to alcohol based
			antifreeze used to winterize water lines on rig. Beta/Gamma at
			table = 50 cpm, alpha = 30 cpm. Crew added 25 ft drill rod.
	1030	1104	Resume drilling/reaming. Advance to 25 ft BGS. Cuttings = grout
			fragments, PVC shavings and few chert fragments in reddish-
			brown stiff clay. Approximately 5% of returns is pea gravel.
	1104	1122	Crew trips out tools, inserts 20 ft of 1.5-in. OD PVC tremie pipe to
			16 ft BGS. Secure site and rig down to await grout delivery.
	1253	1314	Grout delivery here. Pump tremie approximately 0.5 yds^3 into
			bore. Circulate grout. Secure site and depart.
3/4/93	1243	1249	Tag grout level at 2.5 ft BGS. Deviation of depth to grout from
			4.0 ft BGS. Approved by Steve Jones (HSEA). Depart site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1133
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3/18/93	1240	1253	Clay cap installed with backhoe. P/A of 1133 complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1134

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: SPAD Landfill Functional Area

DRILLERS: Hubert Hall-Highland Drilling Co.

HELPERS: Steve Brown, Randy Phillips - Highland

DRILL: Ingersoll Rand XL-750

DATE: START: 5-27-93

FINISH: 6-16-93

METHOD: C

LOGGED BY: T.J. Coffey - SAIC, V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-27-93	0825	0916	Technical Oversight provided by V.R. Harness (SAIC). Awaiting crew. Rig is set up. Protective posts have been removed and PVC riser stick up has been cut off. Remaining stick-up heights are: 4.0-in. outside diameter (OD) PVC riser = 0.6 ft, steel surface casing = 0.8 ft.
	0916	1035	Crew arrives. Rig up 7 5/8-in. tricone roller bit and stabilizer assembly of 20.8 ft length. Excavating cuttings pit with backhoe. Background screening values are: alpha = 0 cpm, beta/gamma = 60 cpm, organic vapors = 0 ppm.
	1035	1043	Breathing zone analysis (BZA) at table = 0.0 ppm. Begin drilling out PVC riser. Table height = 2.8 ft. Advance to 5 ft below ground surface (BGS).
	1043	1057	Begin using water in drilling. Advance to 18 ft BGS. Add 25 ft drilling rod. Resume drilling.
	1057	1110	Advance to 43 ft BGS. Circulation is good. Returns are predominantly PVC cuttings and fragments of the annulus filler which is brittle, friable, and of (N8) white coloration. Randy Phillips (Highland) remarks that material resembles Cal-Seal™ or a similar gypsum based, lost-circulation additive. However, in this situation, it has apparently been placed into the well annulus undiluted.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1134

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-27-93	1057	1110	Beta/gamma measurement of composited cuttings from 18 to 43 ft
(cont.)			BGS = 40 cpm and the same value was measured in composited
			cuttings from 0 to 18 ft BGS.
	1110	1139	Advance to 68 ft BGS. Advance rate has been smooth and rapid.
			BZA = 0.0 ppm.
	1139	1157	Advance to 93 ft BGS. Begin using auxiliary compressor to
			maintain circulation. At 90 ft BGS begin getting fragments of
			dolostone in cuttings, 90 ft appears to be bottom of surface casing.
			Advance to 93 ft BGS. Approximately 20%, by volume, of cuttings
			are medium dark gray (N4-N5) Knox Fm with banding and layering.
	1157	1216	Add 25 ft of drill rod. Bit hung, but circulation still good.
	1216	1300	Lunch Break.
	1300	1457	Resume efforts to free tools.
	1457	1603	Tools unstuck. Crew trips up tools to remove stabilizer from drill
			string. Because they have no subadaptor that will thread the bit to
			the drill rods, they rig back up with a 6-in. diameter tricone roller bit.
			Secure site and depart.
5-28-93	0757	0841	Awaiting crew.
	0841	1022	Crew arrives. Crew has found a sub-adaptor for 7 5/8-in. diameter
			bit: subadaptor must be broken out of existing assembly and a
			check valve added. In the mean time they will drill out well with 6-in.
			bit and then dress hole with 7 5/8-in. dia. bit.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1134
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 3 of 13

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-28-93	1022	1045	Trip in and clean bore with 6-in. bit to 93 ft BGS. Resume drilling.
(cont.)			
	1045	1054	Advance to 100 ft BGS. Cuttings are PVC and (N4) medium dark
			gray dolostone. Circulation good.
	1054	1105	Advance to 125 ft BGS. Table Height = 2.4 ft. Voids encountered:
			102 to 104 ft BGS, 104.5 to 125 ft BGS. Circulation still good. Have
			gained 5-10 gal. per minute of water. Returns include Cal Seal™.
	1105	1114	Resume drilling. Void from 104.5 to 125 ft BGS continues.
			Encounter rock again at 142 ft BGS (Total void = 104.5 to 142 ft
			BGS). At 135 ft BGS, returned hydrated bentonite. Advance to
			150 ft BGS. Another void begins at 143.5 ft BGS and continues to
			150 ft BGS.
	1114	1126	Circulation at 150 ft still good and contains hydrated bentonite.
			Advance to 174.5 ft BGS. Voids encountered: 155 to 160 ft BGS
			and 163 ft to 168 ft BGS. (Lost circulation at 163 ft BGS with ratty
			drilling). Void from 169 ft to 174.5 ft BGS. Regain circulation at
			174.5 ft BGS.
	1126	1151	Resume drilling at 174.5 ft BGS with normal circulation. Advance
			to 190 ft BGS. Encountered little resistance to advance. Lost
			circulation at 190 ft BGS.
	1151	1208	Tripping out 6-in. diameter bit. Will finish hole to target depth of
			192 ft BGS with 7 5/8-in. dia. bit. Circulation of much debris as
			tripping out, including sand from filter pack.
	1208	1340	Lunch Break.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. 1134

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-28-93	1314	1326	Crew exchanging 7 5/8-in. bit for 6-in. diameter bit. Unable to
(cont.)			reach Steve B. Jones (HSEA) yesterday to notify of high cuttings
			pH (11.0), reached him by telephone. He advises to proceed.
	1326	1340	Have rigged up 7 5/8-in. dia. tricone roller bit with subadapter and
			check valve, entire assembly = 4.4 ft. Tripping in.
	1340	1446	Resume drilling with 7 5/8-in. dia. bit at 94 ft BGS. Ream bore to
			192 ft BGS. Encountered void from 102 to 127 ft BGS: Many small
			breaks from 127 ft to 177 ft BGS;
			Description of 94 to 192 ft Reaming cuttings:
			80 % (by volume) of composited sample = grayish orange
			(10YR 7/4) to dark greenish gray (5 GY 4/1) dolostone with
			grayish black (N2) chert. Grayish orange fraction has a porous,
			silty texture, greenish gray portion is dense. 15% of sample = PVC
			cuttings and 5% of sample is filter pack sand.
	1446	1555	Trip out to 125 ft BGS. Secure site and depart.
6-1-93	0912	0924	At site. Trip in and clean out bore to 192 ft BGS. Only 0.5 ft of
			debris in bottom of bore. No circulation.
	0924	1044	Insert 180 ft of 1.5-in. OD PVC tremie pipe to 177 ft BGS. Awaiting
			grout delivery.
	1044	1101	Grout delivery arrives. Tremie 1.5 cubic yds of neat, Type I
			Portland cement into bore.
	1101	1136	Extract tremie pipe. Clean and secure site. All depart to allow
			grout to cure a minmum of 24 hrs before any additional drilling.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1134
WELL PLUGGING AND ABANDONMENT ACTIVITY PROGRESS REPORT continued	PAGE 5 of 13

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
6-1-93	1345	1400	Tag liquid grout at 170 ft BGS, water at 100 ft BGS. Depart site.
(cont.)			
6-2-93	1150	1248	Tag top of grout at 168.9 ft BGS. Receive permission from Kevin
			Jago (HSE) to fill bore to top of first reported void below surface
			casing with quartzite pea gravel. Crew arrives with 4.5 tons of
			gravel.
	1248	1304	Pour 1.5 tons of pea gravel into bore. Bring top of gravel to 101.5 ft
			BGS.
	1304	1313	Pour three 50 lb sacks of Shur-Plug™ 3/8 in. diameter bentonite
			into bore. Tag top of unhydrated bentonite at 93.5 ft BGS.
			Sufficient water exists in bore to hydrate bentonite.
	1313	1326	Insert 80 ft of 1.5-in. OD PVC tremie to 76 ft BGS. Mix and tremie
			two 94-lb. sacks of neat, Type I Portland cement into bore.
	1326	1340	Secure site and depart.
6-3-93	0820	0921	Tag grout at 85.3 ft BGS. Crew unloading washover pipe.
			Dimensions are 13.5-in. OD, 13-in. inside diameter (ID). First piece
			of washover pipe with bit = 22.75 ft long. In addition there are three
			20-ft lengths and one 10-ft length of washover pipe.
	0921	0952	Rig up first piece of washover.
	0952	1144	Begin over wash of steel surface casing. Table height = 2.0 ft.
			Advance to 17 ft BGS. Stop to refuel rig and get a load of water
			before resuming. BZA at 2.5 ft BGS was 0.0 ppm. Cuttings from
			0.0 ft to 17.0 ft BGS consist predominantly of medium light gray
			(N6) cement fragments with minor amounts of white (N9) PVC
			fragments and very light gray (N8) to very pale orange (10YR 8/2)

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1134
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 6 of 13

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
6-3-93			angular and punky or oolitic residual chert in a light brown
(cont.)			(5YR 5/6) clayey soil.
	1144	1202	Lunch break.
	1202	1425	Technical oversight assumed by T. Coffey (SAIC). Arrive at
			1134 site . Waiting for the rest of the crew to return with the water
			truck.
	1425	1524	Water truck at site. Continue over wash. Over wash casing from
			17.0 ft to 22.0 ft BGS. Washover pipe binding on casing (stops
			frequently) at approximately 19.3 ft BGS. Adjust jacks (tilt mast)
			over washing improves. Cuttings from 17.0 ft to 22.0 ft BGS are
			the same as the 0.0 to 17.0 ft interval and include metal shavings.
			Also, some chert is banded; medium gray (N5) to brownish black
			(5YR 2/1).
	1524	1612	At 22.0 ft BGS disconnect washover pipe from drive head in order
			to attempt to pull surface casing: Unsuccessful.
	1612	1644	Add a second section of 13.0-in. ID, 13.5-in. OD steel washover
			pipe; length = 20.0 ft. Total length of tools (including subadapter)=
			46.3 ft. connection made, will continue over wash on 6-4-93.
			Depart site.
6-4-93	0813	0845	Technical oversight assumed by V.R. Harness (SAIC). Arrive at
			site, awaiting crew.
	0845	0855	Crew arrives, fueling rig.
	0855	1056	Resume over wash at 22 ft BGS. Table height = 2.0 ft. Advance
			to 42.0 ft BGS. BZA at 23.5 ft BGS = 0.0 ppm. Surface around

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1134
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 7 of 13

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
6-4-93			washover pipe washed out 3 to 4 ft across.
(cont.)			Description of 22 to 40.5 ft BGS over wash cuttings:
			60% (by volume) iron oxide stained chert fragments, dark yellowish
			orange (10YR 6/6) to unstained white (N9). 20% PVC fragments
			(washed down from surface). 20% medium light gray (N6) grout
			fragments with accessory metal shavings. Beta/gamma of
			composite sample = 50 cpm, alpha=0 cpm.
	1056	1138	Crew breaks out sub.
	1138	1240	Lunch break
	1240	1326	Crew leaves and returns with 3 ft length of 16.5-in. OD, 16.0-in. ID
			steel conductor pipe and inserts to 2.2 ft BGS around washover
			pipe in ground.
	1326	1405	Before resuming drilling, crew must fill washed out area around
			table to maintain circulation and rig stability. Pour 50-lbs of 3/8-in.
			diameter Shur-Plug™ bentonite around base of protruding
			conductor pipe. Hydrate bentonite with 5-gals. potable water.
	1405	1426	Mix five 94-lb. sacks of neat, Type I Portland cement and pour into
			washed out area around conductor casing.
	1426	1500	Will allow grout to cure overnight. Secure site and depart.
6-7-93	0815	0835	Arrive at 1134 site. Wait on crew.
	0835	0906	Crew arrives. Add a third section of 13.0-in. ID, 13.5-in. OD steel
			washover pipe; length = 20.0 ft. Total length of tools (including
			subadaptor) = 66.3 ft. Connection made.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1134
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 8 of 13

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
6-7-93	0906	0927	Place sod under rig, around borehole collar to prevent further
(cont.)			washout around rig jacks.
	0927	1134	Commence over wash. Table height = 3.0 ft. Over wash casing
			from 42.0 ft to 50.0 ft BGS. Ratty drilling at 47.5 ft BGS, lose
			circulation. Cuttings from 42.0 ft to 47.5 ft BGS. consist of medium
			light gray (N6) to light olive gray (5Y6/1) cement fragments;
			medium light gray (N6) to light brownish-gray (5YR 6/1) translucent
			chert; very pale orange (10YR 8/2) to pale yellowish-orange
			(10YR 8/6) punky chert in light brown (5 YR 5/6) to dark yellowish-
			orange (10YR 6/6) residuum. Interval also yields abundant metal
			shavings, and rare white (N9) PVC fragments. Circulation (very
			muddy) restored at 48.5 ft BGS. Cuttings from 48.5 ft to 50.0 ft BGS
			are the same as above. Ratty drilling continues to end of interval.
	1134	1144	Out of water. Depth of washover pipe is 50.0 ft BGS. Shut off rig.
			Wait for water truck.
	1144	1207	Second water truck arrives onsite. Transfer water to onsite water
			truck.
	1207	1210	Continue over wash. No returns, ratty drilling continues.
	1210	1248	Break for lunch.
	1248	1407	Continue over wash. Over wash casing from 50.0 ft to 61.8 ft BGS.
			Circulation returns at 50.6 ft BGS. Rate of advance increases at
			55.5 ft BGS. Relatively smooth drilling from 58.0 ft BGS. Circulation
			lost again between 59.8 ft and 60.3 ft BGS. Penetration rate
			decreases at 60.5 ft BGS. Cuttings from 50.5 ft to 61.8 ft BGS
			consist primarily of olive gray (5Y 4/1) cement fragments, medium
			light gray (N6) translucent and pale yellowish-orange (10YR 8/6)

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1134
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 9 of 13

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
6-7-93			oolitic chert fragments, and metal shavings. No longer observe
(cont.)			PVC fragments in returns.
	1407	1420	At 61.8 ft BGS. Clean out borehole. Pull washover bit off bottom.
			Break subadaptor of washover pipe.
	1420	1428	Attempt to pull casing: unsuccessful.
	1428	1448	Add a fourth section of 13.0-in. ID, 13.5-in. OD steel washover
			pipe; length=20.0 ft. Total length of tools (including
			subadaptor)=86.3 ft. Connection made.
	1448	1540	Continue over wash. Table height =2.6 ft. Over wash casing from
			61.8 ft to 69.5 ft BGS. Ratty drilling from 64.0 ft to 64.6 ft BGS, and
			from 66.5 ft to 69.2 ft BGS. Cuttings from 61.8 ft to 69.5 ft BGS are
			a continuation of the 50.5 to 61.8 ft interval.
	1540	1546	At 69.5 ft BGS. Clean out borehole. Pull bit off bottom. Shut off rig.
	1546	1617	Clean up. Screen cuttings composite, secure site, and depart.
6-8-93	0834	0921	Arrive at 1134 site just ahead of drill crew. Fuel drill rig and auxiliary
			air compressor.
	0921	1105	Commence over wash. Table height remains at 2.6 ft. Over wash
			casing from 69.5 ft to 82.2 ft BGS. Encounter a rough spot
			(wash-over pipe stops frequently) from 71.7 ft to 72.2 ft BGS. Rate
			of advance decreases at 72.7 ft BGS, and then again at 76.3 ft
			BGS. Encounter another rough spot at 78.7 ft BGS, then penetration
			rate increases markedly. Relatively smooth drilling from this point
			on. Encounter yet another rough spot between 81.5 ft and 81.9 ft
			BGS. Drilling is very hard at 81.9 ft BGS (suspect weathered

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1134
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 10 of 13

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
6-8-93			bedrock surface). Cuttings from 69.5 ft to 81.9 ft BGS are the same
(cont.)			as the 61.8 ft to 69.5 ft interval plus very pale orange (10YR 8/2)
			massive dolomite. Interval yields rare metal shavings.
	1105	1115	At 82.2 ft BGS. Clean out borehole. Disconnect subadapter.
	1115	1205	An attempt to pull out the casing is unsuccessful. Add a fifth section
			of 13.0-in. ID. 13.5-in. OD steel washover pipe; length = 10.0 ft.
			Total length of tools (including subadaptor)=96.3 ft. Connection
			made.
	1205	1235	Transfer a load of water to the onsite water truck.
	1235	1326	Break for lunch.
	1326	1545	Continue over wash. Table height 1.8 ft. Over wash casing from
			82.2 to 85.7 ft BGS. Ratty drilling at beginning of interval, becoming
			smoother at 83.9 ft BGS. Appear to occasionally be returning more
			water than what is being put into the borehole. Pit is nearly full of
			water. Enlarge cuttings pit. Encounter a rough spot at 85.3 ft BGS,
			pipe stuck momentarily. Extremely hard drilling beyond 85.3 ft
			BGS (suspect fresh bedrock surface). Cuttings from 81.9 ft to
			85.7 ft BGS consist of medium light gray (N6) cement fragments;
			very pale orange (10YR 8/2), massive dolostone; and light brown
			(5YR 5/6), to dark yellowish-orange (10YR 6/6), massive, fine-
			grained, friable sandstone.
	1545	1553	At 85.7 ft BGS. Clean out borehole.
	1553	1607	Shut off drill rig. Clean up, secure site, and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1134
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 11 of 13

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
6-9-93	0816	0832	Technical oversight assumed by V.R. Harness - SAIC. Rig up.
			Resume over wash at 85.7 ft BGS.
	0832	1200	Advance to 88 ft BGS. Slow advance. Circulation limited to several
			periodic eruptions of mud and cuttings as hole pressures up.
	1200	1223	Lunch break.
	1223	1350	Resume over wash. Advance to 88.5 ft BGS. Tools become hung.
	1350	1551	Resume over wash. Advance very slowly to 89 ft BGS. No
			circulation. Secure site and depart
6-10-93	0807	0853	Awaiting crew.
	0853	1034	Resume over wash at 89 ft BGS. Advance slowly to 89.9 ft BGS.
			No circulation.
	1034	1110	Crew disconnects subadaptor.
	1110	1259	Extract 86 ft of 8.75-in. OD, 8.25-in. ID steel surface casing, cut into
			five pieces with torch.
	1259	1330	Crew begins removing washover from the borehole.
	1330	1430	Awaiting delivery of extra links for power tong before trip out can
			continue.
	1430	1615	All washover pipe out. Secure site and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1134
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 12 of 13

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
6-11-93	1017	1035	Technical oversight by T. Coffey (SAIC). Arrive at 1134 site. Crew has finished tripping washover pipe out of the borehole. Tag bottom of borehole at 89.4 ft BGS (0.4 ft of fill) Borehole is dry. Calculate a borehole volume (assume borehole diameter of 14-in.) to 4.0 ft BGS of 91.3 cubic ft = 3.4 cubic yds. Cement (4 1/2 cubic yds) ordered for 1400 hrs. Depart site.
	1333	1442	Return to 1134 site. Wait on cement truck.
	1442	1513	Cement truck arrives, pour 4 1/2 yds of neat, Type I Portland cement into the borehole.
	1513	1530	Did not circulate cement. Tape depth to liquid cement at 77.5 ft BGS. Cement obviously taken into voids/cavities.
	1530	1542	Call to K. Jago (HSEA) to report disappearance of cement. Kevin directs to fill up the majority of borehole (including voids) with pea gravel, then construct a cement plug near the collar. Depart site.
6-14-93	1251	1353	Arrive at 1134 site. Tag cement level at 79.12 ft BGS. Calculate a borehole volume to 4.0 ft BGS of 68.5 cubic ft = 2.5 cubic yds. Wait on pea gravel delivery.
	1353	1406	J. Gallaher (Highland) arrives with a load of pea gravel. Pour five tons of gravel into borehole. Tag gravel level at 43.8 ft BGS.
	1406	1449	J. Gallaher goes to get another load of gravel.
	1449	1459	Second load of pea gravel arrives (7 tons). Pour approximately 4 1/2 tons into borehole. Pea gravel level at 14.1 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. 1134
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT continued	PAGE 13 of 13

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
	1459	1519	Pour 2 sacks (1.4 cubic ft) of Hole Plug™ bentonite into borehole
			to act as a plug on top of pea gravel. Pour potable water into
			borehole to hydrate the Hole Plug™. Depart site.
6-15-93	0754	0800	Arrive at 1134 site. Tag hydrated Hole Plug™ bentonite level at
			13.4 ft BGS (thickness of Hole Plug™ seal is 0.7 ft). Calculate a
			borehole volume to 4.0 ft BGS of 10.0 cubic ft equivalent to
			7.4 sacks of 2% bentonite - cement grout.
	0800	0858	Wait on crew.
	0858	0914	Crew arrives and begins preparing to cement borehole.
	0914	0958	Mix and pour 13 sacks (17.7 cubic ft) of 2% bentonite - cement
			grout into the borehole. Cement level to approximately 2 ft BGS.
	0958	1020	Clean up, secure site and depart.
6-16-93	0712	0715	Arrive at 1134 site. Tag cement level at 3.8 ft BGS. Borehole is
			ready to be capped. Depart site.
	1030	1100	Borehole is capped with clay soil.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-030

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

FOREMAN: Greg Shillings - Highland Drilling

HELPERS: Paul McCormick - Highland Drilling

DRILL: Ford 555 Backhoe

DATE: START: 2-8-93

FINISH: 2-10-93

METHOD: A

LOGGED BY: T.J. Coffey/T.J. Long - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-8-93	1046	1100	Arrive at GW-030 site. Well is located at the edge of a steep cut-
			bank. The protective casing is exposed below the ground
			surface. Remove cap, scan for organic vapors: 0.0 ppm. Scan
			well site with rad meters: beta & gamma = 30 cpm, alpha = 0 cpm.
			Measure water level at 22.3 ft below top of casing (BTOC) = 19.3
			ft below ground surface (BGS). Tag bottom of well at 41.9 ft BTOC
			= 38.9 ft BGS. Note: Subsurface Database (Y/TS-881) reports
			total depth (TD) of GW-030 to be 40.0 ft. Calculate a well volume
			to 4 ft BGS of 0.8 cubic ft, equivalent to 1.1 sacks of Hole Plug™.
	1155	1203	Pour approximately 1/2 sack (0.3 cubic ft) of Hole Plug™ into GW-
			030 (until Hole Plug™ level is above the water level). Tag Hole
			Plug™ level at 12.2 ft BGS.
2-9-93	0848	0900	Arrive at GW-030 site. Tag Hole Plug™ level at 12.2 ft BGS (No
			change in Hole Plug™ level). Calculate a well volume to 4 ft BGS
			of 0.2 cubic ft, equivalent to 0.2 sacks neat cement. Scan well site
			with rad meters: alpha = 0 cpm, beta & gamma = 50 cpm
			(background). Run 1, 10 ft joint of 1.5-in. OD PVC Tremie pipe
			into well to 6.1 ft BGS.
	0900	0912	Mix and gravity tremie approximately 1/2 sack (0.6 cubic ft) of neat
			Type I Portland cement. Fill to top of casing. Remove tremie pipe
			and clean up. Cement to cure for approximately 24 hrs.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-030
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-10-93	0836	0839	Tag cement level at 0.2 ft BTOC = 2.8 ft above ground surface.
	1226	1242	Return to GW-030 site. Using backhoe, begin excavating cut-
			bank around well casing. Break off well casing just below conductor
			casing (3.0 ft BGS), and push into hole. Bury well casing with
			conductor casing onsite (as per Waste Management Plan) by
			caving cut-bank onto excavation. Screening soil/residuum in
			excavation, and ground surface at completion of P&A: organic
			vapors = 0.0 ppm, beta & gamma = 70 cpm (max.), and alpha =
			0 cpm.
			P&A of GW-030 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-031

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

FOREMAN: Greg Shillings - Highland Drilling

HELPERS: Paul McCormick - Highland Drilling

DRILL: Ford 555 Backhoe

DATE: START: 2-8-93

FINISH: 2-10-93

METHOD: A

LOGGED BY: T.J. Coffey/T.J. Long - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-8-93	1100	1120	Arrive at GW-031 site. Top of casing has been torn from well.
			Organic vapors at wellhead = 0.0 ppm. Scan well site with rad
			meters: beta & gamma = 30 cpm, alpha = 0 cpm. Note: well GW-
			031 had been installed as a "twin" to GW-030 with both wells
			having the approximately same ground elevation. Post-installa-
			tion erosion along with excavation adjacent to the wells has
			resulted in lowering the ground surface elevation at GW-031 by
			approximately 12.5 ft. Measure water level at 12.8 ft below top of
			casing (BTOC) = 8.7 ft below ground surface (BGS). Well casing
			contains a dedicated bailer which is impossible to remove. Wire
			on bailer is cut, bailer drops to bottom of the well. Tag bottom of
			well at 56.3 ft BTOC = 52.2 ft BGS (64.7 ft below original ground
			surface). Note: Subsurface Database (Y/TS-881) reports total
			depth (TD) of GW-031 to be 70.0 ft. Calculate a well volume to 4
			ft BGS of 1.1 cubic ft, equivalent to 1.5 sacks of Hole Plug™.
	1203	1230	Begin pouring Hole Plug™ into the well. Tag Hole Plug™ level
			after pouring less than 1/2 sack into well at 4.5 ft BGS, suspect
			that Hole Plug™ may have bridged in well casing. Attempt to push
			Hole Plug™ into well with PVC tremie pipe. Unable to get tremie
			pipe past kink in casing at 3.8 ft BTOC.
	1406	1416	Cut off 4.0 ft of casing stick-up. Attempt to push Hole Plug™ down
			further into well with PVC tremie pipe: Hole Plug™ level dropped
			about 1.0 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-031
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-9-93	0951	1005	Arrive at GW-031 site. Tag Hole Plug™ level at 5.5 ft BGS.
			Calculate well volume to ground surface of 0.1 cubic ft, equivalent
			to 0.1 sacks neat cement. Scan well site again with rad meters:
			beta & gamma = 60 cpm (background), alpha = 0 cpm. Mix and
			pour 1, 5-gal. bucket (approx. 0.3 sacks) neat cement into
			GW-031. Fill to ground surface.
	1005	1007	Clean up site.
2-10-93	0839	0844	Tag cement level in GW-031 at 0.3 ft BTOC = ground surface.
			Because of well's close proximity to a steep cut-bank, the cap will
			consist of native soil piled on the existing ground surface.
	1220	1226	Return to GW-031 site. Place cut off well casing pieces and wire
			from dedicated bailer on ground near wellhead as per Waste
			Management Plan. Using backhoe, cave cut-bank above well,
			burying well and casing pieces onsite under approximately 2.5 ft
			of loose soil. Screening soil in excavation, and at completion of
			P&A: organic vapors = 0.0 ppm, beta & gamma = 70 cpm (max.),
			alpha = 0 cpm.
			P&A of GW-031 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-032

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

FOREMAN: Greg Shillings - Highland Drilling

HELPERS: Paul McCormick/James Gallaher - Highland

DRILL: Ford 555 Backhoe

DATE: START: 2-8-93

FINISH: 2-12-93

METHOD: A

LOGGED BY: T.J. Coffey/T.J. Long - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-8-93	1544	1549	Arrive at GW-032 site. Note: well bore GW-032 was drilled at an angle of approximately 40° below horizontal to intersect the subsurface strata perpendicularly. Remove cap, scan for organic vapors: 0.0 ppm. Scan well site with rad meters: beta & gamma = 50 cpm, alpha = 0 cpm. Attempt to measure water level in well. Unable to get water level indicator probe beyond about 1.0 ft below top of casing (BTOC) due to obstruction of some type.
	1549	1553	Well has dedicated bailer inside. Unable to recover. Cut wire and let drop to bottom of well. Begin pouring Hole Plug™ into well casing. Casing fills up immediately, suspect that well casing may be pinched. Conclude work, depart site.
2-9-93	1456	1505	Arrive at GW-032 site. Organic vapors at wellhead = 0.0 ppm. Cut off approximately 1.2 ft of the 4-in. diameter protective casing, then the well casing in attempt to get below obstruction. Scan wellsite with rad meters: alpha = 0 cpm, beta & gamma = 70 cpm (background = 60 cpm).
	1505	1517	Well casing is crumpled or pinched, almost flat in places. Visible in the annular cement is the cylindrical external mold of the well casing. Annular grout is intact and undamaged. The well casing appears to have been drawn in (by some suction force) sometime after installation. Further work at this well will require excavating below the ground surface and cutting of the casings below the pinched interval.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-032
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-11-93	1516	1525	Arrive at GW-032 site. Scan with beta & gamma meter: 80 cpm
			(no alpha scan - raining). Organic vapors at wellhead = 0.0 ppm.
			Using backhoe, dig shallow (1.0 to 1.5 ft) pit around well.
	1525	1545	Continue to screen excavation: beta & gamma = 80 cpm. Cut off
			an additional 1.3 ft of protective casing and well casing. Cut is
			made nearly to bottom of damaged interval. Try to open well
			casing collar with torch, run out of acetylene. Hole at well collar is
			not quite large enough to accept PVC tremie pipe. Depart.
2-12-93	0907	0920	Arrive at GW-032 site. Organic vapors at wellhead = less than
			1 ppm. With torch, enlarge well casing collar. Scan wellsite with
			rad meters: beta & gamma = 80 cpm (background), alpha = 0 cpm.
			Since well is installed in 40° angle hole, it is doubtful that sounding
			tape will travel all the way to bottom. Will use Subsurface
			Database (Y/TS-881)-reported TD (54.1 ft) for calculation. Calculate
			a well volume to 4 ft BGS of 1.1 cubic ft, equivalent to 0.7 sacks of
			4% bentonite-cement grout (mix 4% bentonite to prevent excessive
			amount of cement from seeping out of well screen into formation).
	0920	0923	Run 5, 10 ft sections of 1.5-in. outside diameter (OD) PVC tremie
			pipe into well to 49.0 ft BGS.
	0923	0953	Mix and gravity tremie 1 sack (1.5 cubic ft) of 4% bentonite-cement
			grout into the well. Tremie rate is slow using the thick grout.
			Circulate water almost immediately, circulate approximately 50%
			cement at end of tremie. Scan of displaced water: beta & gamma
			= 90 cpm.
	0953	1000	Pull out tremie pipe and clean up.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-032

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-12-93	1342	1350	Attempt to determine level of uncured grout tremmied this morning.
(cont.)			Level is apparently greater than 20 ft BGS.
	1436	1442	Return to GW-032 site. Slowly pour 1/2 sack (0.3 cubic ft) of Hole
			Plug™ into the well to complete the seal to top of the casing. Fill
			to top of casing (approximately 1.0 ft BGS). Use of Hole Plug™ in
			this fashion is a deviation from procedures and was pre-approved
			by S. Jones (HSE).
	1442	1458	Begin digging a pit around well with backhoe. Also, begin
			extracting 3 protective posts. Pit excavated to about 4 ft BGS.
			Screening soil and excavation: organic vapors = less than 1 ppm,
			beta & gamma = 90 cpm, alpha = 0 cpm. Break off well casing
			below protective casing and lay in bottom of pit.
	1458	1518	Push posts into pit and fill in.
	1518	1528	Dress up site with tractor's loading bucket. Screen ground
			surface: organic vapors = less than 1.0 ppm, beta & gamma =
			cpm, and alpha = 0 cpm.
			P&A of GW-032 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-035

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

FOREMAN: Greg Shillings - Highland Drilling

HELPERS: Paul McCormick - Highland Drilling

DRILL: Ford 555 Backhoe

DATE: START: 2-12-93

FINISH: 2-16-93

METHOD: A

LOGGED BY: T.J. Coffey/T.J. Long - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-12-93	1539	1615	Arrive at GW-035 site. The location of the well (which is missing)
			is marked by a stake located by surveyors using the as-built
			coordinates of the well. The plan is to dig a pit with a 5-ft radius
			from the stake, 4.5 ft deep to look for evidence that the well has
			been decommissioned. Begin excavating the pit with the back-
			hoe. Weathered bedrock is exposed in the edges of the pit within
			0.5 ft of the ground surface. Screening soil/weathered bedrock
			and excavation: organic vapors = <1.0 ppm, beta & gamma =
			100 ppm, alpha = 0 cpm. Between about 1 ft BGS and 3 ft BGS,
			fragments of annular grout are unearthed. Below approximately
			3 ft BGS, very near to the staked well location, the backhoe bucket
			encounters a metal object that turns out to be the GW-035
			stainless-steel well casing. The top of the well casing is bent over
			from the backhoe bucket with the top approximately 3.5 ft missing
			presumed removed at an earlier time. A minor amount of hand
			digging reveals that the well is open and contains free water.
			Plans are made to P&A the well on 2-16-93. Continued screening
			of the soil during excavation yields: organic vapors = 0.0 ppm,
			beta & gamma = 90 cpm, and alpha = 0 cpm.
2-16-93	0806	0825	Arrive at Walk-in Pits site. Crew, G. Schillings and P. McCormick
			(Highland), onsite and waiting. T. Coffey (SAIC) technical over-
			sight and Site Health & Safety Officer. Don protective clothing.
	0825	0827	Arrive at GW-035 site. The excavation has caved slightly and
			rainwater accumulation covers the well casing.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-035
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-16-93	0827	0850	Enlarge the excavation with the backhoe to drain the accumulated
(cont.)			water and further expose the well casing. Screen soil and
			excavation: beta & gamma = 120 cpm.
	0850	0900	Excavate by hand to clear debris and annular grout. Scan
			excavation with rad meters: beta & gamma = 120 cpm, alpha =
			0 cpm.
	0900	0906	Cut off bent casing stick-up (0.5 ft). Top of casing is now 4.0 ft
			below ground surface (BGS). Use torch to open up hole further.
			Wire from dedicated bailer is visible in well, but unreachable.
	0906	0908	Tag bottom of well at 53.2 ft below top of casing (BTOC) = 57.2 ft
			BGS (Feels solid, on top of bailer?). Note: Subsurface Database
			(Y/TS-881) reports TD of GW-035 at 62.0 ft. Calculate well volume
			to top of casing at 1.2 cubic ft, equivalent to 1.7 sacks of Hole
			Plug™.
	0908	0916	Slowly pour Hole Plug™ into the well. Hole Plug™ begins to bridge
			off in casing. Run 3, 10 ft sections of PVC tremie pipe into well to
			push Hole Plug™ down. Continue slowly pouring Hole Plug™ into
			well. After 1 sack (.7 cubic ft), the Hole Plug™ bridges again and
			all attempts to push to bottom fail. Bridge may have occurred on
			bailer wire.
	0916	0930	Gather errant post from GW-036 and place in pit along with
			annular cement fragments. Begin filling in the pit.
	0930	1000	Continue to fill in pit. B. McMaster (HSE) onsite, but outside of
			radiation area as Energy Systems representative. Rad scan of site
			ground surface yields: beta & gamma = 70 cpm, alpha = 0 cpm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-035
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-16-93	1000	1010	Dress up site with tractor's loading bucket. Scan wellsite
(cont.)			with rad meters: alpha = 0 cpm, beta & gamma = 70 cpm
			(background = 50 cpm).
			P&A of GW-035 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-036

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

FOREMAN: Greg Shillings - Highland Drilling

HELPERS: Paul McCormick/James Gallaher - Highland

DRILL: Ford 555 Backhoe

DATE: START: 2-8-93

FINISH: 2-11-93

METHOD: A

LOGGED BY: T.J. Coffey/T.J. Long - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-8-93	1447	1453	Arrive at GW-036 site. Remove cap, scan for organic vapors: 0.0
			ppm. Scan wellsite with rad meters: beta & gamma = 60 cpm,
			alpha = 0 cpm. Well has dedicated stainless-steel bailer inside.
			Remove bailer. Measure water level at 32.0 ft below top of casing
			(BTOC) = 28.6 ft below ground surface (BGS). Tag bottom of well
			at 43.0 ft BTOC = 39.6 ft BGS. Note: Subsurface Database (Y/
			TS-881) reports total depth (TD) of GW-036 at 39.1 ft. Calculate
			a well volume to 4 ft BGS of 0.8 cubic ft, equivalent to 1.1 sacks
			of Hole Plug™.
	1453	1458	Pour approximately 1/2 sack (0.3 cubic ft) of Hole Plug™ into GW-
			036 (until the Hole Plug™ level is above the water level). Tag Hole
			Plug™ level at 25.5 ft BGS.
2-9-93	1256	1301	Arrive at GW-036 site. Tag Hole Plug™ level at 25.5 ft BGS (no
			change in Hole Plug™ level). Rad scan of site: beta & gamma
			= 70 cpm (background), alpha = 0 cpm. Calculate a well volume
			to 4 ft BGS of 0.5 cubic ft, equivalent to 0.4 sacks neat cement.
	1301	1303	Run 2, 10 ft joints of 1.5-in. outside diameter (OD) tremie pipe into
			the well to 15.5 ft BGS.
	1303	1312	Mix and gravity tremie 1/2 sack (0.6 cubic ft) of neat Type I
			Portland cement into GW-036. Fill to 2.3 ft BGS.
	1312	1315	Pull out tremie pipe and clean up.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-036
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-10-93	0947	0952	Tag cement level in GW-036 at 3.6 ft BGS. Well is ready for final
			P&A activities.
2-11-93	1250	1315	Arrive at GW-036 site. Using backhoe, begin excavating a pit
			around well. Screening excavation and soil: organic vapors = 0.0
			ppm, beta & gamma = 90 cpm (max), alpha = 0 cpm. Begin
			removing protective posts. These posts (3) have been anchored
			with excessive amounts of concrete. While removing posts, one
			gets away and rolls approximately 30 ft downhill; will need a winch
			to retrieve.
	1315	1325	Excavate pit to approximately 3.6 ft BGS. Break off well casing
			below protective casing. Place casing, bailer, and 2 posts with
			concrete in pit for onsite burial as per waste management plan and
			commence filling in.
	1325	1330	Dress up site with tractor's loading bucket. Scan wellsite after
			completion of P&A activities: organic vapors = 0.0 ppm, beta &
			gamma = 90 cpm, alpha = 0 cpm.
			P&A of GW-036 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-037
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 2

LOCATION: Bear Creek Burial Grounds, Walk-in Pits
FOREMAN: Greg Shillings - Highland Drilling
HELPERS: Paul McCormick/James Gallaher - Highland
DRILL: Ford 555 Backhoe

DATE: START: 2-8-93
FINISH: 2-11-93
METHOD: A
LOGGED BY: T.J. Coffey/T.J. Long - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-8-93	1504	1517	Arrive at GW-037 site. Remove cap, scan for organic vapors:
			0.0 ppm. Scan wellsite with rad meters: beta & gamma = 50 cpm,
			alpha = 0 cpm. Measure water level at 42.2 ft below top of casing
			(BTOC) = 39.4 ft below ground surface (BGS). Tag bottom of well
			at 71.8 ft BTOC = 69.0 ft BGS. Note: Subsurface Database
			(Y/TS-881) reports total depth (TD) of GW-037 at 70.0 ft. Calculate
			a well volume to 4.0 ft BGS of 1.4 cubic ft, equivalent to 2.1 sacks
			of Hole Plug™. Dedicated stainless-steel bailer found onsite in
			brush.
	1517	1527	Pour approximately 1.3 sacks (0.9 cubic ft) of Hole Plug™ into
			GW-037 (until the Hole Plug™ level is above the water level). Tag
			Hole Plug™ level at 31.4 ft BGS.
2-9-93	1315	1320	Arrive at GW-036 site. Tag Hole Plug™ level at 31.2 ft BGS (Hole
			Plug™ swelled 0.2 ft upon hydration). Calculate a well volume to
			4 ft BGS of 0.6 cubic ft, equivalent to 1/2 sack of neat cement. Scan
			wellsite with rad meters: alpha = 0 cpm, beta & gamma = 70 cpm.
	1320	1322	Run 2, 10 ft joints of 1.5-in. OD PVC tremie pipe into GW-037 to
			16.0 ft BGS.
	1322	1333	Mix and gravity tremie 1/2 sack (0.6 cubic ft) of neat Type I Portland
			cement into well GW-037. Fill to approximately 1.6 ft BGS.
	1333	1336	Pull out tremie pipe and clean up.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-037
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-10-93	0952	0956	Tag cement level in GW-037 at 3.3 ft BGS. Scan wellsite with rad meters: alpha = 20 cpm, beta & gamma = 60 cpm. Well is ready for final P&A activities.
2-11-93	1335	1403	Arrive at GW-037 site. Using backhoe, begin excavating pit around well. Begin extracting protective posts (2) with excessively large concrete anchors. Observe weathered bedrock in pit. Screening soil/bedrock fragments and pit: organic vapors = 0.0 ppm, beta & gamma = 90 cpm, alpha = 0 cpm. Excavate pit to approximately 3.3 ft BGS. Break off well casing below protective casing.
	1403	1409	Push casings, posts (2), and bailer into pit for onsite burial as per waste management plan. Fill in pit. Continue to screen soil and bedrock: organic vapors = 0.0 ppm, beta & gamma = 90 cpm, (alpha not measured due to rainfall).
	1409	1424	Dress up site with tractor's loading bucket. Screen site: organic vapors = 0.0 ppm, and beta & gamma = 100 cpm. Scanned wellsite at completion of P&A activities: organic vapors = 0.0 ppm, beta & gamma = 100 cpm.
			P&A of GW-037 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-038

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

FOREMAN: Greg Shillings - Highland Drilling

HELPERS: Paul McCormick/James Gallaher - Highland

DRILL: Ford 555 Backhoe

DATE: START: 2-8-93

FINISH: 2-11-93

METHOD: A

LOGGED BY: T.J. Coffey/T.J. Long - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-8-93	1527	1535	Arrive at GW-038 site. Remove well wizard™ submersible pump
			and tubing. Scan for organic vapors: 0.0 ppm. Scan wellsite with
			rad meters: beta & gamma = 70 cpm, alpha = 0 cpm. Measure
			water level at 49.7 ft below top of casing (BTOC) = 47.5 ft below
			ground surface (BGS). Tag bottom of well at 54.7 ft BTOC = 52.5
			ft BGS. Calculate a well volume to 4 ft BGS of 1.1 cubic ft,
			equivalent to 1.5 sacks of Hole Plug™.
	1535	1540	Begin pouring Hole Plug™ into GW-038. Hole Plug™ level above
			the water level almost immediately. Poured less than 0.2 sack of
			Hole Plug™ into the well. Tag Hole Plug™ level at 44.5 ft BGS.
2-9-93	1336	1339	Arrive at GW-038 site. Tag Hole Plug™ level at 44.5 ft BGS.
			Calculate a well volume to 4 ft BGS of 0.9 cubic ft, equivalent to
			0.7 sacks of neat cement. Scan wellsite with rad meters: alpha
			= 0 cpm, beta & gamma = 80 cpm (background).
	1339	1342	Run 4, 10 ft joints of 1.5-in. outside diameter (OD) PVC tremie
			pipe into the well to 37.0 ft BGS.
	1342	1356	Mix and gravity tremie approximately 3/4 sack (0.9 cubic ft) of neat
			Type I Portland cement into the well. Circulate 100% cement.
	1356	1404	Pull out tremie pipe. Cement level drops to greater than 1.0 ft
			BTOC. Clean up.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-038
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-10-93	0956	1003	Tag cement level at 8.5 ft BGS. Scan wellsite with rad meter: alpha
(cont.)			= 0 cpm, beta & gamma = 80 cpm. Calculate a well volume to 4 ft
			BGS of 0.1 cubic ft, equivalent to 0.1 sacks of neat cement.
			Cement level must be within 4 ft of the ground surface (as per
			procedures) prior to capping.
	1459	1503	Mix and pour approximately 0.1 sack (0.1 cubic ft) of neat Type I
			Portland cement into well. Clean up.
2-11-93	1255	1300	Tag cement level in well at 1.1 ft BGS. Well is ready for final P&A
			activities.
	1429	1458	Return to GW-038 site. Using backhoe, begin excavating pit
			around well. Begin extracting protective posts (2). Posts have
			excessive concrete anchors. Screening soil and excavation: beta
			& gamma = 120 cpm (OVA and alpha meter not used due to heavy
			rains). Excavate pit to approximately 3.0 ft BGS. Break off well
			casing below protective casing.
	1458	1512	Push posts (2), casings, and submersible pump and tubing into pit
			for onsite burial (as per waste management plan) and fill in.
			Screen soil at surface: beta & gamma = 120 cpm.
			P&A of GW-038, is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-063
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 5

LOCATION: Oil Landfarm Functional Area	DATE: START: 3/25/93
DRILLERS: Hubert Hall-Highland Drilling Co.	FINISH: 4/7/93
HELPERS: Greg Shillings/Steve Brown/Mark Baker	METHOD: A
DRILL: Ingersol Rand XL-750	LOGGED BY: Tim Coffey - SAIC V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3/25/93	1335	1441	Crew arrives at site to excavate cuttings pit and erect erosion
			controls. Technical oversight provided by Victor R. Harness
			(SAIC). Stickup of 2.37-in. outside diameter (OD) stainless steel
			(SS) riser is 3 ft. Top of 6-in. OD protective casing is 2.3 ft above
			ground surface. Protective posts previously cut off at ground with
			acetylene torch. Backhoe (Ford 555) used to excavate a 10 ft x
			6 ft x 8 ft deep cuttings pit approximately 20 ft downslope of well,
			55 ft from SS2 spring, and 42 ft south of Bear Creek Valley Road
			right of way (ROW). Secure site and depart.
3/26/93	0833	0913	Awaiting crew. Crew mobilizing rig.
	0913	0957	Crew arrives. One post anchor with excessive grout was removed
			by backhoe to facilitate set up. Siltation fencing installed around
			3/4 of the perimeter of excavation.
	0957	1022	Crew installs plastic sheeting under rig and flags perimeter of
			entire site including pit. Backhoe excavates 1 ft deep by 2 ft wide
			cuttings drainage ditch between well and cuttings pit.
	1022	1032	Crew secures a drill rod that came loose in the carousel prior to
			raising mast.
	1032	1052	Mast raised. Drill table opened. Crew secures protective casing
			with chain and unsuccessfully tries to pull up well.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-063
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3/26/93	1052	1253	Crew departs to get a section of 7.0-in. OD, 6.25-in. inside
(cont'd)			diameter (ID) washover pipe to over wash 6.0-in. OD protective
			casing. Washover pipe must be steam cleaned. Lunch break.
	1253	1321	Crew returns with 24.8 ft length of 7.0-in. OD washover pipe (with
			bit). Subadapter attached (length = 5.6 ft). Rig up washover pipe
			and subadapter.
	1321	1355	Breathing zone analysis at table = 0.0 ppm. Radiation emissions
			at table are: alpha = 0 cpm (= background), beta/gamma = 50 cpm
			(background = 40 cpm). Table height = 3 ft.
	1355	1359	Begin over wash with compressed air only. Returned preliminary
			cuttings consist of light gray (Munsel N7-N8) grout mixed with dark
			yellowish-brown, gritty loam and clay.
	1359	1404	Advance to 2 ft below ground surface (BGS). Begin to use water
			in drilling.
	1404	1408	Halt drilling to free hydraulic hoses, which are bending in mast.
			Resume over wash.
	1408	1448	Advance to 17.5 ft BGS. Losing majority of circulation to a
			multitude of small pressure blowouts that are located on eastern
			side of well as far as 25 ft away from table. No noticeable impact
			to adjacent surface waters.
	1448	1553	Advance to 21.5 ft BGS. Encounter rock. Trip out tools. Casing
			has settled into the bore approximately 6 ft BGS. Bore is audibly
			caving in. Secure site and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-063
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3/29/93	0740	0810	Technical oversight provided by T. J. Coffey (SAIC). Awaiting crew's arrival.
	0810	0850	Crew arrives and rig mast is lowered. Crew departs to get backhoe.
	0850	0939	Crew returns with backhoe and extracts remaining 2.9 ft of protective casing (total length of protective casing = 5 ft) and 7.3 ft of stainless riser (total length removed = 9.9 ft). The riser came apart at a threaded point.
	0939	1030	Attempt to retrieve casing.
	1030	1041	Move rig approximately 3/4-in. forward. Raise mast. Trip in tools.
	1041	1115	Trip out. Unable to see casing. Trip in tools and clean bore. A new hole may have to be drilled.
	1115	1123	Advance to 18 ft BGS. Unsuccessfully attempted to remove washover subadapter.
	1123	1138	Heat joint with acetylene torch, and break it loose.
	1138	1155	Rig down washover pipe.
	1155	1308	Lunch.
	1308	1326	Crew returns with water truck. Steve Jones (HSE) gives permission to drill out remaining casing. Rig up a 10 5/8-in. diameter tricone roller bit (Bit and stabilizer = 9.2 ft length).
	1326	1333	Trip in. Table Ht = 2.4 ft. Commence reaming bore.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-063
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3/29/93	1333	1337	Advance to 22.2 ft BGS. Table Ht = 3.0 ft.
(cont'd.)			
	1337	1401	Advance to 23.5 ft BGS. Bit hung. Trip out. Rotation motor on drill
			head broke. Rig off.
	1401	1554	Crew inspects malfunction, and removes rotation motor. Approxi-
			mately 200 ml of hydraulic fluid spilled on ground around bore.
			Bore is covered with straw bale, and rig down until repairs can be
			made. Secure site and depart.
3/30/93	1445	1535	Technical oversight resumed by V.R. Harness (SAIC). Repairs
			completed to rig. Trip in with 10 5/8-in. diameter bit. Advance to
			23.2 ft BGS. Lose circulation. No cuttings received at surface.
	1547	1640	Encounter a series of small voids and ratty drilling at 24.2 ft to
			26.2 ft BGS. Advance to 30 ft BGS. Water truck empty. Secure
			site and depart. No cuttings.
3/31/93	0821	0845	Awaiting crew's arrival.
	0845	0902	Crew arrives with water truck. Trip tools back in bore hole, and
			resume reaming at 30 ft BGS.
	0902	0957	Ratty drilling advance to 36 ft BGS. Grout delivery arrives.
	0957	1014	Trip out tools. Pour two 50 lb-buckets of bentonite pellets in bore.
			Depth of bore before bentonite tagged at 30 ft BGS (hole caving).
			Top of unhydrated bentonite tagged at 29 ft BGS.
	1014	1041	Insert 20 ft of 1.5-in. OD PVC temie pipe to 17 ft BGS. Prepare to
			gravity tremie. Steve Jones (HSEA) stops grouting, requests that

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-063
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3/31/93			bore be filled with Hole Plug™ to a level above the voids
(cont'd)			(20 ft BGS).
	1041	1137	Crew pours fifteen sacks of Hole Plug™ bentonite into bore. Top
			of unhydrated bentonite = 19 ft BGS.
	1137	1202	Pour 25 gallons of potable water into bore to facilitate hydration of
			bentonite. Secure site and depart.
4/1/93	1133	1138	Tag hydrated bentonite at 18.7 ft BGS.
	1138	1203	Crew prepares for grout delivery.
	1203	1210	Grout delivery arrives. Pour 0.3 cubic yds of neat, Type I Portland
			cement into bore. Liquid grout to 1 ft BGS. Secure site and depart.
4/2/93	1202	1208	Tag cured grout at 4.2 ft BGS.
4/5/93	0856	0902	Crew mixes and pours a fraction of a sack of Portland Type I
			cement into bore.
4/6/93	0839	0848	Top of cured grout at 3.8 ft BGS.
4/7/93	1458	1500	Clay cap installed on bore. P&A of GW-63 complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-088
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 3

LOCATION: Bear Creek Burial Grounds

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Randy Phillips, Greg Anderson, Steve Brown

DRILL: Ingersoll Rand XL-750

DATE: START: 4-27-93

FINISH: 5-5-93

METHOD: A

LOGGED BY: V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-27-93	0900	1036	Technical oversight provided by V.R. Harness - SAIC. Three dump trucks of coarse gravel are delivered to site and crew uses backhoe to create an area for rig to set up on GW-088.
	1036	1219	Riser stick-up at GW-088 = 2.9 ft of 2.37-in. outside diameter (OD), 2.0-in. inside diameter (ID) #304 stainless steel (SS) casing. Also 2.1 ft stick-up of 5-in. OD steel protective casing. Crew removes all 5 ft length of 5-in. protective casing and all 2.37-in. OD SS riser stick-up using backhoe and oxyacetylene torch.
	1219	1250	Rig is mobilized onto site and set up. Protective posts are extracted.
	1250	1256	Rig up 16.9 ft long section of 6-in. OD, 5.25-in. ID washover pipe and bit.
	1256	1301	Begin over wash. Breathing zone analyses (BZA) at table = 0.0 ppm, background (BCK) BZA = 0.0 ppm. Radiation: alpha = 20 cpm = BCK; beta/gamma = 120 cpm (BCK = 80 cpm). Table ht = 2.3 ft.
	1301	1308	Advanced to 14.6 ft below ground surface (BGS). BZA = 0.0 ppm, beta/gamma = 80 cpm. SS casing comes out of hole with washover pipe.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-088
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-27-93	1308	1322	Crew secures casing and extracts 23.7 ft of riser (+2.9 ft stick-up
(cont.)			= 26.6 ft) subtended by 5.1 ft of spiral wound SS screen subtended
			by 1.2 ft of SS silt trap. Total well length with screen, cap, riser, and
			stick up = 32.9 ft.
	1322	1331	Crew breaks out washover pipe and rigs up with 9.2 ft long,
			10 5/8-in. diameter tricone roller bit and stabilizer assembly.
			Description of 0 to 14.6 ft BGS cuttings:
			Sample comprised of 90% (by volume) white (N8) grout fragments
			with 10% light olive brown (2.5Y 5/4) clay with silty shale fragments.
	1331	1334	Begin reaming hole with 10 5/8-in. diameter bit. Advance to 7 ft
			BGS compressed air only.
	1334	1353	Begin using water to drill, advanced to 32 ft BGS.
	1353	1405	Trip out tools, rig down and secure site. 1 cubic yd of grout ordered
			for delivery 4-28-93. Depart site.
			Description of 0-32 ft BGS reaming cuttings:
			Sample is comprised of 90% (by volume) grayish black (N2) silty
			shale, 9% dark yellowish brown (10YR 4/2) silty shale with 1% dark
			greenish gray (5GY 4/1) shale fragments.
4-28-93	0817	0842	Arrive at site, awaiting grout delivery.
	0842	0910	Grout delivery arrives. Bore has collapsed, crew cleans out bore
			with 10 5/8-in. diameter bit. Trip out tools.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-088
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-28-93	0910	0921	Tag bore at 32 ft BGS. Pour 1 cubic yd of neat Type I Portland
(cont.)			cement into bore.
	0921	0945	All grout in bore. Liquid grout at 1 ft BGS and seems to be slowly
			dropping. Secure site and depart.
4-29-93	1257	1302	Tag cured grout at 4.5 ft BGS. Depart site.
4-30-93	1409	1412	Mix and pour 0.5 sack or 5 gal. of neat grout into bore. Depart site.
5-3-93	0750	0800	Tag grout at 4.5 ft BGS. Depart site
	1554	1600	Mix and pour 1 sack of neat grout into bore. Depart.
5-4-93	0802	0805	Tag grout at 4.0 ft BGS. Depart site.
5-5-93	am		Cap GW-088 with clay soil.
			P&A of GW-088 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-234

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Burial Grounds

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Randy Phillips/Jim Gallaher - Highland

DRILL: Ingersoll Rand XL-750

DATE: START: 4-26-93

FINISH: 5-5-93

METHOD: A

LOGGED BY: Timothy Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-26-93	1206	1232	Arrive at GW-234 site. Drill rig is already positioned over well.
			Crew is rigging up a section of 5.0-in. inside diameter (ID), 6.0-in.
			outside diameter (OD) washover pipe modified with tungsten
			carbide chips brazed onto one end to perform as the bit; length =
			15.2 ft, total length (includes drilling sub) = 17.0 ft, table height =
			4.2 ft. Well casing stickup = 3.5 ft.
	1232	1303	Crew breaks for lunch. S. Jones (HSE) onsite with T. McDermott
			(SMS, Inc.) who will be observing the P&A operations.
	1303	1314	Commence over washing the casing with air only. Over wash
			casing from 0.0 ft to 10.9 ft below ground surface (BGS). Sporatic
			circulation between 2.0 ft and 3.5 ft BGS. Cuttings consist of dark
			yellowish-brown (10YR 4/2) to grayish-brown (5YR 3/2), moist,
			clayey soil with increasing amounts of light gray (N7) cement
			fragments. Drilling becomes more difficult at 3.5 ft BGS. Washover
			pipe dropped rapidly from 5.0 ft to approximately 7.0 ft BGS, then
			circulation was lost. Washover pipe appears to be binding on the
			casing beginning at 9.0 ft BGS.
	1314	1320	At 10.9 ft BGS. Halt over wash; no circulation since 7.0 ft BGS.
			Should be below any annular cement, will try to pull casing. Break
			washover pipe loose and rig down. Conductor casing and well
			casing wedged into washover pipe.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-234
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-26-93	1320	1333	Remove a total of 5.0 ft of 4.0-in. OD steel conductor casing (it had
(cont.)			been bent) from washover pipe. A total of 5.6 ft of 2.37-in. OD
			stainless-steel well casing encased within the conductor casing.
			Stainless-steel well casing had sheared off at the base of the
			conductor casing.
	1333	1336	Rig up with a 10 5/8-in. diameter tricone roller bit and stabilizer;
			length = 9.2 ft, table height remains at 4.2 ft.
	1336	1339	Commence reaming with air only. Ream to 5.0 ft BGS. Circulation
			is spotty.
	1339	1343	At 5.0 ft BGS. Add drill rod.
	1343	1410	Continue reaming with air and water. Ream from 5.0 ft to 17.5 ft
			BGS. Lose circulation entirely at 6.8 ft BGS. Ratty drilling
			throughout most of the interval (well casing remaining in hole).
	1410	1419	At 17.5 ft BGS (no circulation since 6.8 ft BGS). Trip out, rig down
			stabilizer. Tag bottom of hole at 15.2 ft BGS (2.3 ft of fill). Calculate
			a borehole volume to 4.0 ft BGS of 6.9 cubic ft, equivalent to 5.1
			sacks of 2% bentonite-cement grout.
	1419	1445	Waiting for crew to bring cementing supplies and equipment to
			site.
	1445	1450	Crew arrives. Run 1, 10.0-ft section of 1.5-in. OD PVC tremie pipe
			into borehole to 9.5 ft BGS. Due to lost circulation, suspect
			washout of borehole. If so, and if cement does not fill hole,
			S. Jones (HSE) gives approval to use Hole Plug™ instead.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-234
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
4-26-93	1450	1512	Mix and tremie 5 sacks (6.8 cubic ft) of 2% bentonite-cement grout
(cont.)			into borehole. Did not circulate water or cement.
	1512	1523	Pull out tremie pipe. Clean up, secure site, and depart.
4-27-93	0830	0840	Technical oversight by Victor Harness (SAIC). Arrive at GW-234
			site. Tag cement level at 11.7 ft BGS. A large void is suspected
			below 7 ft BGS (cause/result of lost circulation). Plan to use Hole
			Plug™ to bring borehole sealant level to 7.0 ft BGS. Calculate a
			minimum borehole volume from 11.7 to 4 ft BGS of 2.8 cubic ft,
			equivalent to 4.2 sacks of Hole Plug™.
	0840	0855	Crew goes to pipeyard for Hole Plug™.
	0855	0904	Crew returns with six sacks of Hole Plug™ (all they had at
			pipeyard). Pour the six sacks (4.1 cubic ft) of Hole Plug™ into the
			borehole. Tag Hole Plug™ level at 9.0 ft BGS (level rose only
			2.7 ft). Depart site.
4-30-93	1334	1350	Arrive at GW-234 site. Pour 12 sacks (8.3 cubic ft) of Hole Plug™
			into borehole. Tag Hole Plug™ level at 8.0 ft BGS. Depart site.
	1451	1500	Return to GW-234 site. Pour an additional 11 sacks (7.6 cubic ft)
			of Hole Plug™ into borehole. Tag Hole Plug™ level at 3.0 ft BGS.
			Depart site.
5-3-93	0755	0800	Oversight resumed by Timothy Coffey (SAIC). Arrive at GW-234
			site. Tag Hole Plug™ level at 4.7 ft BGS. Calculate a borehole
			volume to 4.0 ft of 0.4 cubic ft, equivalent to 0.3 sacks 2%
			bentonite-cement grout. Depart site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-234
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
5-3-93	1549	1554	Return to GW-234 site. Mix and pour 1 sack (1.4 cubic ft) of 2%
(cont.)			bentonite-cement grout into borehole. Cement ran directly into
			small void on side of borehole.
5-4-93	0823	0830	At GW-234 site. Pour 1 more sack (0.7 cubic ft) of Hole Plug™ into
			borehole. Hole Plug™ level at 3.3 ft BGS. Hole Plug™ to hydrate
			a minimum of 4 hrs. Used a total of 30 sacks (20.7 cubic ft) of Hole
			Plug™ in GW-234 borehole. Depart site.
	1454	1512	Return to GW-234 site. Mix and pour 1 sack (1.4 cubic ft) of 2%
			bentonite-cement grout into borehole. Fill to 1.3 ft BGS. Clean up
			and depart site.
5-5-93	0740	0744	Arrive at GW-234 site. Tag cement level at 1.4 ft BGS. Borehole
			is ready to be capped. Depart site.
			Borehole GW-234 capped with clay soil on 5-5-93.
			P&A of GW-234 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-502

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

FOREMAN: Greg Shillings - Highland Drilling

HELPERS: Paul McCormick - Highland Drilling

DRILL: Ford 555 Backhoe

DATE: START: 2-8-93

FINISH: 2-11-93

METHOD: B

LOGGED BY: T.J. Coffey/T.J. Long - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-8-93	1024	1042	Arrive at GW-502 site. Remove well cap, scan for organic vapors:
			0.0 ppm. Scan ground surface with rad meters: beta & gamma
			= 50 cpm, alpha = 0 cpm. Measure water level at 31.2 ft below top
			of casing (BTOC) = 28.7 ft below ground surface (BGS). Tag
			bottom of well at 261.4 ft BTOC = 258.9 ft BGS. Note: Subsurface
			Database (Y/TS-881) reports total depth (TD) of GW-502 to be
			260.0 ft. Calculate a well volume to 4 ft BGS of 50.0 cubic ft,
			equivalent to 72.5 sacks of Hole Plug™.
	1042	1055	Slowly pour 12 sacks (8.3 cubic ft) of Hole Plug™ into GW-502.
			Organic vapors at well collar = 0.0 ppm. Beta & gamma scan =
			30 cpm.
	1139	1155	Slowly pour an additional 9 sacks (6.2 cubic ft) of Hole Plug™ into
			the well. Continue to scan casing collar for organic vapors:
			0.0 ppm. Water rises to the top of the well casing. Tag Hole
			Plug™ level: tape stops at 183.5 ft BGS.
	1346	1406	Arrive at GW-502 site. Water level in well casing has dropped 0.5
			ft. Rad scan of water in casing: beta & gamma = 30 cpm. Pour
			an additional 14 sacks (9.7 cubic ft) of Hole Plug™ into the well.
			Circulate water onto ground surface. Tag unhydrated Hole
			Plug™ level at 135.5 ft BGS.
2-9-93	0912	0915	Arrive at GW-502 site. Tag hydrated Hole Plug™ level at 134.7 ft
			BGS (Hole Plug™ swelled 3.3 ft).

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-502
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-9-93	0915	0932	Slowly pour 15 sacks (10.4 cubic ft) of Hole Plug™ into GW-502.
(cont.)			Circulate water entire time. Tag Hole Plug™ level at 78.0 ft BGS.
	0932	0948	Pour an additional 10-1/2 sacks (7.2 cubic ft) of Hole Plug™ into
			GW-502. Continue to scan site, beta & gamma = 50 cpm; alpha
			= 0 cpm. Circulate water. Tag Hole Plug™ level at 34.7 ft BGS.
			A total of 60.5 sacks (41.7 cubic ft) of Hole Plug™ used in GW-502.
	0948	0951	Clean up site.
2-10-93	0826	0833	Arrive at GW-502 site. Tag hydrated Hole Plug™ level at 34.6 ft
			BGS (Hole Plug™ swelled 0.1 ft). Rad scan of site: beta & gamma
			= 50 cpm, alpha = 20 cpm. Calculate a well volume to 4 ft BGS of
			6.0 cubic ft, equivalent to 4.4 sacks of 2% bentonite-cement grout.
			Run 3, 10 ft joints of 1.5-in. outside diameter (OD) PVC tremie pipe
			into the well to 27.0 ft BGS.
	0833	0904	Mix and gravity tremie 4 sacks (5.4 cubic ft) of 2% bentonite-
			cement grout. Begin circulating water almost immediately. Rad
			scan of displaced water: beta & gamma = 50 cpm. Tremie system
			slows up, remove 1, 10 ft joint of tremie pipe and continue tremie
			of approximately the last sack of cement from 17.0 ft BGS.
			Circulate 50% cement.
	0904	0915	Pull out tremie and clean up. Cement to cure for a minimum of
			24 hrs.
2-11-93	0828	0834	Arrive at GW-502 site. Tag cement level at 5.5 ft BTOC = 3.0 ft
			BGS.
	0834	0908	Position backhoe to remove 1 remaining protective post from well
			GW-030 (post to be buried in pit at GW-502). Post came loose and

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-502
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 3

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-11-93	0834	0908	rolled down bank, backhoe forced to retrieve. Post had in excess
(cont.)			of 1/2 cubic yard (estimated) of concrete on end.
	0908	0959	Position backhoe near GW-502, and begin excavating a pit
			around the well casing. Remove pad and 4 posts (these posts
			installed with minimal amount of concrete). Site HSO scanning
			soil occasionally while digging, maximum results: organic vapors
			= less than 1 ppm, beta & gamma = 70 cpm (max), and alpha =
			0 cpm. Expose 10.0-in. inside diameter, 10.75-in. OD steel
			surface casing.
	0959	1049	Complete pit excavation to about 3.0 ft BGS. Cut off surface
			casing, a total of 3.0 ft removed. Break up annular cement. Cut
			off well casing and recovered total of 5.1 ft. Cement to top of
			casing (level of pit excavation).
	1049	1112	Place posts, pad fragments, casing fragments, and P/A debris in
			excavation for onsite burial (as per waste management plan), and
			commence filling in pit.
	1112	1118	Dress up site with tractor's loading bucket. Scan soil: organic
			vapors = less than 1 ppm, beta & gamma = 50 cpm, and alpha =
			0 cpm.
			P&A of GW-502 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-551

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: SPAD Landfill Site

DRILLERS: Rob Tillery - Law Engineering Co.
Hubert Hall - Highland Drilling Co.

HELPERS: Mel Wagner - Law Engineering Co.
Steve Brown, Greg Shillings - Highland Drilling Co.

DRILL: CME Model 75 Ingersoll-Rand XL-750

DATE: START: 12-2-92

FINISH: 1-6-93

METHOD: D

LOGGED BY: Victor Harness - SAIC
Mike Klidzejs - SAIC
Susan Abston - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-2-92	1332	1423	Technical oversight by Victor Harness - SAIC. Crew and rig by
			Law Engineering. Crew removes fitting from 1.0-in. tube. HNu
			screen of tube interior = 0.4 ppm. Crew cuts stickup off on 1.0-in
			pipe at 1.5 ft above ground. Concrete pad broken up with rig
			hammer.
	1423	1450	Rig up shoe bit on 5-ft piece of HQ drill rod. Bit = 0.3 ft length.
			Crew departs to get water truck.
	1450	1517	Crew stacks 10-ft drill rods on racks, hooks up water truck.
	1517	1526	Begin drilling with HQ (3.79-in. outside diameter) diameter core
			rods using water. 1-in. pipe twists off flush with annular grout
			surface and ground surface. Remove 1.6 ft of 1-in. pipe. Plug
			1-in. pipe to prevent loss of drilling fluids and to maintain
			circulation.
	1526	1549	Resume drilling. Threads on female end of 5-ft drill rod cracked
			and leaking circulation water. Advance to 2 ft below ground
			surface (BGS) and stop to remove 5-ft piece of drill rod.
	1549	1613	Add 10-ft rod to bit. Resume drilling.
	1613	1620	At 5.5 ft BGS, stop to allow water flow from truck tank to feed tank
			to catch up. Resume drilling.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-551
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 10

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-2-92			Advance to 6.5 ft BGS. Shut down for day. Crew secures site.
(cont'd)			Depart.
12-3-92	0741	0805	Awaiting drill crew.
	0805	0856	Crew arrives. Warming drill rig. Crew supplement rod shoe used
			yesterday with a 0.86-ft long reaming shell. Slightly larger diameter
			than rod shoe shell still HQ size. Shell and bit length = 1.26 ft: Crew
			rigging up tools.
	0856	0922	Begin drilling. Advance to 12 ft BGS. Drill rod bends.
	0922	1021	Drilling has cut 1.0-in. pipe and was apparently set at an angle
			when grouted. Crew drills through 1.0 in. pipe fragment, which has
			fallen into bore. Abundant metal shavings in returns. Pause to
			allow flow of water from truck to catch up with rate of use.
	1021	1045	Resume drilling. Advance to 52.8 ft BGS. Pause to allow water
			flow to catch up and fill feed tank.
	1045	1112	Resume drilling. Advance to 62.8 ft BGS. Await water recharge
			to feed tank.
	1112	1138	Resume drilling. Advance to 72.8 ft BGS. Shut off rig to allow
			recharge of feed tank and break for lunch.
	1138	1239	Lunch.
	1239	1417	Resume drilling, advance to 101 ft BGS. Slowing of advance rate
			near end of interval.

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WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 10

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-3-92	1417	1453	Trip out of hole; rod shoe bit is worn out. Remove bit and replace
(cont.)			with HQ core bit. Bit and reaming sleeve = 1.4 ft long. Crew
			departs to get a fresh load of water.
	1453	1641	Awaiting return of crew.
	1641	1654	Crew returns, securing site. All depart.
12-4-92	0801	0810	Awaiting crew.
	0810	0931	Law crew arrives. Trip rods back in. Bore partially filled with water.
	0931	1015	Resume drilling. Stop before advance to allow cuttings pit to be
			made. Pit will allow cuttings to settle and allow re-use of drilling
			water. This hopefully will lessen frequency of downtime periods to
			refill water tank.
	1015	1110	Resume drilling. Very slow advance, bore pressuring up.
			Temporarily lose circulation at 107 ft BGS and at 109 ft BGS.
			Advance to 111.4 ft BGS. Trip out.
	1110	1215	Trip out. Having to remove 1.0-inch outside diameter (OD) pipe
			from inside drill rod. Have removed a total of 107.3 ft of 1.0-in. OD
			pipe since beginning. Also remove fragments of packer. Break for
			lunch and to get a load of water.
	1437	1615	Scott Gilbert (Highland) returns with load of water for Law crew.
			Tripping down. Resume drilling, advance to 145.9 ft BGS. Bore
			dressed. Crew secures rig. Depart.
12-7-92	0728	0806	Awaiting crew.

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DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-7-92	0806	0849	Crew arrives. Calculate five sacks of Type I cement grout required
(cont.)			to fill bore. Tag bore and confirm depth of 145.9 ft BGS.
	0849	0901	Crew departs to get equipment to tremie.
	0936	1024	Awaiting grout delivery. Crew will tremie through HQ rod using rig
			pump. Tremie elevation will be 30 ft above bottom of bore or 115.9
			ft BGS.
	1024	1123	Grout delivery arrives. Crew pumps 80 gal of neat, Type I cement
			grout into bore. No circulation from bore. Trip out, no grout seen
			on drill rods. Crew cleans equipment. Depart site.
	1358	1405	At site. Unable to get weighted tape past 59 ft BGS. Weight has
			bentonite on it when removed. Depart.
12-8-92	0835	0844	Tag bottom of bore at 74.6 ft BGS. Bentonite on weight of tape.
			Depart.
12-10-92	0753	0804	Tag firm surface at 67.7 ft BGS. Encounter water at 66 ft BGS.
			Some bentonite on weight.
12-16-92	1303	1351	Tag grout in bore at 67.7 ft BGS. Awaiting Highland Crew.
			Ingersoll-Rand XL-750 set up on boring.
	1351	1412	Crew steam-cleaning and rigging up first piece of 9-in. OD, 8.5-in.
			ID washover pipe, 20.1-ft length.
	1412	1443	Begin over wash. Advance to 20 ft BGS. Met no resistance
			between 17 and 20 ft BGS.

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DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-16-92	1443	1554	Unable to add next piece of washover pipe until a means of
			clamping and holding washover in bore is found. Secure site and
			depart.
12-17-92	0944	1020	Technical oversight assumed by Michael Klidzejs (SAIC). Crew,
			Bruce McMaster (HSE) and Susan Abston (SAIC), present. Crew
			prepares to over wash. Rig up with second washover pipe, 20.7
			ft in length. Table height is 2.2 ft.
	1020	1041	Continue over wash at 21.0 ft BGS. Organic vapors in breathing
			zone at 29.0 ft BGS = 5.2 ppm. Attribute this to alcohol in rig water
			pipes to prevent overnight freezing. Beta and gamma = 60 cpm
			(background = 50-60 cpm). Collect and rinse cuttings sample of
			21 to 35 ft interval. Sample consists of fine to fairly large cuttings
			of medium gray cement and minor angular chert fragments.
			Organic vapors in breathing zone at 40 ft BGS = 2.2 ppm. Beta
			and gamma = 50 cpm. Reach 41.0 ft BGS. Stop to add third
			washover pipe section.
	1041	1121	Decontaminate third washover pipe and rig up. Third pipe is 21.0
			ft in length.
	1121	1222	Rig stopped. Crew is waiting for 1130 scheduled cement shipment.
	1222	1246	Crew returns to GW-551 site and unloads washover pipe delivered
			to site by Scott Gilbert (Highland). Crew, Bruce McMaster, and
			oversight depart for lunch.
	1342	1402	Crew, oversight, Bruce McMaster, and Steve Fields (HSE) onsite.
			Rig is started and the hole is blown clean.

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WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 6 of 10

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-17-92	1402	1431	Continue over wash at 41 ft BGS. Organic vapors in breathing zone
(cont.)			at 44 ft BGS = 0.2 ppm. Beta and gamma = 30 cpm. Cuttings
			sample of 36 to 46 ft BGS interval collected. Sample consists
			predominantly of fine, light brownish gray (5YR 6/1) cement cuttings
			with minor white chert. Notice grinding noise from rig at 49 ft BGS.
			Beta and gamma around rig at 56 ft BGS = 60 cpm. Reach 61 ft
			BGS. Stop to add fourth washover pipe.
	1431	1515	Crew prepares to add fourth washover pipe; has difficulty breaking
			loose pipe joints. Cuttings sample of 46 to 61 ft BGS interval
			collected. Sample consists predominantly of fine dark gray (N3) to
			grayish orange (10YR 7/4) cement cuttings. Medium gray (N5) to
			white (N9) chert, and minor metal shavings also observed. Bruce
			McMaster leaves site; Steve Fields remains as PHSO. Fourth
			washover pipe, 21.0 ft in length rigged up.
	1515	1600	Continue over wash at 61.0 ft BGS. Organic vapors in breathing
			zone at 65.0 ft BGS = 0.4 ppm. Beta and gamma = 65 cpm. Organic
			vapors at 76.0 ft BGS = 0.6 ppm. Cuttings sample of 61 to 82 ft BGS
			interval collected. Sample is continuation of 46 to 61 ft BGS
			interval. Reach TD at 82.7 ft BGS. Blow hole clean.
	1600	1627	Crew begins removing adapter from washover pipe. Adapter is
			removed, exposing the casing.
	1627	1644	Crew secures site and departs. Oversight departs.
12-18-92	0828	0922	Crew and oversight arrive at site. Driller reports that the cement-
			filled, overwashed casing must be drilled out to enable removal.
			Call Steve Jones and inform him of plan. Crew goes to the GW-561
			site to pick up a stabilizer and bit. Crew returns. Driller leaves site
			to obtain geo-fabric. Steve Jones arrives onsite. Driller returns.

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WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 7 of 10

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-18-92	0922	0956	Geo-fabric is placed outside of the washover pipe for stabilization.
(cont.)			Used Tyvek™ coveralls are placed between overwash pipe and
			casing for stabilization and to prevent cement cuttings from going
			down annulus. Crew rigs up with 6.25 in. diameter bit and
			stabilizer, total length, 2.3 ft; and one rod. Table height = 2.3 ft
			BGS.
	0956	1007	Begin drilling cement inside of casing with air only. Stop drilling
			to check progress and continue down. Organic vapors in breathing
			zone at 10 ft BGS = 0.2 ppm. Beta and gamma = 40 cpm
			(background = 20 to 30 cpm). Alpha = 0 cpm. Reach 25 ft BGS
			and end of rod. Add second rod.
	1007	1013	Continue drilling at 25 ft BGS. Greg Shillings (Highland) arrives
			onsite. Organic vapors in breathing zone at 40 ft BGS and end of
			second rod. Add third rod.
	1013	1033	Continue drilling at 50.0 ft BGS. Organic vapors in breathing zone
			at 57 ft BGS = 0.2 ppm. Get wet cement cuttings and water at 66 ft
			BGS. Reach 75 ft BGS and end of third rod. Add fourth rod.
	1033	1044	Continue drilling at 75 ft BGS. Organic vapors in breathing zone
			at 80.0 ft BGS, erratic from 0.2 to 2.2 ppm. Beta and gamma =
			40 cpm. Get muddy water in returns with cement cuttings at 82
			ft BGS. Notice high pitched noise and vibration at 97 ft BGS,
			probably indicating bottom of casing. Drilling ends of 97.0 ft BGS.
	1044	1117	Pull rods, stabilizer, and bit out. Rig stopped. Organic vapors at
			opening of bored casing erratic, from 0.2 to 3.0 ppm.
	1117	1210	Crew attempts to pull casing. Determine that casing cannot be
			pulled, and must over wash further. Crew rigs up with an

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WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 8 of 10

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-18-92			additional section of washover pipe.
(cont.)			
	1210	1317	Break for lunch.
	1317	1356	Begin over wash at 82.7 ft BGS. Organic vapors in breathing zone
			at 84.7 ft BGS = 0.0 ppm. Beta and gamma = 60 cpm. Washover
			pipe sticks at 90.4 ft BGS. End overwash.
	1356	1615	Collect cuttings sample of 82.7 to 90.4 ft BGS interval. Sample
			consists of cement and minor yellowish gray (5Y 8/1) chert and
			medium light gray (N6) dolomite. Sample set to dry. Crew
			attempts to pull washover pipe. Crew unable to break joints. Will
			continue attempt in the morning. Crew, Bruce McMaster, and
			oversight depart.
12-21-92	0810	0950	Oversight, Bruce McMaster, and crew arrive at site. Crew continues
			attempt to break joint. The joint is broken and the first (uppermost)
			washover pipe section is removed, exposing the well casing.
			Scan first washover pipe section for rad: beta and gamma =
			60 cpm (background = 40 cpm), alpha = 10 cpm (background =
			5 cpm). Bruce McMaster leaves site to obtain cutting/welding
			permit, then returns.
	0950	1040	Crew begins removal of casing. Organic vapors in breathing zone
			= 0.2 ppm. Casing string is raised to top of the mast, clamped at
			the table, and cut with cutting torch. Uppermost section lowered
			to the ground surface. Process is repeated until entire string is
			removed. Beta and gamma of casing = 80 cpm. Alpha = 0 cpm.
			Total length of 6.5-in. OD steel casing string recovered = 91.1 ft.
	1040	1205	Washover pipe is pulled out, with minor difficulties.

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WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 9 of 10

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-21-92	1205	1320	Break for lunch.
(cont.)			
	1320	1410	Crew prepares to ream hole. Stabilizer and bit are decontaminated.
			Bit diameter = 10 5/8-in. Total length of stabilizer and bit = 9.2 ft.
			Rig up with rod, stabilizer, and bit. Table height = 2.9 ft.
	1410	1414	Scan washover pipes for rad: beta and gamma = 80 cpm, alpha
			= 0 cpm.
	1414	1422	Begin reaming with air only. Get frothy return water. Reach 31.3 ft
			BGS and end of first rod. Add second rod.
	1422	1427	Continue reaming at 31.3 ft BGS. Organic vapors in breathing
			zone at 46.0 ft BGS = 0.6 ppm. Reach 56.3 ft BGS and end of rod.
			Add third rod.
	1427	1510	Continue reaming at 56.3 ft BGS. Stop getting returns at 58.0 ft
			BGS. Rig is stopped. Tighten bolts on rig air compartment.
			Determine that bit is clogged. Begin pulling rods out to clear bit.
			Bit is unclogged. Trip back down. Table height adjusted to 3.2 ft.
	1510	1530	Continue reaming. Now getting good returns. Organic vapors in
			breathing zone at 71.0 ft BGS = 1.0 ppm. Ratty drilling between
			76 and 81 ft BGS. Reach 81 ft BGS and end of rod. Add fourth
			rod.
	1530	1600	Continue reaming at 81 ft BGS. Beta and gamma in breathing
			zone at 83 ft BGS = 50 cpm. Reach 92.0 ft BGS, stop reaming and
			blow hole clean. Trip out, and begin pulling rods. Collect cuttings
			sample of 20 to 92 ft BGS interval. Sample is rinsed and set to dry.
			Screen sample for beta and gamma, alpha and place under foil for
			headspace analysis (see cuttings field screening/disposal sheet).

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WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 10 of 10

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-21-92			Beta and gamma of stabilizer and bit = 60 cpm. Alpha = 0 cpm.
(cont.)			
	1600	1617	Mast is lowered. Rig is winterized.
	1617	1622	Seven 10-ft sections of tremie pipe are placed down hole.
	1622	1646	Crew decontaminates rig, and departs. Oversight departs.
12-22-92	0940	1105	Susan Abston (SAIC) assumes oversight responsibilities. Tag
			bottom of reamed hole at 67.4 ft BGS. Cement truck arrives at
			1016. Two cubic yds cement is pumped into tremie pipe. Cement
			truck departs.
12-28-92	1050	1100	Tag cement level in GW-551 at 2.4 ft BGS.
1-6-93	1430	1500	Cap GW-551. P&A of GW-551 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-553

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: SPAD Landfill Site

DRILLERS: Rob Tillery - Law Engineering; Hubert Hall - Highland Drilling Co.; Mel Wagner - Law Engineering

HELPERS: Jim Gallaher/Steve Brown - Highland

DRILL: CME M-75/Ingersoll Rand XL-750

DATE: START: 12/8/92

FINISH: 3/18/93

METHOD: D

LOGGED BY: S.L. Abston - SAIC; V.R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12/8/92	1314	1345	Technical oversight by V.R. Harness (SAIC). Crew using backhoe (Ford 555 tractor) to cut recirculation pit for CME M-75 core rig (Law Engineering). Rob Tillery and Mel Wagner (Law Engineering) set up rig.
	1345	1416	Rig up CME with HQ core bit to over drill 1.0-in. outside diameter (OD) tube in well. (Well is a core hole converted by use of packer into a well.) HQ core bit is 3.79-in. OD and 2.5-in. inside diameter (ID). Core bit and rod used to fit inside 4.5-in. OD, 4.0-in. ID casing. Nylon packer inflation tube clogs bit, driller places crushed glass into hole to facilitate cutting. Bit and reaming shell length = 1.4 ft. Reaming shell OD = 3.672 in.
	1416	1424	Advance to 1.0 ft below ground surface (BGS). Driller having to use 5-ft section of HQ drill rod first to make room to mount 10-ft rod on chuck. Female end of 5-ft rod is cracked, so driller packs threads with teflon tape to seal circulation.
	1424	1435	Resume over drilling. Advance to 5 ft BGS. Background radiation = 40 cpm beta/gamma and 20 cpm alpha emissions.
	1435	1535	Halt advance, exchange 5-ft long rod for 10-ft long rod. 8.8 ft of 1-in. tube comes out during exchange. Resume drilling. Breathing zone analysis (BZA) for organic vapors at table = background = 0 ppm. Cuttings composition = 90% fine grout fragments plus 10% metal shavings, glass fragments, and fragments of nylon

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WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12/8/92			nylon packer inflation tubing.
(cont.)			
	1535	1602	Advance to 12.6 ft BGS. Cuttings sample composition = 75%
			metal shavings (magnetized) + 25% grout chips. Radiation
			screening of cuttings:
			Interval alpha beta/gamma
			0-5 ft 40 cpm 50 cpm
			5-12.6 ft 40 cpm 30 cpm
	1602	1613	Extracted a 6-ft piece of twisted and sheared 1.0-in. OD pipe.
			Resumed over drilling.
	1613	1712	Advance to 18 ft BGS. Halt for day. Secure site. Depart.
12/9/92	0803	0818	Awaiting crew.
	0818	0827	Law Engineering crew arrives. Resume over drilling with HQ drill
			rod.
	0827	0859	Advance to 22.6 ft BGS. Crew trips out tools to unclog debris from
			inside. Description of 12.6 to 22.6 ft sample: 90% metal shavings,
			10% grout chips.
	0859	1009	Resume over drilling. Advance to 32.6 ft BGS. Cuttings from
			22.6 ft to 32.6 ft BGS comprised of 90% metal shavings and 10%
			fragments of Nylon packer inflation tube.
	1009	1023	Crew trips out to clear nylon tubing from bit. Upon tripping out,
			crew discovers uppermost two (10-ft long each) pieces of drill rod
			are warped badly. In light of this unforeseen damage, crew shuts
			down to confer with Sam Wilkinson (Law). Bit is also worn out.

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WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12/9/92	1023	1125	Problem is discussed between HSE personnel, Highland
(cont.)			personnel, and Law Engineering. Y-12 photographer arrives to
			take photographs.
	1125	1138	The 4.5-in. OD steel casing can be rotated with a pipe wrench.
			Crew's attempt to pull same is unsuccessful with 10,000 lb of
			pressure.
	1138	1205	Scott Gilbert (Highland) to bring acetylene torch to cut any casing
			we pull from bore. Crew continues attempts to free 4.5-in. OD
			casing. Break for lunch.
	1314	1401	Cut pull holes in 4.5-in. OD stickup. A steel pin is inserted across
			casing, and a pull attempt using the Kelly bar hydraulics is
			unsuccessful (30,000 lb pull).
	1401	1412	Receive permission from Bill Thedford (HSE) to unthread 4.5-in.
			OD casing. Crew begins unthreading and removing casing.
	1412	1641	Crew extracts part of the 4.5-in. OD steel casing and part of the
			1.0-in. OD black steel tubing inside it. The following is a tally of
			casing and tubing extracted.
			4.5-in. OD casing = 101.0 ft cut into 5 pieces
			1.0-in. OD tubing = 152.0 ft in 8 pieces
	1641	1651	Secure site and depart.
12/10/92	0817	0830	Tag 94 ft BGS in hole left by casing extraction.
	0830	0907	Crew trips down drill rod to bottom of open bore. Rig shut down
			while crew gets a load of potable water.

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DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12/10/92	0907	0951	Old water truck breaks down on way out to road.
(cont.)			
	0951	1248	Move old water truck back to drill site, and begin pumping water
			from new truck to old truck.
	1248	1401	Transfer of water complete between tank trucks.
	1401	1454	Resume drilling at 94 ft BGS. Advance to 111.3 ft BGS. Crew
			unable to advance bit further due to caving in the bore. Highland,
			Law, and HSE conferring. Law will rig down and move off.
	1454	1506	Secure site, depart.
2/16/93	0934	1027	Highland Drilling crew setting up Ingersoll Rand XL-750 on borehole
			to begin over wash of 6.5-in. OD steel casing.
	1027	1045	Rig up 22 ft-long piece of 9.0-in. OD, 8.5-in. ID washover pipe and
			bit. Second piece of washover on ground is 21.1 ft long.
	1045	1131	Begin over wash of 6.5-in. OD steel casing. Table height = 2.4 ft.
			Advance to 20 ft BGS. Break for lunch.
	1259	1401	Crew uses acetylene torch to break out subadapter and add
			second piece of washover pipe. First piece of washover with bit
			slips down hole due to absence of annular grout.
	1401	1459	Retrieving and threading first piece to second piece of washover
			pipe.
	1459	1516	Unable to reach washover pipe down hole without additional
			section of washover pipe. Secure site and depart.

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WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/17/93	0840	1053	Awaiting backhoe and additional pieces of washover.
	1053	1103	Backhoe arrives with two pieces of 9-in. OD washover pipe, both
			21 ft long. Rigging up third piece of washover for a string length
			of 65 ft.
	1103	1142	Tripping in, contacted top of first piece of washover at 62 ft BGS,
			threaded it into string. Bottom of tools at 85 ft BGS. Annulus
			surrounding 6.5-in OD casing apparently was poorly grouted.
			Lunch break.
	1308	1330	Rigging up fourth piece of washover for a total of 86 ft of tools.
	1330	1357	Resume over wash. Annulus empty from approximately 19-20 ft
			BGS to 77.5 ft BGS. No returns. Advance to 86 ft BGS.
	1357	1540	Cuttings from 77.5 to 86 ft BGS are grout chips with metal
			shavings. Crew believes casing is loose and will trip out washover
			pipe to attempt a pull. Must wait for D. Hewitt (Highland) to deliver
			torch to heat washover joints for breakout and to cut casing.
	1540	1642	D. Hewitt (Highland) arrives with acetylene torch. Crew extracts
			93.4 ft of 6.5-in. OD steel casing in four pieces. Crew begins
			tripping out washover.
	1642	1715	All washover pipe out. Secure rig and depart.
2/18/93	0815	0850	Awaiting crew.
	0850	0900	Crew arrives and departs to fill water tank truck.
	0900	1106	Awaiting return of crew with water.

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WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 6 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/18/93	1106	1138	Crew rigging up 10 5/8-in. tricone roller bit onto stabilizer to ream
(cont.)			bore made by casing. Over wash stabilizer and bit = 9.2 ft long.
	1138	1205	Technical oversight provided by Susan L. Abston (SAIC). Crew
			still breaking out hole opener bit to fit 10 5/8-in. bit onto stabilizer.
	1205	1225	Begin reaming bore. Table height = 2.4 ft. Water lines on rig
			frozen. Stop drilling. Awaiting Janet Sitzler (HSE) to issue cutting
			permit so crew can heat and thaw water lines.
	1225	1255	J. Sitzler (HSE) arrives. Heat frozen water lines with propane
			torch.
	1255	1310	Resume reaming bore. No cuttings returned. Advance to 37.7 ft
			BGS. Breathing zone analysis at table = 0.4 ppm (background),
			and radiation emission at table = 40 cpm beta/gamma (=
			background).
	1310	1425	Advance to 94 ft BGS. Begin to trip out. Cuttings are reddish-
			brown clay with chert fragments. Break for lunch.
	1440	1510	Crew preparing to move rig away from borehole. Awaiting grout
			delivery.
	1510	1610	Grout delivery arrives (3 yds^3). Pump tremie Type I Portland
			cement into bore through 1.5-in. OD PVC tremie pipe.
	1610	1625	All grout in, no circulation, no grout at surface. Secure site and
			depart.
2/19/93	0825	0905	Tagged cement level at 58 ft BGS.

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WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 7 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/19/93	1525	1620	Pump tremie 3 yds³ of neat, Type I Portland cement into bore
(cont.)			through 1.5-in. OD PVC tremie pipe.
3/3/93	1207	1210	Technical oversight provided by V.R. Harness (SAIC). Tag grout
			level at 12 ft BGS.
	1210	1240	Awaiting grout truck.
	1240	1247	Pour approximately 0.5 yd³ of neat, Type I Portland cement into
			bore. Circulate grout.
3/4/93	1249	1303	Tag depth to grout at 4.4 ft BGS. Deviation from 4 ft BGS
			previously approved by Steve Jones (HSE).
3/18/93	1350	1357	Remaining open bore plugged with clay soil. P&A of GW-553 is
			complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-556

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: SPAD Landfill Site

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Steve Brown, Greg Shillings - Highland Drilling

DRILL: Ingersoll-Rand XL-750

DATE: START: 12-31-93

FINISH: 03-18-93

METHOD: D

LOGGED BY: Michael Klidzejs - SAIC
Victor Harness - SAIC
Tim Coffey - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-31-93			Crew decontaminates rig off site and moves it into position over
			GW-556. Steve Jones (HSE) present for oversight.
1-4-93	1308	1411	Technical oversight provided by Michael Klidzejs (SAIC). Steve
			Jones and Bill Thedford both of (HSE) on site. Crew prepares to
			over wash. Rig up with first washover pipe with bit and adapter,
			total length = 25.9 ft. Table height = 2.0 ft.
	1411	1417	Begin over wash with air only. Organic vapors in breathing zone
			at 1.0 ft below ground surface (BGS) = 0.2 ppm. Beta and gamma
			= 30 cpm (background = 30 cpm). Alpha = 10 cpm (background
			= 10 cpm).
	1417	1432	Washover pipe stickup = 1 ft BGS. Begin over wash with water.
	1432	1433	Over wash stopped to inspect positioning. Position appears OK.
	1433	1456	Continue over wash. Steve Jones and Bill Thedford (both of HSE)
			leave site. Note that over wash is proceeding very slowly. Inspect
			cuttings and find abundant metal shavings.
	1456	1521	Stop over wash to inspect hole again. Notice collar in path of
			washover pipe at about 2 ft BGS. Bill Thedford (HSE) returns to
			site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-556
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 15

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-4-93	1521	1538	Continue over wash. Organic vapors in breathing zone at 2.5 ft
(cont.)			BGS = 0.2 ppm. Beta and gamma = 30 cpm.
	1538	1627	Appears that over wash has proceeded through collar. Over wash
			going faster. Collect cuttings sample at 0.0 ft to 6.0 ft BGS interval.
			Sample consists of medium dark gray (N4) cement fragments and
			abundant metal shavings. Organic vapors in breathing zone at
			10 ft BGS = 0.2 ppm. Beta and gamma = 30 cpm.
	1627	1636	Heavy rain begins; decide to stop for the day. Have advanced to
			14 ft BGS. Rig is stopped. Bill Thedford (HSE) and crew depart.
			Leave site.
1-5-93	0820	0850	Arrive at GW-556 site, crew present. Crew prepares to over wash.
	0850	0948	Trip down and resume over wash at 14 ft BGS. Organic vapors in
			breathing zone at 14.3 ft BGS = 0.2 ppm. Beta and gamma
			= 60 cpm (background = 60 cpm). Bill Thedford (HSE) arrives on
			site. Reach 19.3 ft BGS and end of first washover pipe.
	0948	1053	Crew rigs up with second washover pipe (21.0 ft in length). Collect
			cuttings sample of 6.0 ft to 19.3 ft BGS interval. Sample consists
			of very light gray (N8) to medium dark gray (N4) cement cuttings
			and abundant metal shavings.
	1053	1200	Resume over wash at 19.3 ft BGS. Organic vapors in breathing
			zone at 23.3 ft BGS = 0.2 ppm. Beta and gamma = 40 cpm.
	1200	1453	Break for lunch. Crew leaves site to fill water truck.
	1453	1617	Continue over wash at 24.3 ft BGS. Organic vapor in breathing
			zone at 24.7 ft BGS = 0.0 ppm. Beta and gamma = 30 cpm. Reach

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-556
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 15

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-5-93			24.8 ft BGS and stop for the day. Collect cuttings sample at 19.3 ft
(cont.)			to 24.8 ft BGS interval. Cuttings consist of medium light gray
			cement and metal shavings. Crew secures rig. Crew and
			oversight depart site.
1-6-93	0826	0840	Arrive at site. Crew is present, preparing to over wash. Trip
			washover pipe down.
	0840	1141	Resume over wash at 24.8 ft BGS. Organic vapors in breathing
			zone at 25 ft BGS = 0.3 ppm - 3.8 ppm. Beta and gamma = 30 cpm
			(background = 30 cpm). Over wash producing grinding noise. Bill
			Thedford (HSE) on site.
	1141	1243	Continue over wash. Monitoring breathing zone: 0.0 ppm. Beta
			& gamma scan yields 40 cpm (max.). D. Wright (Highland) brings
			spare washover bit to site. Crew returns from lunch.
	1243	1320	Crew fuels rig.
	1320	1600	Continue over wash at 32.2 ft BGS. Over wash casing from 32.2 ft
			to 36.0 ft BGS. Cuttings consist primarily of metal shavings with
			minor medium gray (N5) cement fragments. Continue to monitor
			breathing zone: organic vapors = 0.0 ppm. Beta and gamma scan
			= 40 cpm (max.).
	1600	1617	Raise washover pipe to top of the mast, secure rig. Clean up,
			depart site.
1-7-93	0827	0902	Arrive at GW-556 site. Start drill rig, begin to trip out to inspect bit.
			Having difficulty breaking joint loose. May have to use torch to
			heat joints.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-556
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 15

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-7-93	0902	0920	Stand by until B. Thedford (HSE) arrives to issue welding/cutting
(cont.)			permit.
	0920	1034	Continue trip out.
	1034	1139	Washover bit out of the ground. Bit is in excellent condition. Cut
			hole in casing. Unsuccessfully attempt to pull casing. Plan to
			continue over wash of casing.
	1139	1145	T. Coffey (SAIC) arrives to provide technical oversight. Get status
			information from M. Klidzejs (SAIC).
	1145	1212	Start drill rig, and trip in washover pipe. Length of two washover
			pipe sections and bit = 40.2 ft, length including sub = 45.9 ft, table
			height = 2.1 ft. Fuel drill rig.
	1212	1355	Crew departs for lunch and to get a load of water.
	1355	1413	Crew returns. Start drill rig, complete tripping in to bottom while
			turning washover pipe.
	1413	1607	At bottom (36.0 ft BGS), resume over wash. Over wash casing
			from 36.0 ft to 37.2 ft BGS. Monitor organic vapors in the breathing
			zone: 0.0 ppm. Washover pipe still appears to be binding inside
			the surface casing. Cuttings consist of: medium light gray (N6)
			cement fragments with scattered white (N9) to pale yellowish-
			orange (10YR 8/6) residual chert fragments and wirey metal
			shavings.
	1607	1620	Trip washover pipe to top of mast and clean up. Depart site.
1-8-93	0819	0827	Arrive at GW-556 site, crew on site warming up equipment.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-556
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 15

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-8-93	0827	0830	Trip into hole while turning washover pipe.
(cont.)			
	0830	0910	At bottom (37.2 ft BGS). Resume over wash. Washover pipe
			continues to bind inside the surface casing. Advance rate is
			extremely slow.
	0910	0918	Interrupt over wash to add soap to try to lubricate washover pipe
			inside casing [deviation pre-approved by K. Jago and S. Jones,
			(both of HSE)].
	0918	0954	Continue over wash. Monitor organic vapors in breathing zone:
			0.0 ppm. Beta and gamma scan of rig area = 40 cpm, background
			= 30 cpm. Over wash casing to 39.4 ft BGS. Cuttings consist of
			medium light gray (N6) to yellowish-gray (5Y 8/1) cement fragments
			with white (N9) to pale yellowish-orange (10YR 8/6) residual chert
			and wirey iron millings (37.2 ft to 38.0 ft only). Note: After washing
			over casing for nearly 1 ft, the driller lowered the front-end jacks
			which seemed to reduce the binding on the washover pipe. The
			advance rate also improved at this point.
	0954	1039	Rig up with third section of washover pipe; length = 20.7 ft; total
			length of tools including sub = 66.4 ft; table height = 1.9 ft.
	1039	1208	Continue over wash from 39.4 ft to 48.0 ft BGS. Monitor organic
			vapors in breathing zone: 0.4 ppm (max.). Beta and gamma
			scans of rig area yielded 50 to 60 cpm (max.) background = 30
			cpm. Cuttings consist of light olive gray (5Y 5/2) to (5Y 6/1) cement
			fragments with rare metal shavings and chert fragments. Advance
			rate appeared to have slowed at approximately 47.5 ft BGS. Crew
			fueling drill rig.
	1208	1308	Crew leaves site for lunch.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-556
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 6 of 15

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-8-93	1308	1326	Fuel drill rig. Start drill rig and trip into hole.
(cont.)			
	1326	1600	At bottom (48.0 ft BGS), continue over wash of casing. Over wash to 53.7 ft BGS. Monitor organic vapors in breathing zone = 0.0 ppm. Beta and gamma scans of rig area = 40 cpm. Cuttings are the same as the 39.4 ft to 48.0 ft interval, except that chert fragment content begins to increase just below 50 ft BGS, and the metal content increases such that the last 1 ft of the overwashed interval is almost exclusively metal shavings.
	1600	1616	Trip out washover pipe to top of mast. Crew cleans up. Secure site and depart.
1-11-93	0806	0840	Arrive at GW-556 site, part of crew on site. Notify S. Jones (HSE) of elevated headspace and pH readings taken on 1-8-93. Elevated pH is due to cement fragments in returns, but no explanation for headspace hit is found. Agree to an experiment: try headspace of soapy drilling water sample.
	0840	0906	Driller and rest of crew arrive. Crew departs for load of water; driller starts drill rig.
	0906	1230	Trip into hole while turning washover pipe. Table height = 2.0 ft. At bottom (53.7 ft BGS), resume over wash. Continue to use soap to lubricate the washover pipe inside the surface casing. Headspace analysis of soapy drilling water = 5.0 ppm. Report findings to S. Jones (HSE). Monitor organic vapors in breathing zone = 0.2 ppm. Drilling rate appeared to increase at 54.5 ft BGS, then decrease again at 56.8 ft BGS. Fuel drill rig while drilling. Over wash casing to 57.8 ft BGS. Cuttings consist of medium gray (N5) to medium light gray (N6) cement fragments with abundant light brownish-gray (5YR 6/1) dolostone fragments with white

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-556
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 7 of 15

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-11-93			(N9) to pale yellowish-orange (10YR 8/6) chert and wirey metal
(cont.)			shavings and metal fragments with blue burn stains.
	1230	1235	Trip out washover pipe to top of drill rig. Shut off drill rig.
	1235	1320	Crew leaves site for lunch.
	1320	1606	Start up drill rig, trip into hole. At bottom (57.8 ft BGS), resume over
			wash of casing. Rate of advance continues to be very slow.
			Monitor organic vapors in breathing zone = 0.2 ppm. Over wash
			casing to 59.9 ft BGS. Cuttings are the same as the 53.7 to
			57.8 ft interval, with increasing amounts of medium light gray (N6)
			to light brownish-gray (5YR 6/1) dolostone with medium light gray
			(N6) oomicrite.
	1606	1646	Clean out hole and break joint. Remove sub. Attempt to pull out
			intermediate casing with tools in the hole. Three attempts fail - not
			enough room to attach big lifting hook adequately.
	1646	1655	Fuel drill rig, and clean up. Secure and depart site.
1-12-93	0845	1137	Technical oversight provided by Mike Klidzejs (SAIC). Rig up 21.0
			ft piece of washover pipe. Resume over wash at 57.8 ft BGS.
	1137	1241	Break for lunch.
	1241	1707	Resume over wash. Advance to 69.6 ft BGS. Survey of breathing
			zone near table indicates 0.2 ppm organic vapors. Radioactive
			emissions near table: alpha=20 cpm, beta and gamma = 40 cpm.
			Cuttings from 57.8 ft to 69.6 ft BGS are very light gray (Munsell
			N4) to medium light gray dolostone with minor amounts of light
			gray chert fragments, metal shavings and yellowish-brown (Munsell

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-556
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 8 of 15

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-12-93			10YR 5/4) mud. Crew secures rig. Oversight and crew depart.
(cont.)			
1-13-93	0820	0846	Technical oversight provided by Victor Harness - SAIC. Crew
			trips washover pipe back into bore. Resume over wash at
			69.6 ft BGS. Table height = 2 ft.
	0846	1301	Advance to 72 ft BGS. Rate of advance very slow. Halt advance.
	1301	1410	Trip out one section of 9-in. OD washover pipe. Casings have
			slipped down into bore approximately 4 ft BGS.
	1410	1520	Rig engine has developed oil leak attributable to malfunctioning
			water pump. Rig down for engine repairs. Oversight departs site.
1-14-93	1219	1400	Arrive at site. Crew finishing repairs to rig engine.
	1400	1510	Resume trip out of washover pipe.
	1510	1705	All washover pipe out. Crew hoists casings. Total lengths of
			casings removed:
			1-in. OD pipe removed = 69.3 ft
			4.5-in. OD casing removed = 68.8 ft
			6.5-in. OD casing removed = 70.3 ft
	1705	1719	Crew torches hoisting holes in 11.75-in. OD casing. Tag bottom
			of bore firm at 71.7 ft BGS, or 72.0 ft below top of casing (BTOC)
			from top of 11.75-in. OD casing. Secure and depart site.
1-15-93	0843	0917	Crew awaiting delivery of a full tank of water. Rig up with 10-5/
			8-in. diameter tricone roller bit. Bit and stabilizer length = 9.2 ft.
			Oversight assumed by T.J. Coffey (SAIC).

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-556
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 9 of 15

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-15-93	0917	1039	Water tank arrives. Commence reaming bore left by 9-in. OD
(cont.)			washover with 10 5/8-in. bit. Advance to 73.0 ft BGS easily. Surge
			and clean bore. Trip out.
	1039	1053	Tag soft bottom of bore at 70.2 ft BGS. Depart site until grout
			delivery.
	1405	1441	Arrive at GW-556 site. Driller is on site, has already run seven
			10-ft joints of 1.5-in. OD PVC tremie pipe into bore to 66 ft BGS.
			Calculated 0.55 cubic yds of cement needed to grout hole to
			bottom of surface casing (50 ft BGS), equivalent to 111 gallons of
			grout. Plan to use 55-gallon drum to gauge cement volumes.
	1441	1447	Cement truck arrives, begins pouring cement into 55-gallon drum.
	1447	1458	Tremie 110 gallons of cement grout into bore from 55-gallon drum
			using hand-powered diaphragm pump.
	1458	1508	Clean up, secure site, and depart.
1-18-93	0843	0850	Arrive at GW-556 site. Crew on site. Tag cement level at 40.5 ft
			BGS.
	0850	0922	Start drill rig. Crew unsuccessfully attempts to pull surface casing.
			Crew to gather big washover pipe and bit. Depart site.
	1035	1103	Return to GW-556 site. Drillers have rigged up with a 10 5/8-in.
			diameter tricone bit and stabilizer; length = 9.2 ft, table height
			= 2.2 ft. Start drill rig. Trip into hole, adding drill rods.
	1103	1105	Begin drilling in cement at 40.4 ft BGS. Drill to 51.5 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-556
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 10 of 15

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-18-93	1105	1113	Clean out borehole. Begin tripping out of the hole. Rod comes
(cont.)			loose from head of drill rig at top of mast.
	1113	1117	Drill from 51.5 ft to 57.0 ft BGS (end of rod) to make breaking the
			joints easier.
	1117	1128	Tighten joint at rig head, and trip out.
	1128	1150	Add clevis and chain, and unsuccessfully attempt to pull out
			surface casing. Top of casing appears to move slightly, but it is
			doubtful that casing can be pulled.
	1150	1200	Shut off drill rig. Driller would like to rig up some way to turn the
			surface casing, to see if it can be loosened that way.
	1200	1305	Depart site for lunch.
	1305	1322	Return to site. Driller departs to gather materials to construct
			device to twist casing.
	1322	1350	Crew arrives with big washover pipe.
	1350	1430	Driller returns with materials. D. Hewitt (Highland) assists driller in
			constructing device (which consists of a piece of 7-in. casing with
			two holes burned in each end).
	1430	1445	Rig up device to drill rig by running a pin (a short section of pipe)
			through the clevis and the two holes in top of device. The device
			slips down into the surface casing where another pin is run through
			holes in bottom of device and in surface casing.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-556
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 11 of 15

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-18-93	1445	1513	Attempt to turn/pull surface casing. Each attempt results in one of
(cont.)			the pins being bent and/or sheared. Will have to over wash the
			surface casing.
	1513	1540	Begin rigging up washover pipe. A 1.7-ft subadapter is threaded
			into first section of washover pipe (21.4 ft in length). Having
			difficulty threading bit to washover pipe, will try with washover in
			rig.
	1540	1622	Cannot drop washover pipe directly over surface casing. Move
			drill rig ahead slightly. Remove clevis.
	1622	1625	Thread 13.0-in ID, 14.5-in OD, 4.1-ft long washover bit into
			washover pipe. Plan to begin over wash on 1-19-93.
	1625	1641	Clean up, secure drill rig. Depart.
1-19-93	0902	1024	Oversight provided by V. Harness (SAIC). Crew awaiting return
			of water truck.
	1024	1034	Water truck arrives. Commence over wash of 11.75-in. OD casing
			with 13.0-in. ID, 14.5-in. OD washover pipe. Advance to 2 ft BGS.
	1034	1209	Driller corrects attitude of drill mast to match casing. Resume over
			wash. Advance to 25 ft BGS. Stop to break out.
	1209	1217	Washover is broken loose from subadaptor. Will attempt to pull
			11.75-in. OD casing before adding second piece of washover
			pipe. Break for lunch.
	1315	1624	Unable to pull casing with rig or winch truck. Secure site, depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-556
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 12 of 15

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-20-93	0846	1019	Rig up second piece of 13.0-in. ID, 14.5-in. OD washover pipe.
			Length = 19.7 ft. New total length of washover and bit = 44.2 ft.
	1019	1053	Resume over wash at 25 ft BGS. Advance to 44 ft BGS. Surge
			and clean bore.
	1053	1150	Break loose washover pipe from subadaptor. Unable to pull
			11.75-in. OD casing. Break for lunch.
	1237	1307	Renew attempts to pull casing with rig. Unsuccessful.
	1307	1441	Move rig. Attempts to pull casing with winch truck are unsuccessful.
			Must quit until more washover pipe is ordered and shipped.
			Secure site and depart.
2-8-93	0809	0832	Oversight provided by Mike Klidzejs (SAIC). Awaiting crew's
			arrival.
	0832	0900	Crew arrives, and sets up rig over bore. Background radiation:
			beta and gamma = 50 cpm, alpha = 20 cpm, breathing zone
			analysis (at table) = 0.0 ppm.
	0900	1022	Crew departs site for potable water.
	1022	1106	Crew returns. Adding next piece of washover pipe to tools left in
			bore. New piece of washover = 8.0 ft long.
	1106	1200	Resume over wash with water and Quik-Foam™. Advance 3.4 ft.
			Halt. Break for lunch.
	1220	1247	Oversight provided by Victor R. Harness (SAIC). Awaiting crew's
			arrival.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-556
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 13 of 15

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-8-93	1247	1302	Crew returns. Resume over wash. Unable to advance further at
(cont.)			47 ft BGS. Stop advance to attempt to pull 11.75-in. OD casing.
	1302	1508	Unable to break loose threaded joints in washover pipe. Acetylene
			torch used for heating joint needs new tip. Must have new tip to
			continue. Secure site, depart.
2-9-93	0818	0846	Awaiting crew.
	0846	0908	Crew arrives, unable to start until a welding permit is issued.
			Awaiting arrival of Bill Thedford (HSE).
	0908	1043	B. Thedford (HSE) arrives. Resume breaking loose joints in
			washover pipe.
	1043	1112	Uppermost 8-ft piece of washover pipe is removed. Attempt to pull
			11.75-in. OD casing is unsuccessful. Crew rigs up washover pipe.
	1112	1149	Resume over wash. Advance to 46.7 ft BGS. Halt advance. Break
			for lunch.
	1239	1503	Resume over wash. Advance to 50 ft BGS. Cuttings are N4 grey
			chert fragments, grout fragments, and minor shavings of casing.
	1503	1559	Trip out uppermost 8-ft piece of washover pipe. Attempt to pull
			11.75-in. OD casing is unsuccessful. Casing full of water from over
			wash.
	1559	1618	Crew trips in drill rod to remove water from casing with compressed
			air.
	1618	1704	Still unable to pull 11.75-in. OD casing. Secure site and depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-556
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 14 of 15

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-10-93	0900	1030	Crew unable to break loose subadapter and uppermost 8-ft piece
			of washover. Resume over wash to situate joint to table level to
			break.
	1030	1209	Advance to 50.5 ft BGS. Begin attempts to remove washover
			pipe. Break for lunch.
	1330	1533	Joint between subadapter and uppermost 8-ft piece of washover
			pipe is loose. Use pick-up truck to pull washover pipe away from
			rig. Burn up clutch. Must await arrival of backhoe to continue trip-
			out. Raise washover pipe and break next joint.
	1533	1549	Secure site and depart.
2-11-93	0832	1055	Backhoe at site. Crew break out and remove remaining washover
			pipe.
	1055	1353	Crew attempts to twist casing loose with rig head. Crew moves rig
			away from hole to allow winch truck access.
	1353	1517	Awaiting winch truck arrival.
	1517	1644	Three attempts to pull casing with large winch truck are
			unsuccessful. Secure site and depart. Receive permission from
			W. K. Jago (HSE) to twist off or unthread casing.
2-12-93	0810	1040	Crew moves rig back onto bore and attempts to twist off or
			unthreading 11.75-in. OD casing.
	1040	1129	Crew uses rig to successfully unthread and remove 22.1 ft of
			11.75-in. OD casing. Break for lunch.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-556
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 15 of 15

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-12-93	1210	1247	Bore is approximately 17-in. in diameter, water in bore is at 15 ft
(cont.)			BGS, and maximum sounding depth of 53 ft BGS.
	1247	1311	Awaiting grout delivery.
	1311	1359	Pump tremie 2.5 cubic yds through 50 ft of 1.5-in. OD PVC tremie
			pipe at a depth of 47 ft BGS.
	1359	1430	Clean and secure site. Depart.
2-16-93	0803	0806	Tag 5 ft BGS to water and 16 ft BGS to top of grout.
3-3-93	1234	1240	Poured approximately 0.5 cubic yds of neat, Type I Portland
			cement into bore while circulating water.
3-4-93	1230	1240	Tag grout at 10 ft BGS, water to surface.
	1401	1405	Pour approximately 0.5 cubic yds of neat, Type I Portland cement
			into bore while circulating grout.
3-9-93	0824	0830	Tag grout at 3.7 ft BGS.
3-18-93	1050	1110	Clay cap installed. P&A of GW-556 complete

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-561
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 5

LOCATION: SPAD Landfill Site	DATE: START: 12-11-92
DRILLERS: Hubert Hall - Highland Drilling Company	FINISH: 12-23-92
HELPERS: Steve Brown, Greg Shilling - Highland	METHOD: A
DRILL: Ingersoll-Rand XL-750	LOGGED BY: Michael A. Klidzejs - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-11-92	0811	0930	Oversight (Mike Klidzejs - SAIC), Bill Thedford (HSEA), and crew
			arrive at site. GW-561 is constructed with 4-in. OD casing
			installed to a reported depth of 89.9 ft below ground surface
			(BGS). A 1-in. diameter PVC piezometer, installed to 27.05 ft,
			BGS, is approximately 1-in. away from the casing in same bore.
			Water level in GW-561 at 90.2 ft BGS. Cement well pad and
			casing protector removed with backhoe. Bottom of hole inside
			casing tagged at 91.3 ft BGS.
	0930	1357	Rig is moved into position over GW-561.
	1357	1406	Crew rigs up with 5-3/4-in. OD diameter, 15.2 ft washover pipe
			and 1.8 ft adapter. Washover pipe set over 4 in. casing; beside
			1-in. PVC piezometer. Table height = 2.2 ft.
	1406	1500	Begin over wash of casing. Advance to 2.0 ft BGS, organic vapors
			in breathing zone = 0.0 ppm. Washover pipe raised upon
			reaching 3.0 ft BGS to inspect progress. Minor metal shavings
			found in cuttings. Rig is moved approximately 1 in. Washover
			continues. Table height now = 2.1 ft. Cuttings sample of 0 to 6 ft
			BGS interval is collected. Sample consists of light gray (N7) to
			moderate yellowish brown (10YR 5/4) cement cuttings and very
			light gray (N8) subrounded to subangular chert pebbles. Other
			fine gravel, some PVC, and a very minor amount of steel shavings
			also observed.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-561
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-11-92	1500	1516	Circulation is lost at 11.0 ft BGS. Washover pipe is pushed down
(cont.)			to 15 ft BGS with little resistance. Sample of 6 to 15 ft BGS interval
			cuttings collected. Cuttings show continuation of 0 to 6 ft interval.
	1516	1532	Crew rigs up with second washover pipe 14.6 ft in length.
	1532	1543	Continue over wash with minor resistance and little circulation.
			Reach 29.4 ft BGS and end of washover pipe. Collect cuttings
			sample of 15 to 29.4 ft BGS interval. Sample consist of fine
			cement cuttings with minor chert and PVC.
	1543	1601	Crew antifreezes rig and prepares to leave site. Cuttings are
			scanned for rad and placed under foil for head space (see Well
			Cuttings Field Screening/Disposal Sheet). Crew and oversight
			leave site.
12-14-92	0808	1003	Oversight arrives at site. Crew arrives, then departs to get water
			truck. Crew returns and rigs up with third washover pipe, 24.9 ft
			in length. Table height = 2.2 ft.
	1003	1030	Resume over wash at 29.4 ft BGS. Organic vapors in breathing
			zone at 34.4 ft BGS = 0.4 ppm. Beta and gamma = 40 cpm.
			Advance to 54.3 ft BGS. Crew rigs up with fourth washover pipe,
			24.9 ft in length. Collect cuttings sample of 29.4 to 54.3 ft BGS
			interval. Sample consists of small cuttings of cement grout, minor
			limestone, and chert pebbles.
	1030	1105	Continue over wash at 54.3 ft BGS with fourth washover pipe.
			Advance to 58.0 ft BGS. Organic vapors in breathing zone =
			0.4 ppm. Beta and gamma = 50 cpm. Advance to 79.2 ft BGS.
			Collect cuttings sample of 54.3 to 79.2 ft BGS interval. Cuttings
			show continuation of 29.4 to 54.3 ft interval. Rig is stopped.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-561
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-14-92	1105	1121	Steve Jones (HSEA) grants permission to attempt to pull casing
(cont.)			without over washing the entire length of casing. A chain is
			attached to the casing and the casing and washover pipe are
			pulled up easily, indicating that casing can be pulled.
	1121	1210	Crew prepares to pull casing. Cuttings samples screened and
			placed under foil for head space analysis (see Cuttings Field
			Screening/Disposal Sheet).
	1210	1515	Uppermost washover pipe section is removed. Bill Thedford and
			Steve Jones (HSE) arrive on site. Casing is extracted. Organic
			vapors in breathing zone = 0.0 ppm. Remaining washover pipe
			sections are removed from hole.
	1515	1542	Crew rigs up with 10 5/8-in. tricone bit and stabilizer, total length
			= 9.2 ft. Rig is winterized. Site is secured. Crew and oversight
			depart.
12-15-92	0815	0918	Oversight arrives at site. Scan of casing and washover pipe
			pulled out of hole: Alpha = 30 cpm, Beta and gamma = 60 cpm.
			Crew arrives and prepares to ream. Table height = 3.0 ft.
	0918	0930	Begin reaming with 10 5/8-in. bit and stabilizer. Advance to 4.0 ft
			BGS. Organic vapors in breathing zone = 3.2 ppm. Stop reaming
			at 6.2 ft BGS to add rod.
	0930	0941	Continue reaming. Advance to 26.2 ft BGS. Organic vapors in
			breathing zone = 0.0 ppm, beta and gamma = 50 cpm. Reach
			31.2 ft BGS and end of first rod. Add second rod.
	0941	0950	Continue reaming at 31.2 ft BGS. Advance to 46 ft BGS. Organic
			vapors in breathing zone = 1.6 ppm, beta and gamma = 30 cpm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-561
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-15-93			Collect cuttings sample of 31.2 to 56.2 ft BGS interval. Sample
(cont.)			consists of predominantly white (N9) chert pebbles. Reach end
			of rod at 56.2 ft BGS. Add third rod.
	0950	1016	Continue reaming at 56.2 ft BGS. Rig begins to chatter at 58 ft
			BGS, and reaming seems to be progressing more slowly. Advance
			to 66 ft BGS. Organic vapors in breathing zone = 0.0 ppm. Beta
			and gamma = 50 cpm. Reach end of rod at 81.2 ft BGS. Add
			fourth rod.
	1016	1030	Continue reaming. Rig bounces vigorously at 87.7 ft BGS. Driller
			believes bedrock is encountered at this point. Sample of cuttings
			of 56.2 to 88.0 ft interval collected. Sample shows continuation
			of above interval. Advance to 89 ft BGS. Organic vapors in
			breathing zone = 1.2 ppm. Reaming stops at 92.0 ft BGS. Hole
			is cleaned.
	1030	1110	Trip out. Plastic material and string found at joint of third and
			fourth rods. Stabilizer and bit removed from hole. Rad scan of
			stabilizer and bit: beta and gamma = 40 cpm, alpha = 0 cpm.
			Attempt to tag bottom of reamed hole. Mud in hole prevents
			accurate measurement. Apparently some of the borehole wall
			has caved into the hole accumulating at the bottom.
	1110	1330	Break to allow drillers to repair truck tire, pick up water and
			washover pipe. Oversight departs.
	1330	1630	Oversight returns to site. Crew arrives at 1437 with water truck.
			Screen cuttings samples from reaming and place under foil for
			headspace analysis (see Cuttings Field Screening/Disposal
			Sheet). Rig, washover pipe, stabilizer bit, and equipment decon-
			taminated. Rig is moved to offsite. Crew returns to

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-561
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-15-92			GW-561 site to winterize rig. Oversight departs.
(cont.)			
12-16-92	1116	1210	Cement truck arrives at GW-561 site with 2.5 cu. yds cement.
			Five,10 ft sections of 1.5-in. OD PVC tremie pipe are inserted to
			47 ft BGS (3 ft stick-up). Crew begins hand-pumping cement
			down tremie pipe. One 10 ft section of tremie pipe is removed.
			Continue pumping cement. Water is circulated out of hole. Stop
			pumping cement. Cement level is below ground surface.
			Cement truck departs.
	1551	1554	Tag cement level at 21.0 ft BGS.
12-17-92	1222	1236	Cement truck arrives at site. Cement poured into hole until
			cement reaches level of ground surface. Cement truck leaves
			site.
12-18-92	1045	1050	Cement level tagged at 17.5 ft BGS.
	1532	1548	Cement truck arrives. Bruce McMaster (HSEA) supervises
			cementing. He reports GW-561 filled with cement to ground
			surface. Cement truck departs.
12-21-92	0933	0935	Bruce McMaster reports that cement level in GW-561 is at 5.0 ft
			BGS. Steve Jones (HSEA) grants permission to cap hole with
			cement level at 5.0 ft.
12-23-93			Soil cap emplaced.
			P&A completed.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-565

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: N27,363 E58,174

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Greg Shillings, Bob Bowers

DRILL: Ingersoll Rand XL-750 Drillmaster

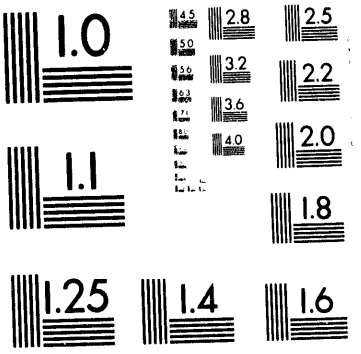
DATE: START: 1-21-93

FINISH: 2-1-93

METHOD: A

LOGGED BY: Victor Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-21-93	0800	0839	Technical oversight by V.R. Harness (SAIC). Awaiting drill crew.
	0839	1023	Stickup of 4.5-in. outside diameter (OD), 4.25-in. inside diameter
			(ID) stainless steel riser = 2.6 ft above ground surface. Height of
			concrete pad = 0.5 ft. Height of protective steel casing (10.75-in
			OD, 10.25-in. ID) = 3.5 ft. Crew removes pad, protective casing
			and all but 0.3 ft stickup of stainless steel riser. Bottom of casing
			= 57.3 ft below ground surface (BGS). Rig moved onto well.
	1023	1034	Crew rigging up 6.0-in. OD, 5.5-in. ID washover pipe with shoe bit
			and subadapter. Total length of pipe and shoe = 22.4 ft. Length
			of subadapter = 2 ft. Table ht = 2.2 ft.
	1034	1110	Commence over wash of 4.5-in. OD, 4.25-in. ID riser with washover
			pipe. Advance to 22 ft BGS. Cuttings from 0 to 22 ft BGS =
			reddish-brown stiff clay with chert grit, grout fragments and minor
			amounts of stainless steel (SS) shavings.
	1110	1150	Add second piece of 20.1 ft long washover pipe. Advance to 42 ft
			BGS. Annulus open from 35 to 42 ft BGS. Lithology same as 0-22
			ft BGS interval. Break for lunch.
	1300	1413	Trip out washover pipe. Extract 59.2 ft of 4.5-in. OD, 4.25-in. ID
			stainless steel screen and riser. Total casing removed with
			stickup = 61.5 ft.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Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-565
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-21-93	1413	1457	Crew rigs up 10 5/8-in. diameter tricone roller bit and stabilizer.
(cont.)			Total length = 9.2 ft.
	1457	1606	Advance to 62 ft BGS. Encountered rock at 55 ft BGS. Trip out.
			Cuttings from 22 to 62 ft BGS = same as 0 to 22 ft BGS interval.
	1606	1628	Unable to tag 62 ft in boring. Boring has bridged. Maximum
			sounding depth = 53 ft BGS. Oversight departs.
1-22-93	1018	1118	Insert 70 ft of 1.5-in. OD PVC tremie line to 67 ft BGS in bore
			(Pushed tremie into soft mud fill as far as possible). Awaiting
			cement grout delivery.
	1118	1211	Delivery arrives. Pump tremie 2.5 cubic yds into bore. Grout to
			surface. Crew cleans and departs.
1-26-93	0849	0854	Tag cured grout at 4.7 ft BGS. Deviation from 4 ft BGS approved
			by Steve Jones (HSE).
2-1-93	1101	1229	Remaining open bore plugged with clay soil. Plugging and
			abandonment of GW-565 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-566

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

PAGE 1 of 7

LOCATION: SPAD Landfill Site

DRILLERS: Hubert Hall - Highland Drilling Co.
Randy Phillips - Highland Drilling Co.

HELPERS: Steve Brown, Greg Shillings, Lecil Jones - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 2-22-93

FINISH: 3-18-93

METHOD: A

LOGGED BY: S.L. Abston - SAIC
Mike Klidzejs - SAIC
Victor Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-22-93	1040	1117	Technical oversight provided by M. Klidzejs (SAIC). Awaiting arrival of crew. Tag water level in well at 96.9 ft below ground surface (BGS). Stainless steel (SS) riser has been cut off at 0.3 ft above ground.
	1117	1133	Crew arrives. Rig up 22.3-ft long washover pipe. Washover pipe = 6-in. outside diameter (OD) and 5.5-in. inside diameter (ID). Table ht = 2.2 ft. Breathing zone analyses (BZA) near table reveals 0.0 ppm organic vapors.
	1133	1145	Begin over wash of 4.0-in. OD, 3.75-in. ID SS riser. Advance 2 ft BGS. Compressed air blow-outs around rig. The 11.75-in. OD conductor casing is loose. Crew secures conductor to rig jackfoot with chain.
	1145	1157	Continue over wash. Circulation coming from around conductor casing and through multiple blowout holes in adjacent soil. No circulation from around washover pipe. Advance to 6.0 ft BGS. Radiation emissions at table are: alpha = 40 cpm (= background). Cuttings consist of medium dark gray cement fragments.
	1157	1207	Advance to 21.1 ft BGS. Cuttings similar to 0 ft to 6 ft BGS interval.
	1207	1255	Lunch break.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-566
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-22-93	1255	1439	Crew breaking out subadapter and adding second 20.2 ft long
(cont'd)			piece of washover pipe.
	1439	1442	Resume over wash. Advance to 26 ft BGS. BZA at table yields
			0.0 ppm organic vapors. Radiation emissions at table: beta and
			gamma = 40 cpm, alpha = 50 cpm.
	1442	1512	Advance to 41.6 ft BGS. Cuttings same as 6 ft to 21.1 ft BGS
			interval. Stop over wash until more sections of washover pipe can
			be located. Water truck needs refilling also.
	1512	1544	Secure site and depart.
2-23-93	0827	0904	Awaiting crew.
	0904	0920	Crew arrives. Resume attempts to break loose the subadapter to
			add more washover pipe.
	0920	1026	Adding third (20.3 ft long) piece of washover pipe. Fuel rig.
	1026	1034	Water truck arrives. Crew hooks up hoses.
	1034	1100	Resume over wash at 41.6 ft BGS. BZA = 0.0 ppm. Radiation at
			table: beta + gamma = 40 cpm (= background), alpha = 50 cpm
			(background = 40 cpm). Circulation of cuttings is poor. Advance
			to 62.6 ft BGS. No returns.
	1100	1122	Halt advance. Break loose the subadapter to add fourth piece of
			washover pipe.
	1122	1128	Fourth piece of washover pipe attached (20.2 ft long). Resume
			over wash.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-566
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-23-93	1128	1157	Advance to 81.5 ft BGS. Circulation poor. Cuttings consist of light
(cont.)			grayish brown clay with cement and chert fragments. BZA at 67 ft
			BGS = 0.0 ppm organic vapors. Radiation emissions at table:
			alpha = 30 cpm, beta + gamma = 30 cpm.
	1157	1307	Lunch break.
	1307	1334	Crew breaking out subadapter.
	1334	1405	Add fifth piece of washover pipe to string (length = 20.15 ft).
			Resume over wash at 81.5 ft BGS. Advance to 101.7 ft BGS.
			Cuttings same as from 62.6 ft to 81.5 ft interval. BZA at 91.5 ft BGS
			= 0.0 ppm.
	1405	1433	Breaking out subadaptor. Adding sixth piece of washover pipe
			(= 20.2 ft long).
	1433	1442	Resume over wash. Very quick rate of advance, loose circulation
			at 108 ft BGS. BZA at 112 ft BGS = 0.0 ppm. Radiation
			measurement at table: beta + gamma = 40 cpm, alpha = 40 cpm.
			Advance to 115 ft BGS. Cuttings same as previous interval.
	1442	1457	D. Wright (Highland) arrives. Shut down rig. Water truck is needed
			elsewhere. Crew secures site and departs.
2-24-93	0837	0927	Safety Meeting called by Bill Thedford (HSE), attended by Highland
			and SAIC project personnel.
	0927	1137	Arrive at site. Crew waiting on arrival of water truck.
	1137	1142	Steam cleaner arrives. Will use its water tank for potable water
			source.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-566
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-24-93	1142	1221	Resume over wash. Advance to 121.9 ft BGS. Cuttings consist
(cont.)			of medium light gray to light gray dolostone with some light gray
			to light brown chert fragments.
	1221	1305	Lunch break.
	1305	1340	Adding seventh piece of washover pipe (= 20.3 ft long). Resume
			over wash.
	1340	1402	Unable to circulate cuttings and mud. Will require water truck for
			sufficient amount of water to keep hole clean. Stop rig.
	1402	1508	Crew returns with steam cleaner; unable to get water truck.
	1508	1522	Rig back on.
	1522	1527	Resume over wash at 121.9 ft BGS. BZA at 121.9 ft BGS =
			0.0 ppm. Radiation measurement at table: beta + gamma =
			40 cpm, and alpha = 20 cpm.
	1527	1541	Advance to 142.5 ft BGS. Halt advance, clean hole. Cuttings
			same as last interval.
	1541	1615	Crew breaks loose subadaptor. Riser pipe is not visible; has been
			cut and subsequently subsided.
	1615	1715	Crew begins tripping out washover pipe. Secure site and depart.
2-25-93	0847	0924	Technical oversight assumed by V.R. Harness (SAIC). Awaiting
			crew.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-566
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-25-93	0924	0936	Crew arrives. Resume tripping out washover pipe. Because
(cont'd)			casing was cut during last 20 ft of over wash and the riser
			subsided, HSE and Highland decided to try to pull casing out, then
			ream hole.
	0936	1207	All of washover pipe out of bore. Casing not visible from surface.
	1207	1245	Break for lunch.
	1245	1518	Driller believes he has located riser approximately 20 ft BGS.
			Crew awaiting delivery of a taper tap device to extract casing.
	1518	1556	Scott Gilbert (Highland) arrives with taper tap. Crew rigs up taper
			tap to 25 ft piece of drill rod and begins fishing for casing.
	1556	1614	Attempts so far unsuccessful. Will resume in morning. Secure
			site and depart.
2-26-93	0822	0854	Awaiting crew.
	0854	0910	Crew arrives. Resume attempts to fish out casing.
	0910	1047	Driller extracts a 9.9 ft long piece of SS 4.0-in. OD casing.
	1047	1110	Receive permission from Bill Thedford (HSE) to pull out all the
			casing we can, ream bore as deep as we can, and abandon
			remainder of well in place. Crew resumes fishing.
	1110	1457	Crew extracts 2 more pieces (24.5 ft long and 25.9 ft long: total
			63.8 ft) out of bore. Total of all retrieved pieces of riser plus stick-
			up cut off = 65.9 ft of 4.0-in. OD SS riser removed.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-566
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 6 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-26-93	1457	1510	Crew pulls 4.0 ft long conductor pipe out of ground (10.75-in. OD).
(cont'd)			
	1510	1528	Crew rigs up 10 5/8-in. diameter tricone roller bit to ream bore. Bit
			+ stabilizer = 9.2 ft long. Will ream Monday. Secure site and
			depart.
3-1-93	0830	1057	Susan Abston (SAIC) providing technical oversight. Crew reams
			bore to 32 ft BGS with 10 5/8-in diameter tricone roller bit.
			Cuttings consist of cement grout fragments and angular chert
			fragments.
	1057	1137	Technical oversight resumed by Victor R. Harness (SAIC). Crew
			installing new check valve in subassembly prior to resuming
			reaming.
	1137	1211	Resume reaming at 32 ft BGS. Goal is to ream to 174 ft BGS, or
			as far as possible. Advance to 80 ft BGS. Cuttings so far are
			comprised of 10% grout fragments and 90% yellowish-brown
			stained chert fragments. A small fraction of chert fragments are
			translucent and pale gray (Munsell N6).
	1211	1239	Adding drill rod to string (25 ft long) and resuming reaming.
	1239	1256	Advance to 90 ft BGS to the first real resistance to advance.
			Advance to 95 ft BGS with a much-reduced rate of advance.
	1256	1328	Unable to advance beyond 95 ft BGS. Bill Thedford (HSE) gives
			permission to halt reaming at 95 ft BGS. Cuttings from 80 ft to
			95 ft BGS similar to previous interval but average fragment size
			of returns increased to approximately 0.75-in.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-566
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 7 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
3-1-93	1328	1512	Trip tools out of hole. Crew inserts 70 ft of 1.5-in. OD PVC tremie
			to 65 ft BGS for tomorrow's scheduled grout delivery.
	1512	1536	Crew cleans and secures site. Oversight departs.
3-2-93	1020	1120	Grout delivery arrives. Pump tremie 3 cubic/yds into bore. Grout
			not visible from surface. Secure site and depart.
3-3-93	1004	1010	Tag depth to grout at 45 ft BGS, 16 ft BGS to water.
3-4-93	1303	1309	Crew inserts 40 ft of 1.5-in. OD PVC tremie into bore to 37 ft BGS.
	1309	1320	Awaiting grout delivery.
	1320	1345	Grout delivery arrives. Pump tremie 3 cubic/yds into bore. Grout
			to surface. Secure site and depart.
3-9-93	0820	0824	Tag grout at 3 ft BGS.
3-18-93	1350	1357	Clay cap installed. P&A of GW-566 complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-571

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: SPAD Landfill Site

DRILLERS: Hubert Hall - Highland Drilling

HELPERS: Steve Brown, Greg Shilling - Highland

DRILL: Ingersoll-Rand XL-750

DATE: START: 12-29-92

FINISH: 1-5-93

METHOD: A

LOGGED BY: Susan Abston
Michael A. Klidzejs - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-29-92	0849	1001	Susan Abston (SAIC) providing technical oversight. Oversight
			arrives at site. Helpers excavating soil around well to allow rig
			access. Janet Sitzler (HSEA) arrives at site.
	1001	1250	Three truck loads of 2 in. gravel dumped and spread over site.
			NOTE: GW-571 is located within a topographic depression which
			collects water and is therefore very muddy.
	1250	1330	Break for lunch.
	1330	1605	Drill rig moved onto GW-571 site; is centered over well, and
			leveled. Crew removes casing from GW-572 from inside of
			washover pipe. Washover pipe is decontaminated and trans-
			ported to GW-571 site. Crew and oversight depart.
12-30-92	0845	0902	Oversight arrives at GW-571 site. Highland crew and Victor
			Harness (SAIC) present. Crew rigs up drill with 5.75 in. outside
			diameter 15.2 ft washover pipe and 1.8 ft adapter. Table height =
			2.4 ft.
	0902	1040	Begin overwash. Organic vapors in breathing zone = 2.1 ppm.
			Beta and gamma = 40-50 cpm (background = 40 cpm) overwash
			to approximately 15 ft below ground surface (BGS). Collect
			cuttings sample of 0 to 15 ft BGS interval. Sample consists of
			angular fragments of grout, chert, gray silt, and some metal
			shavings. Beta and gamma of cuttings sample = 50-60 cpm.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-571
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-30-92	1040	1110	Rig up with second washover pipe, 24.7 ft in length.
(cont.)			
	1110	1208	Crew and oversight leave site to break for lunch.
	1208	1214	Oversight responsibilities assumed by Michael Klidzejs (SAIC).
			Crew returns from lunch. Rig is started and hole is blown clean.
	1214	1227	Continue overwash at 15 ft BGS. Organic vapors in breathing
			zone at 20 ft BGS = 1.2 ppm. Beta and gamma = 60 cpm.
	1227	1239	Driller notices that return water is scouring soil from beneath rig
			supports. Overwash stops. Backhoe is used to dig trench from
			washover hole to cuttings pit to divert water away from rig.
	1239	1256	Continue overwash. Collect cuttings sample of 15 to 22 ft BGS
			interval. Sample consists of grayish orange (10YR 7/4) stained
			cuttings of white (N9) chert and very pale orange (10YR 8/2)
			dolostone. Also abundant fine gravel consisting of grout, chert and
			dolostone fragments. Organic vapors in breathing zone at 32 ft
			BGS = 0.0 ppm. Beta and gamma = 60 cpm. Reach 39 ft BGS and
			end of second washover pipe. Cuttings sample of 22 to 39 ft BGS
			interval collected. Sample shows continuation of 15 to 22 ft
			interval, but contains minor steel shavings.
	1256	1321	Crew begins to add third washover pipe section. Driller reports
			that casing is not visible within washover pipe, and he believes that
			casing is being pushed and crumpled down hole by the washover
			pipe.
	1321	1333	Call Steve Jonas to inform him of the situation. He is not available.
			Call Kevin Jago. Kevin Jago grants permission to drill casing out
			with 10 5/8-in. tricone bit.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-571
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-30-92	1333	1408	Crew begins removing washover pipe. Steve Jones calls and is
(cont.)			informed of the situation and Kevin Jago's suggestion. He
			concurs.
	1408	1418	Crew rigs up with 10 5/8-in. diameter tricone bit and stabilizer,
			9.2 ft. in length.
	1418	1433	Begin drilling with air only. Table height is adjusted to 3.0 ft. Reach
			6.2 ft BGS and end of stabilizer and bit. Stop drilling to add rod.
	1433	1449	Continue drilling. Organic, vapors in breathing zone at 16 ft BGS
			= 3.4 ppm. Beta and gamma = 30 cpm. Table height is adjusted
			to 2.7 ft BGS. Reach 31.5 ft BGS and end of first rod. Stop drilling
			to add second rod.
	1449	1501	Continue drilling 31.5 ft BGS. Organic vapors in breathing zone at
			36 ft BGS = 1.0 ppm. Ratty drilling around 40 ft BGS. Reach
			56.5 ft BGS and end of rod. Stop drilling to add third rod.
	1501	1520	Continue reaming at 56.5 ft BGS. Organic vapors in breathing
			zone at 71.5 ft BGS = 0.4 ppm. Beta and gamma = 40 cpm. Ratty
			drilling around 79 ft BGS. Reach end of rod at 81.5 ft BGS.
	1520	1552	Crew begins to trip out and remove rods. Collect cuttings sample
			of 42.0 to 81.5 ft interval. Sample consists primarily of small
			cuttings of chert, grout, and dolostone, and some larger chert and
			dolostone fragments. Beta and gamma = 40 cpm, alpha = 20 cpm,
			headspace analysis = 3.8 cpm (cuttings field screening/disposal
			sheet).
	1552	1605	Rig is moved away from the hole. Inspect reamed hole and
			observe that casing is visible at 3 ft BGS in the center of the reamed

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-571
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-30-92			hole. Casing was not visible after extraction of the washover pipe.
(cont.)			Washover pipe may have cut through casing during first 3 ft of
			overwash, and then advanced beside casing.
	1605	1630	Backhoe is used to excavate soil around reamed hole to access
			casing. Chain is attached from casing to backhoe bucket and an
			attempt is made to extract the casing. Casing cannot be pulled.
	1630	1635	Crew winterizes rig and cleans up. Crew and oversight depart.
12-31-92	0839	0911	Oversight arrives at site, crew is present. Make another attempt
			to pull casing with backhoe. Attempt is unsuccessful. Steve Jones
			is onsite. It is decided that the drill rig will have to be brought back
			in to pull the casing. Surface casing will have to be installed to
			prevent soil from filling reamed hole.
	0911	1035	Crew leave the site to pick up surface casing.
	1035	1121	Crew and Steve Jones return to site. Steve Jones reports that
			winch truck will be brought in on 1-4-93 to remove casing.
			Oversight departs.
1-4-93	0826	0950	Oversight arrives at site. Crew is present. Stand by for winch
			truck. Bill Thedford arrives onsite.
	0950	1125	Scott Gilbert and David Wright (Highland) arrive onsite with winch
			truck. Truck is moved into position and chain is attached from the
			casing to the winch cable. On the third attempt the casing is pulled
			up approximately 10 ft. Organic vapors in breathing zone at
			casing surveyed = 0.0 ppm. The casing is cut with a cutting torch.
			Remainder of casing (73.3 ft) is removed in segments cut with
			torch. Entire casing and screen string removed. Rad scan of

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-571
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-4-93			casing: beta and gamma = 60 cpm, alpha = 20 cpm. Crew inserts
(cont.)			two sections of 10 ft tremmie pipe down hole. Pipe cannot be
			inserted deeper.
	1125	1202	Driller's helpers leave site to break for lunch.
	1202	1258	Cement truck arrives. Helpers return from lunch. Approximately
			2.0 cubic yd load is pumped into GW-571. Cement truck departs.
1-5-93	0817	0820	Tag cement level in GW-571 at 3.7 ft BGS.
	1130	1134	GW-571 infilled with soil to ground surface.
			P&A of GW-571 completed.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-572

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: SPAD Landfill Site

DRILLERS: Hubert Hall - Highland Drilling

HELPERS: Steve Brown, Greg Shillings - Highland Drilling

DRILL: Ingersoll-Rand XL-750

DATE: START: 12-23-92

FINISH: 1-5-93

METHOD: A

LOGGED BY: Susan L. Abston/ Michael A. Klidzejs - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-23-92	1000	1055	Oversight onsite (Susan Abston-SAIC), crew preparing GW-572 site for drill rig.
	1055	1258	Janet Sitzler (HSEA) arrives onsite, continue preparing site for drill rig.
	1258	1315	Setting rig up into position over GW-572.
	1315	1327	Crew rigs up with a 5 3/4-in. diameter, 15.2 ft long washover pipe with a 1.8 ft adapter over a 2-in. stainless steel casing. Table height = 2.5 ft above ground surface.
	1327	1355	Beginning over wash of casing. Organic vapors in breathing zone at 3.0 ft BGS = 3.1 ppm. Beta and gamma = 60 cpm (background 60 cpm). Drilled to 12.7 below ground surface (BGS).
	1355	1420	Breaking steel casing apart to add additional section of washover pipe of 24.7 ft length, collected sample of cuttings from 0-12.7 ft interval. Sample consists of small pieces of cement with some larger reddish brown to tan fragments of chert. Beta and gamma = 60 cpm.
	1420	1435	Resume over wash. Organic vapors in breathing zone at 15 ft BGS = 2.1 ppm. Beta gamma = 30 cpm. Drilled to 29.9 ft until tank ran out of water.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-572
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-23-92	1435	1448	Collected sample of cuttings from 12.7-29.9 ft BGS interval.
(cont.)			Sample consists of small angular pieces of cement with some
			large reddish brown to tan chert fragments. Beta and
			gamma = 50 cpm. Drillers preparing to winterize rig and leave
			site.
	1448	1456	Drillers depart site. Alpha scan on composite sample of
			cuttings = 0-10 cpm. Headspace analysis of 9.1 ppm probably
			due to residual anti-freeze in rig water system. Oversight departs,
			site secured.
12-28-92	0847	0928	Oversight and crew onsite. Crew warming up rig and preparing
			to drill. Water truck arrives at site.
	0928	1001	Started over wash at 29.9 ft. Organic vapors in breathing zone at
			32 ft = 2.8 ppm. Beta and gamma = 40 cpm. Background beta
			and gamma = 40 cpm. Drilled to 39.9 ft and added another section
			of washover pipe.
	1001	1015	Collected sample of cuttings from 29.9 ft to 39.9 ft interval BGS.
			Sample consists of angular fragments of grout (cement) and more
			rounded fragments of chert stained with orangish-red clay, and
			some metal shavings.
	1015	1031	Janet Sitzler (HSE) onsite. Cannot see casing in hole. Called
			Steve Jones (HSE) and reported progress at GW-572. Pull
			washover pipe and check to see if casing has been cut by
			washover. If cut, to ream hole to 39.9 ft and grout hole.
	1031	1130	Drillers pulled washover pipe out of hole. Casing balled up inside
			of washover pipe.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-572
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-28-92	1130	1135	Report situation to Steve Jones. He gave permission to ream hole
(cont.)			to 39.9 ft.
	1135	1240	Oversight and crew leave site for lunch.
	1240	1329	Steve Jones (HSEA) onsite, drill crew preparing drill for reaming,
			steam clean bit and stabilizer = 5.4 ft. (Sub = 2.2 ft and adapter
			=1.5 ft). Reaming bit = 10 5/8-in. in diameter.
	1329	1346	Start drilling. Organic vapors in breathing zone at 6 ft BGS
			3.0 ppm, beta and gamma = 40 cpm. Drill to 31.6 ft BGS.
	1346	1459	Stop drilling to dig a trench for drill water to divert it from the
			roadway. Water truck goes to refill.
	1459	1524	Drill second rod to 39.9 ft BGS with reaming bit.
	1524	1625	Collect sample of cuttings from 0-39.9 ft BGS interval. Cuttings
			consist primarily of tan chert fragments. Beta and gamma =
			40 cpm. Alpha =10 cpm. Drillers prepare to leave and secure site.
			Oversite leaves site.
12-29-92	0849	1208	Oversight and crew onsite. Crew steam cleaning rig. Janet Sitzler
			(HSEA) onsite.
	1208	1250	Cement truck arrived and tremied with diaphram pump approxi-
			mately 1-1/4 cubic yds of cement into GW-572.
1-4-93	0830	0832	Technical oversight by Mike Klidzejs - SAIC. Tag cement level at
			8.6 ft BGS. Depart site.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-572
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 4

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-4-93 (cont.)	1202	1215	Return to GW-572 site. Cement truck onsite with approximately
			2 cubic yds of neat Type I cement. Top off GW-572 (remainder
			of load tremied into adjacent bore). Depart site.
1-5-92	0817	0820	Arrive at GW-572 site. Tag cement level at 2.1 ft BGS. Depart
			site.
	1053	1118	Cap GW-572 bore with soil even with ground surface.
			P&A of GW-572 is complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-573D
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 2

LOCATION: SPAD Landfill Site	DATE: START: 2/2/93
DRILLERS: John Voekel - Law Environmental	FINISH: 3/18/93
HELPERS: Jason Smith - Law Environmental	METHOD: A
DRILL: CME Model 55	LOGGED BY: Michael Klidzeis - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/2/93	0930	0944	Rig is moved over GW-573D casing. 5.1 ft stick-up of casing is
			chiseled off at approximately 1.0 ft above ground surface. Crew
			rigs up with first auger flight and bit; total length = 5.2 ft. Inside
			diameter (ID) of auger is 6 1/4-in., outside diameter (OD) is
			10 5/8-in. Each additional auger flight is 5.0 ft in length.
	0944	1132	Begin augering. Auger flights are added sequentially at end of
			each 5 ft interval. Cuttings grab samples are collected periodically.
			Returns consist of pale yellowish-brown (10YR 6/2) clayey silt with
			some cement. Encounter water at 24.0 ft below ground surface
			(BGS), resulting in soupy, very pale orange (10YR 8/2) to pale
			yellowish-brown (10YR 6/2) mud returns. Greatest reading of
			organic vapors in breathing zone is 0.1 ppm. Maximum reading of
			beta/gamma at borehole is 60 cpm, alpha is 20 cpm. Auger to
			49.6 ft BGS.
	1132	1332	Crew breaks for lunch.
	1332	1435	Rig is started and augering continues. Auger begins to stick in
			borehole due to thick mud, causing rig engine to bog. Two auger
			flights are tripped out and removed. The string is raised and spun
			to clear mud from borehole. The auger flights are re-added and
			augering continues. Augering continues to 70 ft BGS.
	1435	1524	Casing string is pulled up with rig winch. Casing sections removed,
			section by section. Cuttings grab samples are prepared for

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-573D
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/2/93			screening (see Cutting Field Screening/Disposal Sheet).
(cont.)			
	1524	1619	Crew leaves site to clean augers needed to complete P&A. Casing
			and screen removed from borehole. Beta/gamma is 50 cpm. Alpha
			is 20 cpm. Note that complete screen and casing has been
			removed from hole. Total length of extracted casing is 94.02 ft.
	1619	1646	Drillers return to site. Augering continues. Auger to 90.2 ft BGS, TD.
	1646	1740	Auger flights are removed from string until auger is out of the
			borehole. Crew loads equipment and departs. Oversight departs.
2/3/93	1313	1457	Crew and oversight arrive at site to prepare for cementing. Eight
			10-ft, 2-in. diameter PVC tremie pipe sections are inserted down
			hole. Stick-up of tremie pipe is 7.0 ft, bottom at 73.0 ft BGS.
	1457	1554	Cement truck arrives on site with 2.5 cubic yards of cement.
			Cement is pumped into borehole by use of the rig pump. Cement
			is circulated out of the borehole. The tremie pipe is removed from
			the borehole and cleaned. The cement truck leaves the site. Crew
			and oversight depart.
2/4/93	0755	0855	Tag cement level in bore at 12.6 ft BGS. Calculate bore volume to
			4 ft BGS of 5.3 cubic ft, equivalent to 3.9 sacks of 2% bentonite-
			cement grout needed to bring cement level to within 4 ft of the
			ground surface.
3/12/93	1010	1035	Mixed and poured 4 bags of cement w/bentonite into borehole.
3/16/93	1552	1600	Grout tagged at 3.8 ft BGS.
3/18/93	1312	1338	Clay cap installed. P&A of GW-573D complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-573S
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 2

LOCATION: SPAD Landfill Site	DATE: START: 2/2/93
DRILLERS: John Voekel - Law Environmental	FINISH: 3/18/93
HELPERS: Jason Smith - Law Environmental	METHOD: A
DRILL: CME Model 55	LOGGED BY: Michael Klidzejs - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/2/93	0818	0827	Arrive at GW-573 site. Crew is present. Rig is already set up over
			casing in GW-573S and rigged up with first auger flight and bit.
			Total length of first flight with bit is 5.2 ft. Inside diameter (ID) of
			auger is 6 1/4-in., outside diameter (OD) is 10 5/8-in. Additional
			auger flights are 5.0 ft.
	0827	0843	Begin augering. Auger flights added sequentially at each 5 ft
			interval. Organic vapors in breathing zone at 8 ft below ground
			surface (BGS) = 0.0 ppm. Beta and gamma around borehole -
			80 cpm (background = 40-50 cpm). Alpha = 0 cpm (background =
			0 cpm). Cuttings returned consist of pale yellowish-brown clayey
			silt (soil). Cuttings become moist around 7 ft BGS. Encounter
			grayish-white to very light gray clay at 14 ft BGS. Grab samples
			of soil collected throughout augered interval. Reach total depth of
			16 ft BGS and stop augering.
	0843	0930	Crew removes auger flights from borehole. Casing not visible in
			borehole; groundwater in borehole at 8 ft BGS; 5.5 ft section of
			casing is lodged in bottom auger flight. Remainder of casing may
			be below the water level or balled up. Bottom of augered hole is
			tagged at 16.0 ft BGS. Notify Bill Thedford (HSR) and David
			Wright (Highland) that a section of casing remains in the hole.
			David Wright and Scott Gilbert (Highland) report at 1019 hr that
			Kevin Jago (HSE) has given permission to grout hole with casing
			still present.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-573S
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 2

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2/3/93	1457	1530	Cement truck arrives on site with 2.5 cubic yards of cement. Two
			10-ft sections of 1.5-in. OD PVC tremie pipe are placed in
			borehole. Cement is pumped through pump on rig into tremie
			pipe. Cement is pumped to within approximately 2 ft of ground
			surface.
2/4/93	0746	0755	Tag cement level in bore at 3.7 ft BGS (water level at 2.3 ft BGS).
			Bore is ready for soil cap.
3/18/93	1312	1338	Clay cap installed. P&A of GW-573S complete.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-580

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT

LOCATION: SPAD Landfill Site

DRILLERS: Hubert Hall - Highland Drilling Co.

HELPERS: Greg Shilling/Steve Brown/ Jim Gallaher - Highland Drilling Co.

DRILL: Ingersoll-Rand XL-750

DATE: START: 12-8-92

FINISH: 12-18-92

METHOD: A

LOGGED BY: Michael A. Klidzejs - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-8-92	0900	0947	Arrive at GW-580 site. Hubert Hall (Highland) and Victor Harness (SAIC) already present. Bottom of hole is tagged at 73.4 ft below ground surface (BGS). Drill rig rigged up with 5-3/4 in. diameter, 15.2 ft washover pipe, and 1.8 ft adapter. Table height = 1.6 ft. Driller's helper, Jim Gallaher, arrives.
	0947	1000	Rig is started. Begins over wash. Organic vapors in breathing zone at 7 ft BGS = 15 ppm. High level attributed to alcohol in anti-freeze earlier expelled from rig. Rig is stopped. Crew has to get backhoe to dig a trench to prevent return water from scouring soil from below rig jacks. Crew leaves site.
	1000	1154	On standby until crew returns. Bill Thedford (HSEA) reports at 1046 that crew was delayed by logging activities, then backhoe ran out of gas. Oversight tags cement levels in wells 1131 and 1132. Crew returns to site with backhoe at 1148 and digs cuttings/ water trench.
	1154	1303	Rig is restarted. Continues over wash. Organic vapors in breathing zone = 4.2 ppm. Beta and gamma = 60 cpm (back-ground = 20 cpm). Reach end of first washover pipe at 15.0 ft BGS (0.2 ft stick-up). Collect cuttings sample of 0 to 14 ft interval. Cuttings consist of predominantly small grayish orange (10YR 7/4) to pale yellowish brown (10YR 6/2) cement-grout fragments. Rig up with second washover pipe, 24.7 ft in length.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-580
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 2 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-8-92	1303	1438	Continues over wash. Organic vapors at 20.0 ft BGS = 2.0 ppm.
(cont'd)			Beta and gamma = 40 cpm. Collect cuttings samples of 15 ft to
			25 ft and 25 ft to 30 ft BGS intervals. Both samples consist of
			cuttings similar to 0 to 14 ft intervals. Minor steel shavings found
			in 25 to 39 ft interval sample. Reach 39.0 ft BGS. Rig up with
			third washover pipe, 24.7 ft in length.
	1438	1512	Continues over wash. Organic vapors at 44 ft BGS in breathing
			zone = 0.2 ppm. Beta and gamma = 40 cpm. Collect cuttings
			sample of 40 to 50 ft BGS interval. Cuttings as in above intervals
			with no steel shavings. Water truck empty. End drilling activities
			for day at 51.5 ft BGS.
	1512	1540	Cuttings samples screened for radioactivity and placed under
			foil for head space analysis. (See Cuttings Field Screening/
			Disposal Sheet.) Crew circulates antifreeze through rig piping
			and hoses to prevent freezing overnight. Crew leaves site.
			Oversight departs.
12-9-92	0801	0951	Oversight arrives at GW-580 site. Crew arrives and prepares to
			washover. Table height adjusted to 2.0 ft. Continue washover.
			Organic vapors in breathing zone = 0.0 ppm. Beta and gamma
			= 40 cpm. Collect cuttings sample of 56.7 to 63 interval. Sample
			consists of thin to medium cuttings of light gray (N7) to moderate
			yellowish brown (10YR 5/4) cement/grout. Reach 65 ft BGS and
			end of washover pipe.
	0951	1036	Determine that both HNu and beta and gamma meter are
			malfunctioning. Oversight departs to replace equipment. Bill
			Thedford (HSEA) remains on site as health and safety over-
			sight. Oversight returns to site at 1024. Crew rigs up with fourth
			washover pipe, 14.6 ft in length.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-580
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-9-92	1036	1114	Continues overwash. Organic vapors in breathing zone at 69 ft
(cont'd)			BGS = 9.8 ppm. Beta and gamma = 90 cpm (background =
			50 cpm). Washover to 79.6 ft BGS. Collect cuttings sample of 69
			to 79.6 ft interval. Sample is similar to 56.7 to 63 ft interval but also
			contains abundant filter pack sand.
	1114	1344	Extract washover pipe from hole. Organic vapors in breathing
			zone = 0.4 ppm. Cuttings samples screened for radioactivity and
			head space (see Field Cuttings Field Screening/Disposal Sheet).
	1344	1355	Attempt to tag bottom of hole. Tape sticks in mud at 76 ft BGS.
			Crew prepares to depart. Crew and oversight leave site.
12-10-92	0800	0935	Oversight arrives at site. Crew arrives at 0845 and prepares to
			pull casing. Casing not visible in hole during first inspection. Crew
			assumes that original hole was deviated and casing was sheared
			during first few feet of washover. Steve Jones (HSEA) and Scott
			Gilbert (Highland) notified of situation.
	0935	1036	On standby awaiting Scott Gilbert. Crew cleans site during
			standby.
	1036	1130	Scott Gilbert arrives on site and inspects hole. He notices a small
			portion of the casing sticking out of overwash hole wall at
			approximately 3 ft BGS. He recommends digging a pit to expose
			casing.
	1130	1225	Backhoe is used to dig a 3.5 ft deep pit which exposes the casing.
			Chain is attached from drill sub to the casing, and an attempt to
			pull the casing is made. Tension causes casing to compress and
			the chain slips off.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-580
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-10-92	1225	1315	Break for lunch.
(cont'd)			
	1315	1415	Backhoe is used to deepen the pit to approximately 4.5 ft to expose
			casing further. Re-attach chain and attempt to pull casing again.
			Casing breaks. Call Steve Jones and inform him that attempts to
			pull casing have failed. Steve Jones will come to site.
	1415	1447	On standby.
	1447	1554	Steve Jones, Scott Gilbert, David Wright on site. Steve Jones
			decides that since original hole was probably deviated and addi-
			tional washover would not achieve anything, casing cannot be
			pulled and should be filled with grout in place. D. Wright and S.
			Gilbert leave site. Crew moves rig off of the hole. Rig and
			equipment decontaminated. Site secured. Crew, Steve Jones,
			and oversight depart.
12-11-92	0811	1135	Backhoe is used to widen pit over GW-580, to facilitate grouting.
			The hole around the casing is opened with a shovel and the steam
			cleaner. Kevin Jago (HSEA) and David Wright (Highland) on site
			from approximately 1020 to 1040. Two 10 ft tremie sections
			inserted down hole to 20 ft BGS (stick-up above bottom of pit is
			approximately 4 ft). Cement scheduled for 1300 hrs. Depart site.
	1257	1326	Cement truck arrives on site. Approximately 250 gallons cement/
			grout is pumped into tremie pipe until cement circulates out of hole.
			An additional 250 gallons of cement/grout is poured into the pit
			(around hole collar) over the borehole in the hope that the cement
			would settle in the borehole, bringing the level to within 4 ft of the
			ground surface. Tremie pipe is pulled and decontaminated.
12-14-92	0808	0812	Cement in hole tagged at 10.4 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-580
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 5

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
12-17-92	1222	1236	Cement truck arrives. Additional cement is poured into pit.
			Cement truck leaves site.
12-18-92	1045	1050	Cement level inspected. Cement to bottom of pit (approximately
			4.5 ft BGS).
	1334	1358	Pit over GW-580 infilled with soil.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-607
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT	PAGE 1 of 7

LOCATION: SPAD Landfill Site

DRILLERS: Scott Gilbert/Hubert Hall - Highland Drilling

HELPERS: Greg Shillings - Highland Drilling

DRILL: Ingersoll Rand XL-750 Drillmaster

DATE: START: 1-27-93

FINISH: 3-18-93

METHOD: A

LOGGED BY: Susan L. Abston - SAIC
V. R. Harness - SAIC

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-27-93	0845	0906	Technical oversight by V.R. Harness (SAIC). Crew setting up rig.
			Protective pad and posts previously removed. Stickup of 10.75-in.
			outside diameter (OD), 10.25-in. inside diameter (ID) surface
			casing = 0.5 ft. Excavation of cuttings pit will be done to keep
			metal cuttings out of access road. 4.5-in. OD, 4.0-in. ID stainless
			steel riser stickup previously removed = 3.12 ft height.
	0906	0938	Crew begins drilling out stainless-steel (SS) riser within 10.75-in.
			OD surface casing using a 9.5-in. diameter tricone bit and
			stabilizer (length = 9.2 ft). Table Ht = 2 ft. Advance to 7 ft below
			ground surface (BGS) with air only. Returns are grout chips with
			no SS cuttings yet.
	0938	1029	Broke power-tong wrench during break out to install check valve
			at sub. No break in drilling. Cuttings pit excavation now made
			approximately 10 ft x 6 ft x 3.5 ft deep. Composition of cuttings
			from 0 to 7 ft BGS = 99% grout fragments and 1% small SS
			shavings. Begin using water at 7 ft BGS.
	1029	1103	Advance to 26.2 ft BGS. Drilling rate slows as riser is gradually
			compacted by bit and eases as crumpled masses are cut up. Hit
			stagnant water in riser at 18.7 ft BGS, visible dark humic contri-
			bution to circulation waters noted. To prevent binding, crew adds
			liquid soap (Palmolive™ dishwashing liquid) to drill waters.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO. GW-607

WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-27-93	1103	1211	Advance to 40 ft BGS, clean bore. Collect 27 to 40 ft BGS cuttings
(cont.)			composite. Crew breaks for lunch.
	1321	1532	Resume drilling. Advance to 90.2 ft BGS. Collected 40 to 57 ft
			BGS and 57 to 80 ft BGS cuttings composites earlier.
	1532	1648	Advance to 105.2 ft BGS. Collect 80 to 101 ft BGS cuttings
			composite. Screening radioactivity of cuttings:

Sample interval	Alpha	Beta/gamma
0-27 ft	20 cpm	40 cpm
27-57 ft	0 cpm	45 cpm
57-80 ft	0 cpm	50 cpm
80-101 ft	(damp)	45 cpm

			Cuttings fining in size with depth. Composition of returned cuttings
			= 25% ≤1 cm grout fragments, 25% ≤3 cm SS fragments (not
			shavings), and 50% tan colored dolomite fragments with a
			saccharoidal or silty appearance.
	1648	1715	Advance to 107 ft BGS. Bit is now immediately below bottom of
			surface casing. Collect 101 to 107 ft BGS cuttings sample. Secure
			site. Depart site.
1-28-93	0813	0928	Two 25-ft pieces of extra drill rods delivered . Site and cuttings pit
			separately flagged. Trip down tools, resume drilling.
	0928	1039	Rate of advance essentially stopped, lowering of bit to cutting
			surface repeatedly causing binding of tools. Advance to 118.2 ft
			BGS. Collect 107 to 118.2 ft composite of cuttings.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-607
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 3 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-28-93	1039	1120	Scott Gilbert arrives with 9 7/8-in. diameter tricone roller bit. Crew
(cont.)			suspects that 9.5-in. diameter bit is worn out. Crew begins to trip
			tools out to exchange bits. Description of 107 to 118.2 ft cuttings:
			75% SS cuttings ≤5 cm, 25% grout fragments with minor amounts
			of angular chert fragments. Lunch break.
	1240	1254	Resume trip out of tools. Crew repairing power tong and water
			truck dispatched to refill.
	1254	1408	Awaiting return of water truck.
	1408	1522	Water truck returns. Trip down tools with 9 7/8-in. diameter bit
			attached. The 9.5-in bit was worn out. Resume drilling using Quik-
			Foam™. Unable to advance bit without hanging up below 117.7ft
			BGS.
	1522	1553	Tools hang-up, attempting to free.
	1533	1623	Tripping out and rigging down. Secure site. Depart.
1-29-93	0840	1028	Scott Gilbert (Highland) replaces Hubert Hall as driller. Verify that
			9.5-in diameter tricone bit used to advance to 118.2 ft BGS was
			worn out. Tripping out 9 7/8-in diameter bit, was unable to advance
			yesterday.
	1028	1053	Receive permission from Kevin Jago (HSE) to abandon effort to
			drill out any more SS riser, and instead over wash 10.75-in. OD
			surface casing as an approved deviation.
	1130	1430	Crew retrieving washover pipe.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-607
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 4 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
1-29-93	1430	1518	Crew arrives with 13.5-in. OD, 12.25-in. ID washover pipe in two
(cont.)			pieces. First piece with shoe bit is 22.7 ft long. Shoe bit portion
			of this is 2.7 ft long. Subadapter (not included above) is 3 ft long.
			Second piece of washover pipe = 20 ft long. Rigging up first piece
			with bit.
	1518	1606	Begin over wash of 10.75-in. OD, 10.25-in. ID surface casing.
			Table height = 2 ft. Advance to 22 ft BGS. Collect 0 to 22 ft BGS
			composited cuttings sample. Composition predominantly ≤2 cm
			rounded quartz pebbles (pea gravel). Awaiting return of D. Wright
			(Highland) with alcohol for antifreezing rig pipes and hoses.
	1606	1623	Alcohol antifreeze arrives. Crew securing site. Depart site.
2-1-93	0901	1011	Awaiting crew. Hubert Hall (Highland) returns as driller.
	1011	1032	Crew arrives with additional washover pipe (13.5-in OD,
			12.25-in. ID).
	1032	1108	Backhoe arrives. Crew discovers power tong hydraulic hose is
			leaking. Down for replacement. Unable to add washover pipe
			without power-tong. Depart for lunch.
	1229	1252	Replacement hose arrives, replacement made.
	1252	1412	Crew torches pulling holes in 10.75-in. OD casing. Unload new
			washover pipe tally:
			3, 20 ft long pieces
			1, 10 ft long piece
			Counted with original delivery of washover now at site, total tally
			is:

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-607
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 5 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-1-93			4, 20 ft long pieces
(cont.)			1 22.7 ft long piece (with bit)
			1, 10 ft long piece
			Total 112.7 ft
			Crew rigs up 2nd, 20 ft long piece into string.
	1412	1505	Resume over wash. Table height = 2 ft. Advance to 42 ft BGS.
			Collect 22 to 42 ft BGS composite cuttings sample. Composition:
			70% quartz pea gravel, 20% 0.1 to 1 cm grout fragments, 10%
			chert fragments and residual stainless steel fragments that have
			fallen into bore from surface.
	1505	1537	Crew rigging 3rd piece of washover pipe.
	1537	1656	Resume over wash. Advance to 62 ft BGS. Collect 42 to 62 ft
			composite cuttings sample. Clean bore, washover pipe becomes
			stuck.
	1656	1710	Washover unstuck, trip up. Crew secures rig. Depart.
2-2-93	0824	0827	Awaiting crew.
	0827	1033	Trip in tools. Adding 20 ft piece of washover pipe.
	1033	1224	Resume over wash. Advance to 82 ft BGS. Collect 62 to 82 ft BGS
			composited cuttings sample. Composition = 95% grout fragments,
			5% chert fragments with minor pea gravel. Depart for lunch.
	1250	1622	Crew adding 20 ft piece of washover and awaiting return of water
			truck with fresh load of water.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-607
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 6 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-2-93	1622	1740	Water truck arrives. It broke down enroute and had to be repaired
(cont.)			before proceeding. Resume over wash. Advance to 91 ft BGS.
			Collect 82 to 91 ft BGS composited cuttings sample. Crew
			secures rig. Depart.
2-3-93	1209	1325	Trip in tools. Resume over wash. Advance to 102 ft BGS. Collect
			91 to 102 ft BGS composited cuttings sample. Composition =
			95% grout fragments, 5% chert fragments.
	1325	1426	Crew adding 10 ft piece of washover pipe, following an unsuccessful
			attempt to pull 10.75-in. OD surface casing.
	1426	1503	Resume over wash. Advance to 107.1 ft BGS. Collect 102 to
			107 ft BGS composited sample. Composition similar to 91 to 102
			ft interval.
	1503	1545	Crew cleaning bore, washover pipe hangs.
	1545	1615	Washover pipe freed. Secure site. Depart site.
2-4-93	0830	1032	Crew moving attachment tab for P-tong to a higher position to
			facilitate trip-out.
	1032	1124	Changes complete. Trip out topmost 10 ft of washover pipe
			casing. Begin removal of 10.75-in. OD surface casing.
	1124	1440	Extract 107.2 ft of 10.75-in. OD surface casing in five pieces.
			Acetylene torch used to cut casing in manageable pieces.
	1440	1712	Crew remove all washover pipe from bore. Crew secures site.
			Depart.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO. GW-607
WELL PLUGGING AND ABANDONMENT ACTIVITY/PROGRESS REPORT - continued	PAGE 7 of 7

DATE	TIME		ACTIVITY/COMMENTS
	START	FINISH	
2-5-93	0824	0956	Crew rigs up 15-in. diameter hole opener and stabilizer. Distance
			from tip bit to reaming cones = 1.5 ft. Table Height = 2 ft. Ream
			to 110.5 ft BGS. Can advance no further with hole opener.
	0956	1054	Trip out. Mobilize rig from hole to decontaminate. Tag mud in bore
			at 63 ft BGS.
	1054	1140	Grout delivery arrives (2.5 cubic yds). Crew inserts 90 ft of 1.5-in.
			OD PVC tremie pipe to 87 ft BGS. Tremie all of grout into bore
			(neat, Type I Portland cement). No grout visible at surface. To
			allow grout to cure overnight. Depart.
2-8-93	1247	1302	D. Wright (Highland) reports tagged bottom of bore at 32 ft BGS
			and that we've received permission from Bill Thedford and Kevin
			Jago (HSE) to use Hole Plug™ to prevent bore from taking
			excessive grout. Two bags of Hole Plug™ poured into bore.
2-16-93	0806	0815	Tag top of hydrated bentonite at 25 ft BGS.
3-3-93	1322	1359	Crew inserts 20 ft of 1.5-in. OD PVC tremie pipe to 17 ft BGS.
			Tremie 2.0 cubic yds of neat, Type I Portland cement into bore.
			Circulate grout at surface. Clean and depart site.
3-4-93	1240	1243	Tag grout level at 4.0 ft BGS.
3-18-93	1120	1200	Greg Shillings and Steve Brown (Highland) use backhoe to place
			4.0 ft clay cap on bore to bring level to ground surface.

APPENDIX B

Plugging and Abandonment Diagrams

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. PZ-12

LOCATION: SPAD Landfill Site

COORDINATES: N27175 E59740

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 3/10/93

FINISH: 3/18/93

PREPARED BY: V.R. Harness-SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

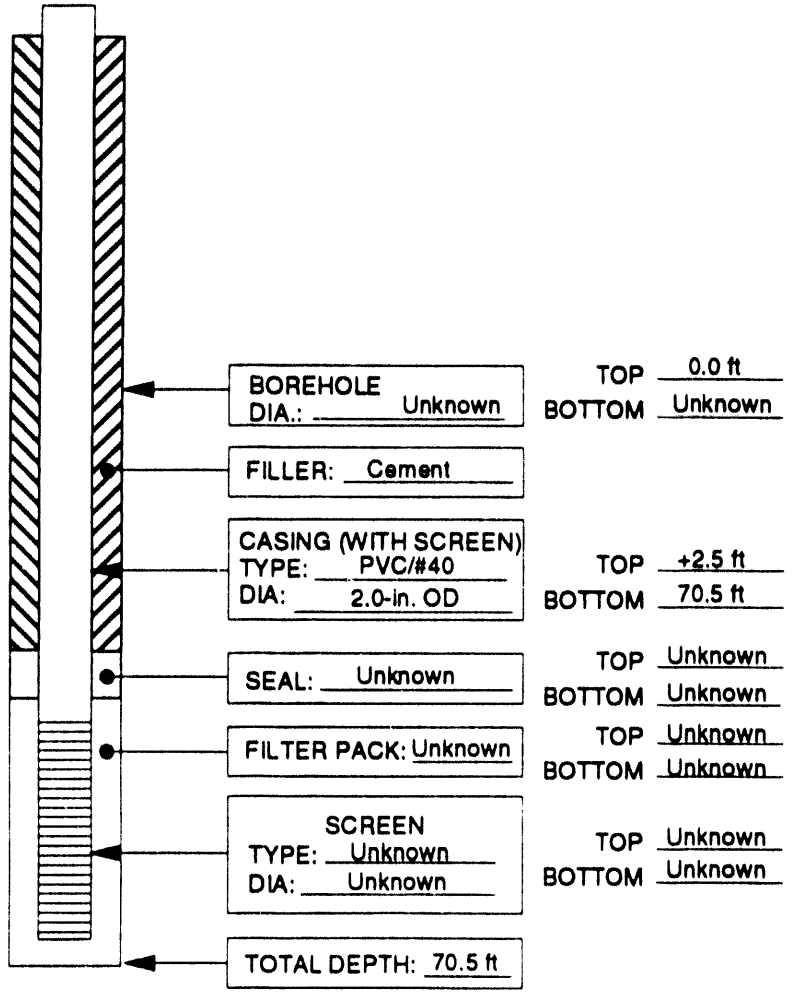
HELPER: Mark Baker

REASON FOR P&A: Well is obstructing construction of landfill.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Cap depth is 0.5 ft BGS rather than 4.0 ft BGS. Deviation approved by Steve Jones - HSEA.

WELL CONSTRUCTION SUMMARY



NOT TO SCALE

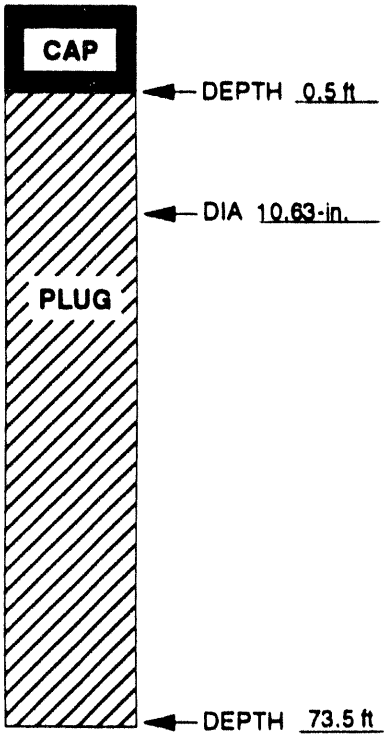
P&A SUMMARY

REAMED DIA: 10.63-in.

DRILLED/REAMED DEPTH: 73.5 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. PZ-14

LOCATION: SPAD Landfill Site

COORDINATES: N26175 E60212

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-3-93

FINISH: 3-18-93

PREPARED BY: Timothy Coffey-SAIC

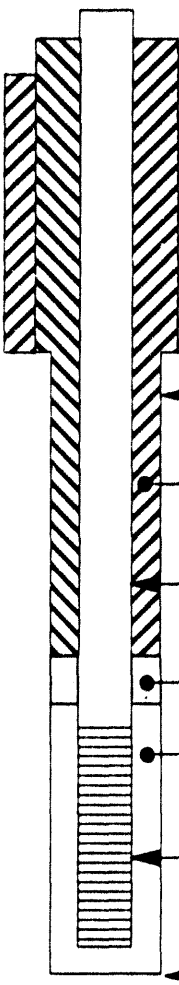
DRILLING COMPANY: Law Engineering DRILL: CME 55

DRILLER: John Voekel/Jason Smith HELPER: Jason Smith/Matthew Guyman

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: C DEVIATIONS FROM METHOD: Drill over casing with hollow stem augers, reaming hole at the same time. Cement column to 4.5 ft BGS.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: -NA-
DEPTH -NA-

SURFACE CONDUCTOR
TYPE: -NA-
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE
DIA.: 8.0-in.
TOP 0.0 ft
BOTTOM 97.0 ft

FILLER: Bentonite Slurry/ Cement

CASING (WITH SCREEN)
TYPE: PVC/#40
DIA: 2.0-in.
TOP 3.0 ft Above Ground Surface
BOTTOM ~97.0 ft

SEAL: Bentonite
TOP 75.0 ft
BOTTOM 77.0 ft

FILTER PACK: Sand
TOP 77.0 ft
BOTTOM 97.0 ft

SCREEN
TYPE: PVC
DIA: 2.0-in.
TOP 87.0 ft
BOTTOM 97.0 ft

TOTAL DEPTH: 97.0 ft

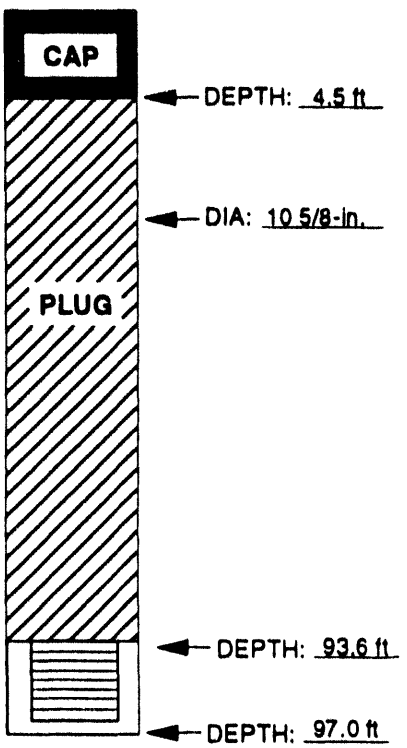
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 93.6 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. PZ-24

LOCATION: SPAD Landfill Site

COORDINATES: N26908 E60400

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-9-93

FINISH: 3-18-93

PREPARED BY: S.L. Abston-SAIC

DRILLING COMPANY: Law Engineering

DRILL: CME 55

DRILLER: John Voekel

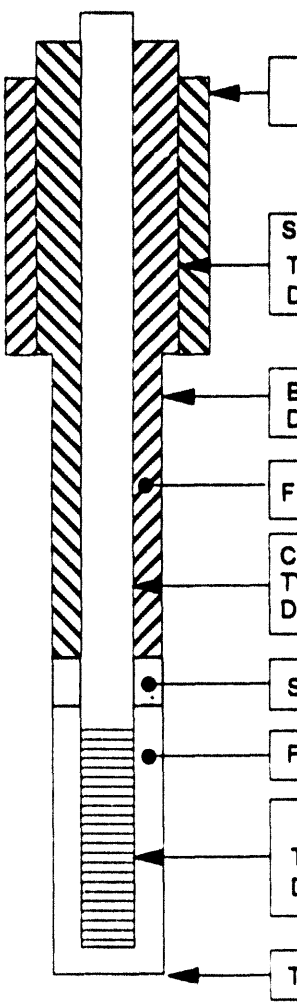
HELPER: Shawn Smith

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Drill over casing with hollow stem augers, reaming hole at the same time.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: -NA-
DEPTH -NA-

SURFACE CONDUCTOR
TYPE: -NA-
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE
DIA.: 8.0-in.
TOP 0.0 ft
BOTTOM 51.0 ft

FILLER: Cement

CASING (WITH SCREEN)
TYPE: PVC
DIA: 2.0-in.
TOP 3.0 ft Above Ground Surface
BOTTOM 51.0 ft

SEAL: Bentonite
TOP 29.0 ft
BOTTOM 31.0 ft

FILTER PACK: Sand
TOP 31.0 ft
BOTTOM 51.0 ft

SCREEN
TYPE: PVC
DIA: 2.0-in.
TOP 41.0 ft
BOTTOM 51.0 ft

TOTAL DEPTH: 51.0 ft

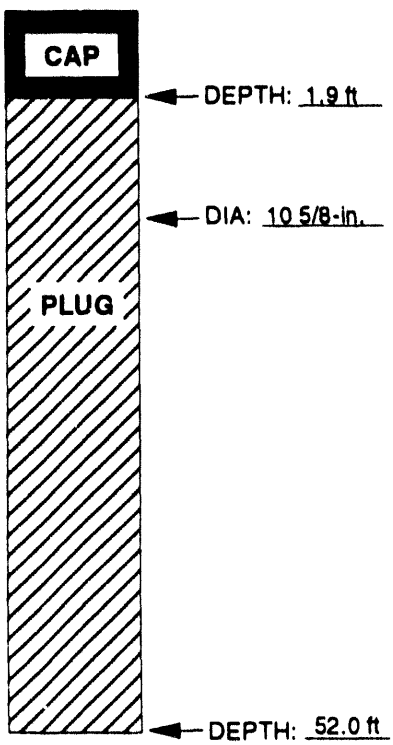
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 52 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Soil/Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. PZ-32

LOCATION: SPAD Landfill Site

COORDINATES: N27586 E58886

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 1-22-93

FINISH: 2-1-93

PREPARED BY: V.R. Hamess-SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

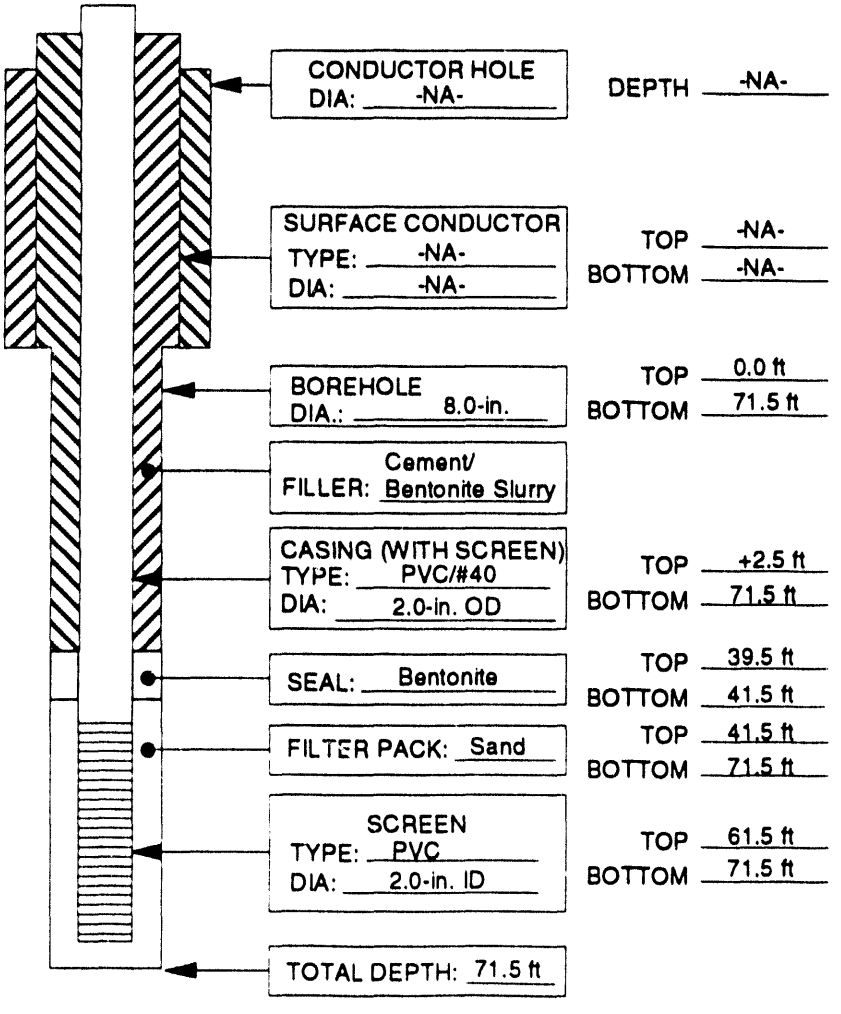
HELPER: Bob Bowers

REASON FOR P&A: Well is obstructing construction of landfill.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Depth of Cap is 6 ft BGS instead of 4 ft BGS. Deviation approved by Steve Jones - HSEA.

WELL CONSTRUCTION SUMMARY



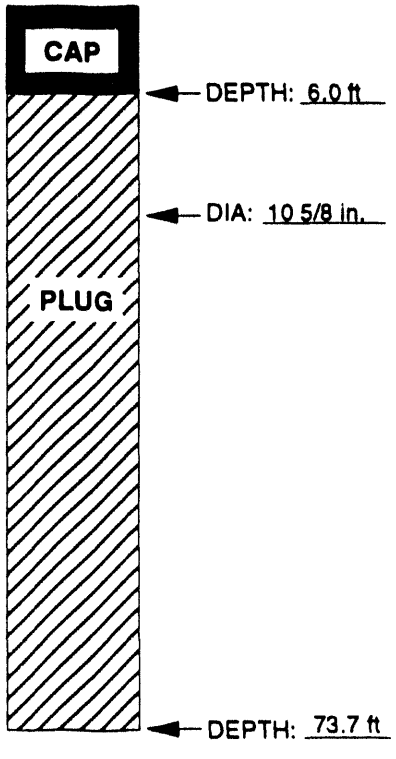
P&A SUMMARY

REAMED DIA: 10 5/8 in.

DRILLED/REAMED DEPTH: 73.7 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. PZ-34

LOCATION: SPAD Landfill Site

COORDINATES: N26627 E60887

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-10-93

FINISH: 3-18-93

PREPARED BY: S.L. Abston-SAIC

DRILLING COMPANY: Law Engineering

DRILL: CME 55

DRILLER: John Voekel

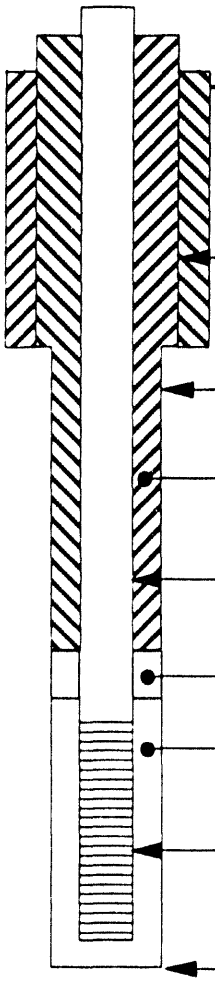
HELPER: Shawn Smith

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Drill over casing with hollow-stem augers; ream hole at the same time. Top of cement at 6.0 ft BGS.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: -NA-
DEPTH -NA-

SURFACE CONDUCTOR
TYPE: -NA-
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE
DIA.: 8.0-in.
TOP 0.0 ft
BOTTOM 47.0 ft

FILLER: Bentonite slurry

CASING (WITH SCREEN)
TYPE: PVC
DIA: 2.0-in.
TOP 3.0 ft Above Ground Surface
BOTTOM 47.0 ft

SEAL: Bentonite
TOP 25.0 ft
BOTTOM 27.0 ft

FILTER PACK: Sand
TOP 27.0 ft
BOTTOM 47.0 ft

SCREEN
TYPE: PVC
DIA: 2.0-in.
TOP 37.0 ft
BOTTOM 47.0 ft

TOTAL DEPTH: 47.0 ft

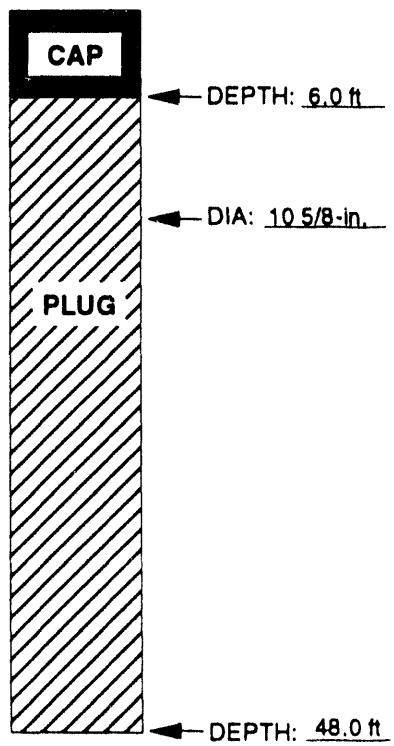
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 48.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Soil/Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. SB-12

LOCATION: SPAD Landfill Site

COORDINATES: N27783 E59490

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 1-26-93

FINISH: 2-1-93

PREPARED BY: V.R. Harness-SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

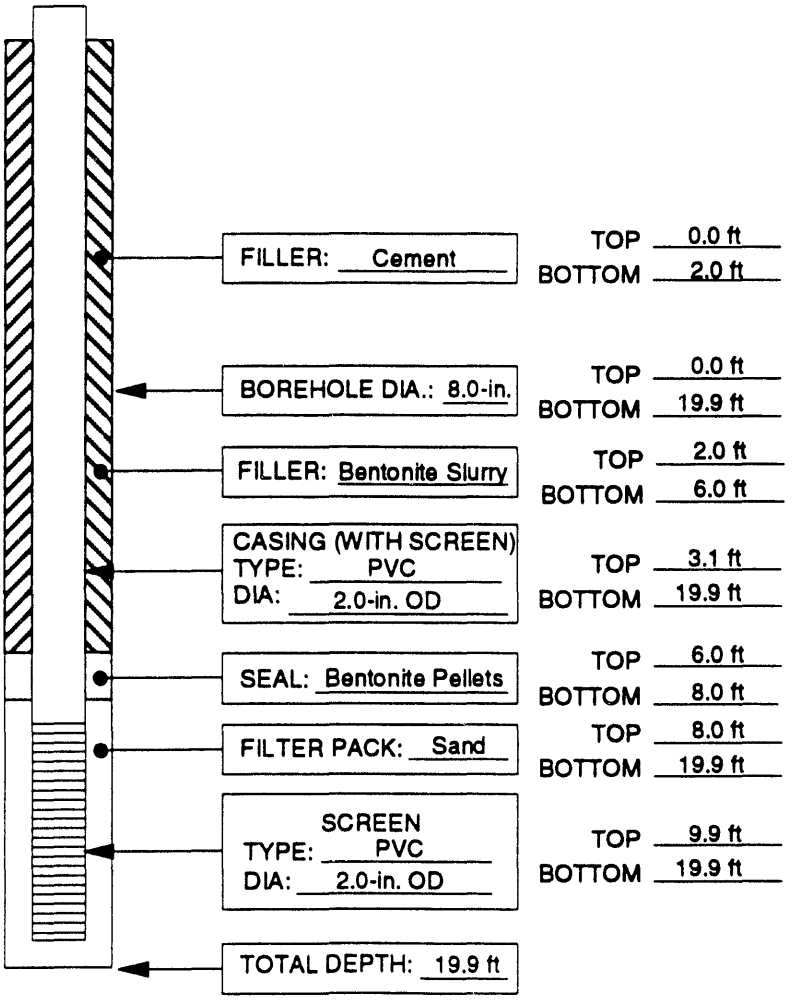
HELPER: Bob Bowers

REASON FOR P&A: Well is obstructing construction of SPAD landfill.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Cap depth = 5.6 ft instead of 4 ft. Deviation approved by Steve Jones - HSEA.

WELL CONSTRUCTION SUMMARY



FILLER: Cement — TOP 0.0 ft, BOTTOM 2.0 ft

BOREHOLE DIA.: 8.0-in. — TOP 0.0 ft, BOTTOM 19.9 ft

FILLER: Bentonite Slurry — TOP 2.0 ft, BOTTOM 6.0 ft

CASING (WITH SCREEN) TYPE: PVC DIA: 2.0-in. OD — TOP 3.1 ft, BOTTOM 19.9 ft

SEAL: Bentonite Pellets — TOP 6.0 ft, BOTTOM 8.0 ft

FILTER PACK: Sand — TOP 8.0 ft, BOTTOM 19.9 ft

SCREEN TYPE: PVC DIA: 2.0-in. OD — TOP 9.9 ft, BOTTOM 19.9 ft

TOTAL DEPTH: 19.9 ft

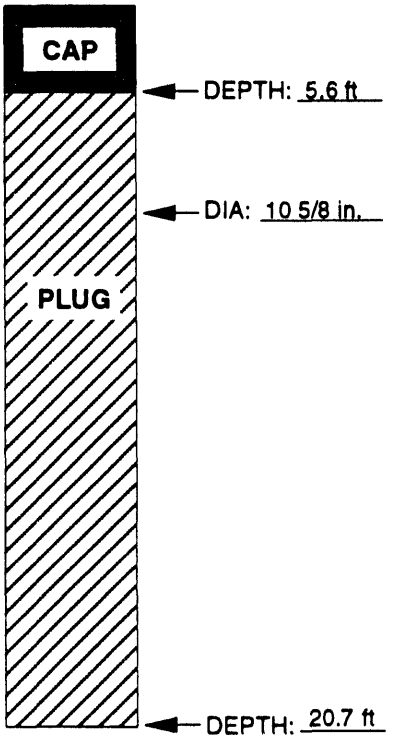
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 20.7 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. SB-14

LOCATION: SPAD Landfill Site

COORDINATES: N26580 E60323

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-8-93

FINISH: 3-18-93

PREPARED BY: S.L. Abston-SAIC

DRILLING COMPANY: Law Engineering

DRILL: CME 55

DRILLER: John Voekel

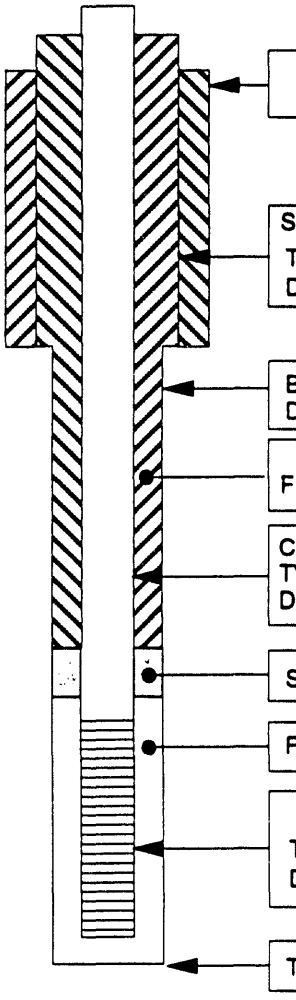
HELPER: Shawn Smith

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Drill over casing with hollow steam augers; ream hole at the same time.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: -NA-
DEPTH -NA-

SURFACE CONDUCTOR
TYPE: -NA-
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE
DIA.: 8.0-in.
TOP 0.0 ft
BOTTOM 44.0 ft

FILLER: Bentonite Slurry/ Cement

CASING (WITH SCREEN)
TYPE: PVC
DIA: 2.0-in.
TOP 3.0 ft Above Ground Surface
BOTTOM 44.0 ft

SEAL: Bentonite
TOP 22.0 ft
BOTTOM 24.0 ft

FILTER PACK: Sand
TOP 24.0 ft
BOTTOM 44.0 ft

SCREEN
TYPE: PVC
DIA: 2.0-in.
TOP 34.0 ft
BOTTOM 44.0 ft

TOTAL DEPTH: 44.0 ft

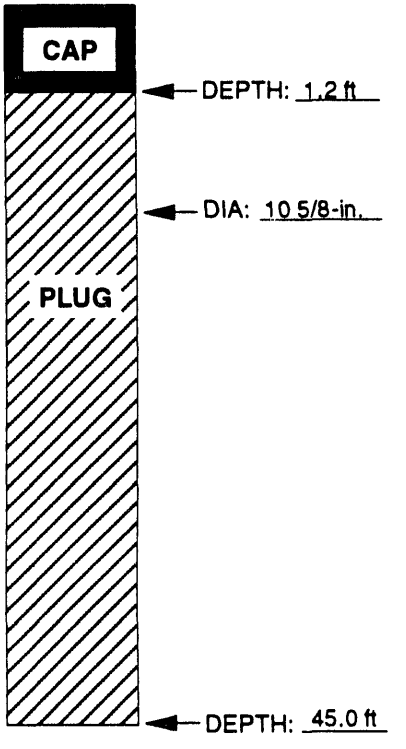
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 45.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. SB-24

LOCATION: SPAD Landfill Site

COORDINATES: N26099 E60728

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-17-93

FINISH: 3-18-93

PREPARED BY: S.L. Abston-SAIC

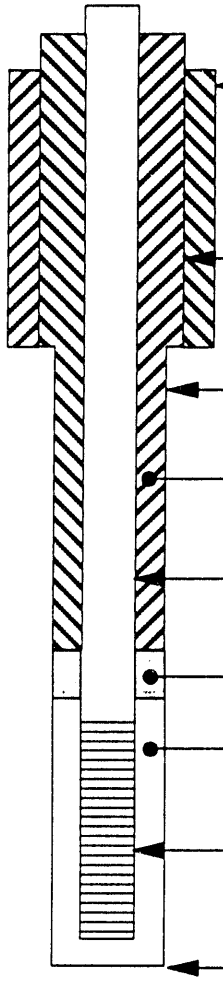
DRILLING COMPANY: Law Engineering DRILL: CME 55

DRILLER: John Voekel HELPER: Shawn Smith

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: C DEVIATIONS FROM METHOD: Pull 24.2 ft of PVC casing prior to augering; condition hole with augers. Top of cement at 5.8 ft BGS.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: -NA-
DEPTH -NA-

SURFACE CONDUCTOR
TYPE: -NA-
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE
DIA.: 8.0-in.
TOP 0.0 ft
BOTTOM 20.0 ft

FILLER: Bentonite Slurry

CASING (WITH SCREEN)
TYPE: PVC
DIA: 2.0-in.
TOP 3.0 ft Above Ground Surface
BOTTOM 20.0 ft

SEAL: Bentonite
TOP 6.0 ft
BOTTOM 8.0 ft

FILTER PACK: Sand
TOP 8.0 ft
BOTTOM 20.0 ft

SCREEN
TYPE: PVC
DIA: 2.0-in.
TOP 10.0 ft
BOTTOM 20.0 ft

TOTAL DEPTH: 20.0 ft

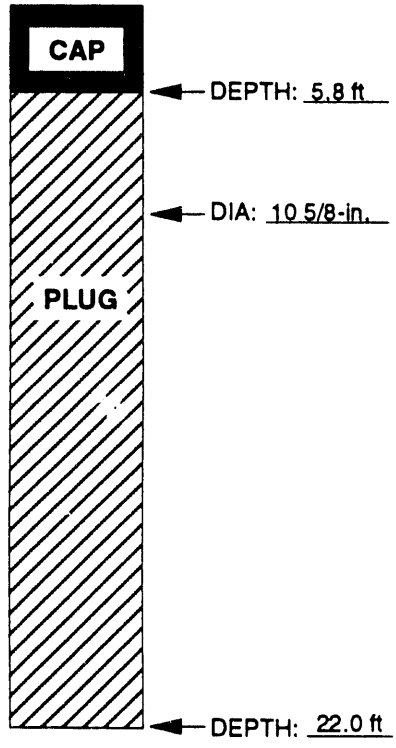
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 22.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Soil/Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. SB-34

LOCATION: SPAD Landfill Site

COORDINATES: N26253 E61150

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-11-93

FINISH: 3-18-93

PREPARED BY: S.L. Abston-SAIC

DRILLING COMPANY: Law Engineering

DRILL: CME 55

DRILLER: John Voekel

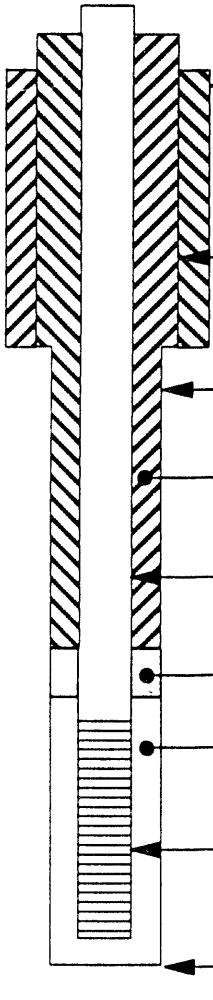
HELPER: Shawn Smith

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Drill over casing with hollow-stem augers; ream hole at the same time. Cement level less than 1 ft BGS.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: -NA-
DEPTH -NA-

SURFACE CONDUCTOR
TYPE: -NA-
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE
DIA.: 8.0-in.
TOP 0.0 ft
BOTTOM 41.0 ft

FILLER: Bentonite Slurry

CASING (WITH SCREEN)
TYPE: PVC
DIA: 2.0-in.
TOP 3.0 ft Above Ground Surface
BOTTOM 41.0 ft

SEAL: Bentonite
TOP 23.0 ft
BOTTOM 25.0 ft

FILTER PACK: Sand
TOP 25.0 ft
BOTTOM 41.0 ft

SCREEN
TYPE: PVC
DIA: 2.0-in.
TOP 31.0 ft
BOTTOM 41.0 ft

TOTAL DEPTH: 41.0 ft

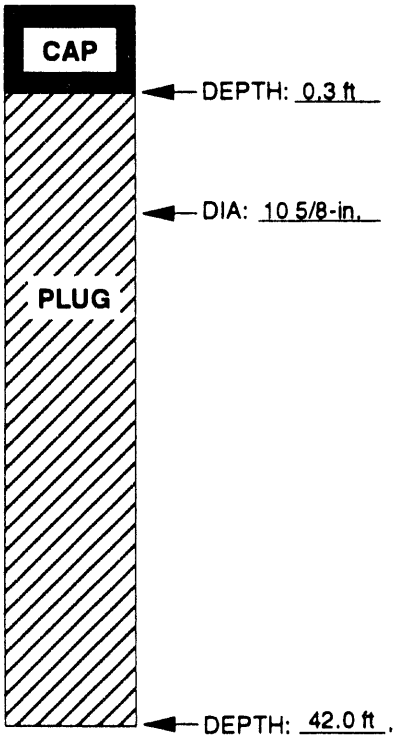
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 42.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Soil/Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. SB-44B

LOCATION: SPAD Landfill Site

COORDINATES: N26655 E61235

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-12-93

FINISH: 3-18-93

PREPARED BY: S.L. Abston-SAIC

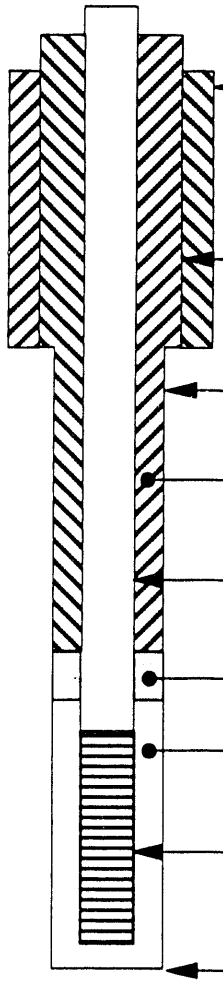
DRILLING COMPANY: Law Engineering DRILL: CME 55

DRILLER: John Voekel HELPER: Shawn Smith

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: C DEVIATIONS FROM METHOD: Drill over casing with hollow-stem augers; ream hole at the same time.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: -NA-
DEPTH -NA-

SURFACE CONDUCTOR
TYPE: -NA-
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE
DIA.: 8.0-in.
TOP 0.0 ft
BOTTOM 39.0 ft

FILLER: Bentonite Slurry

CASING (WITH SCREEN)
TYPE: PVC
DIA: 2.0-in.
TOP 3.0 ft Above Ground Surface
BOTTOM 39.0 ft

SEAL: Bentonite
TOP 20.5 ft
BOTTOM 22.5 ft

FILTER PACK: Sand
TOP 22.5 ft
BOTTOM 39.0 ft

SCREEN
TYPE: PVC
DIA: 2.0-in.
TOP 29.0 ft
BOTTOM 39.0 ft

TOTAL DEPTH: 39.0 ft

P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 40.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Soil/Clay

DEPTH: 2.3 ft

DIA: 10 5/8-in.

DEPTH: 40.0 ft

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. SB-54

LOCATION: SPAD Landfill Site

COORDINATES: N25702 E60296

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-16-93

FINISH: 3-18-93

PREPARED BY: S.L. Abston-SAIC

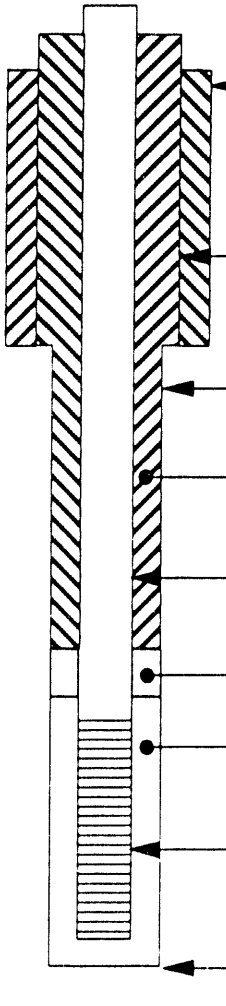
DRILLING COMPANY: Law Engineering DRILL: CME 55

DRILLER: John Voekel HELPER: Shawn Smith

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: C DEVIATIONS FROM METHOD: Pull out PVC well casing prior to augering. Ream borehole with augers. Cement level at 5.1 ft BGS.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: -NA-
DEPTH -NA-

SURFACE CONDUCTOR
TYPE: -NA-
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE
DIA.: 8.0-in.
TOP 0.0 ft
BOTTOM 21.0 ft

FILLER: Bentonite Slurry

CASING (WITH SCREEN)
TYPE: PVC
DIA: 2.0-in.
TOP 3.5 ft Above Ground Surface
BOTTOM 21.0 ft

SEAL: Bentonite
TOP 7.0 ft
BOTTOM 9.0 ft

FILTER PACK: Sand
TOP 9.0 ft
BOTTOM 21.0 ft

SCREEN
TYPE: PVC
DIA: 2.0-in.
TOP 11.0 ft
BOTTOM 21.0 ft

TOTAL DEPTH: 21.0 ft

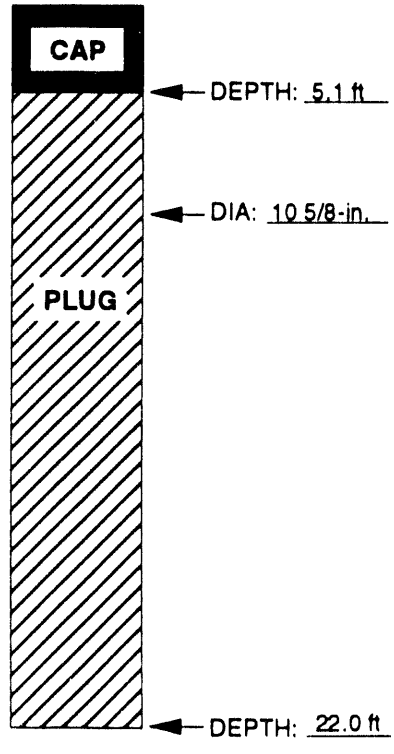
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 22.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay/Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. SB-72a

LOCATION: SPAD Landfill Site

COORDINATES: N26750 E59397

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 3/8/93

FINISH: 3/18/93

PREPARED BY: D. Hollon-SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750 Drillmaster

DRILLER: Rick Mayberry

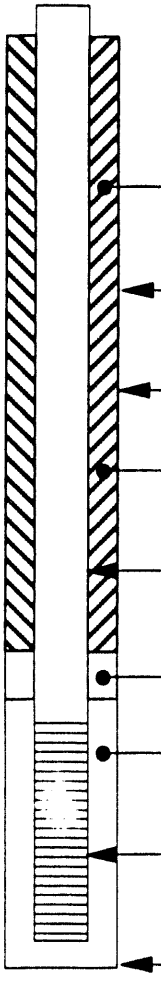
HELPER: Paul McCormick

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: C

DEVIATIONS FROM METHOD: None.

WELL CONSTRUCTION SUMMARY



FILLER: Cement

SURFACE CONDUCTOR
TYPE: -NA-
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE
DIA.: 8-in.
TOP 0.0 ft
BOTTOM 96.0 ft

FILLER: Bentonite Slurry
TOP 54.0 ft
BOTTOM 74.0 ft

CASING (WITH SCREEN)
TYPE: PVC
DIA: 2-in.
TOP Groundsurface
BOTTOM 86.0 ft

SEAL: Bentonite
TOP 74.0 ft
BOTTOM 76.0 ft

FILTER PACK: Sand
TOP 76.0 ft
BOTTOM 96.0 ft

SCREEN
TYPE: PVC
DIA: 2-in.
TOP 86.0 ft
BOTTOM 96.0 ft

TOTAL DEPTH: 96.0

-NA-: Not Applicable

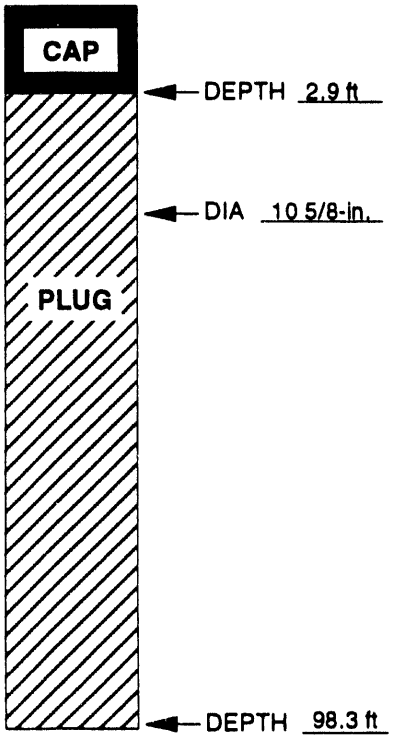
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 98.3 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1003

LOCATION: S-3 Ponds Functional Area

COORDINATES: N29939 E51595

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-20-93

FINISH: 5-24-93

PREPARED BY: V.R. Harness - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

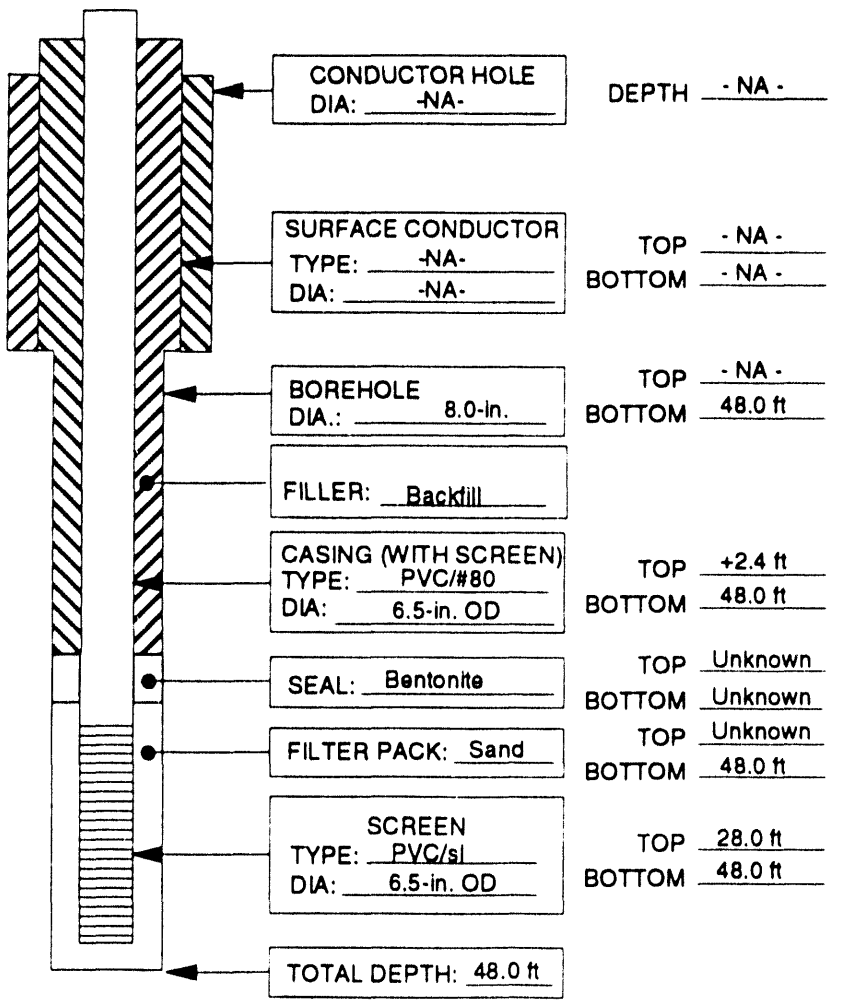
HELPERS: Greg Anderson, Steve Brown

REASON FOR P&A: Well security compromised, substandard construction.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Well abandoned in place from 27 ft to 48 ft due to instability of bore. Removal drilling and reaming conducted in one pass.

WELL CONSTRUCTION SUMMARY



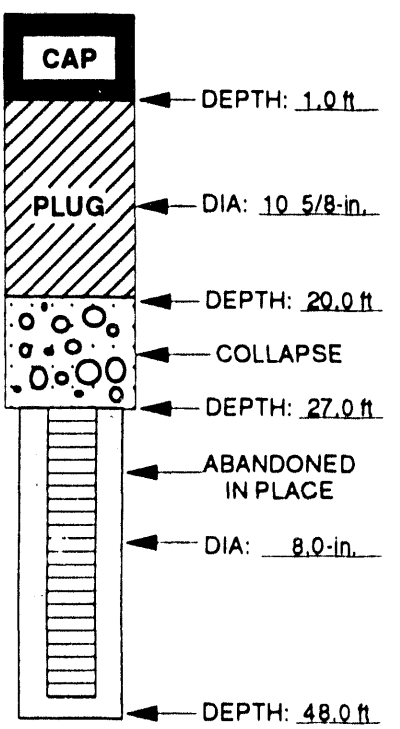
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 27 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1007

LOCATION: S-3 Ponds Functional Area

COORDINATES: N29995 E52310

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-25-93

FINISH: 5-27-93

PREPARED BY: V.R. Hamess - SAIC

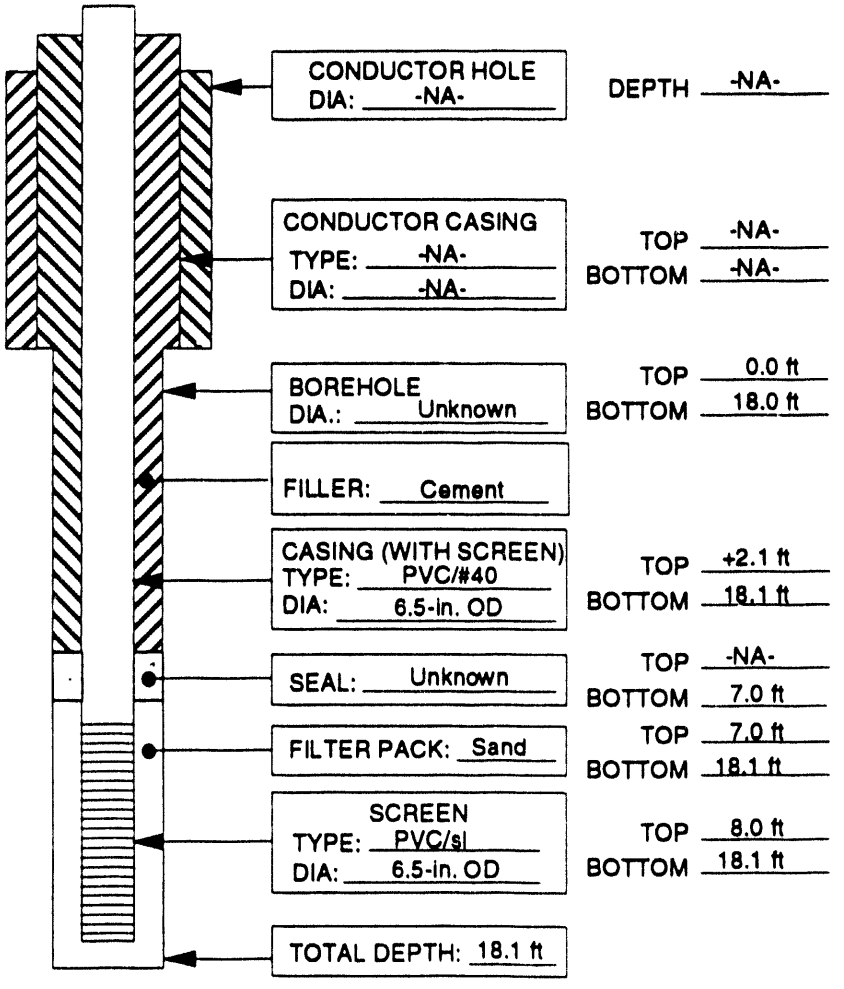
DRILLING COMPANY: Highland Drilling Company DRILL: Altec Auger Truck

DRILLER: Hubert Hall HELPER: Greg Anderson

REASON FOR P&A: Well security compromised, well construction substandard.

P&A: METHOD: C DEVIATIONS FROM METHOD: Removal drilling and reaming performed in one pass.

WELL CONSTRUCTION SUMMARY



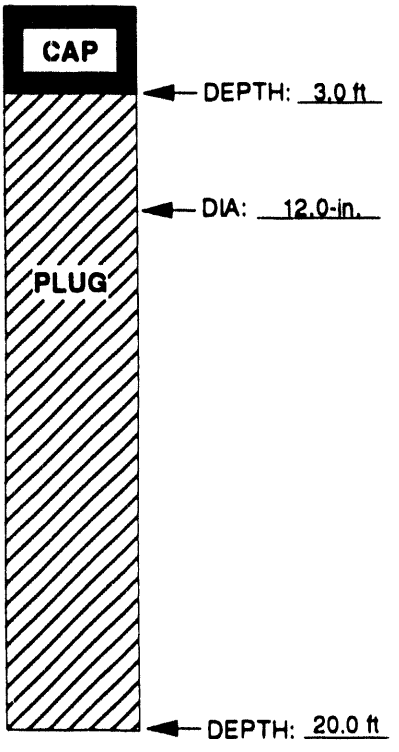
P&A SUMMARY

REAMED DIA: 12.0-in.

DRILLED/REAMED DEPTH: 20 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1010

LOCATION: S3 Ponds Functional Area

COORDINATES: N30556 E52206

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-21-93

FINISH: 5-27-93

PREPARED BY: V.R. Harness - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Altec Auger Truck

DRILLER: Hubert Hall

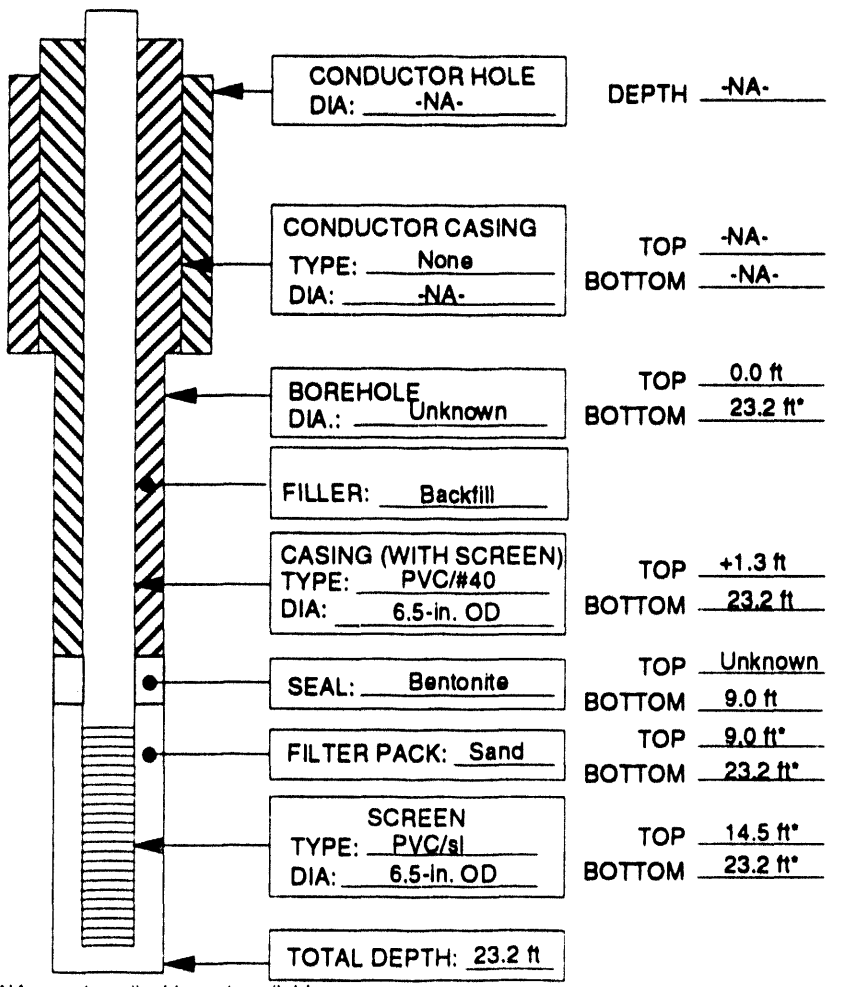
HELPER: Greg Anderson, Steve Brown

REASON FOR P&A: Well security compromised, substandard construction.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Cap to 0.5 ft of gravel to blend with surrounding area.

WELL CONSTRUCTION SUMMARY



-NA- = not applicable, not available

*Database indicated 20 ft hole depth, screen from 10 to 20 ft and pack from 9 to 20 ft

NOT TO SCALE

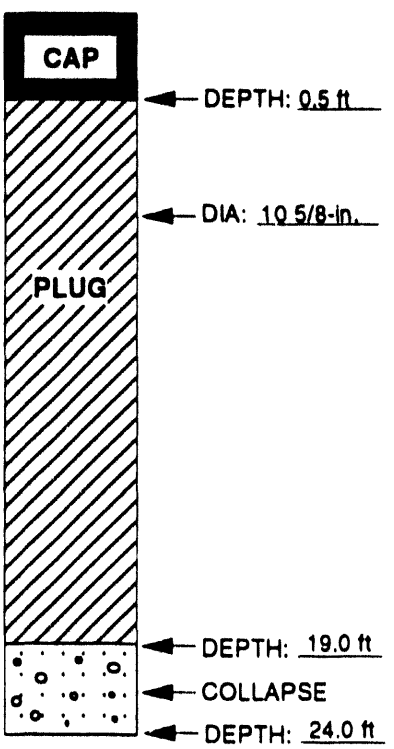
P&A SUMMARY

REAMED DIA: 12-in.

DRILLED/REAMED DEPTH: 24.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Gravel



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1011

LOCATION: S3 Ponds Functional Area

COORDINATES: N29981 E52016

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-24-93

FINISH: 5-25-93

PREPARED BY: V.R. Hamess - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Altec Auger Truck

DRILLER: Hubert Hall

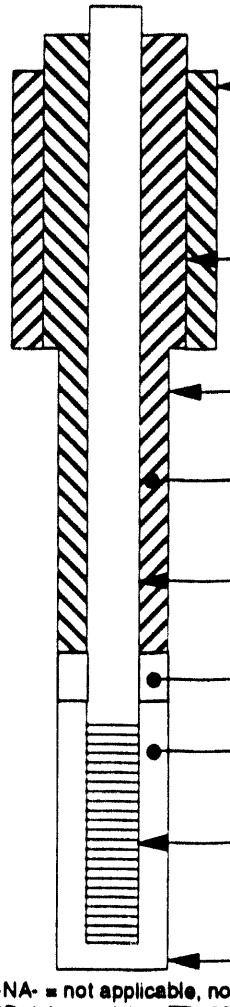
HELPER: Greg Anderson, Steve Brown

REASON FOR P&A: Well security compromised, substandard construction.

P&A: METHOD: C

DEVIATIONS FROM METHOD: None.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: -NA-
DEPTH -NA-

CONDUCTOR CASING
TYPE: None
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE
DIA.: Unknown
TOP 0.0 ft
BOTTOM 20.0ft*

FILLER: Backfill

CASING (WITH SCREEN)
TYPE: PVC/#40
DIA: 6.5-in. OD
TOP + 3.7 ft
BOTTOM 20.0 ft

SEAL: Bentonite
TOP Unknown
BOTTOM Unknown

FILTER PACK: Sand
TOP Unknown*
BOTTOM 20. ft

SCREEN
TYPE: PVC/sl
DIA: 6.5-in. OD
TOP 10.0 ft*
BOTTOM 20.0 ft

TOTAL DEPTH: 20.0 ft

-NA- = not applicable, not available
*Database claims TD=22.5 ft, filter pack 11 to 22 ft BGS and screen from 12 to 22 ft BGS.

NOT TO SCALE

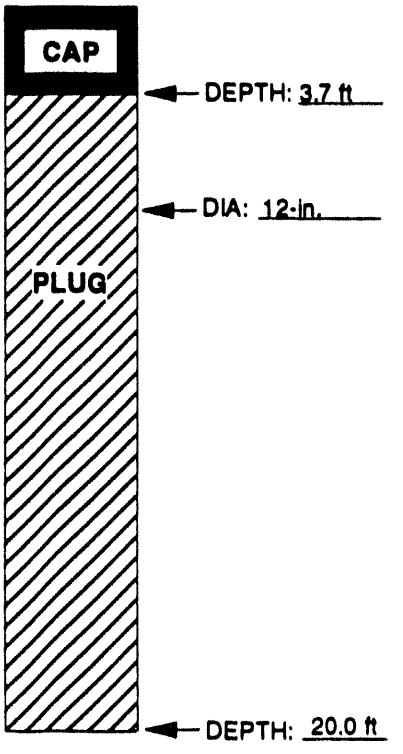
P&A SUMMARY

REAMED DIA: 12-in.

DRILLED/REAMED DEPTH: 12.0-in.

PLUG MATERIAL: Cement

CAP MATERIAL: Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1013

LOCATION: S3 Ponds

COORDINATES: N31611 E51496

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 8-4-93

FINISH: 8-10-93

PREPARED BY: Timothy Coffey- SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750 / Ingersoll-Rand T4W

DRILLER: Hubert Hall

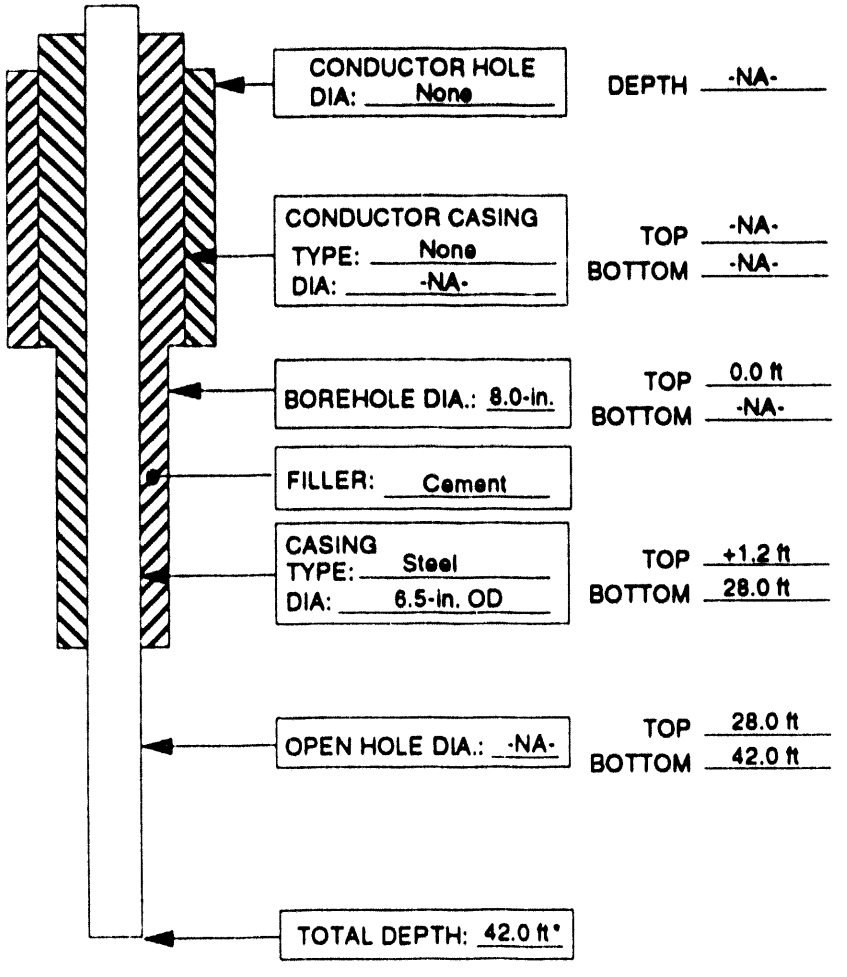
HELPER: S. Brown/R. Jones

REASON FOR P&A: Loss of well security.

P&A: METHOD: D

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY



N/A: Not Applicable/ Not Available

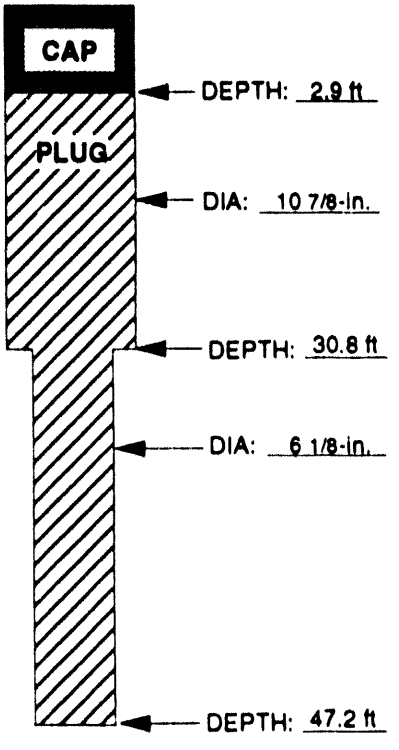
P&A SUMMARY

REAMED DIA: 6 1/8-in./10 7/8-in.

DRILLED/REAMED DEPTH: 47.2 ft/30.8 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



* Y/TS-881 database reports TD as 42.0 ft. Actual measurement of TD prior to drilling was 44.9 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1014

LOCATION: S3 Ponds Functional Area

COORDINATES: N31759 E51522

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 7-15-93

FINISH: 7-27-93

PREPARED BY: S.L. Abston - SAIC
V.R. Harness- SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

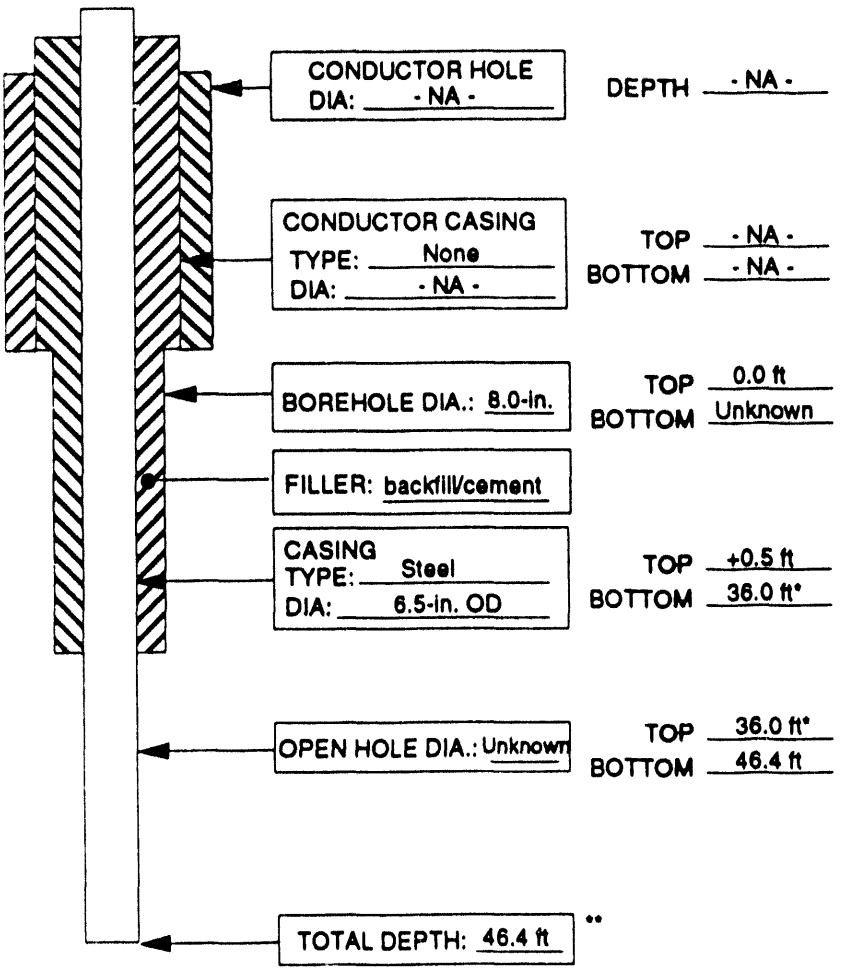
HELPER: Steve Brown/Rick Thomas

REASON FOR P&A: Well security compromised; substandard well construction.

P&A: METHOD: B

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY



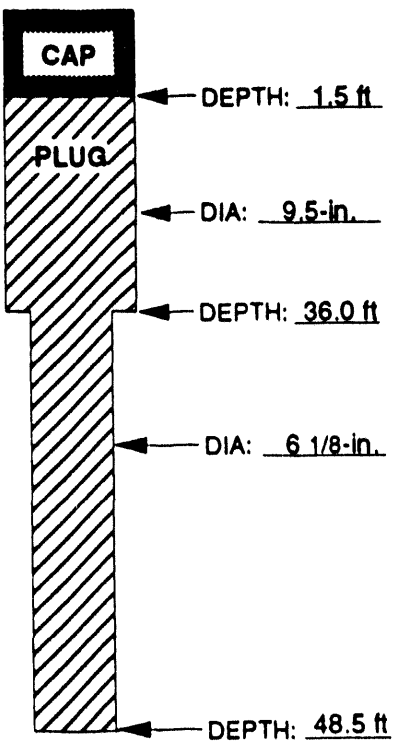
P&A SUMMARY

REAMED DIA: 9.5-in./6 1/8-in.

DRILLED/REAMED DEPTH: 36 ft/48.5 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay/Soil



* Y/TS-881 Database reports bottom of casing at 36.0 ft BGS.
Bottom of casing as measured was 36.5 ft BGS.

** Y/TS-881 Database reports TD as 46.4 ft BGS. Actual measurement revealed TD was 46.5 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1017

LOCATION: S3 Ponds Functional Area

COORDINATES: N31683 E51399

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 7-20-93

FINISH: 8-10-93

PREPARED BY: Timothy Coffey- SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

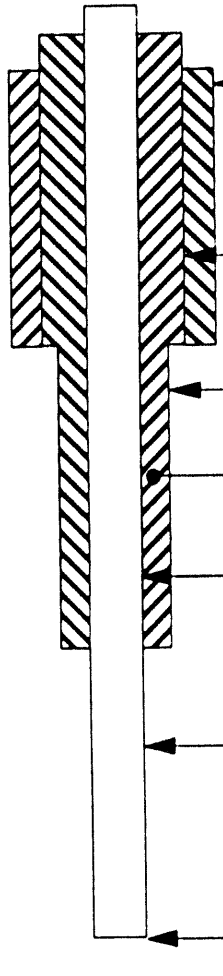
HELPER: Steve Brown/Randy Phillips/David Hewitt

REASON FOR P&A: Loss of well security.

P&A: METHOD: B

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE DIA.: -NA- DEPTH -NA-

CONDUCTOR CASING TYPE: None DIA: -NA- TOP -NA- BOTTOM -NA-

BOREHOLE DIA.: 8.0-in. TOP 0.0 ft BOTTOM 29.0 ft

FILLER: Cement

CASING TYPE: Steel DIA: 6.5-in. OD TOP +0.3 ft BOTTOM 29.0 ft

OPEN HOLE DIA.: -NA- TOP 29.0 ft BOTTOM 44.4 ft

TOTAL DEPTH: 44.4 ft *

-NA-: Not Applicable or Not Available

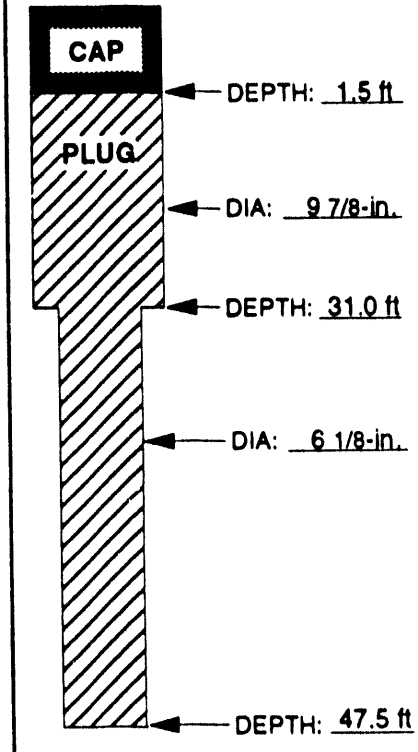
P&A SUMMARY

REAMED DIA: 9 7/8-in./6 1/8-in.

DRILLED/REAMED DEPTH: 31.0 ft/47.5 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay/Soil



* Y/TS-881 reports TD = 44.4 ft BGS. Actual measurement of depth = 4.5 ft BGS.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1022

LOCATION: S3 Ponds Functional Area

COORDINATES: N31280 E51512

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 7-13-93

FINISH: 7-27-93

PREPARED BY: V.R. Harness- SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

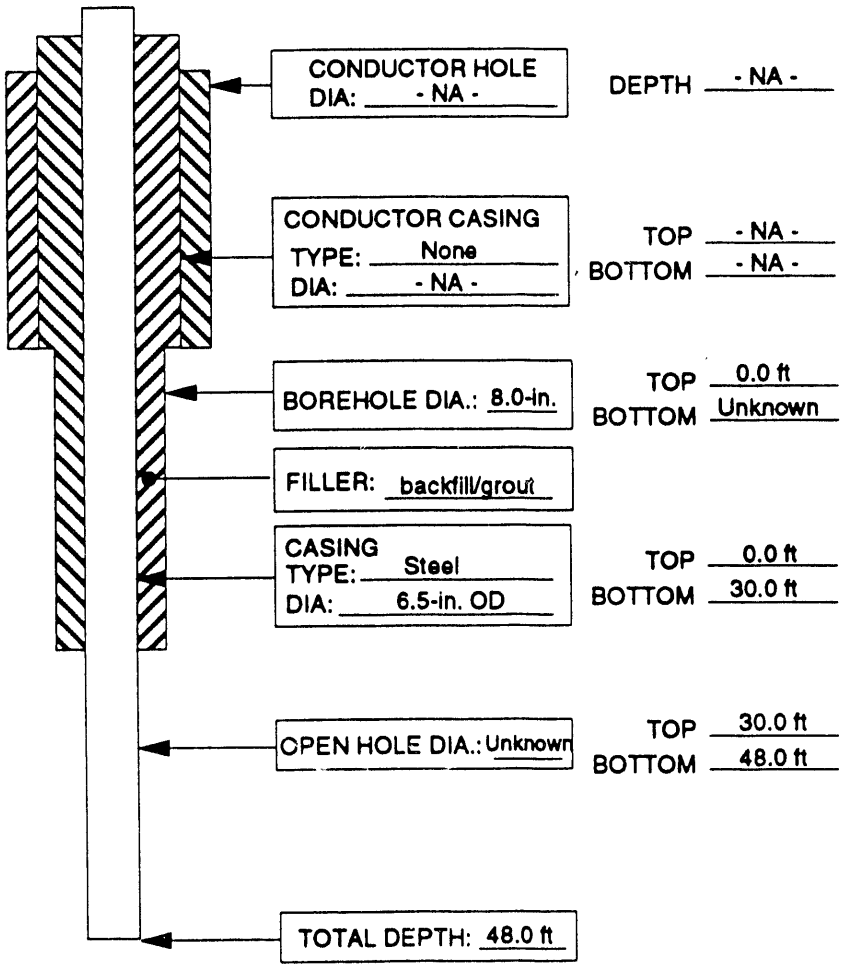
HELPER: Steve Brown/Mark Baker

REASON FOR P&A: Well security compromised, substandard well construction.

P&A: METHOD: 3

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY



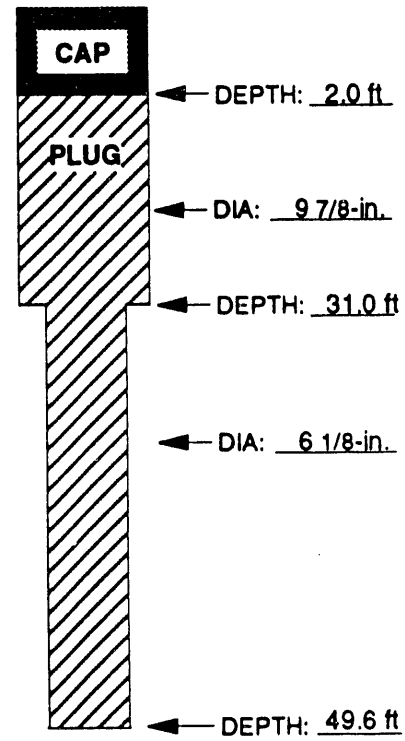
P&A SUMMARY

REAMED DIA: 9 7/8-in./6 1/8-in.

DRILLED/REAMED DEPTH: 31.0 ft/49.6 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay/Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1024

LOCATION: S3 Ponds

COORDINATES: N31681 E51703

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 8-18-93

FINISH: 8-20-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling

DRILL: Ingersoll-Rand T4W

DRILLER: Hubert Hall

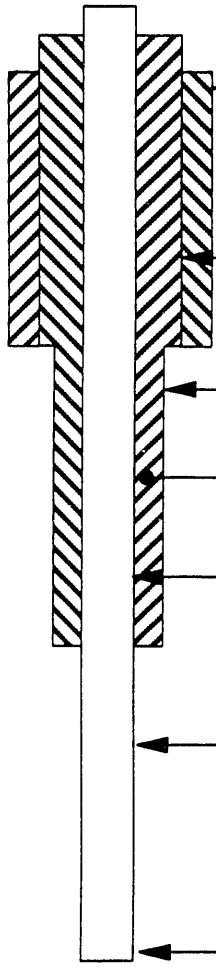
HELPER: Steve Brown/Randy Phillips

REASON FOR P&A: Loss of well security/substandard well construction.

P&A: METHOD: B

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: None
DEPTH -NA-

CONDUCTOR CASING
TYPE: None
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE
DIA.: 8.0-in.
TOP 0.0 ft
BOTTOM 20.0 ft

FILLER: Backfill

CASING
TYPE: Steel
DIA: 6.5-in. OD
TOP +0.3 ft
BOTTOM 20.0 ft

OPEN HOLE DIA: -NA-
TOP 20.0 ft
BOTTOM 40.0 ft

TOTAL DEPTH: 40.0 ft

-NA- Not Available/Not Applicable

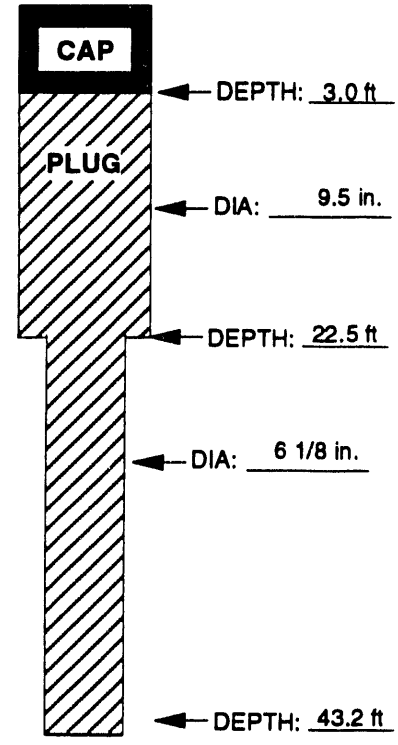
P&A SUMMARY

REAMED DIA: 6 1/8-in./9.5-in.

DRILLED/REAMED DEPTH: 43.2 ft./22.5 ft.

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1025

LOCATION: S3 Ponds Functional Area

COORDINATES: Unknown

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 7-26-93

FINISH: 8-10-93

PREPARED BY: Timothy Coffey- SAIC

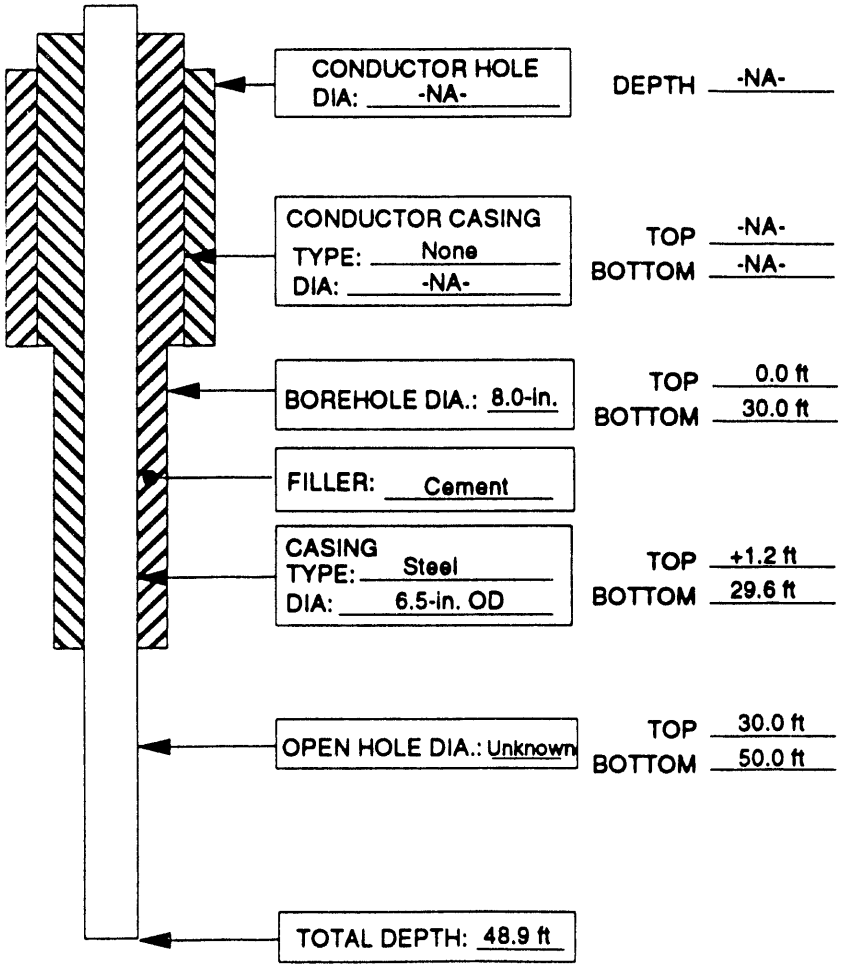
DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand XL-750

DRILLER: Russell Jones/Hubert Hall HELPER: Steve Brown/Randy Phillips

REASON FOR P&A: Loss of well security.

P&A: METHOD: B DEVIATIONS FROM METHOD: Overwash bore not reamed due to depth being approximately equal to grout in open interval.

WELL CONSTRUCTION SUMMARY



-NA-: Not Applicable or Not Available

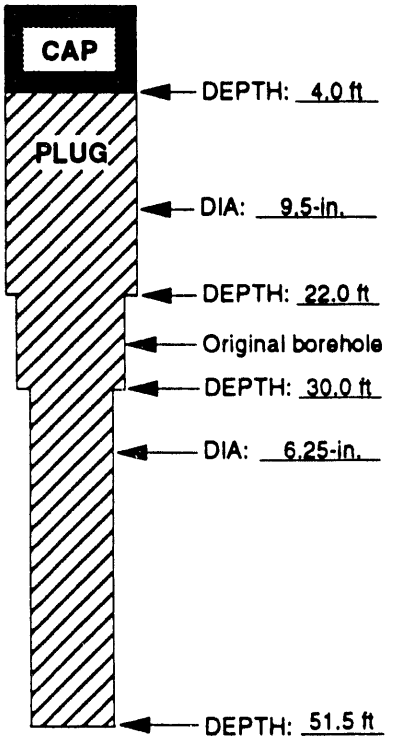
P&A SUMMARY

REAMED DIA: 9.5-in./6.25-in.

DRILLED/REAMED DEPTH: 30 ft/51.5 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay/Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1025A

LOCATION: S3 Ponds

COORDINATES: Unknown

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 8-6-93

FINISH: 8-10-93

PREPARED BY: Timothy Coffey- SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand T4W

DRILLER: Hubert Hall

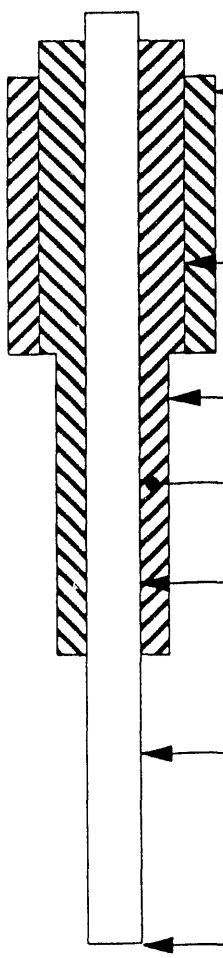
HELPER: Steve Brown/Russell Jones

REASON FOR P&A: Loss of well security.

P&A: METHOD: B

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE DIA.: None — DEPTH -NA-

CONDUCTOR CASING TYPE: None, DIA: -NA- — TOP -NA-, BOTTOM -NA-

BOREHOLE DIA.: * — TOP 0.0 ft, BOTTOM **

FILLER: Cement

CASING TYPE: Steel, DIA: 6.5-in. OD — TOP +1.3 ft, BOTTOM 27.6 ft

OPEN HOLE DIA.: -NA- — TOP Unknown, BOTTOM 41.6 ft

TOTAL DEPTH: 41.6 ft

N/A: Not Applicable/ Not Available

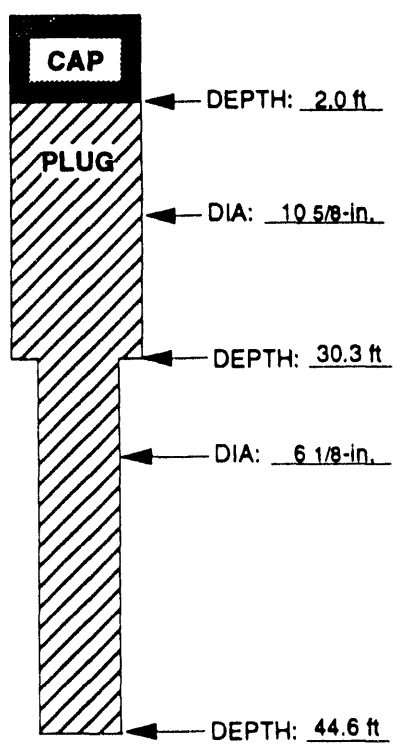
P&A SUMMARY

REAMED DIA: 6 1/8-in./10 5/8-in.

DRILLED/REAMED DEPTH: 44.6 ft/30.3 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay soil



*: Assumed to be 8.0-in. as were all similar wells in this group

**: Assumed to be 27.6 ft.

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1027

LOCATION: Y-12 Burial Grounds

COORDINATES: N30663 E44309

REFERENCE POINT FOR MEASUREMENTS: Ground surface

DATE: START: 4-28-93

FINISH: 5-5-93

PREPARED BY: Tim J. Coffey-SAIC, V.R. Harness-SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

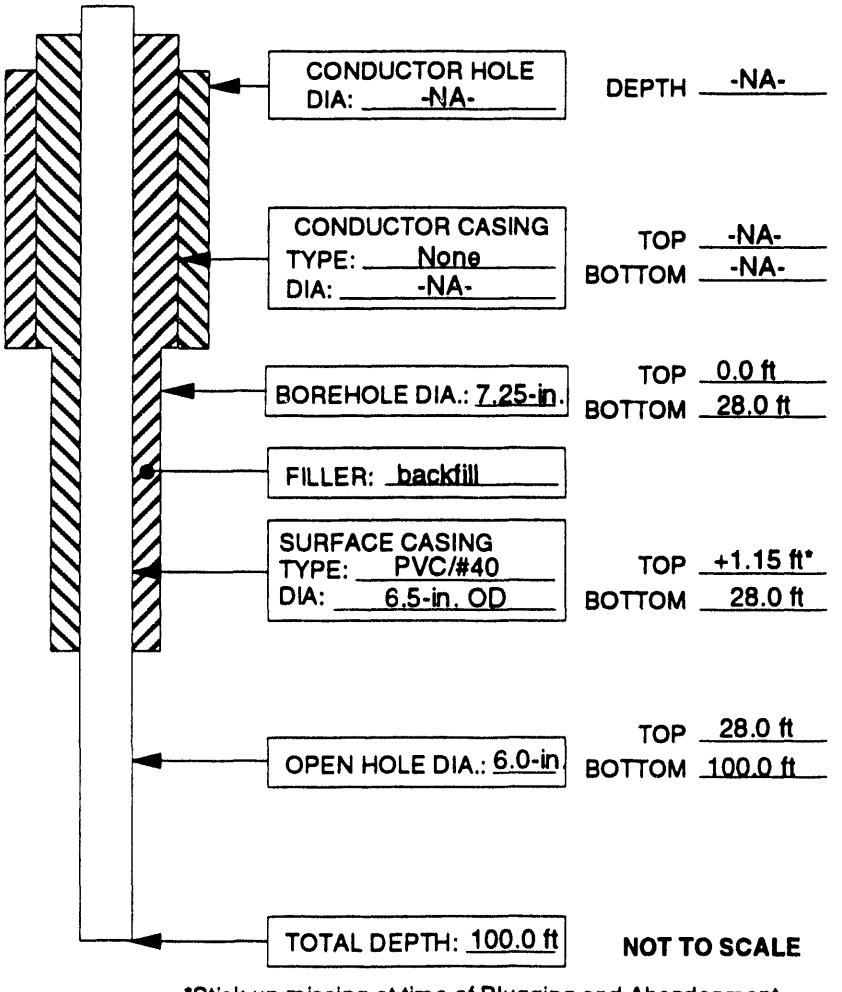
HELPERS: Greg Anderson, Jim Gallaher

REASON FOR P&A: Well security compromised, substandard construction.

P&A: METHOD: B

DEVIATIONS FROM METHOD: Approved use of Quik-Foam™. Removal drilling and reaming performed simultaneously. Open interval not grouted prior to removal of surface casing.

WELL CONSTRUCTION SUMMARY



*Stick-up missing at time of Plugging and Abandonment
-NA- Not applicable/not available

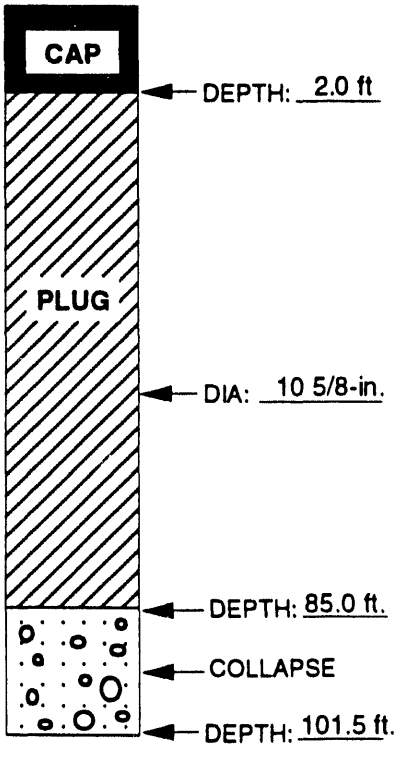
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 101.5 ft

PLUG MATERIAL: cement

CAP MATERIAL: clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1028

LOCATION: Bear Creek Burial Grounds

COORDINATES: N29427 E45511

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-6-93

FINISH: 5-17-93

PREPARED BY: T. Coffey-SAIC

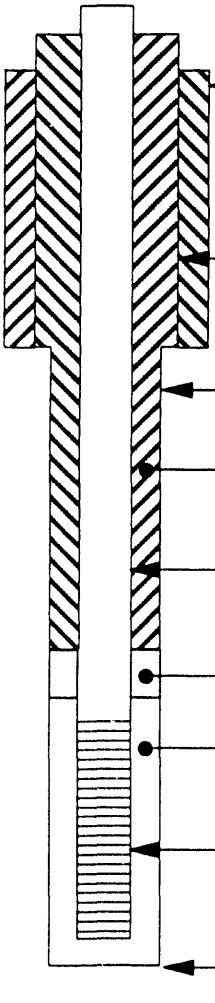
DRILLING COMPANY: Highland Drilling Co. DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall HELPERS: Greg Anderson

REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: C DEVIATIONS FROM METHOD: Mill casing and ream borehole to 10 5/8-in. diameter in one operation.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE DIA: None — DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: None — TOP - NA - BOTTOM - NA -

BOREHOLE DIA.: 8.0 in. — TOP 0.0 ft BOTTOM 29.0 ft

FILLER: Cement

CASING (WITH SCREEN) TYPE: PVC/#40 DIA: 6.5-in. OD — TOP +3.1 ft BOTTOM 19.0 ft

SEAL: Unknown — TOP - NA - BOTTOM - NA -

FILTER PACK: Sand — TOP - NA - BOTTOM - NA -

SCREEN TYPE: PVC/SI DIA: 6.5-in. OD — TOP 19.0 ft BOTTOM 29.0 ft

TOTAL DEPTH: 29.0 ft

- NA -: Not Applicable/Available

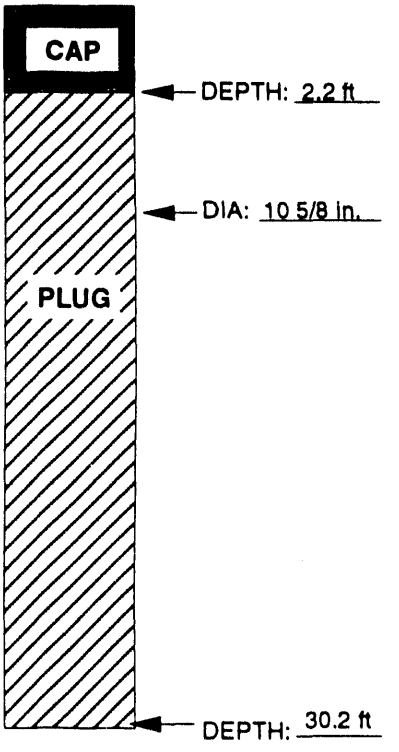
P&A SUMMARY

REAMED DIA: 10 5/8 in.

DRILLED/REAMED DEPTH: 30.2 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1029

LOCATION: Bear Creek Burial Grounds

COORDINATES: N29502 E44102

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-5-93

FINISH: 5-7-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

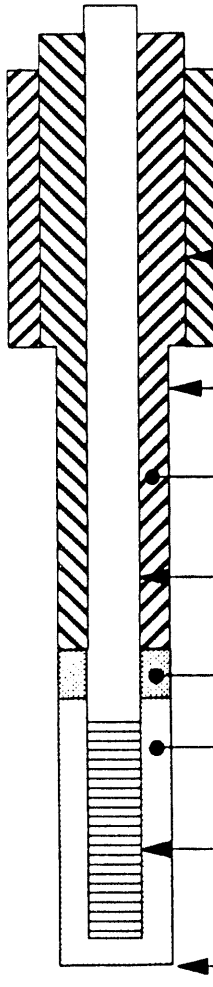
HELPER: Greg Anderson

REASON FOR P&A: Loss of well security/substandard well construction.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Casing milled and borehole reamed to 10 5/8-in. diameter in one operation.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: None
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: None
DIA: None
TOP - NA -
BOTTOM - NA -

BOREHOLE
DIA.: 7.5-in.
TOP 0.0 ft
BOTTOM 18.5 ft

FILLER: Soil

CASING (WITH SCREEN)
TYPE: PVC/#40
DIA: 6.5-in. OD
TOP +1.0 ft
BOTTOM 5.0 ft

SEAL: - NA -
TOP - NA -
BOTTOM 5.0 ft

FILTER PACK: Sand
TOP 5.0 ft
BOTTOM 18.5 ft

SCREEN
TYPE: PVC/sl
DIA: 6.5-in. OD
TOP 5.0 ft
BOTTOM 18.5 ft

TOTAL DEPTH: 18.5 ft

- NA -: Not Applicable

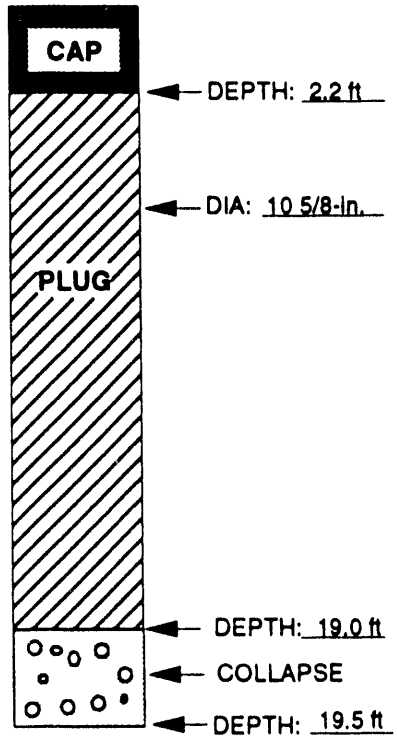
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 19.5 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1032

LOCATION: Bear Creek Burial Grounds

COORDINATES: N29243 E43748

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-5-93

FINISH: 5-7-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

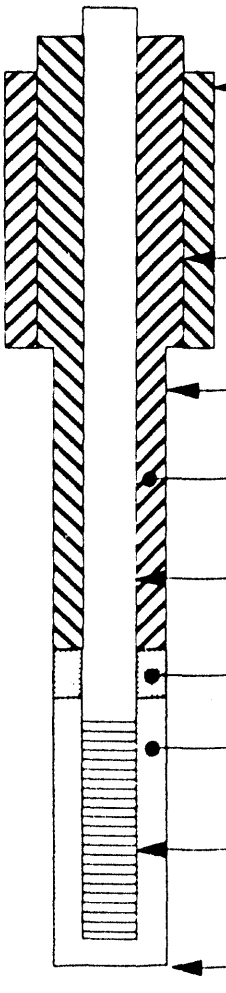
HELPER: Greg Anderson

REASON FOR P&A: Loss of well security/substandard well construction.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Casing milled and borehole reamed to 10 5/8-in. diameter in one operation.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: None
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: None
DIA: None
TOP - NA -
BOTTOM - NA -

BOREHOLE
DIA.: 8.0-in.
TOP 0.0 ft
BOTTOM 57.0 ft

FILLER: Cement

CASING (WITH SCREEN)
TYPE: PVC/#40
DIA: 6.5-in. OD
TOP +2.4 ft
BOTTOM 47.0 ft

SEAL: - NA -
TOP - NA -
BOTTOM - NA -

FILTER PACK: Sand
TOP - NA -
BOTTOM - NA -

SCREEN
TYPE: PVC/sl
DIA: 6.5-in. OD
TOP 47.0 ft
BOTTOM 57.0 ft

TOTAL DEPTH: 57.0 ft

- NA -: Not Applicable/Available

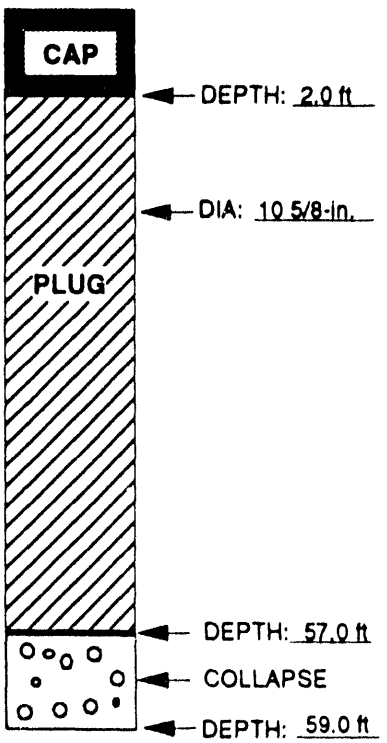
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 59.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1033
ALTERNATE NAMES: YGMW-11, BG-07

LOCATION: Y-12 Burial Grounds

COORDINATES: N 30016 E 42899

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 4-5-93

FINISH: 4-27-93

PREPARED BY: Victor Harness-SAIC, Tim Coffey-SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

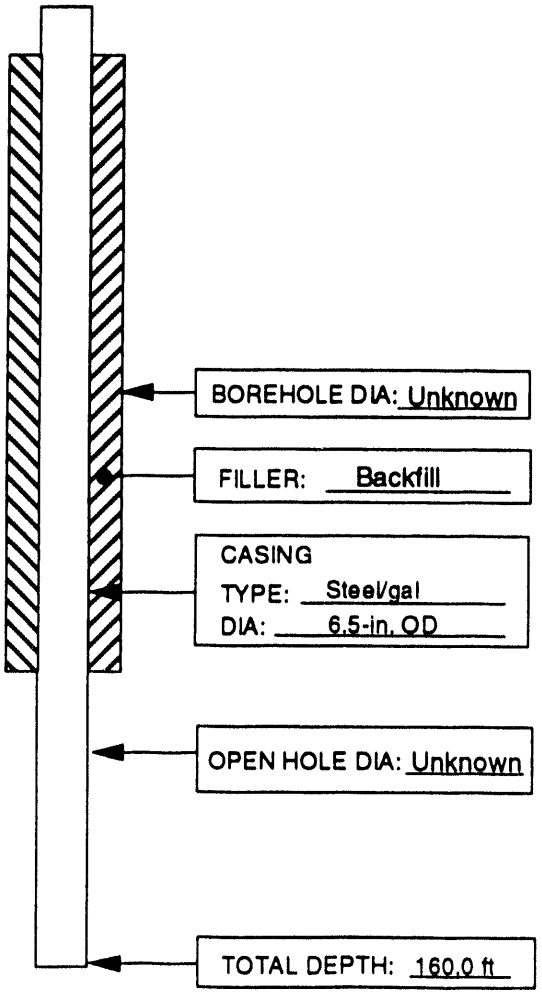
HELPERS: Jim Gallaher, Steve Brown, Mark Baker

REASON FOR P&A: Well design obsolete. Construction allows groundwater communication.

P&A: METHOD: D

DEVIATIONS FROM METHOD: Use of bentonite from 32.2 ft to 18.4 ft BGS, cap depth of 1.9 ft BGS, and abandonment of caved section from 100 ft to 32.2 ft approved by Steve Jones - HSEA.

WELL CONSTRUCTION SUMMARY



(NOT TO SCALE)

*Database records originally indicated bottom of casing and top of open hole at 110 ft BGS.

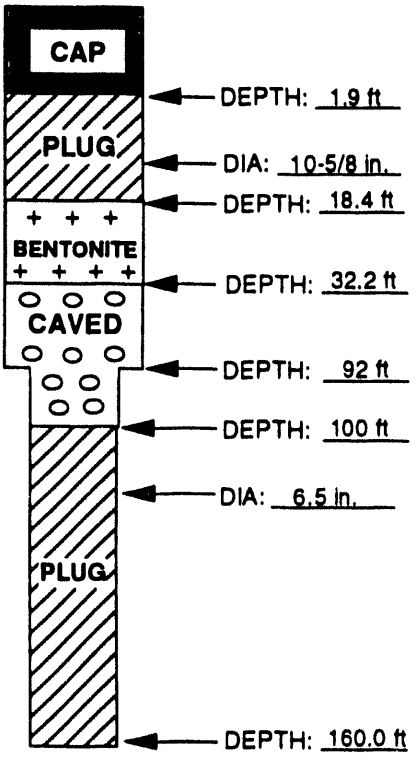
P&A SUMMARY

REAMED DIA: 10-5/8 in./6.5-in.

DRILLED/REAMED DEPTH: 92 ft/160 ft

PLUG MATERIAL: Bentonite/Grout

CAP MATERIAL: Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1035

LOCATION: Bear Creek Burial Grounds

COORDINATES: N31011 E42430

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-10-93

FINISH: 5-17-93

PREPARED BY: Timothy Coffey-SAIC

DRILLING COMPANY: Highland Drilling Co.

DRILL: Ford 555B Backhoe with McMillan Diggerhead auger motor

DRILLER: Steve Brown

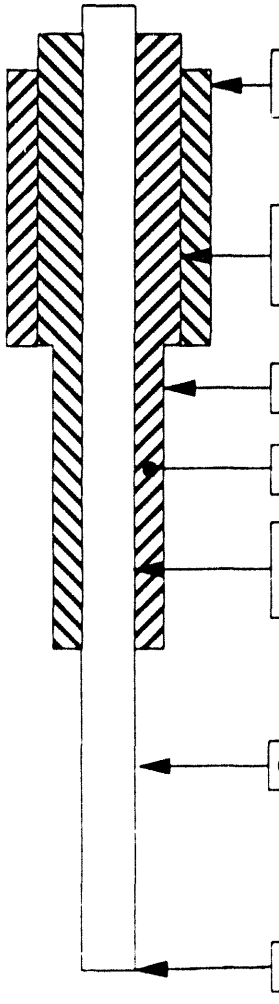
HELPERS: Greg Shillings/Greg Anderson

REASON FOR P&A: Loss of well security/substandard well construction

P&A: METHOD: B

DEVIATIONS FROM METHOD: Open interval plugged with Hole Plug™. Portion of casing grouted in place.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE DIA: None — DEPTH - NA -

SURFACE CONDUCTOR TYPE: None DIA: None — TOP - NA - BOTTOM - NA -

BOREHOLE DIA.: 7.5 in. — TOP 0.0 ft BOTTOM 28.0 ft

FILLER: Cement

CASING (WITH SCREEN) TYPE: PVC/#40 DIA: 6.5-in. OD — TOP +2.0 ft BOTTOM 28.0 ft

OPEN HOLE DIA.: 6.0-in. — TOP 28.0 ft BOTTOM 100.0 ft

TOTAL DEPTH: 100.0 ft

- NA -: Not Applicable/Available

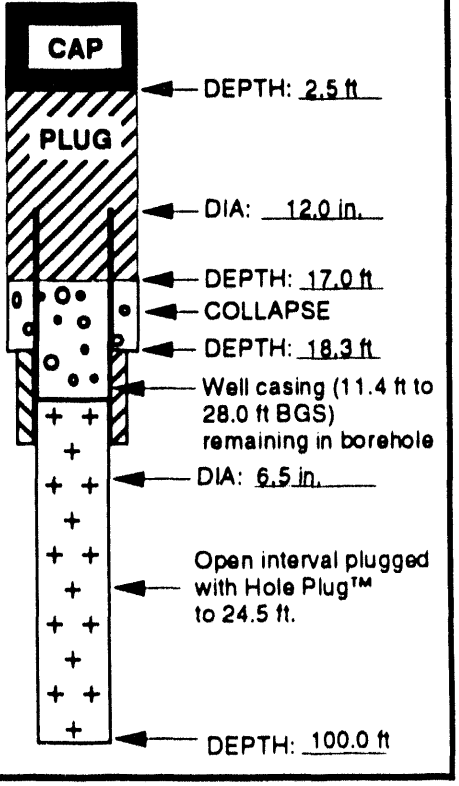
P&A SUMMARY

REAMED DIA: 12.0 in.

DRILLED/REAMED DEPTH: 18.3 ft

PLUG MATERIAL: Cement/ Hole Plug™

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1036

LOCATION: Bear Creek Burial Grounds

COORDINATES: N30197 E42173

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-3-93

FINISH: 5-17-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

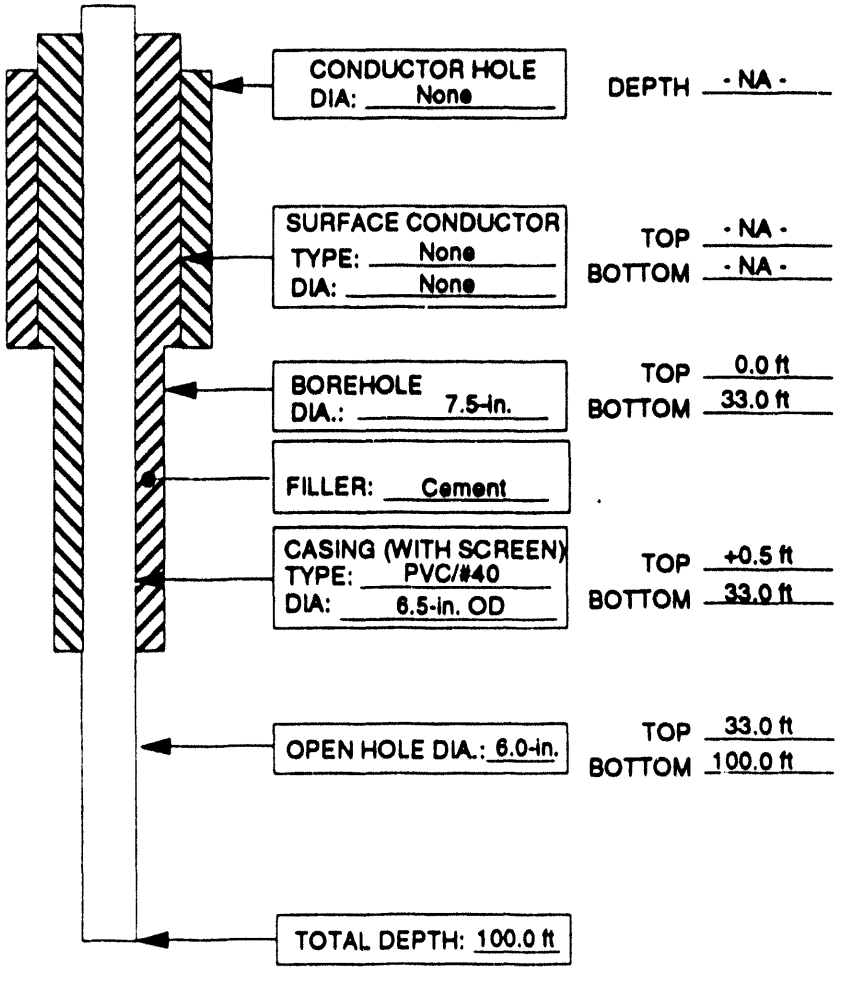
HELPERS: Steve Brown/Greg Shillings

REASON FOR P&A: Loss of well security/substandard well construction.

P&A: METHOD: B

DEVIATIONS FROM METHOD: Casing milled and borehole reamed to 10 5/8-in. diameter in one operation. Used Quik-Foam™ to raise cuttings.

WELL CONSTRUCTION SUMMARY



- NA -: Not Applicable

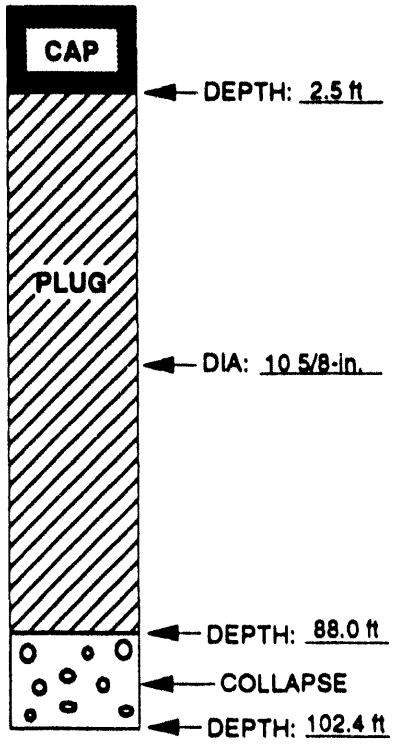
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 102.4 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1037

LOCATION: Bear Creek Burial Grounds

COORDINATES: N29731 E41185

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-4-93

FINISH: 5-7-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

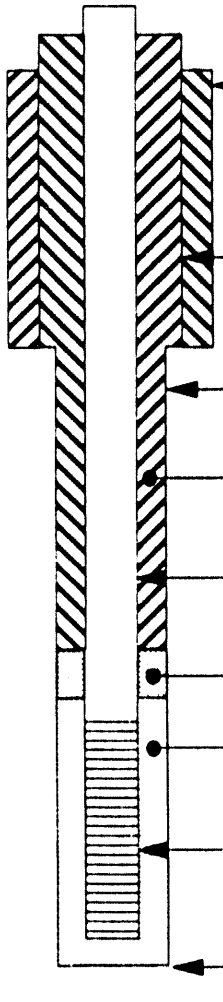
HELPER: Greg Shillings/Greg Anderson

REASON FOR P&A: Loss of well security/substandard well construction.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Casing milled and borehole reamed to 10 5/8-in. diameter in one operation. Reamed borehole 15 ft deeper than reported well depth because of suspected erroneous data base entry.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: None
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: None
DIA: None
TOP - NA -
BOTTOM - NA -

BOREHOLE
DIA.: 8.0 in.
TOP 0.0 ft
BOTTOM 45.0 ft

FILLER: Cement

CASING (WITH SCREEN)
TYPE: PVC/#40
DIA: 6.5-in. OD
TOP +2.9 ft
BOTTOM 35.0 ft

SEAL: Not Available
TOP Not Available
BOTTOM Not Available

FILTER PACK: Sand
TOP Not Available
BOTTOM 45.0 ft

SCREEN
TYPE: PVC/sl
DIA: 6.5-in. OD
TOP 35.0 ft
BOTTOM 45.0 ft

TOTAL DEPTH: 45.0 ft

- NA -: Not Applicable

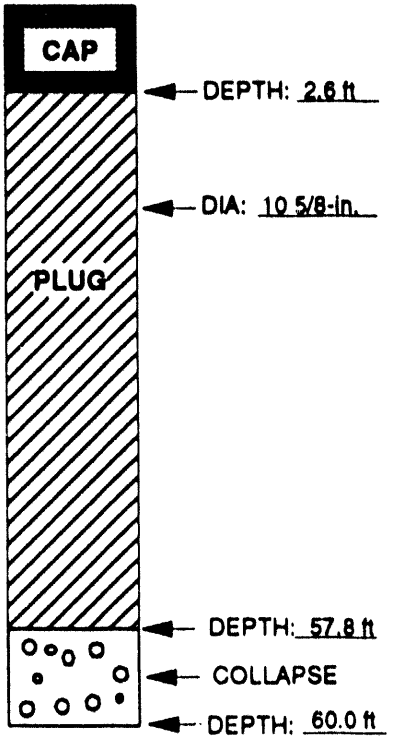
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 60.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1038

LOCATION: Bear Creek Burial Grounds

COORDINATES: N31111 E42810

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-12-93

FINISH: 5-14-93

PREPARED BY: Timothy Coffey-SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ford 555B Backhoe with McMillan Diggerhead auger motor

DRILLER: Steve Brown

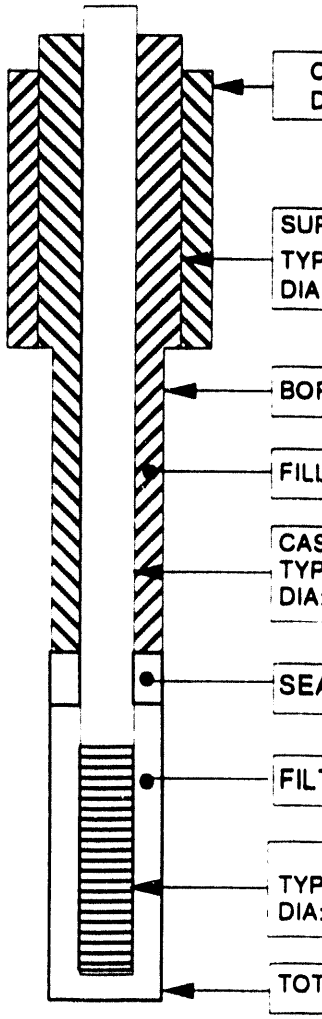
HELPERS: Greg Shillings/Greg Anderson

REASON FOR P&A: Loss of well security/substandard well construction

P&A: METHOD: C

DEVIATIONS FROM METHOD: Auger over casing and ream borehole in one operation. Borehole not reamed to 1.0 ft greater than well depth.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: None
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: None
DIA: None
TOP - NA -
BOTTOM - NA -

BOREHOLE DIA.: 7.5 in.
TOP 0.0 ft
BOTTOM 26.0 ft

FILLER: - NA -

CASING (WITH SCREEN)
TYPE: PVC/#40
DIA: 6.5-in. OD
TOP +2.3 ft
BOTTOM 5.0 ft

SEAL: - NA -
TOP - NA -
BOTTOM 5.0 ft

FILTER PACK: Sand
TOP 5.0 ft
BOTTOM 26.0 ft

SCREEN
TYPE: PVC/sl
DIA: 6.5-in. OD
TOP 5.0 ft
BOTTOM 26.0 ft

TOTAL DEPTH: 26.0 ft

- NA -: Not Applicable/Available

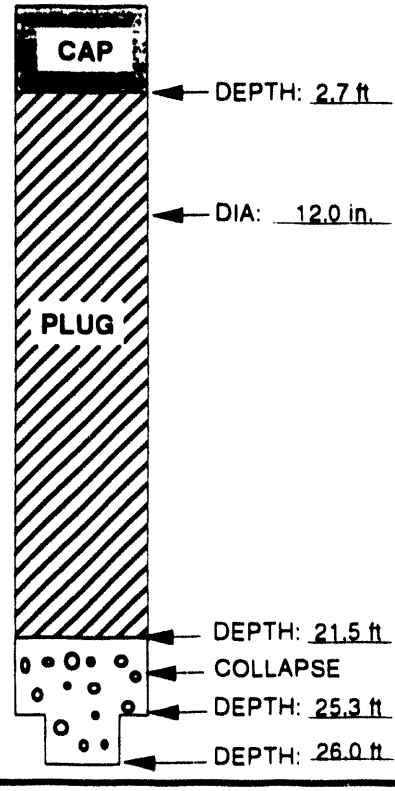
P&A SUMMARY

REAMED DIA: 12.0 in.

DRILLED/REAMED DEPTH: 25.3 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1040

LOCATION: Bear Creek Burial Grounds

COORDINATES: N30766 E42331

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-10-93

FINISH: 5-17-93

PREPARED BY: Timothy Coffey-SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ford 555B Backhoe with McMillan Diggerhead auger motor

DRILLER: Steve Brown

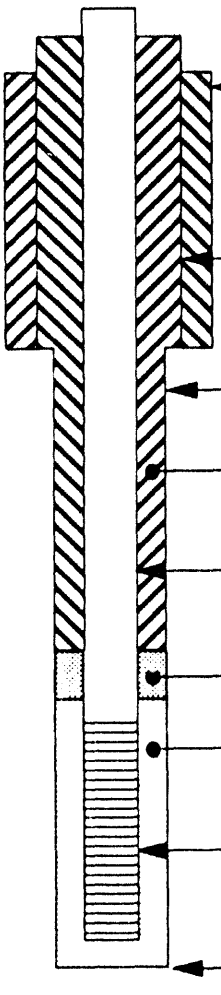
HELPERS: Greg Shillings/Greg Anderson

REASON FOR P&A: Loss of well security/substandard well construction

P&A: METHOD: C

DEVIATIONS FROM METHOD: Did not ream beyond bottom of well casing. Portion of casing grouted in place.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: None
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: None
DIA: None
TOP - NA -
BOTTOM - NA -

BOREHOLE DIA.: 7.5 in.
TOP 0.0 ft
BOTTOM 23.0 ft

FILLER: Unknown

CASING (WITH SCREEN)
TYPE: PVC/#40
DIA: 6.5-in. OD
TOP +0.9 ft
BOTTOM 5.0 ft

SEAL: Unknown
TOP - NA -
BOTTOM 5.0 ft

FILTER PACK: Sand
TOP 5.0 ft
BOTTOM 23.0 ft

SCREEN
TYPE: PVC/sl
DIA: 6.5-in. OD
TOP 5.0 ft
BOTTOM 23.0 ft

TOTAL DEPTH: 23.0 ft

- NA -: Not Applicable

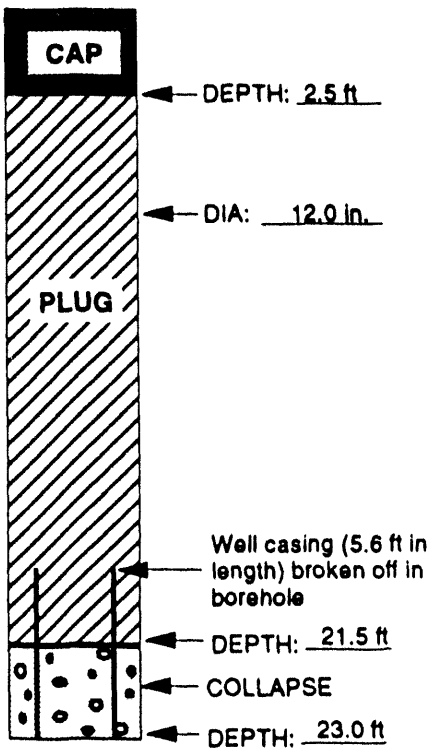
P&A SUMMARY

REAMED DIA: 12.0 in.

DRILLED/REAMED DEPTH: 23.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1041

LOCATION: Bear Creek Burial Grounds

COORDINATES: N30313 E42185

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-6-93

FINISH: 5-17-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ford 555B Backhoe with McMillan Diggerhead

DRILLER: Steve Brown

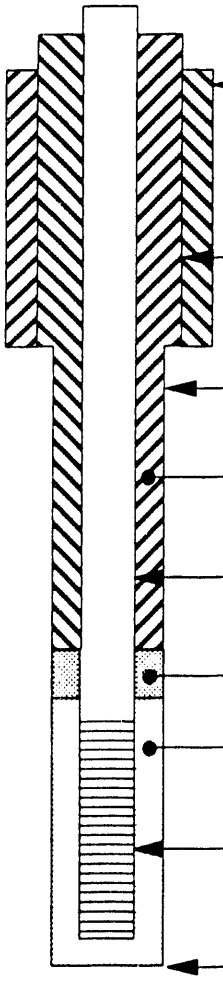
HELPERS: Greg Shillings/Jim Gallaher

REASON FOR P&A: Loss of well security/substandard well construction.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Auger over casing and ream borehole in one operation.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: None
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: None
DIA: None
TOP - NA -
BOTTOM - NA -

BOREHOLE
DIA.: 7.5-in.
TOP 0.0 ft
BOTTOM 29.6 ft

FILLER: Unknown

CASING (WITH SCREEN)
TYPE: PVC/#40
DIA: 6.5-in. OD
TOP +3.5 ft
BOTTOM 5.0 ft

SEAL: Unknown
TOP - NA -
BOTTOM - NA -

FILTER PACK: Sand
TOP 5.0 ft
BOTTOM 29.6 ft

SCREEN
TYPE: PVC/sl
DIA: 6.5-in. OD
TOP 5.0 ft
BOTTOM 29.5 ft

TOTAL DEPTH: 29.6 ft

- NA -: Not Applicable

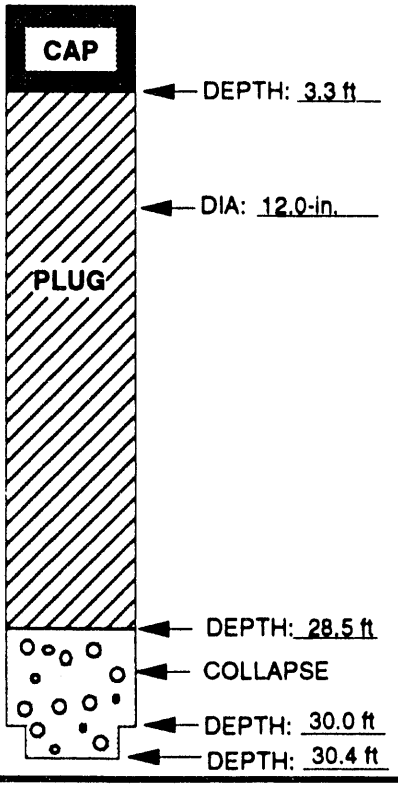
P&A SUMMARY

REAMED DIA: 12.0 in.

DRILLED/REAMED DEPTH: 30.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1043

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

COORDINATES: N30434 E42887

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-9-93

FINISH: 2-12-93

PREPARED BY: Timothy Coffey-SAIC

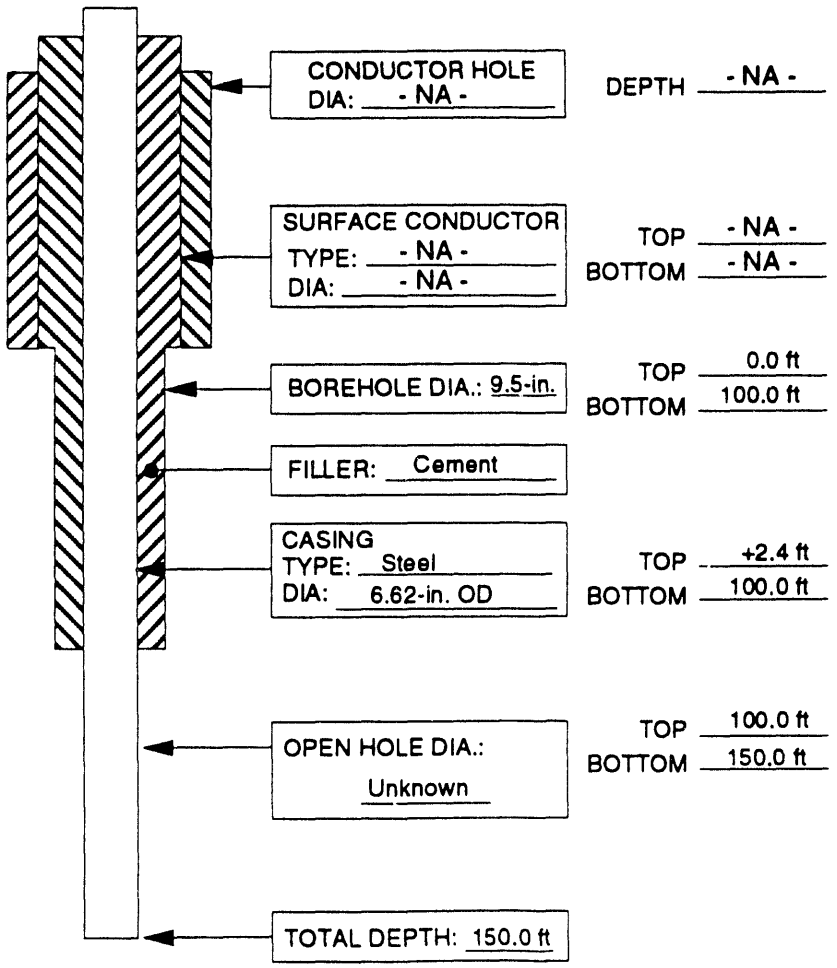
DRILLING COMPANY: Highland Drilling Company DRILL: Ford 555 Backhoe

DRILLER: Greg Shillings HELPERS: Paul McCormick/James Gallaher

REASON FOR P&A: To proceed with closure of the Walk-in Pits site. Well hinders construction activities.

P&A: METHOD: B DEVIATIONS FROM METHOD: Well casing sealed with Hole Plug™ and 2% bentonite-cement grout to 1.1 ft BGS. Deviations approved by Steve Jones-HSEA.

WELL CONSTRUCTION SUMMARY



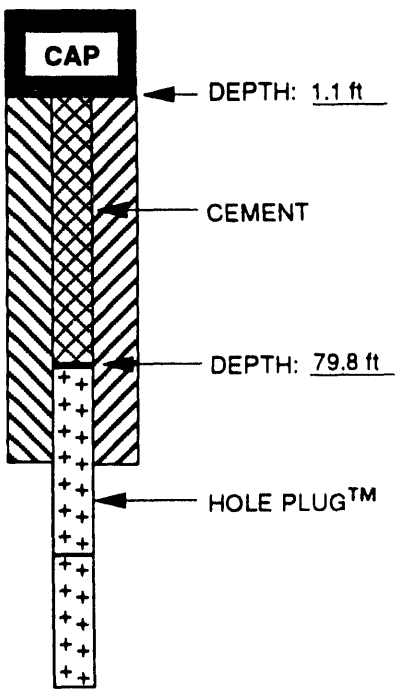
P&A SUMMARY

REAMED DIA: - NA -

DRILLED/REAMED DEPTH: - NA -

PLUG MATERIAL: Hole Plug™/ Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1048

LOCATION: Bear Creek Burial Grounds

COORDINATES: N30288 E47771

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-12-93

FINISH: 5-25-93

PREPARED BY: D. Hollon (SAIC), V. Harness (SAIC)

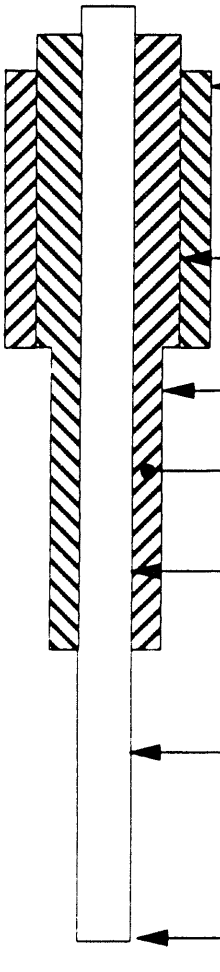
DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand XL-750

DRILLER: H. Hall (Highland) HELPERS: R. Phillips and G. Anderson

REASON FOR P&A: Loss of well security and substandard construction.

P&A: METHOD: B DEVIATIONS FROM METHOD: Quick Foam™ used. Mill casing and ream borehole to 10 5/8-in. diameter in one operation.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE DIA.: None — DEPTH: N/A

SURFACE CONDUCTOR TYPE: None DIA: N/A — TOP: N/A, BOTTOM: N/A

BOREHOLE DIA.: 7.5 in. — TOP: 0.0 ft, BOTTOM: 31.5 ft

FILLER: Not Available

CASING (WITH SCREEN) TYPE: PVC/#40 DIA: 6.50 in. — TOP: +1.9 ft, BOTTOM: 30.0 ft

OPEN HOLE DIA.: 6.0 — TOP: 30.0 ft, BOTTOM: 100.0 ft

TOTAL DEPTH: 100.0 ft

N/A: Not Applicable

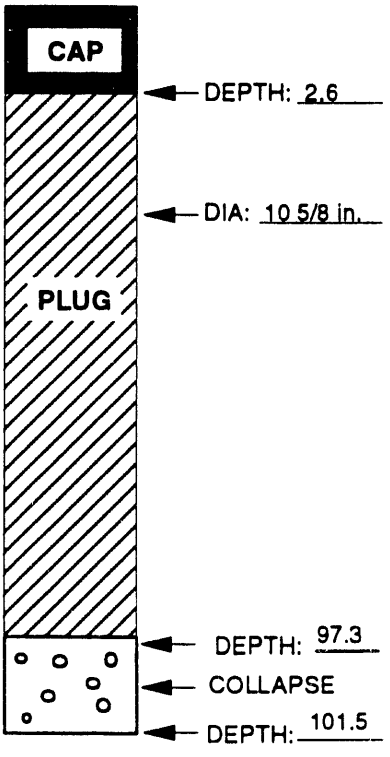
P&A SUMMARY

REAMED DIA: 10 5/8 in.

DRILLED/REAMED DEPTH: 101.5 ft. BGS

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1049

LOCATION: Bear Creek Burial Grounds

COORDINATES: N29883 E47387

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-14-93

FINISH: 5-21-93

PREPARED BY: D. Hollon - SAIC

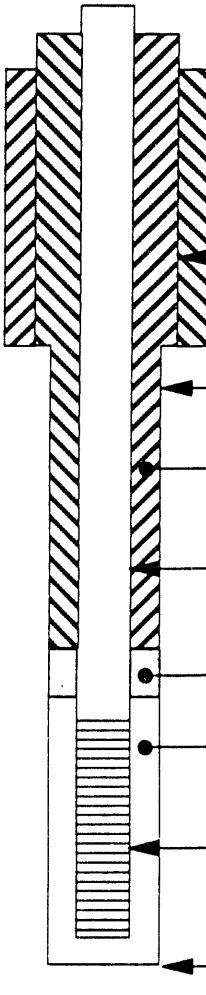
DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand XL-750

DRILLER: H. Hall HELPERS: G. Anderson

REASON FOR P&A: Loss of well security and substandard well construction

P&A: METHOD: C DEVIATIONS FROM METHOD: Casing milled and borehole reamed to 10 5/8-in. diameter in one operation.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE DIA: N/A — DEPTH N/A

SURFACE CONDUCTOR TYPE: N/A DIA: N/A — TOP N/A, BOTTOM N/A

BOREHOLE DIA.: 8 in. — TOP 0.0 ft, BOTTOM 20.0 ft

FILLER: Cement

CASING (WITH SCREEN) TYPE: PVC/#40 DIA: 6.5-in. OD — TOP +1.6 ft, BOTTOM 20.0 ft

SEAL: Not present — TOP N/A, BOTTOM N/A

FILTER PACK: Sand — TOP 10.0 ft, BOTTOM 20.0 ft

SCREEN TYPE: PVC/Slotted DIA: 6.5-in. OD — TOP 10.0 ft, BOTTOM 20.0 ft

TOTAL DEPTH: 20.0 ft

N/A: Not Applicable

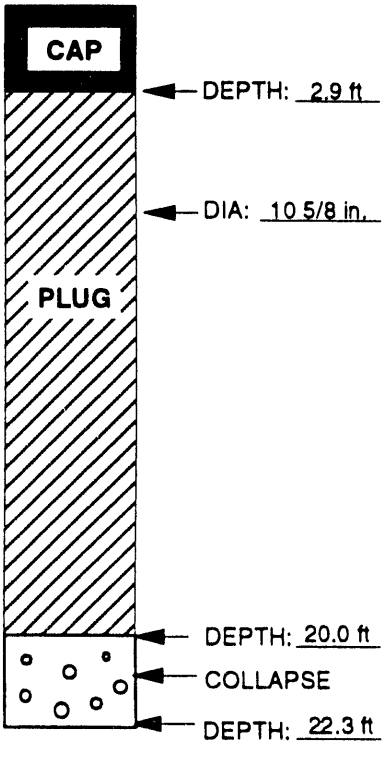
P&A SUMMARY

REAMED DIA: 10 5/8 in.

DRILLED/REAMED DEPTH: 22.3 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1050

LOCATION: Oil Landfarm Functional Area

COORDINATES: N29370 E46969

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-17-93

FINISH: 5-25-93

PREPARED BY: V.R. Harness - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll Rand XL-750

DRILLER: Hubert Hall

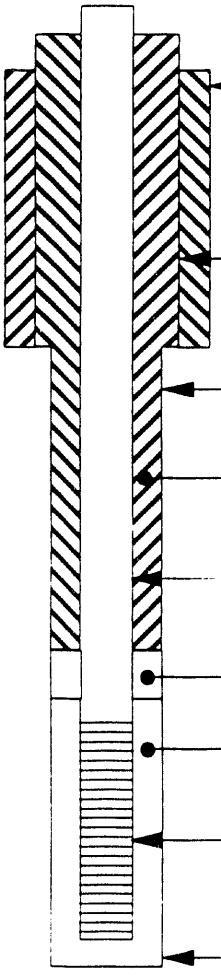
HELPER: Steve Brown, Randy Phillips

REASON FOR P&A: Well security compromised, substandard construction

P&A: METHOD: C

DEVIATIONS FROM METHOD: Use of Quik Foam™, part of plug is bentonite, removal drilling and reaming performed in one pass.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: -NA-
DEPTH -NA-

CONDUCTOR CASING
TYPE: None
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE
DIA.: 7.5-in.
TOP 0.0 ft
BOTTOM 89.0 ft

FILLER: Backfill

CASING (WITH SCREEN)
TYPE: PVC/#80
DIA: 6.5-in. OD
TOP +1.85 ft
BOTTOM 89.0 ft

SEAL: Bentonite
TOP -NA-
BOTTOM Unknown

FILTER PACK: Sand
TOP Unknown
BOTTOM 89.0 ft

SCREEN
TYPE: PVC/#80
DIA: 6.5-in. OD
TOP Unknown
BOTTOM 89.0 ft

TOTAL DEPTH: 89.0 ft*

*Database gives TD as 22 ft BGS.
Before P&A, well was tagged at 89 ft BGS.

NOT TO SCALE

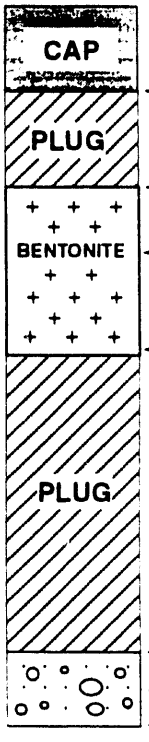
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 90 ft

PLUG MATERIAL: Bentonite/cement

CAP MATERIAL: Clay



DEPTH: 2.7 ft
DEPTH: 15.3 ft
DIA: 10 5/8-in.
DEPTH: 36.2 ft
DEPTH: 80.0 ft
COLLAPSE
DEPTH: 90.0 ft

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1051

LOCATION: Bear Creek Burial Grounds

COORDINATES: N29797 E47777

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-14-93

FINISH: 5-21-93

PREPARED BY: D. Hollon

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: H. Hall

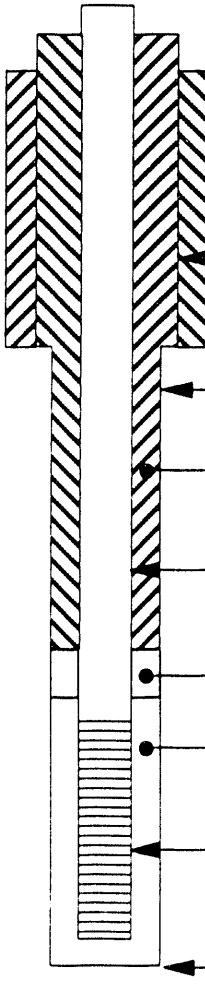
HELPERS: G. Anderson

REASON FOR P&A: Loss of well security and substandard well construction

P&A: METHOD: C

DEVIATIONS FROM METHOD: Casing milled and borehole reamed to 10 5/8-in. diameter in one operation.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE DIA: N/A — DEPTH N/A

SURFACE CONDUCTOR TYPE: None DIA: N/A — TOP N/A, BOTTOM N/A

BOREHOLE DIA.: 7.5 in. — TOP 0.0 ft, BOTTOM 28.0 ft

FILLER: Not available

CASING (WITH SCREEN) TYPE: PVC/#40 DIA: 6.5 in. — TOP +1.5 ft, BOTTOM 28.0 ft

SEAL: Bentonite — TOP 3.0 ft, BOTTOM 5.0 ft

FILTER PACK: N/A — TOP 5.0 ft, BOTTOM 28.0 ft

SCREEN TYPE: PVC/Slotted DIA: 6.5 in. — TOP 5.0 ft, BOTTOM 28.0 ft

TOTAL DEPTH: 28.0 ft

N/A: Not Applicable

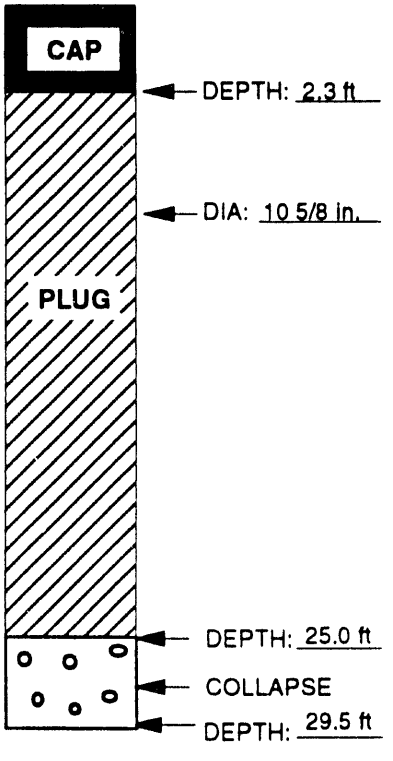
P&A SUMMARY

REAMED DIA: 10 5/8 in.

DRILLED/REAMED DEPTH: 29.5 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1052

LOCATION: Oil Landfarm Functional Area

COORDINATES: N29968 E45400

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-19-93

FINISH: 5-25-93

PREPARED BY: V.R. Harness - SAIC

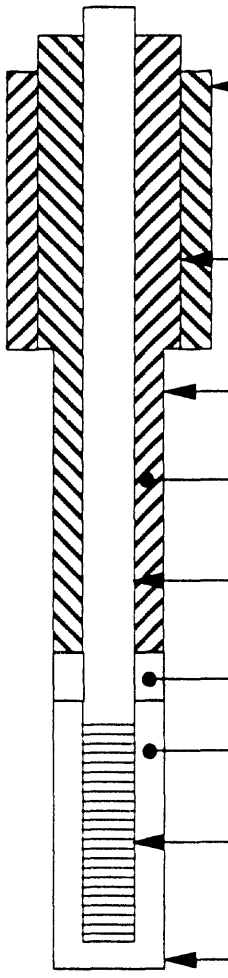
DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall HELPER: Randy Phillips, Greg Anderson

REASON FOR P&A: Well security compromised, substandard construction

P&A: METHOD: C DEVIATIONS FROM METHOD: Removal drilling and reaming done in one pass.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: -NA-
DEPTH -NA-

CONDUCTOR CASING
TYPE: None
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE
DIA.: 7.5-in.
TOP 0.0 ft
BOTTOM 22.0 ft

FILLER: Backfill

CASING (WITH SCREEN)
TYPE: PVC/#80
DIA: 6.5-in. OD
TOP +1.1 ft
BOTTOM 22.0 ft

SEAL: Bentonite
TOP Unknown
BOTTOM 5.0 ft

FILTER PACK: Sand
TOP 5.0 ft
BOTTOM 22.0 ft

SCREEN
TYPE: PVC/sl
DIA: 6.5-in. OD
TOP 5.0 ft
BOTTOM 22.0 ft

TOTAL DEPTH: 22.0 ft

NA = not applicable, not available

NOT TO SCALE

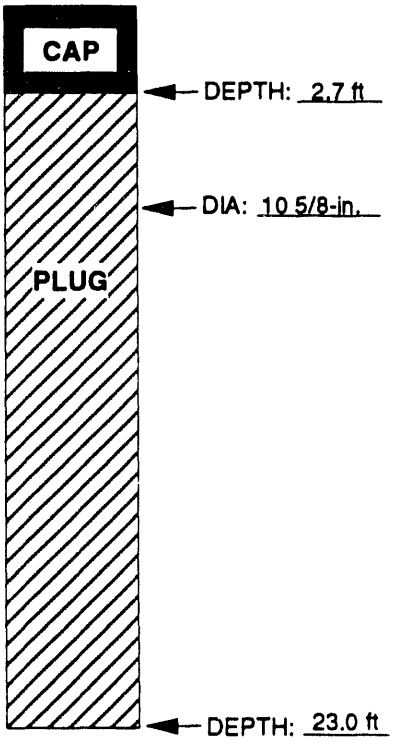
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 23.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1071

LOCATION: Bear Creek Burial Grounds

COORDINATES: N30961 E42826

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 5-12-93

FINISH: 5-14-93

PREPARED BY: T. Coffey-SAIC

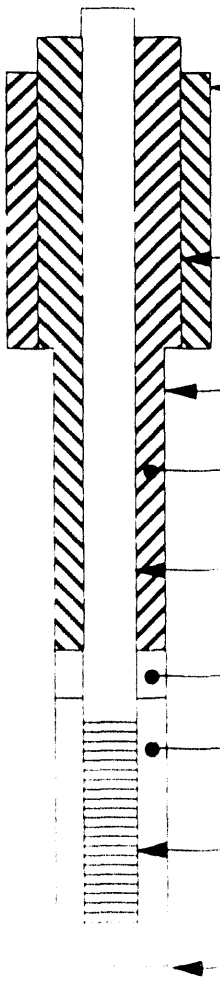
DRILLING COMPANY: Highland Drilling Company DRILL: Ford 555B Backhoe with McMillan Diggerhead auger motor

DRILLER: Steve Brown HELPERS: Greg Shillings/Greg Anderson

REASON FOR P&A: Loss of well security/substandard construction

P&A: METHOD: C DEVIATIONS FROM METHOD: Auger over casing and ream borehole to 12.0-in. diameter in one operation. Casing from 2.3 ft. BGS to end of well assumed ground up by augers.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: None
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: None
DIA: None
TOP - NA -
BOTTOM - NA -

BOREHOLE DIA.: 7.5 in.
TOP 0.0 ft
BOTTOM 21.0 ft

FILLER: - NA -

CASING (WITH SCREEN)
TYPE: PVC/#40
DIA: 6.5-in. OD
TOP +2.3 ft
BOTTOM 5.0 ft

SEAL: - NA -
TOP - NA -
BOTTOM 5.0 ft.

FILTER PACK: Sand
TOP 5.0 ft.
BOTTOM 20.0 ft.

SCREEN
TYPE: PVC/sl
DIA: 6.5-in. OD
TOP 5.0 ft
BOTTOM 20.0 ft

TOTAL DEPTH: 21.0 ft

- NA -: Not Applicable/Available

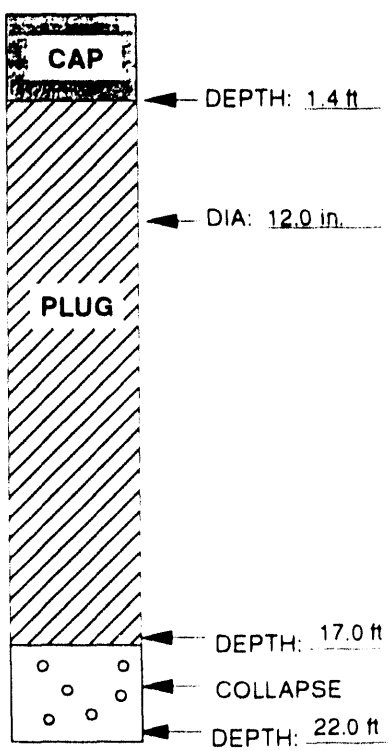
P&A SUMMARY

REAMED DIA: 12.0 in.

DRILLED/REAMED DEPTH: 22.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1088

LOCATION: Oil Landfarm Functional Area

COORDINATES: N29342 E49162

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 6-8-93

FINISH: 6-15-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Not Applicable

DRILLER: Greg Shillings

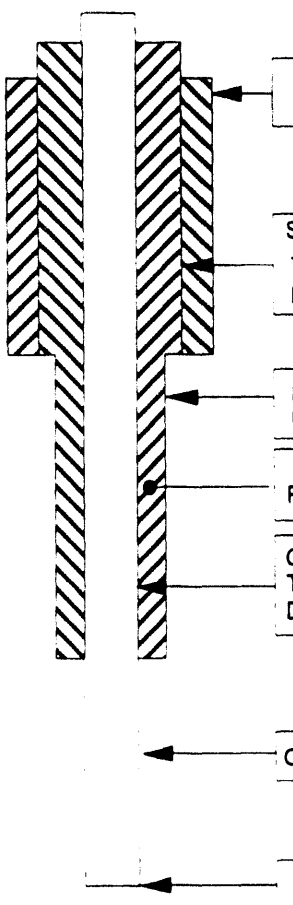
HELPERS: Steve Brown/James Gallaher

REASON FOR P&A: Loss of well security/substandard well construction.

P&A: METHOD: B

DEVIATIONS FROM METHOD: Top 2.9 ft of casing removed, remainder of casing sealed with Hole Plug™/grouted in place.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: -NA-
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: -NA-
DIA: None
TOP - NA -
BOTTOM - NA -

BOREHOLE
DIA.: -NA-
TOP 0.0 ft
BOTTOM -NA-

FILLER: -NA-

CASING
TYPE: Steel
DIA: 4.0-in. OD*
TOP +0.6 ft
BOTTOM -NA-

OPEN HOLE DIA.: 2.98-in.
TOP -NA-
BOTTOM 117.7 ft

TOTAL DEPTH: 117.7 ft

* Actual dimension. Subsurface data base reports 6.5-in. OD casing.

- NA -: Not Available/Not Applicable

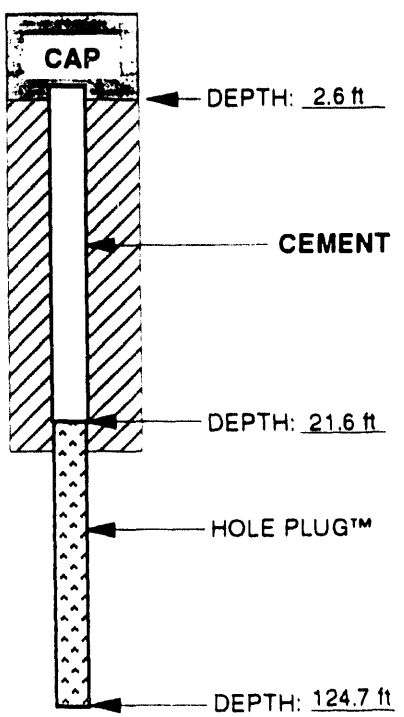
P&A SUMMARY

REAMED DIA: -NA-

DRILLED/REAMED DEPTH: -NA-

PLUG MATERIAL: Hole Plug™/cement

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1130

LOCATION: SPAD Landfill Site

COORDINATES: N26, 314 E59, 972

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 12-2-92

FINISH: 12-15-92

PREPARED BY: Timothy Coffey

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

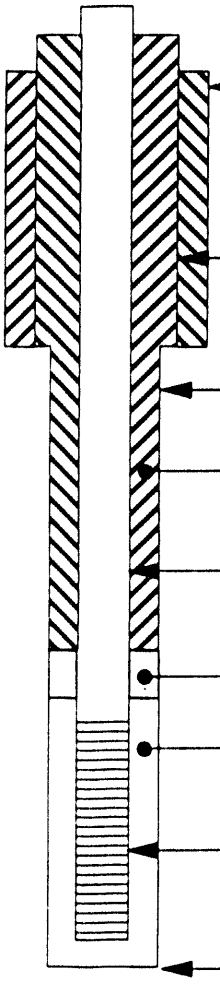
HELPERS: Scott Gilbert/Steve Brown

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: C

DEVIATIONS FROM METHOD: Cement/grout level to 5.0 ft. BGS.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: N/A
DEPTH N/A

SURFACE CONDUCTOR
TYPE: N/A
DIA: N/A
TOP N/A
BOTTOM N/A

BOREHOLE DIA.: 9.63 in.
TOP 0.0 ft
BOTTOM 23.5 ft

FILLER: Neat Cement

CASING (WITH SCREEN)
TYPE: #40 PVC
DIA: 4.0 in.
TOP +2.2 ft
BOTTOM 23.5 ft

SEAL: Bentonite
TOP 9.0 ft
BOTTOM 11.0 ft

FILTER PACK: Sand
TOP 11.0 ft
BOTTOM 23.5 ft

SCREEN
TYPE: 0.02 slot PVC
DIA: 4.0 in.
TOP 13.0 ft
BOTTOM 23.5 ft

TOTAL DEPTH: 23.5 ft

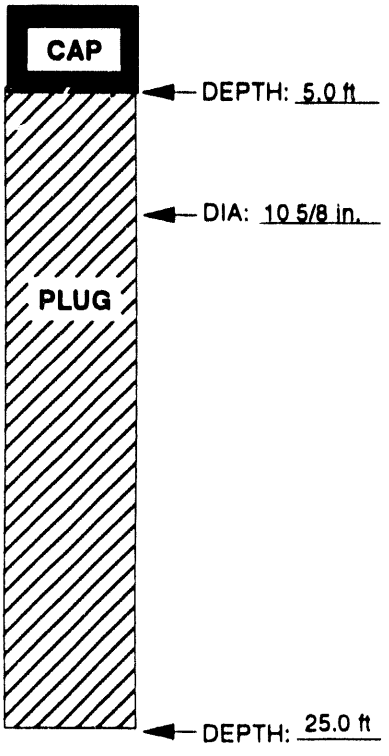
P&A SUMMARY

REAMED DIA: 10 5/8 in.

DRILLED/REAMED DEPTH: 25.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1131

LOCATION: SPAD Landfill Site

COORDINATES: N26,834 E60,036

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 12-3-92

FINISH: 12-15-92

PREPARED BY: Timothy Coffey

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

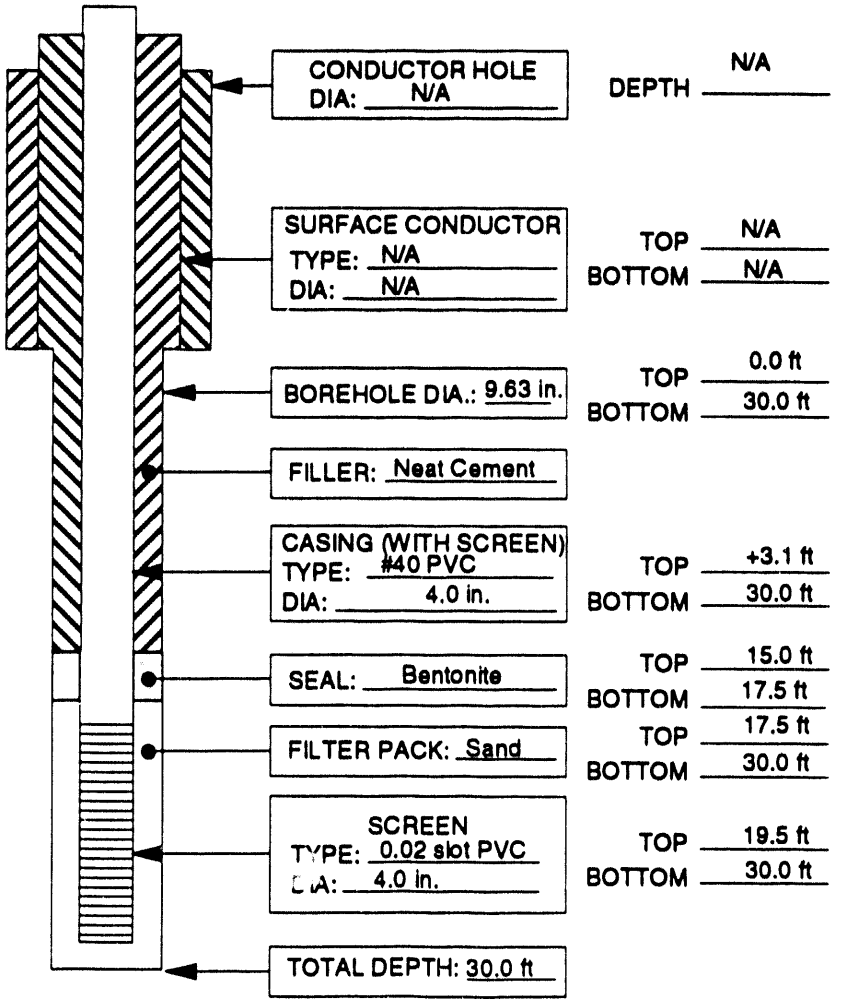
HELPERS: Steve Brown

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: C

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY



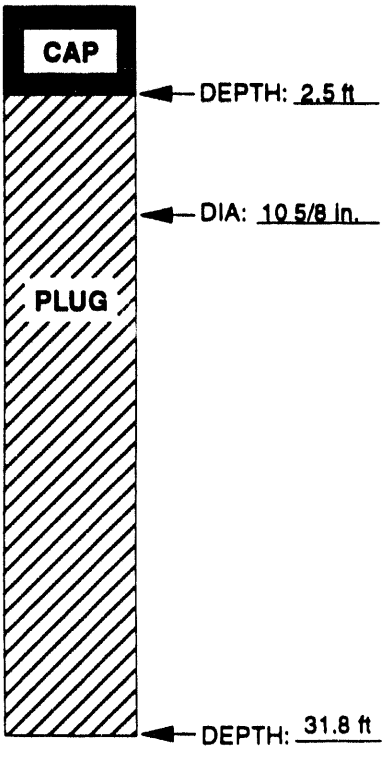
P&A SUMMARY

REAMED DIA: 10 5/8 in.

DRILLED/REAMED DEPTH: 31.8 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1132

LOCATION: SPAD Landfill Site

COORDINATES: N27,243 E60,134

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 12-4-92

FINISH: 12-15-92

PREPARED BY: Timothy Coffey
Mike Klidzejs - SAIC

DRILLING COMPANY: Highland Drilling

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

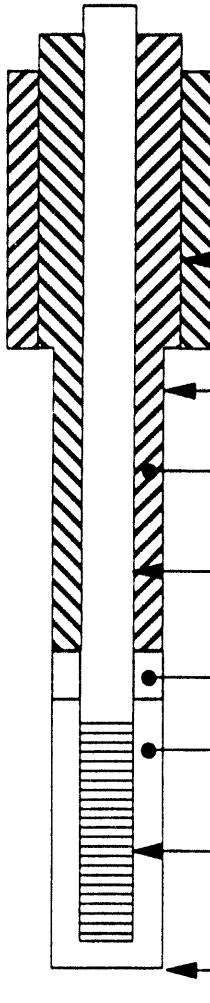
HELPERS: Steve Brown

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: C

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: N/A
DEPTH N/A

SURFACE CONDUCTOR
TYPE: N/A
DIA: N/A
TOP N/A
BOTTOM N/A

BOREHOLE DIA.: 9.63 in.
TOP 0.0 ft
BOTTOM 30.0 ft

FILLER: Neat Cement

CASING (WITH SCREEN)
TYPE: #40 PVC
DIA: 4.0 in.
TOP +2.4 ft
BOTTOM 27.0 ft

SEAL: Bentonite
TOP 10.0 ft
BOTTOM 13.0 ft

FILTER PACK: Sand
TOP 13.0 ft
BOTTOM 27.5 ft

SCREEN
TYPE: 0.02 slot PVC
DIA: 4.0 in.
TOP 17.0 ft
BOTTOM 27.0 ft

TOTAL DEPTH: 23.5 ft

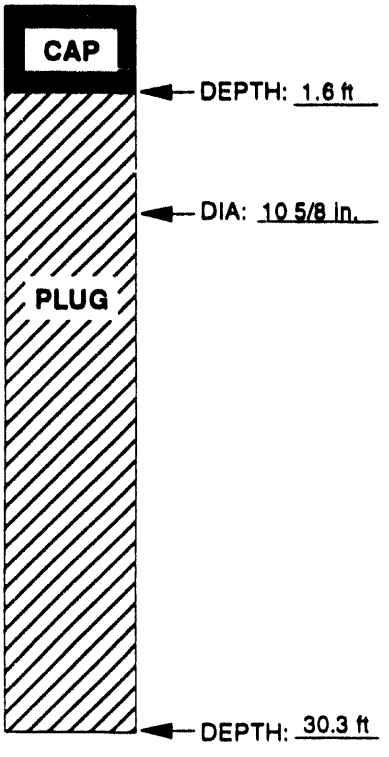
P&A SUMMARY

REAMED DIA: 10 5/8 in.

DRILLED/REAMED DEPTH: 30.3 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1133

LOCATION: SPAD Landfill Site

COORDINATES: N27,423 E59,147

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 3/3/93

FINISH: 3/18/93

PREPARED BY: V.R. Hamess-SAIC

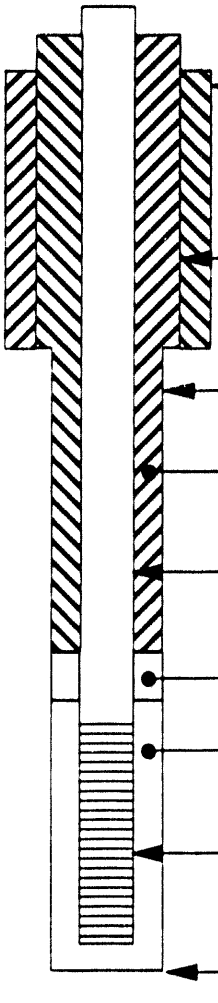
DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall HELPER: Greg Shillings

REASON FOR P&A: Well obstructs construction of landfill.

P&A: METHOD: C DEVIATIONS FROM METHOD: Cap depth of 2.5 ft instead of 4 ft approved by Steve Jones - HSEA.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: -NA-
DEPTH -NA-

SURFACE CONDUCTOR
TYPE: -NA-
DIA: -NA-
TOP -NA-
BOTTOM -NA-

BOREHOLE
DIA.: 9.63-in.
TOP 0.0 ft
BOTTOM 24.0 ft

FILLER: Cement

CASING (WITH SCREEN)
TYPE: PVC/#40
DIA: 4.0-in. OD
TOP +1.53 ft
BOTTOM 24.0 ft

SEAL: bentonite
TOP Unknown
BOTTOM 11.3 ft

FILTER PACK: pea gravel
TOP 11.3 ft
BOTTOM 24.0 ft

SCREEN
TYPE: PVC/sl/.02
DIA: 4.0-in. OD
TOP 13.3 ft
BOTTOM 24.0 ft

TOTAL DEPTH: 24 ft

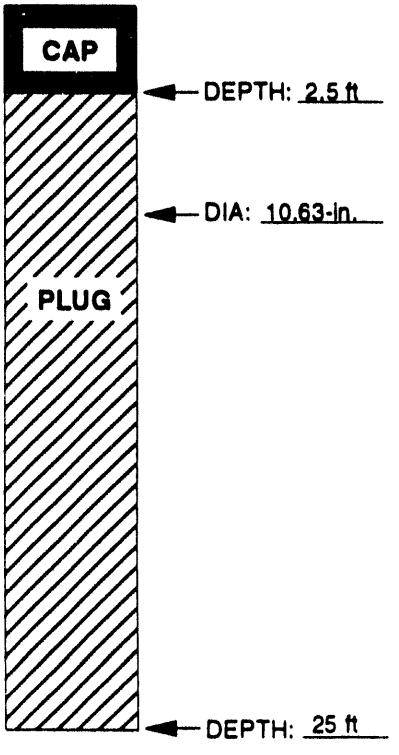
P&A SUMMARY

REAMED DIA: 10.63-in.

DRILLED/REAMED DEPTH: 25 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. 1134

LOCATION: SPAD Landfill Functional Area

COORDINATES: N26814 E58819

REFERENCE POINT FOR MEASUREMENTS: Ground surface

DATE: START: 5-27-93

FINISH: 6-16-93

PREPARED BY: Tim J. Coffey-SAIC, V.R. Harness-SAIC

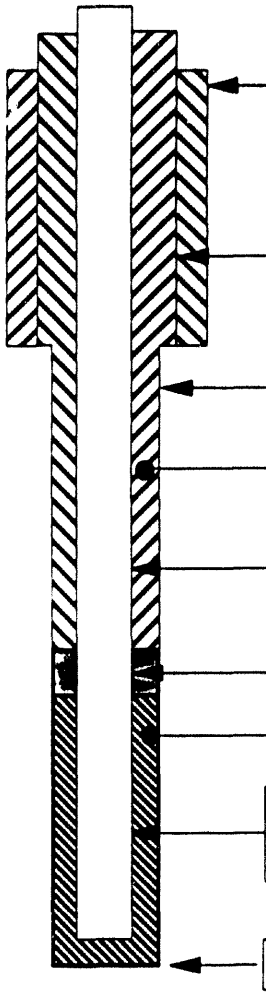
DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll Rand XL-750

DRILLER: Hubert Hall HELPERS: Greg Anderson, Jim Gallaher

REASON FOR P&A: Damaged well screen

P&A: METHOD: C DEVIATIONS FROM METHOD: Use of Pea gravel and bentonite to fill large lost circulation zones.

WELL CONSTRUCTION SUMMARY



SURFACE CASING
HOLE DIA: UNKNOWN
DEPTH -NA-

CONDUCTOR CASING
TYPE: STEEL
DIA: 8.75-IN. OD
TOP +0.8 FT
BOTTOM 86.0

BOREHOLE DIA.: 8.0-in.
TOP 0.0 ft
BOTTOM 190.0 ft

FILLER: Cal-Seal™ (Gypsum)

CASING (WITH SCREEN)
TYPE: PVC/#40
DIA: 4.0-in. OD
TOP +0.6 ft
BOTTOM 189.0 ft

SEAL: BENTONITE
TOP UNKNOWN
BOTTOM 174.5 ft

FILTER PACK: SAND
TOP 174.5 ft
BOTTOM 190.0 ft

SCREEN
TYPE: PVC/sl/.02
DIA: 4.0-in. OD
TOP 178.6 ft
BOTTOM 189.0 ft

TOTAL DEPTH: 190.0 ft

NOT TO SCALE

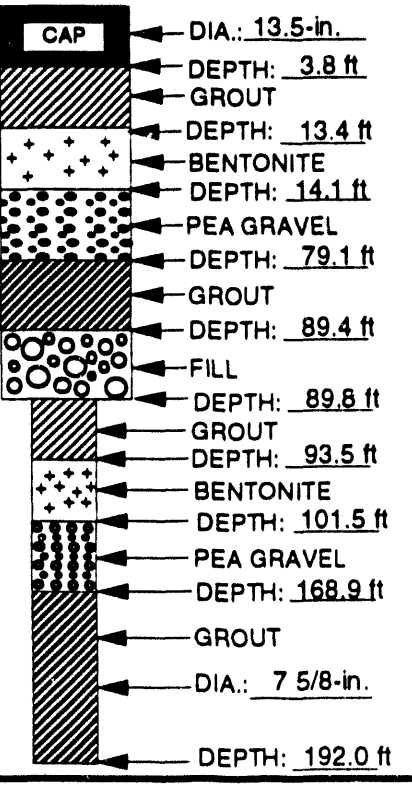
P&A SUMMARY

REAMED DIA.: 13.5-in./7 5/8-in.

DRILLED/REAMED DEPTH: 89.8 ft/192.0 ft

PLUG MATERIAL: Cement/Pea Gravel Bentonite

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-030

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

COORDINATES: N30235 E43108

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-8-93

FINISH: 2-10-93

PREPARED BY: Timothy Coffey-SAIC

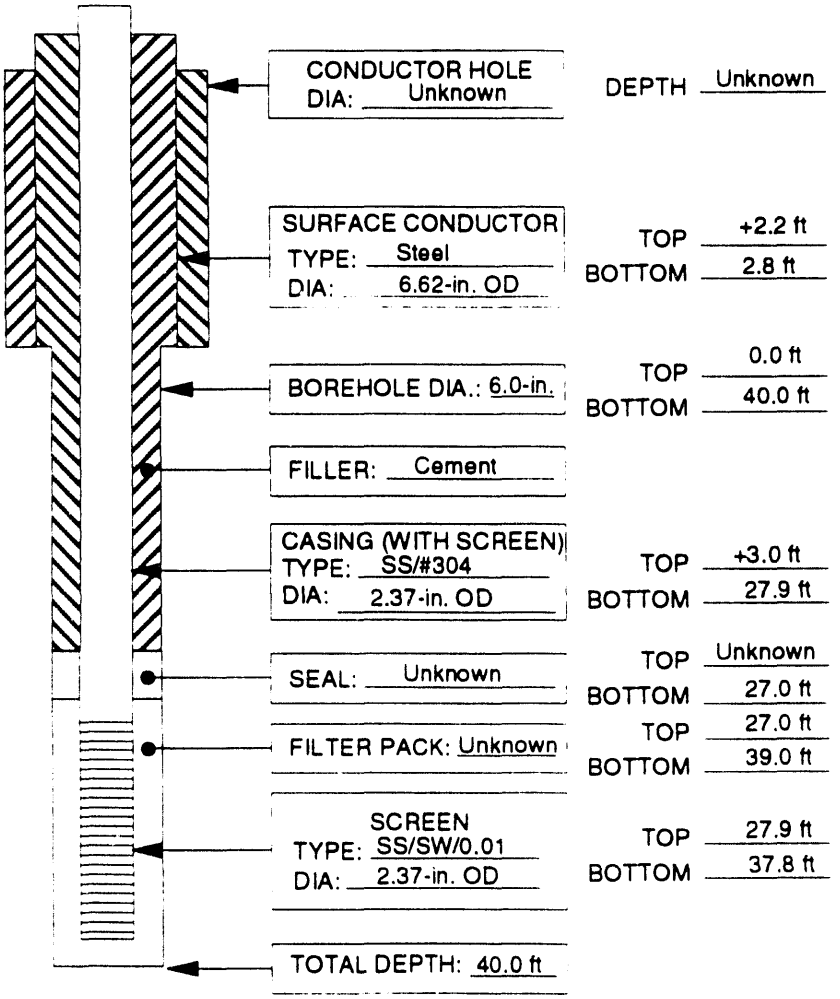
DRILLING COMPANY: Highland Drilling Company DRILL: Ford 555 Backhoe

DRILLER: Greg Shillings HELPERS: Paul McCormick

REASON FOR P&A: To proceed with closure of the Walk-in Pits site. Well hinders construction activities.

P&A: METHOD: A DEVIATIONS FROM METHOD: Well casing sealed entirely with Hole Plug™ and cement-grout, deviation approved by Steve Jones - HSE.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE DIA: Unknown — DEPTH Unknown

SURFACE CONDUCTOR TYPE: Steel DIA: 6.62-in. OD — TOP +2.2 ft, BOTTOM 2.8 ft

BOREHOLE DIA.: 6.0-in. — TOP 0.0 ft, BOTTOM 40.0 ft

FILLER: Cement

CASING (WITH SCREEN) TYPE: SS/#304 DIA: 2.37-in. OD — TOP +3.0 ft, BOTTOM 27.9 ft

SEAL: Unknown — TOP Unknown, BOTTOM 27.0 ft

FILTER PACK: Unknown — TOP 27.0 ft, BOTTOM 39.0 ft

SCREEN TYPE: SS/SW/0.01 DIA: 2.37-in. OD — TOP 27.9 ft, BOTTOM 37.8 ft

TOTAL DEPTH: 40.0 ft

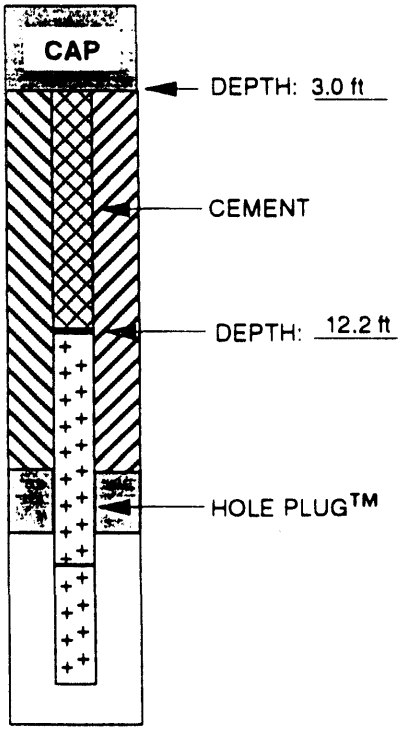
P&A SUMMARY

REAMED DIA: - NA -

DRILLED/REAMED DEPTH: - NA -

PLUG MATERIAL: Hole Plug™/ Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-031

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

COORDINATES: N30240 E43109

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-8-93

FINISH: 2-10-93

PREPARED BY: Timothy Coffey-SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ford 555 Backhoe

DRILLER: Greg Shillings

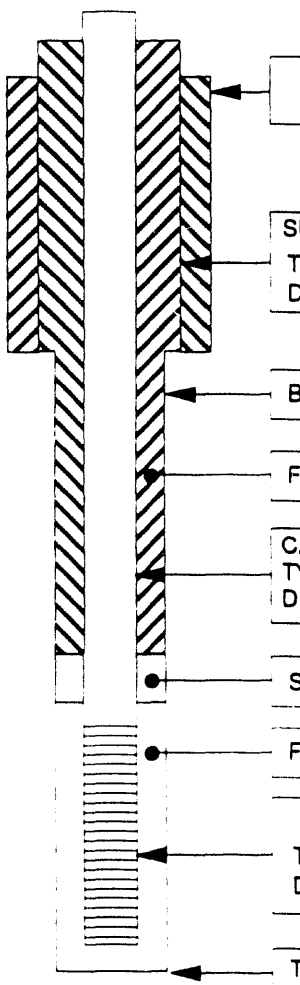
HELPERS: Paul McCormick

REASON FOR P&A: To proceed with closure of the Walk-in Pits site. Well hinders construction activities.

P&A: METHOD: A

DEVIATIONS FROM METHOD: Well casing sealed to ground surface with Hole Plug™ and cement-grout, deviation approved by Steve Jones - HSE.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: Unknown*
DEPTH Unknown*

SURFACE CONDUCTOR
TYPE: Unknown*
DIA: Unknown*
TOP Unknown*
BOTTOM Unknown*

BOREHOLE DIA.: 4.0-in.
TOP 0.0 ft
BOTTOM 70.0 ft

FILLER: Cement

CASING (WITH SCREEN)
TYPE: SS/#304
DIA: 2.37-in. OD
TOP +4.1 ft
BOTTOM 63.7 ft

SEAL: Unknown
TOP Unknown
BOTTOM 47.0 ft

FILTER PACK: Unknown
TOP 47.0 ft
BOTTOM 67.0 ft

SCREEN
TYPE: SS/SW/0.01
DIA: 2.37-in. OD
TOP 63.7 ft
BOTTOM 65.7 ft

TOTAL DEPTH: 70.0 ft

* - Missing/destroyed

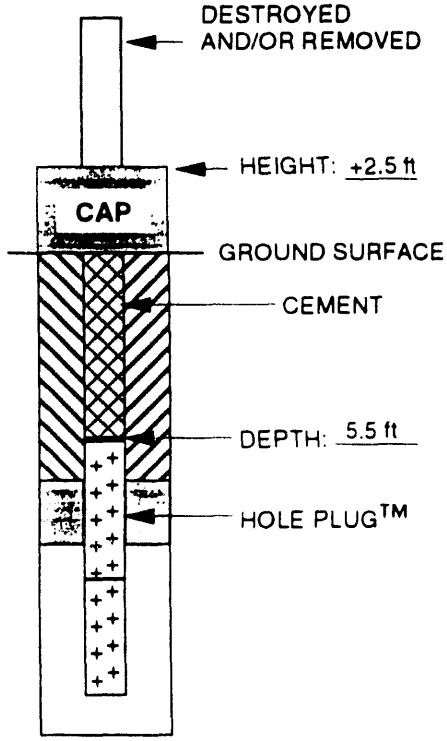
P&A SUMMARY

REAMED DIA: -NA-

DRILLED/REAMED DEPTH: -NA-

PLUG MATERIAL: Hole Plug™/ Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-032

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

COORDINATES: N30388 E42850

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-8-93

FINISH: 2-12-93

PREPARED BY: Timothy Coffey-SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ford 555 Backhoe

DRILLER: Greg Shillings

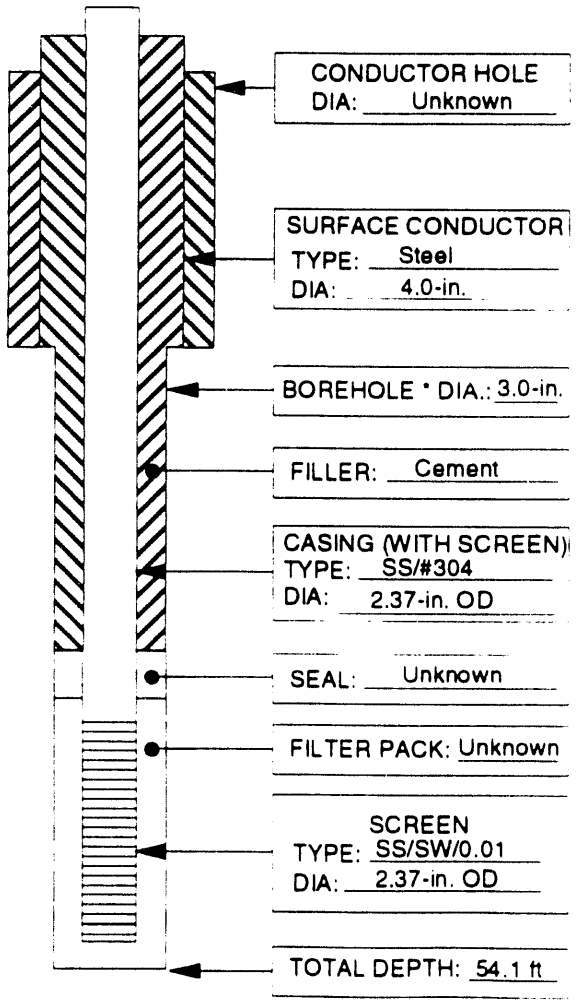
HELPERS: Paul McCormick/James Gallaher

REASON FOR P&A: To proceed with closure of the Walk-in Pits site. Well hinders construction activities.

P&A: METHOD: A

DEVIATIONS FROM METHOD: Well casing sealed to 4.0 ft BGS with a 4% bentonite cement-grout. Deviations approved by Steve Jones - HSE.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: Unknown
DEPTH Unknown

SURFACE CONDUCTOR
TYPE: Steel
DIA: 4.0-in.
TOP +0.8
BOTTOM Unknown

BOREHOLE * DIA.: 3.0-in.
TOP 0.0 ft
BOTTOM 54.1 ft

FILLER: Cement

CASING (WITH SCREEN)
TYPE: SS/#304
DIA: 2.37-in. OD
TOP +1.2 ft
BOTTOM 45.1 ft

SEAL: Unknown
TOP Unknown
BOTTOM 26.0 ft

FILTER PACK: Unknown
TOP 26.0 ft
BOTTOM 50.5 ft

SCREEN
TYPE: SS/SW/0.01
DIA: 2.37-in. OD
TOP 45.1 ft
BOTTOM 49.5 ft

TOTAL DEPTH: 54.1 ft

*Hole drilled on angle of 40° below horizontal.

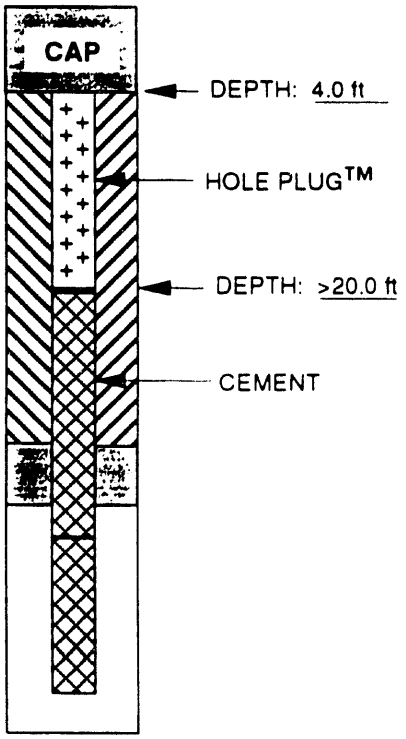
P&A SUMMARY

REAMED DIA: -NA-

DRILLED/REAMED DEPTH: -NA-

PLUG MATERIAL: Hole Plug™ Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-035

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

COORDINATES: N30712 E43183

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-12-93

FINISH: 2-16-93

PREPARED BY: Timothy Coffey-SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ford 555 Backhoe

DRILLER: Greg Shillings

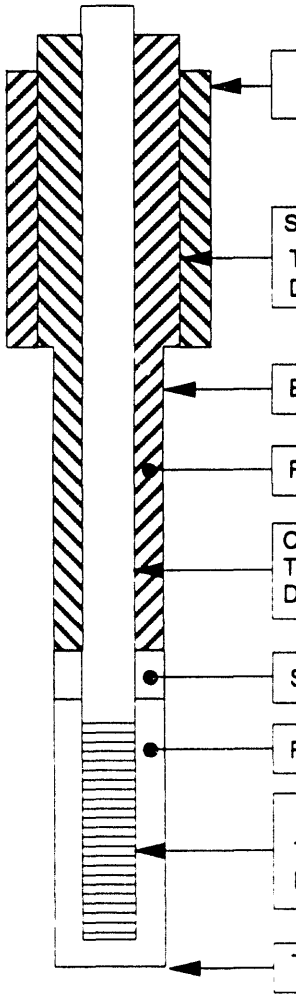
HELPERS: Paul McCormick

REASON FOR P&A: To proceed with closure of the Walk-in Pits site. Well hinders construction activities.

P&A: METHOD: A

DEVIATIONS FROM METHOD: Well casing sealed to 4.0 ft BGS with Hole Plug™, deviation approved by Steve Jones - HSE.

WELL CONSTRUCTION SUMMARY



- CONDUCTOR HOLE DIA: -NA- — DEPTH -NA-
- SURFACE CONDUCTOR TYPE: -NA- DIA: -NA- — TOP -NA- BOTTOM -NA-
- BOREHOLE DIA.: 4.0-in. — TOP 0.0 ft BOTTOM 62.0 ft
- FILLER: Cement
- CASING (WITH SCREEN) TYPE: SS/#304 DIA: 2.37-in. OD — TOP Unknown* BOTTOM 49.1 ft
- SEAL: Unknown — TOP Unknown BOTTOM 37.5 ft
- FILTER PACK: Unknown — TOP 37.5 ft BOTTOM 60.3 ft
- SCREEN TYPE: SS/SW/0.01 DIA: 2.37-in. OD — TOP 49.1 ft BOTTOM 59.1 ft
- TOTAL DEPTH: 62.0 ft

*Wellhead destroyed. Top found approx. 3.5 ft BGS.

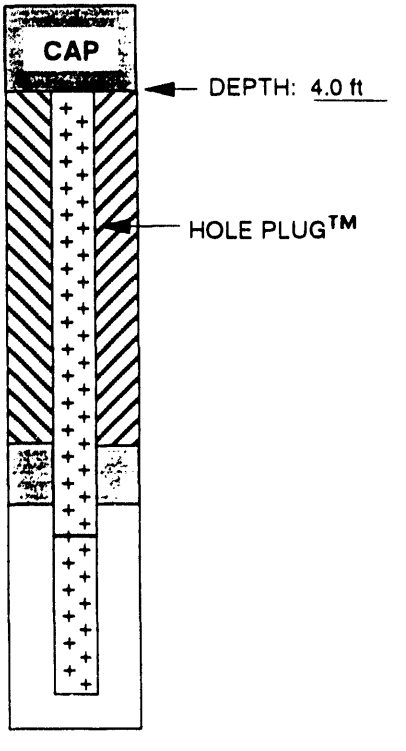
P&A SUMMARY

REAMED DIA: -NA-

DRILLED/REAMED DEPTH: -NA-

PLUG MATERIAL: Hole Plug™

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-036

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

COORDINATES: N30778 E43262

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-8-93

FINISH: 2-11-93

PREPARED BY: Timothy Coffey-SAIC

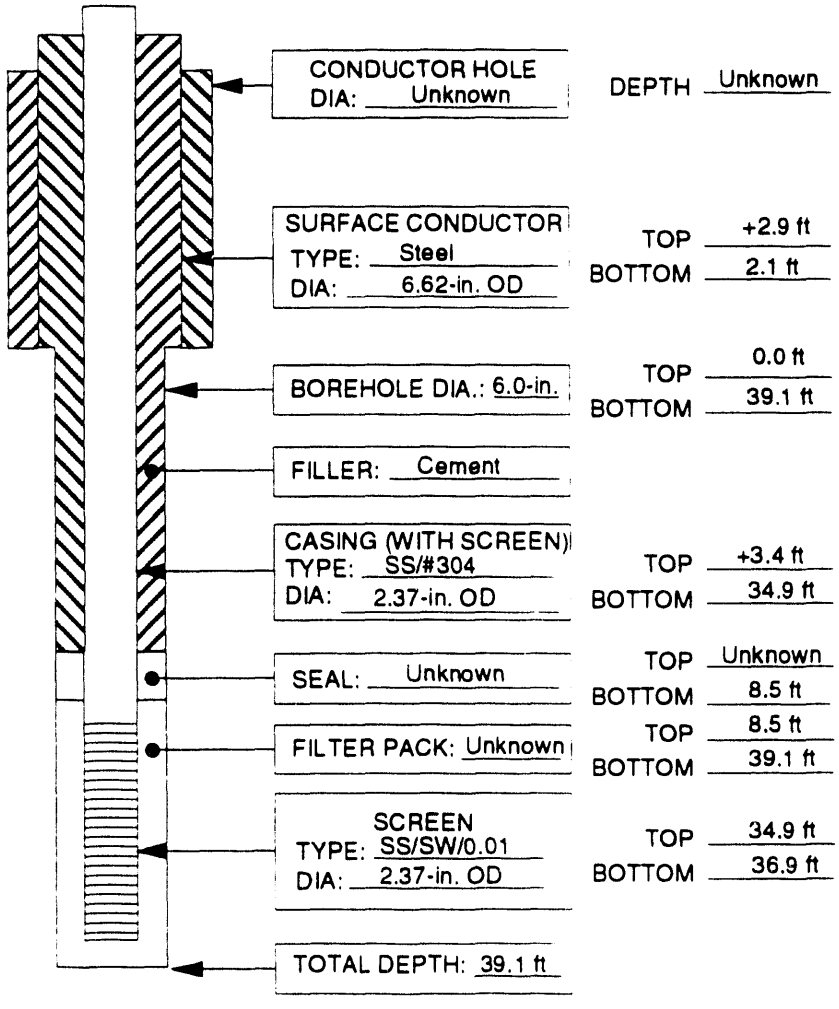
DRILLING COMPANY: Highland Drilling Company DRILL: Ford 555 Backhoe

DRILLER: Greg Shillings HELPERS: Paul McCormick/James Gallaher

REASON FOR P&A: To proceed with closure of the Walk-in Pits site. Well hinders construction activities.

P&A: METHOD: A DEVIATIONS FROM METHOD: Well casing sealed to 3.6 ft BGS with Hole Plug™ and cement-grout, deviation approved by Steve Jones - HSE.

WELL CONSTRUCTION SUMMARY



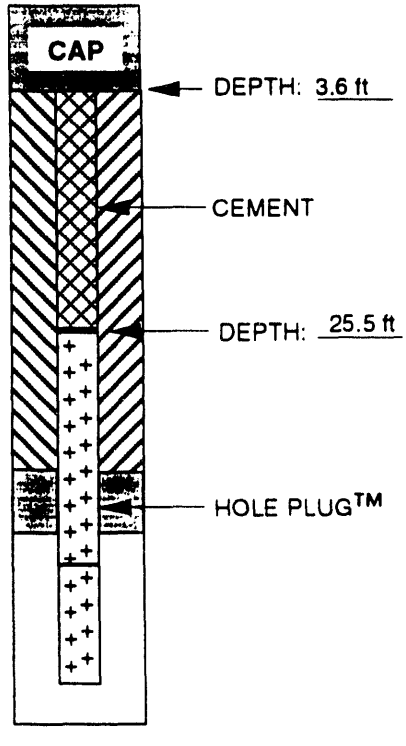
P&A SUMMARY

REAMED DIA: -NA-

DRILLED/REAMED DEPTH: -NA-

PLUG MATERIAL: Hole Plug™/ Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-037

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

COORDINATES: N30685 E43346

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-8-93

FINISH: 2-11-93

PREPARED BY: Timothy Coffey-SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ford 555 Backhoe

DRILLER: Greg Shillings

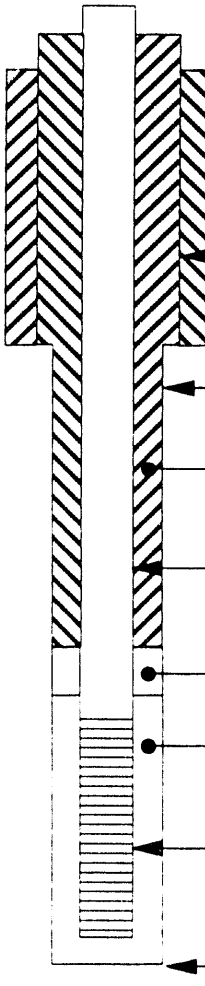
HELPERS: Paul McCormick/James Gallaher

REASON FOR P&A: To proceed with closure of the Walk-in Pits site. Well hinders construction activities.

P&A: METHOD: A

DEVIATIONS FROM METHOD: Well casing sealed to 3.3 ft BGS with Hole Plug™ and cement-grout, deviation approved by Steve Jones - HSE.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: Unknown
DEPTH Unknown

SURFACE CONDUCTOR
TYPE: Steel
DIA: 6.62-in. OD
TOP +2.3 ft
BOTTOM 2.7 ft

BOREHOLE DIA.: 4.0-in.
TOP 0.0 ft
BOTTOM 70.0 ft

FILLER: Cement

CASING (WITH SCREEN)
TYPE: SS/#304
DIA: 2.37-in. OD
TOP +2.8 ft
BOTTOM 64.5 ft

SEAL: Unknown
TOP Unknown
BOTTOM 42.0 ft

FILTER PACK: Unknown
TOP 42.0 ft
BOTTOM 68.7 ft

SCREEN
TYPE: SS/SW/0.01
DIA: 2.37-in. OD
TOP 64.5 ft
BOTTOM 66.5 ft

TOTAL DEPTH: 70.0 ft

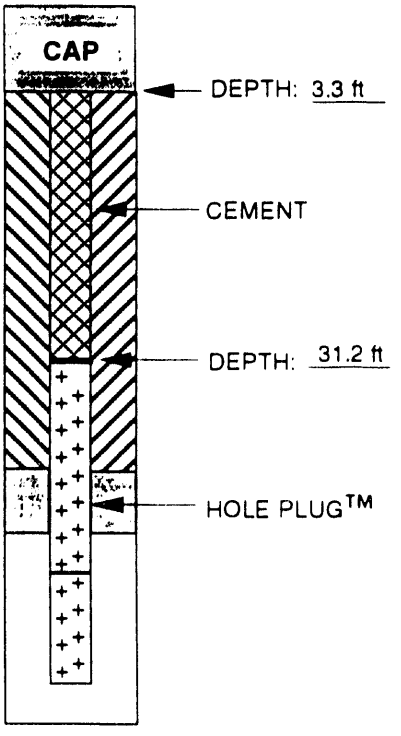
P&A SUMMARY

REAMED DIA: -NA-

DRILLED/REAMED DEPTH: -NA-

PLUG MATERIAL: Hole Plug™/ Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-038

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

COORDINATES: N30533 E43373

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-8-93

FINISH: 2-11-93

PREPARED BY: Timothy Coffey-SAIC

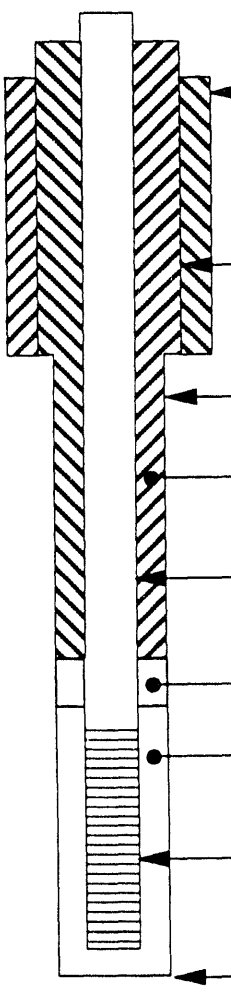
DRILLING COMPANY: Highland Drilling Company DRILL: Ford 555 Backhoe

DRILLER: Greg Shillings HELPERS: Paul McCormick/James Gallaher

REASON FOR P&A: To proceed with closure of the Walk-in Pits site. Well hinders construction activities.

P&A: METHOD: A DEVIATIONS FROM METHOD: Well casing sealed to 1.1 ft BGS with Hole Plug™ and cement-grout, deviation approved by Steve Jones - HSE.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: Unknown
DEPTH Unknown

SURFACE CONDUCTOR
TYPE: Steel
DIA: 6.62-in. OD
TOP +1.7 ft
BOTTOM 3.3 ft

BOREHOLE DIA.: 6.0-in.
TOP 0.0 ft
BOTTOM 52.5 ft

FILLER: Cement

CASING (WITH SCREEN)
TYPE: SS/#304
DIA: 2.37-in. OD
TOP +2.2 ft
BOTTOM 41.2 ft

SEAL: Unknown
TOP Unknown
BOTTOM 38.9 ft

FILTER PACK: Unknown
TOP 38.9 ft
BOTTOM 52.4 ft

SCREEN
TYPE: SS/SW/0.01
DIA: 2.37-in. OD
TOP 41.2 ft
BOTTOM 51.2 ft

TOTAL DEPTH: 52.5 ft

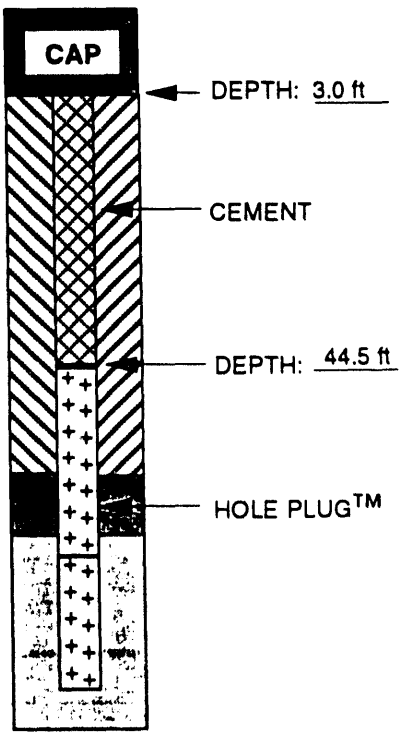
P&A SUMMARY

REAMED DIA: -NA-

DRILLED/REAMED DEPTH: -NA-

PLUG MATERIAL: Hole Plug™/ Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-063

LOCATION: Oil Landfarm Functional Area

COORDINATES: N29016 E48257

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 3/25/93

FINISH: 4/7/93

PREPARED BY: Tim J. Coffey-SAIC, V.R. Harness-SAIC

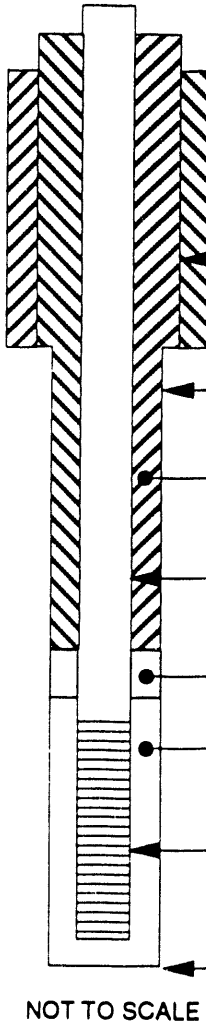
DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall HELPER: Greg Shillings/Steve Brown/Scott Gilbert

REASON FOR P&A: Well is obstructed by hung bailer and is damaged.

P&A: METHOD: A DEVIATIONS FROM METHOD: Casing from 18 ft BGS to bottom reamed out. Bore is plugged from 30 ft to 18.9 ft BGS with Hole Plug™ (deviations approved by Steve Jones - HSEA).

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: Unknown
DEPTH Unknown

SURFACE CONDUCTOR
TYPE: Steel
DIA: 6.5-in. OD
TOP +2.3ft
BOTTOM 2.7ft

BOREHOLE
DIA.: 4.0-in.
TOP 0.0 ft
BOTTOM 35.0 ft

FILLER: Cement

CASING (WITH SCREEN)
TYPE: SS/#304
DIA: 2.37-in. OD
TOP +3.0 ft
BOTTOM 32.7 ft

SEAL: Bentonite
TOP unknown
BOTTOM 27.7 ft

FILTER PACK: Sand
TOP 27.7 ft
BOTTOM 32.7 ft

SCREEN
TYPE: SS/sw/.01
DIA: 2.37-in. OD
TOP 27.7 ft
BOTTOM 32.7 ft

TOTAL DEPTH: 35.0 ft

NOT TO SCALE

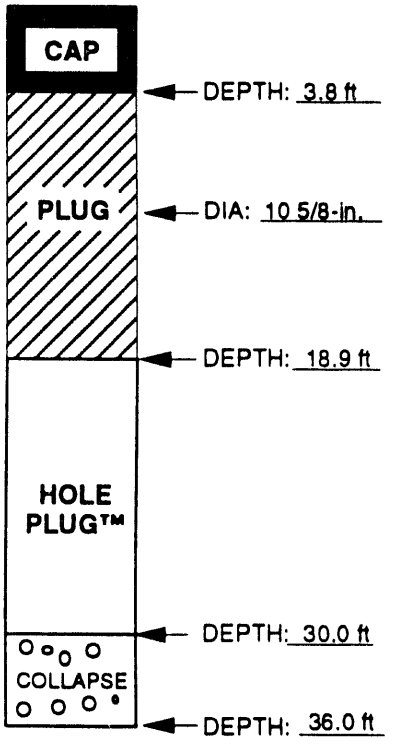
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 36 ft

PLUG MATERIAL: Cement/ Hole Plug™

CAP MATERIAL: Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-088

LOCATION: Bear Creek Burial Grounds

COORDINATES: N30578 E43768

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 4-27-93

FINISH: 5-5-93

PREPARED BY: V.R. Harness - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

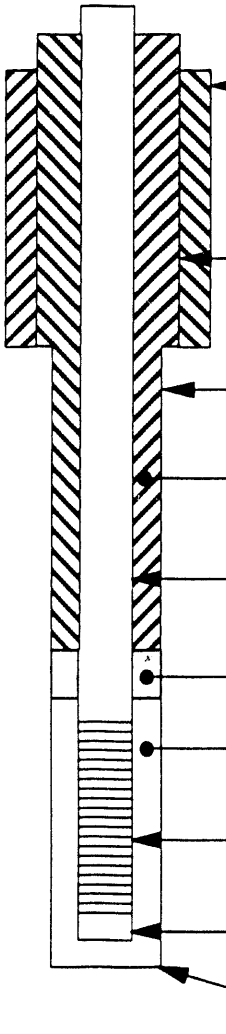
HELPER: Randy Phillips, Greg Anderson, Steve Brown

REASON FOR P&A: Well security compromised, substandard well construction

P&A: METHOD: A

DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: Unknown
DEPTH Unknown

CONDUCTOR CASING
TYPE: Steel
DIA: 5.0-in. OD
TOP +2.1 ft
BOTTOM 2.9 ft

BOREHOLE
DIA.: 6.5-in.
TOP 0.0 ft
BOTTOM 30.0 ft

FILLER: Cement

CASING (WITH SCREEN)
TYPE: SS/#304
DIA: 2.37-in. OD
TOP +2.9 ft
BOTTOM 30.0 ft

SEAL: Bentonite
TOP Unknown
BOTTOM 25.0 ft

FILTER PACK: Sand
TOP 25.0 ft
BOTTOM 30.0 ft

SCREEN
TYPE: SS/SW/.01
DIA: 2.37-in. OD
TOP 23.7 ft
BOTTOM 28.8 ft

SS SILT TRAP
TOP 28.8 ft
BOTTOM 30.0 ft

TOTAL DEPTH: 30.0 ft

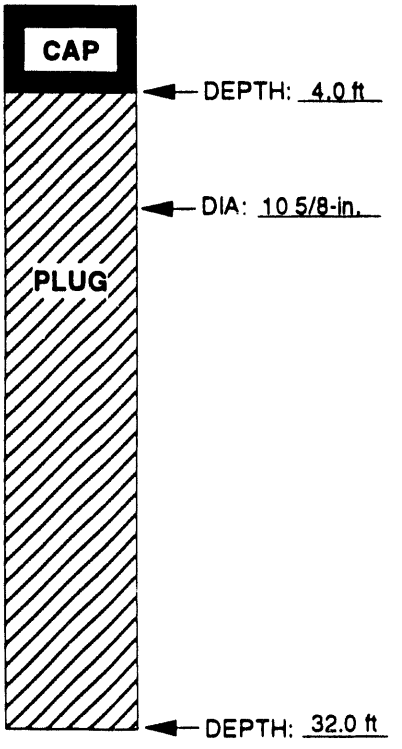
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 32.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-234

LOCATION: Bear Creek Burial Grounds

COORDINATES: N30620 E43621

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 4-26-93

FINISH: 5-5-93

PREPARED BY: Timothy Coffey - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersol Rand XL-750

DRILLER: Hubert Hall

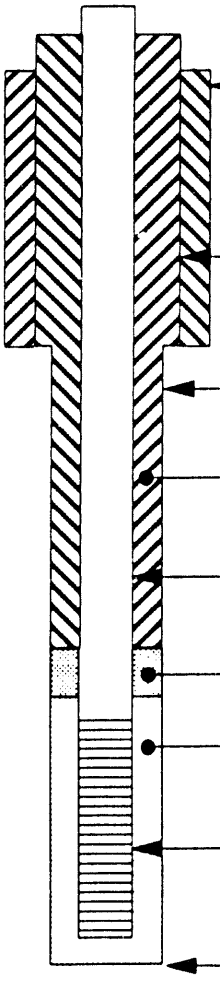
HELPER: Randy Phillips/Jim Gallaher

REASON FOR P&A: Well is damaged.

P&A: METHOD: A

DEVIATIONS FROM METHOD: Bottom 14.6 ft of well casing sealed in borehole. Hole Plug™ used to seal portion of borehole.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: None
DEPTH - NA -

SURFACE CONDUCTOR
TYPE: Steel
DIA: 4.0-in. OD
TOP +3.0 ft
BOTTOM 2.0 ft

BOREHOLE
DIA.: 8.0-in.
TOP 0.0 ft
BOTTOM 16.5 ft

FILLER: Cement

CASING (WITH SCREEN)
TYPE: SS/#304
DIA: 2.37-in. OD
TOP +3.5 ft
BOTTOM 10.2 ft

SEAL: - NA -
TOP - NA -
BOTTOM 8.0 ft

FILTER PACK: Sand
TOP 8.0 ft
BOTTOM 16.5 ft

SCREEN
TYPE: SS/sw/0.01
DIA: 2.37-in. OD
TOP 10.2 ft
BOTTOM 16.5 ft

TOTAL DEPTH: 16.5 ft

- NA -: Not Applicable

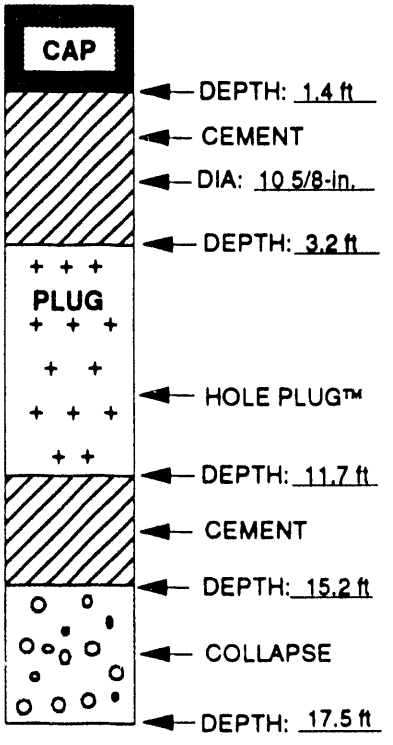
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 17.5 ft

PLUG MATERIAL: Cement/ Hole Plug™

CAP MATERIAL: Clay Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-502

LOCATION: Bear Creek Burial Grounds, Walk-in Pits

COORDINATES: N30269 E43114

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-8-93

FINISH: 2-11-93

PREPARED BY: Timothy Coffey-SAIC

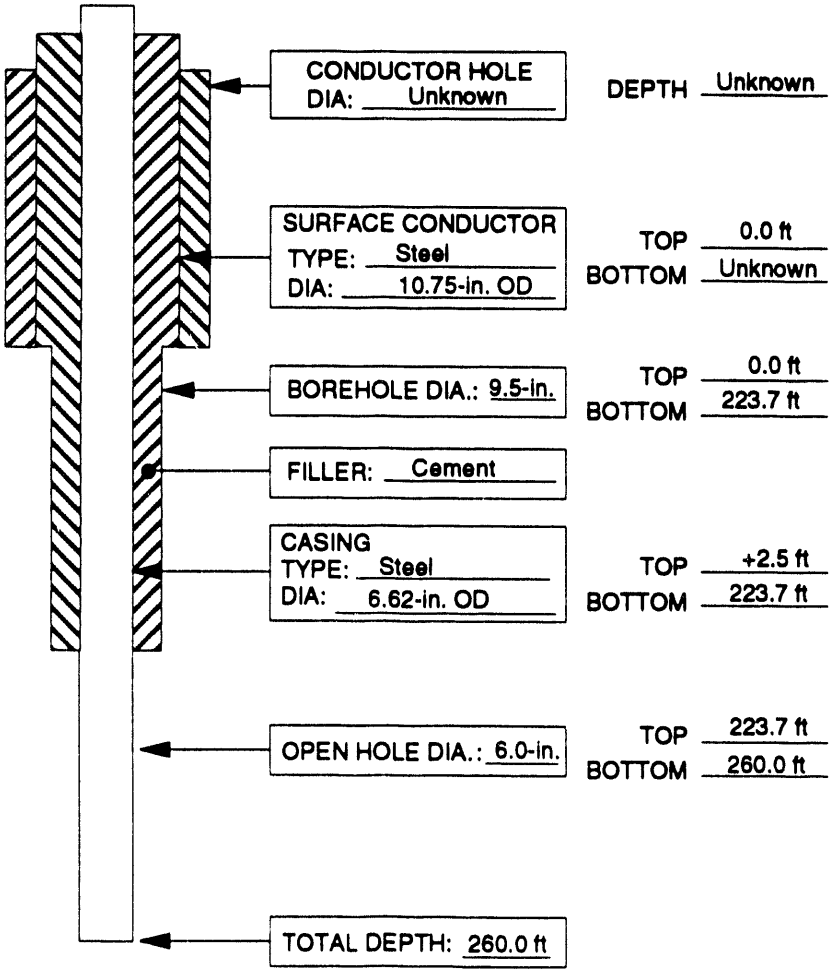
DRILLING COMPANY: Highland Drilling Company DRILL: Ford 555 Backhoe

DRILLER: Greg Shillings HELPERS: Paul McCormick

REASON FOR P&A: To proceed with closure of the Walk-in Pits site. Well hinders construction activities

P&A: METHOD: B DEVIATIONS FROM METHOD: Well casing sealed to 3.0 ft BGS with Hole Plug™ and bentonite-cement grout. Deviation approved by Steve Jones - HSE.

WELL CONSTRUCTION SUMMARY



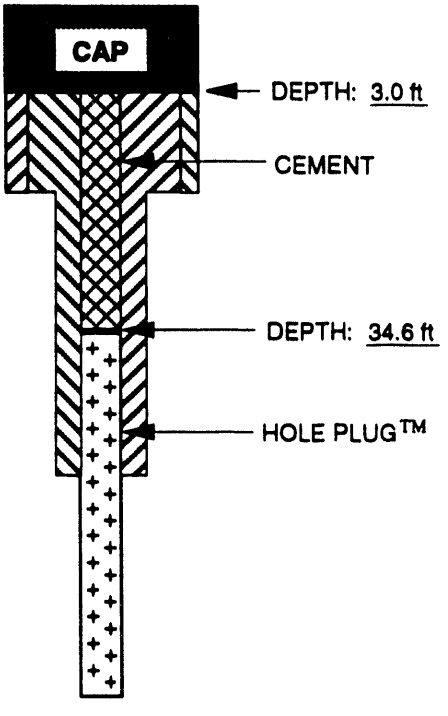
P&A SUMMARY

REAMED DIA: -NA-

DRILLED/REAMED DEPTH: -NA-

PLUG MATERIAL: Hole Plug™/ Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-551

LOCATION: SPAD Landfill Site

COORDINATES: E 60,263 N 27,299

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 12-2-92

FINISH: 1-6-93

PREPARED BY: Susan L. Abston-SAIC, Victor Hamess-SAIC, Michael Klidzejs-SAIC

DRILLING COMPANY: Law Engineering Co. / Highland Drilling Co.

DRILL: CME Model 75 / Ingersoll-Rand XL-750

DRILLER: Rob Tillery - Law Engineering / Hubert Hall - Highland

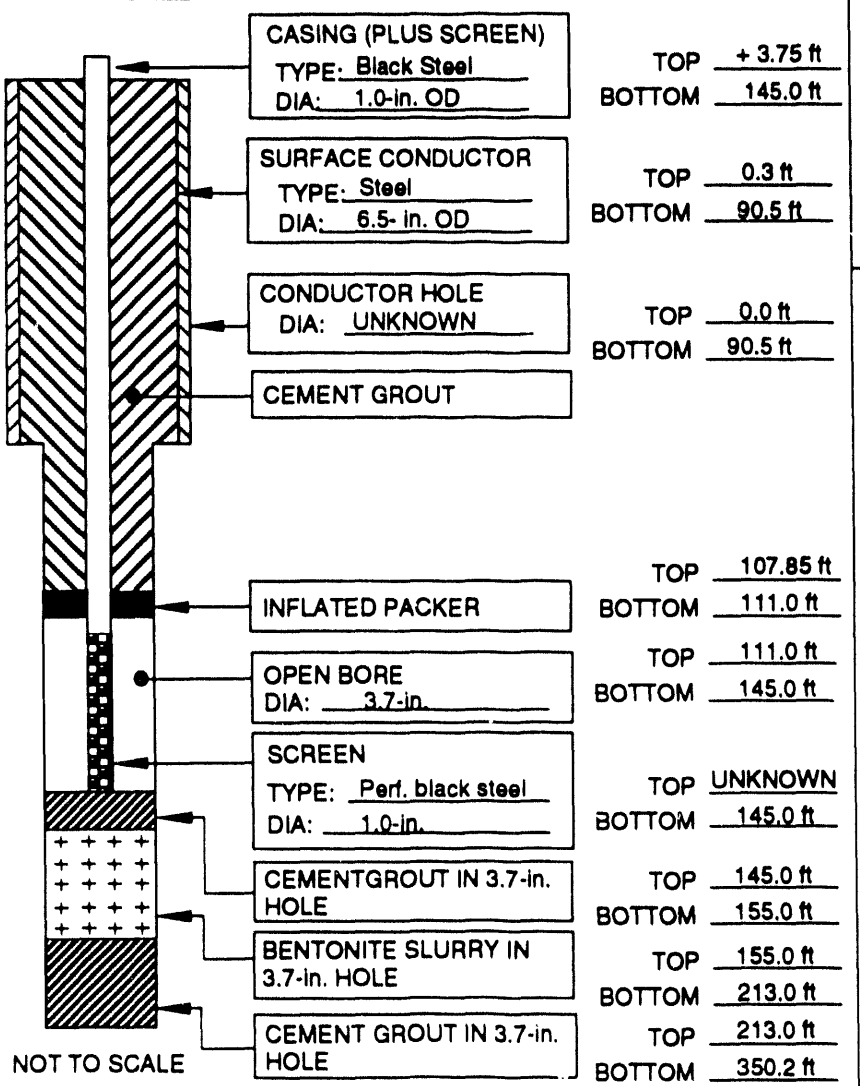
HELPERS: Mel Wagner - Law Engineering / Steve Brown, Greg Shillings - Highland

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: D

DEVIATIONS FROM METHOD: Cap depth of 2.4 ft., Permission from Steve Jones (HSE).

WELL CONSTRUCTION SUMMARY



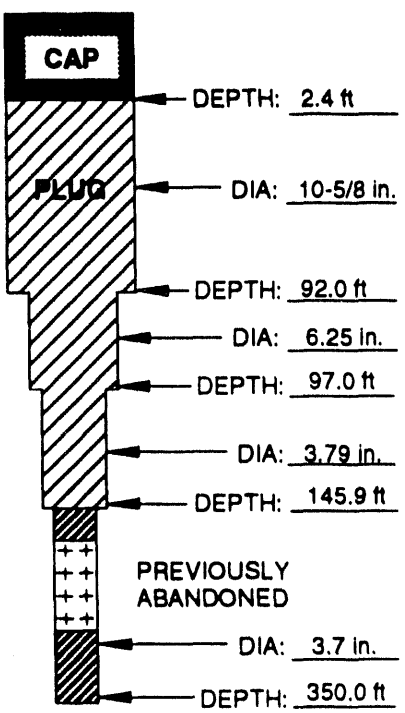
P&A SUMMARY

REAMED DIA: 10-5/8 in./6.25-in./3.79-in.

DRILLED/REAMED DEPTH: 92.0 ft/97.0 ft/145.9 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-553

LOCATION: SPAD Landfill Site

COORDINATES: N26,363 E61,047

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 12/8/92

FINISH: 3/18/93

PREPARED BY: S.L. Abston - SAIC
V.R. Harness - SAIC

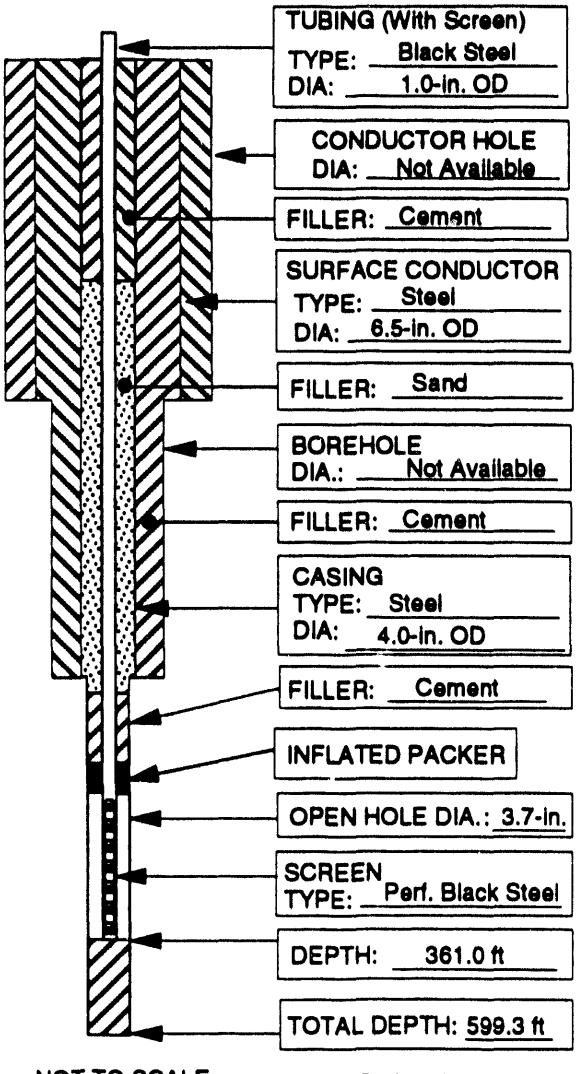
DRILLING COMPANY: Law Engineering/Highland Drilling DRILL: CME M-75/Ingersoll Rand XL-750

DRILLERS: Rob Tillery/Hubert Hall HELPERS: Mel Wagner/Jim Gallaher and Steve Brown

REASON FOR P&A: Well is obstructing construction of Landfill.

P&A: METHOD: D DEVIATIONS FROM METHOD: Abandonment of well casing appliances below 111.3 ft BGS in place approved by Bill Thedford (HSE), cap depth of 4.4 ft instead of 4.0 ft BGS approved by Steve Jones (HSE).

WELL CONSTRUCTION SUMMARY



NOT TO SCALE

NOTE: SAND FILLER USED TO BRIDGE CAVITY

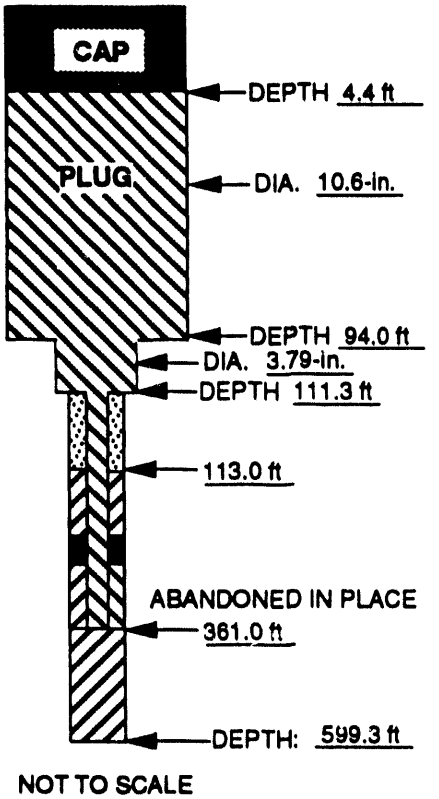
P&A SUMMARY

REAMED DIA. 10.6-in./9.0-in./3.79-in.

DRILLED/REAMED DEPTH 94.0 ft/101.0 ft/111.3 ft

PLUG MATERIAL Cement

CAP MATERIAL Clay



NOT TO SCALE

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-556

LOCATION: SPAD Landfill Site

COORDINATES: N27,359 E58,159

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 12/31/92

FINISH:

PREPARED BY: V.R. Hamess - SAIC, M. Klidzejs - SAIC, T. J. Coffey - SAIC

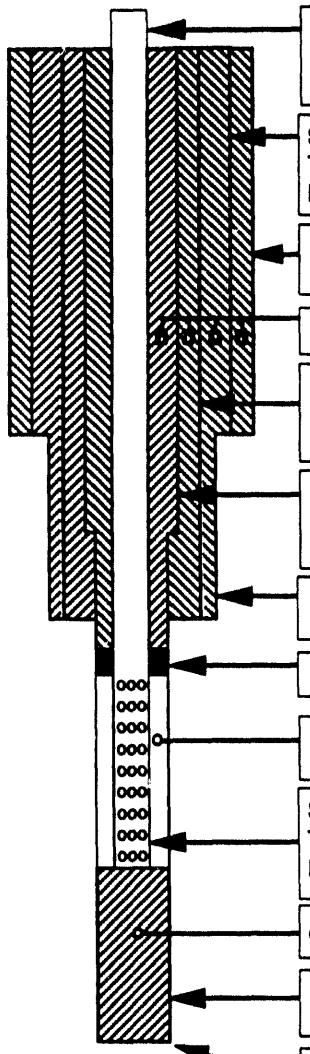
DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll Rand XL-750

DRILLER: Hubert Hall HELPERS: Steve Brown/Greg Shillings

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: D DEVIATIONS FROM METHOD: Deviation of leaving portion of original well in ground approved by W. K. Jago (HSE).

WELL CONSTRUCTION SUMMARY



CASING TYPE: Black Steel DIA: 1.0-in. OD	TOP +4.6 ft	BOTTOM 272.6 ft
SURFACE CONDUCTOR TYPE: Steel DIA: 11.75-in. OD	TOP 0.0 ft	BOTTOM 50.0 ft
CONDUCTOR HOLE DIA.: Unknown	TOP 0.0 ft	BOTTOM Unknown
CEMENT GROUT		
CASING #1 TYPE: Steel DIA: 6.63-in. OD	TOP 0.0 ft	BOTTOM 77.0 ft
CASING #2 TYPE: Steel DIA: 4.6-in. OD	TOP 0.0 ft	BOTTOM 70.7 ft
BOREHOLE DIA: Unknown	TOP 0.0 ft	BOTTOM Unknown
INFLATED PACKER	TOP 248.65 ft	BOTTOM 251.80 ft
OPEN BORE DIA: 3.7-in	TOP 251.80 ft	BOTTOM 272.6 ft
SCREEN TYPE: Perf. black steel DIA: 1.0 in. OD	TOP 251.8 ft	BOTTOM 272.6 ft
CEMENT GROUT		
GROUTED BOREHOLE DIA.: 3.7-in	TOP 272.6 ft	BOTTOM See below
TOTAL DEPTH: listed as 354.5 and 356.5 ft		

NOT TO SCALE

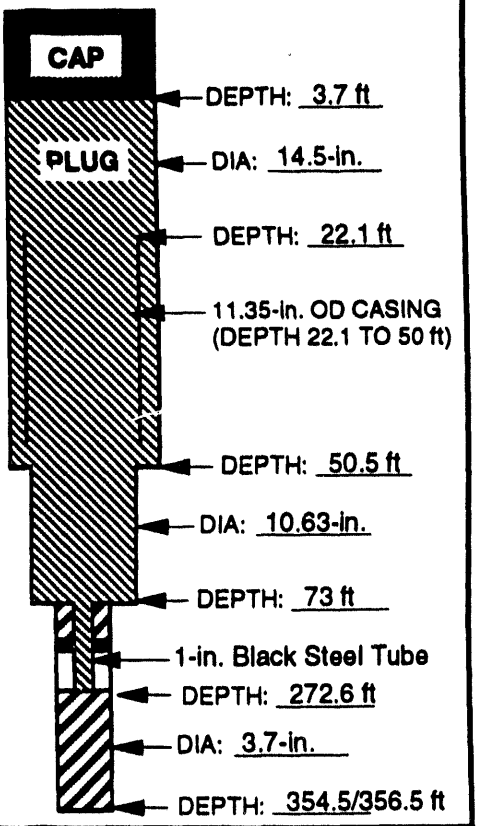
P&A SUMMARY

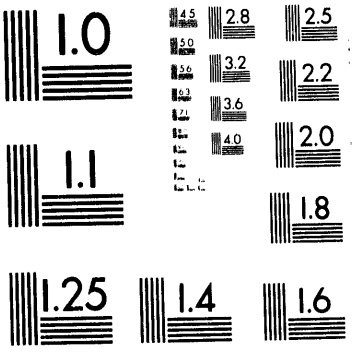
REAMED DIA: 14.5-in/10.63-in.

DRILLED/REAMED DEPTH: 50.5 ft/73.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
6.3
7.1

5 of 6

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-561

LOCATION: SPAD Landfill Site

COORDINATES: NFT 59,323 NFT 27,811

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 12-11-92

FINISH: 12-23-92

PREPARED BY: Michael A. Klidzejs-SAIC

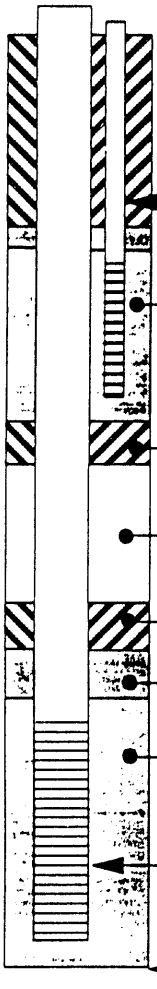
DRILLING COMPANY: Highland Drilling Co. DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall HELPERS: Steve Brown, Greg Shilling

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: A DEVIATIONS FROM METHOD: Final cement plug level at 5.0 ft BGS, approved by HSEA.

WELL CONSTRUCTION SUMMARY



FILLER: Grout	TOP	GS
	BOTTOM	12.00 ft
PIEZOMETER TYPE: PVC/S1/.01 DIA: 1 in.	TOP	N/A
	BOTTOM	27.05 ft
FILTER PACK: Sand Pack	TOP	14.00 ft
	BOTTOM	28.00 ft
BOREHOLE DIA.: 9.5 in.		
FILLER: Concrete/Gravel	TOP	28.00 ft
	BOTTOM	35.00 ft
CAVE IN	TOP	35.00 ft
	BOTTOM	56.40 ft
FILLER: Concrete	TOP	56.40 ft
	BOTTOM	63.80 ft
SEAL: Bentonite	TOP	63.80 ft
	BOTTOM	67.05 ft
FILTER PACK: Sand Pack	TOP	67.05 ft
	BOTTOM	89.90 ft
SCREEN TYPE: SS/SW/.01 DIA: 4.0 in. OD	TOP	79.90 ft
	BOTTOM	89.90 ft
TOTAL DEPTH: 91.0 ft		

NOT TO SCALE

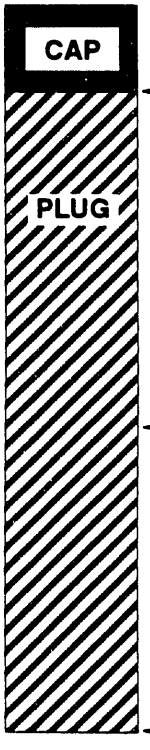
P&A SUMMARY

REAMED DIA: 10 5/8 in.

DRILLED/REAMED DEPTH: 92.0 ft BGS

PLUG MATERIAL: Cement

CAP MATERIAL: Soil/Clay



DEPTH: 5.0 ft

DIA: 10 5/8 in.

DEPTH: 92.0 ft

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-565

LOCATION: SPAD Landfill Site

COORDINATES: N27,363 E58,174

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 1-21-93

FINISH: 2-1-93

PREPARED BY: V.R. Harness-SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll Rand XL-750

DRILLER: Hubert Hall

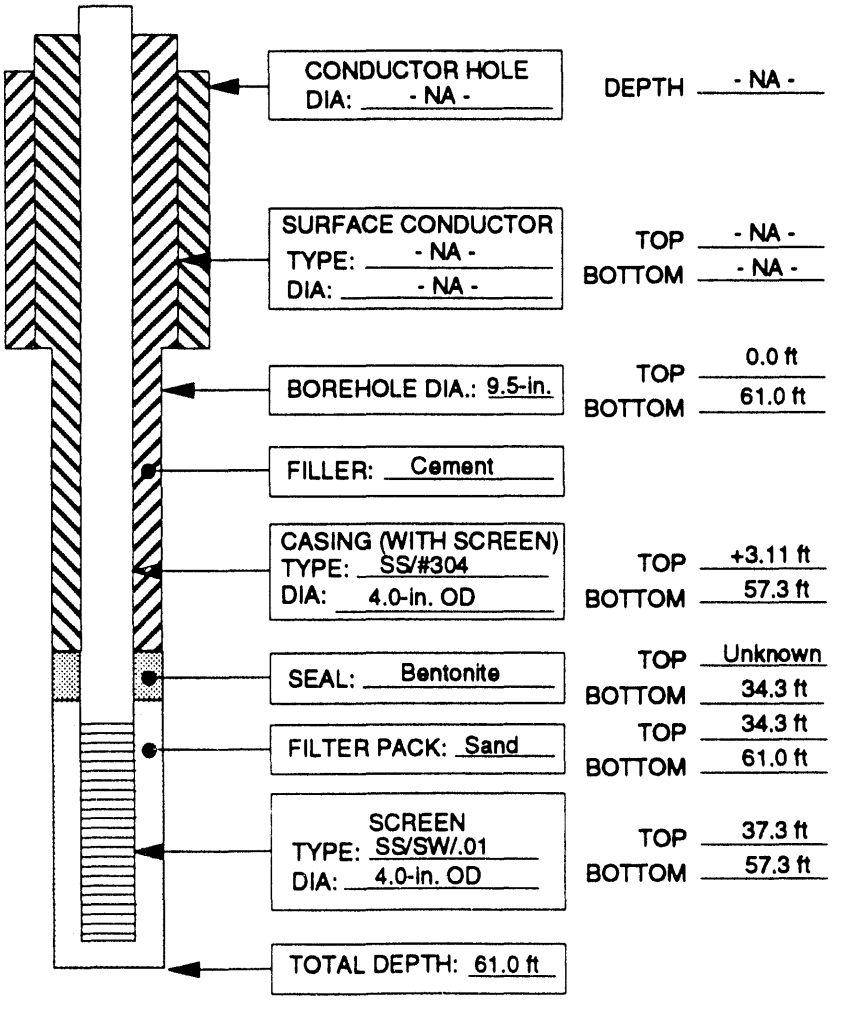
HELPERS: Greg Shillings, Bob Bowers

REASON FOR P&A: Well is obstructing landfill construction.

P&A: METHOD: A

DEVIATIONS FROM METHOD: Grout plug at 4.7 ft BGS instead of 4.0 ft BGS; apprcved by Steve Jones - HSE.

WELL CONSTRUCTION SUMMARY



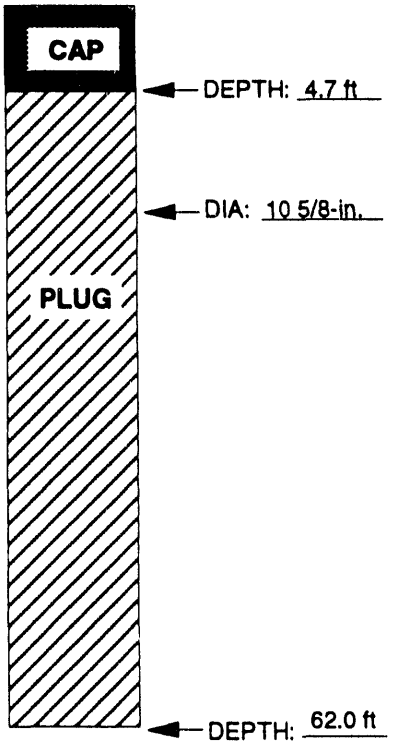
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 62.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-566

LOCATION: SPAD Landfill Site

COORDINATES: N 26,360 E61060

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2-22-93

FINISH: 3-18-93

PREPARED BY: Susan L. Abston-SAIC, Victor Hamess-SAIC, Michael Klidzejs-SAIC

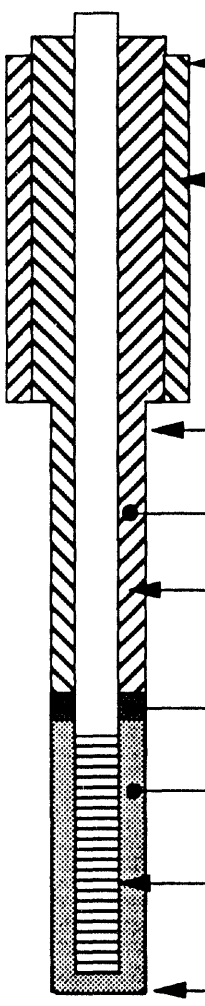
DRILLING COMPANY: Highland Drilling Co. DRILL: Ingersoll-Rand XL-750

DRILLER: Randy Phillips / Hubert Hall HELPERS: Steve Brown, Greg Shillings, Lecil Jones

REASON FOR P&A: Well is obstructing construction of landfill.

P&A: METHOD: A DEVIATIONS FROM METHOD: Portions of well abandoned in situ (approved by Bill Thedford - HSE).

WELL CONSTRUCTION SUMMARY



- CONDUCTOR HOLE DIA: UNKNOWN — DEPTH UNKNOWN
- SURFACE CONDUCTOR TYPE: STEEL DIA: 10.75-in. OD — TOP 0.0 ft, BOTTOM 4.0 ft
- BOREHOLE DIA: 9.5 in. — TOP 0.0 ft, BOTTOM 174.0 ft
- FILLER: CEMENT
- CASING (WITH SCREEN) TYPE: SS # 304 DIA: 4.0-in. OD — TOP +2.32 ft, BOTTOM 173.0 ft
- SEAL: BENTONITE — TOP UNKNOWN, BOTTOM 151.5 ft
- FILTER PACK : SAND — TOP 151.5 ft, BOTTOM 174.0 ft
- SCREEN TYPE: SS/SW/.01 DIA: 4.0-in. OD — TOP 155.0 ft, BOTTOM 173.0 ft*
- TOTAL DEPTH: 188.0 ft

NOT TO SCALE

*Hole originally drilled to 188.0 ft BGS but caved in to 174 ft BGS prior to well installation.

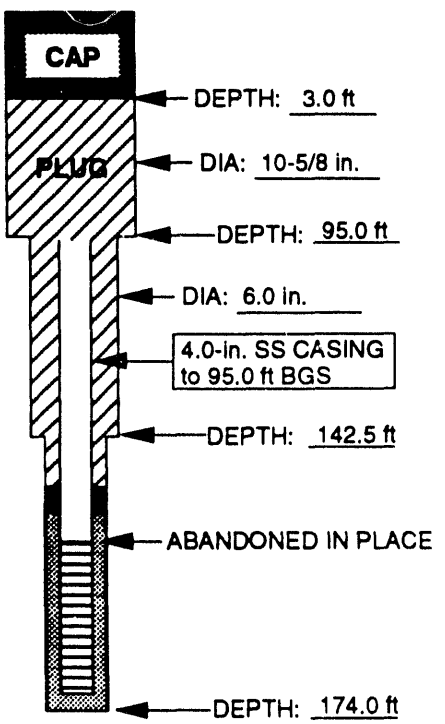
P&A SUMMARY

REAMED DIA: 10-5/8 in./6.0-in.

DRILLED/REAMED DEPTH: 95.0 ft/142.5 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-571

LOCATION: SPAD Landfill Site

COORDINATES: EFT 58,936 NFT 27,672

REFERENCE POINT FOR MEASUREMENTS: _____

DATE: START: 12-29-92

FINISH: 1-5-93

PREPARED BY: M. Klidzejs - SAIC

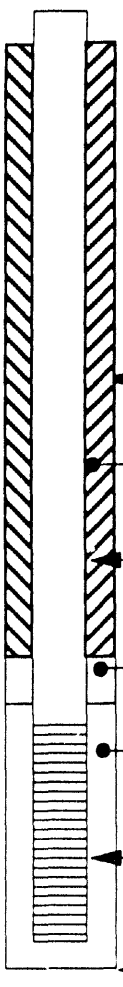
DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall HELPERS: Steve Brown, Greg Shilling

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: A DEVIATIONS FROM METHOD: None

WELL CONSTRUCTION SUMMARY



BOREHOLE DIA.: 6.0 in. — TOP ground surface, BOTTOM 73.3 ft

FILLER: Cement Grout

CASING WITH SCREEN
TYPE: SS #304
DIA: 2.0 in. — TOP 0.89 ft above ground surface, BOTTOM 73.3 ft

SEAL: Bentonite — TOP N/A, BOTTOM 60.0 ft

FILTER PACK: Sand — TOP 60.0 ft, BOTTOM 73.3 ft

SCREEN
TYPE: SS/SW/.01
DIA: 2.0 in. — TOP 63.3 ft, BOTTOM 73.3 ft

TOTAL DEPTH: 80.0 ft

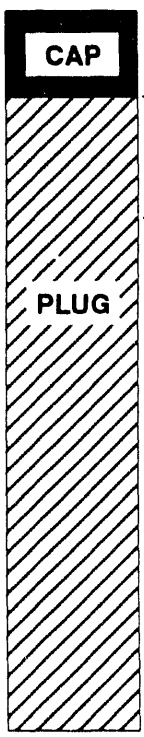
P&A SUMMARY

REAMED DIA: 10 5/8 in.

DRILLED/REAMED DEPTH: 81.5 ft BGS

PLUG MATERIAL: Cement Grout

CAP MATERIAL: Soil



CAP — DEPTH: 3.7 ft BGS

DIA: 10 5/8 in.

DEPTH: 81.5 ft BGS

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-572

LOCATION: SPAD Landfill Site

COORDINATES: E 58,964 N 27,751

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 12-23-92

FINISH: 1-5-93

PREPARED BY: Susan Abston - SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall

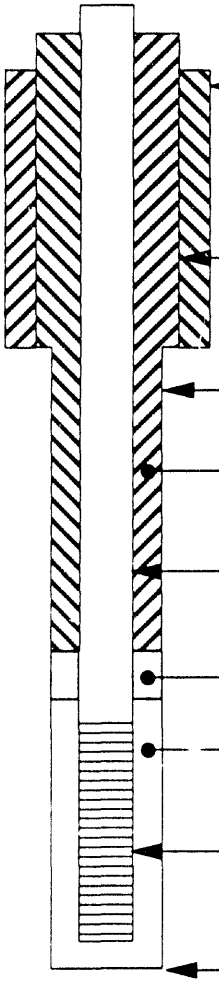
HELPERS: Steve Brown/Greg Shillings

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: A

DEVIATIONS FROM METHOD: Casing cut while overwashing: ream hole to 39.9 ft BGS and grout.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE DIA: N/A — DEPTH N/A

SURFACE CONDUCTOR TYPE: N/A DIA: N/A — TOP N/A, BOTTOM N/A

BOREHOLE DIA.: 6.0 in. — TOP 0.0, BOTTOM 74.0 ft

FILLER: Cement

CASING (WITH SCREEN) TYPE: SS/#304 DIA: 2.0 in. — TOP +4.7, BOTTOM 52.4 ft

SEAL: Bentonite — TOP Unk, BOTTOM 50.0 ft

FILTER PACK: Sand — TOP 50.0 ft, BOTTOM 74.0 ft

SCREEN TYPE: SS/SW/.01 DIA: 2.0 in. — TOP 52.4 ft, BOTTOM 67.4 ft

TOTAL DEPTH: 74.0 ft

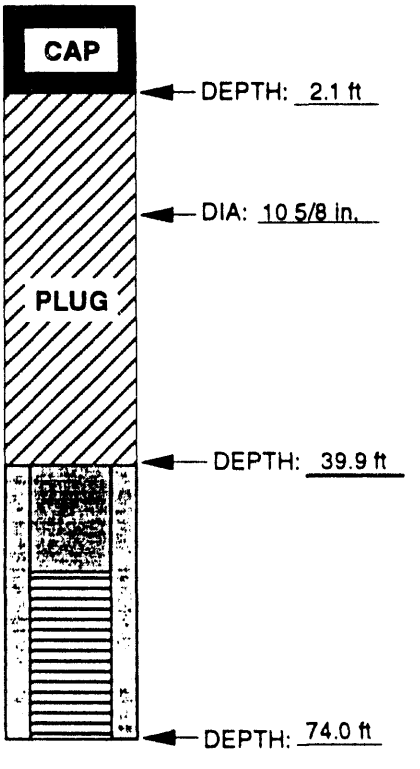
P&A SUMMARY

REAMED DIA: 10 5/8 in.

DRILLED/REAMED DEPTH: 39.9 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-573D

LOCATION: SPAD Landfill Site

COORDINATES: EFT 60,852 NFT 27,028

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2/2/93

FINISH: 3/18/93

PREPARED BY: Michael Klidzejs-SAIC

DRILLING COMPANY: Law Environmental

DRILL: CME Model 55

DRILLER: John Voekel - Law

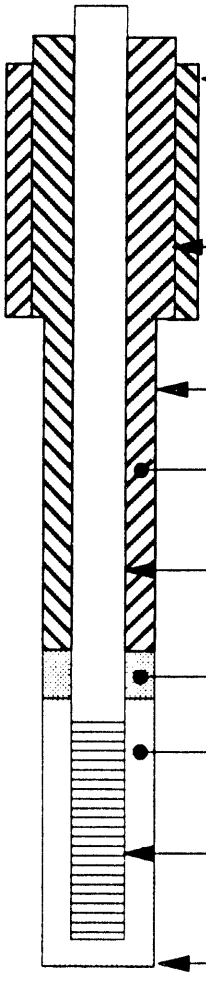
HELPER: Jason Smith - Law

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: A

DEVIATIONS FROM METHOD: Hollow-stem auger used to overwash casing and condition borehole in one operation.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE DIA.: None — DEPTH NA

SURFACE CONDUCTOR TYPE: None DIA.: N/A — TOP N/A, BOTTOM N/A

BOREHOLE DIA.: 6.0 — BOTTOM 89.8 ft

FILLER: Grout

CASING TYPE: SS/#304 DIA: 2.0-in. OD — TOP 5.12 above groundsurface, BOTTOM 74.8 ft

SEAL: Bentonite — TOP N/A, BOTTOM N/A

FILTER PACK: Sand — TOP 69.8, BOTTOM 89.8

SCREEN TYPE: SS/SW/.01 DIA: 2.0 — TOP 74.8, BOTTOM 89.8

TOTAL DEPTH: 89.8 ft

NOT TO SCALE

N/A = Not Applicable/Not Available

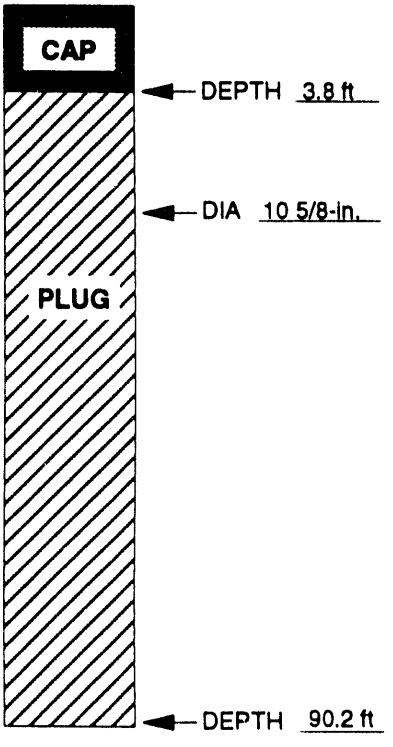
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 90.2 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-573S

LOCATION: SPAD Landfill Site

COORDINATES: EFT 60,847 NFT 27,044

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 2/2/93

FINISH: 3/18/93

PREPARED BY: Michael Klidzejs-SAIC

DRILLING COMPANY: Law Environmental

DRILL: CME Model 55

DRILLER: John Voekel - Law

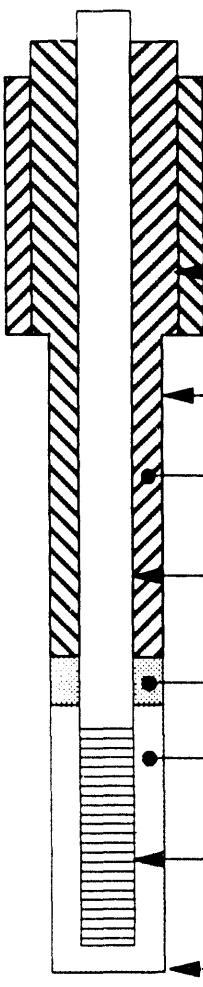
HELPER: Jason Smith - Law

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: A

DEVIATIONS FROM METHOD: Hollow-stem auger used to overwash casing. Portion of casing remained in hole.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA.: None
DEPTH N/A

TYPE: None
DIA.: N/A
TOP N/A
BOTTOM N/A

BOREHOLE
DIA.: 6.0
TOP ground surface
BOTTOM 15.0

FILLER: Grout

CASING
TYPE: SS/#304
DIA: 2.0-in. OD
TOP ground surface
BOTTOM 10.0

SEAL: Bentonite
TOP N/A
BOTTOM N/A

FILTER PACK: NA
TOP 5.00
BOTTOM 15.0

SCREEN
TYPE: SS/SW/.01
DIA: 2.0
TOP 10.0
BOTTOM 15.0

TOTAL DEPTH: 15.0

N/A: Not Applicable/Not Available

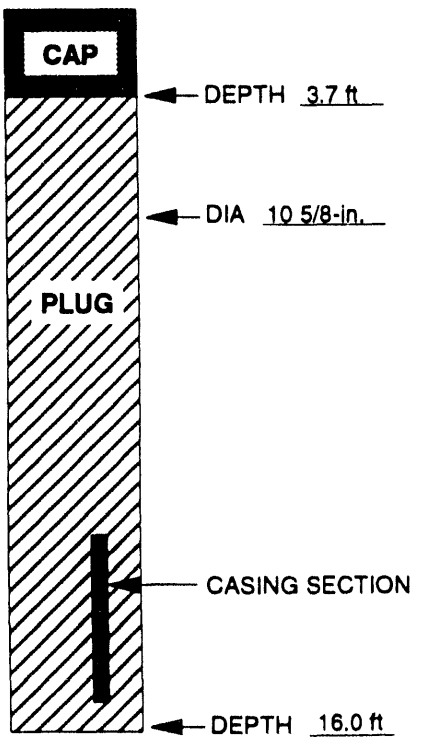
P&A SUMMARY

REAMED DIA: 10 5/8-in.

DRILLED/REAMED DEPTH: 16.0 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Soil



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-580

LOCATION: SPAD Landfill Site

COORDINATES: EFT 58,922 NFT 27,846

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 12-8-92

FINISH: 12-18-92

PREPARED BY: Michael A. Klidzejs

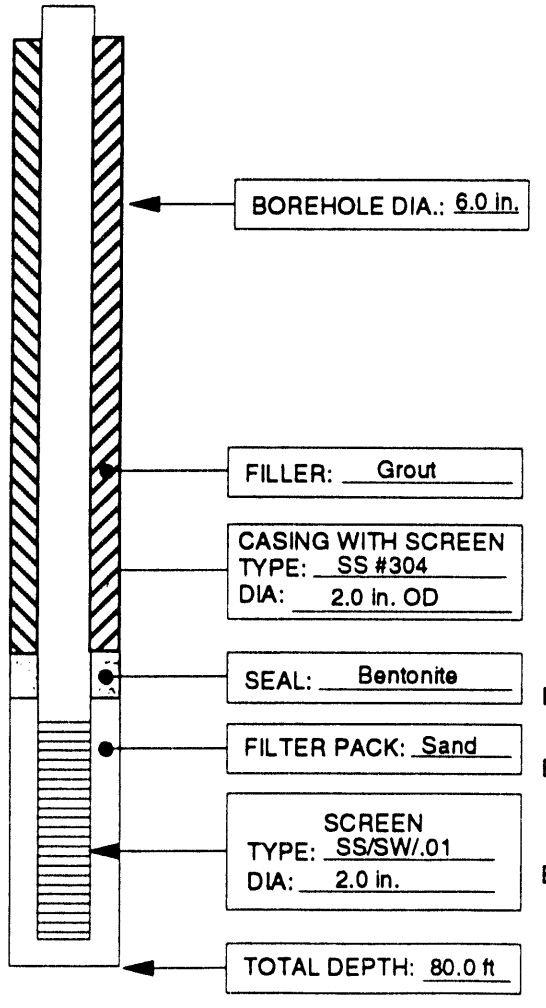
DRILLING COMPANY: Highland Drilling Company DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall HELPERS: Greg Shillings, Steve Brown, Jim Gallaher

REASON FOR P&A: Well location impedes construction of new landfill.

P&A: METHOD: A DEVIATIONS FROM METHOD: Casing, below 5 ft BGS, cemented in hole. Unable to remove casing due to deviated original hole. Deviations approved by HSEA.

WELL CONSTRUCTION SUMMARY



TOP N/A
BOTTOM N/A
TOP 60.0 ft
BOTTOM 76.7 ft
TOP 61.7 ft
BOTTOM 76.7 ft

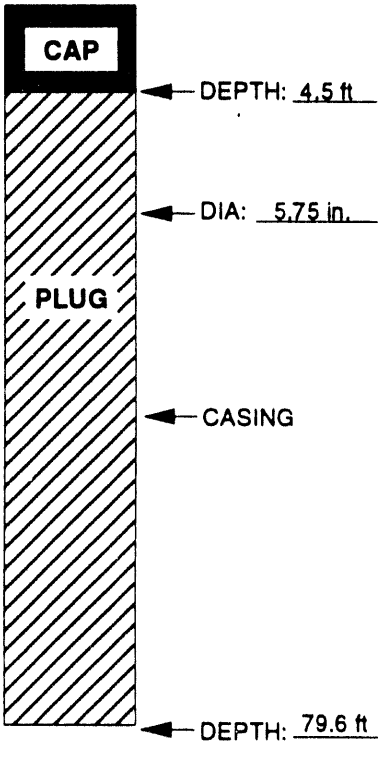
P&A SUMMARY

REAMED DIA: 5.75 in.

DRILLED/REAMED DEPTH: 79.6 ft

PLUG MATERIAL: Cement

CAP MATERIAL: Soil/Clay



Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL PLUGGING AND ABANDONMENT DIAGRAM

WELL NO. GW-607

LOCATION: SPAD Landfill Site

COORDINATES: N27,363 E58, 174

REFERENCE POINT FOR MEASUREMENTS: Ground Surface

DATE: START: 1-21-93

FINISH: 2-1-93

PREPARED BY: Susan Abston-SAIC
V.R. Hamess-SAIC

DRILLING COMPANY: Highland Drilling Company

DRILL: Ingersoll-Rand XL-750

DRILLER: Hubert Hall/Scott Gilbert

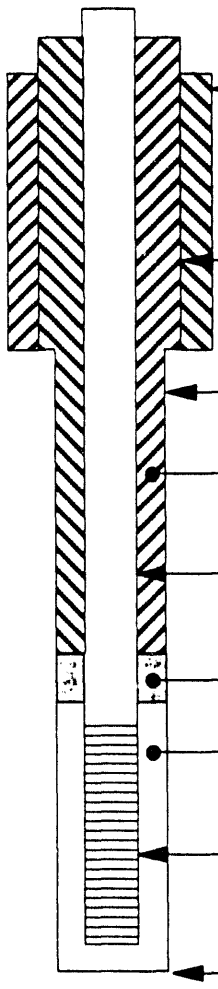
HELPERS: Greg Shillings/Steve Brown

REASON FOR P&A: Well obstructs construction of SPAD Landfill.

P&A: METHOD: A

DEVIATIONS FROM METHOD: Received approval to drill out SS casing instead of overwash, use Hole Plug in bore, abandon SS casing from 118.2 ft to 151.3 ft BGS in place and to ream bore from 107.1 to 118.2 BGS to same size as installation bore.

WELL CONSTRUCTION SUMMARY



CONDUCTOR HOLE
DIA: Unknown
DEPTH Unknown

SURFACE CONDUCTOR
TYPE: F/25 Steel
DIA: 10.75-in OD
TOP +0.5 ft
BOTTOM 106.8 ft

BOREHOLE DIA.: 9.5-in.
TOP 0.0 ft
BOTTOM 151.3 ft

FILLER: Cement Grout

CASING (WITH SCREEN)
TYPE: SS/#304
DIA: 4.5-in. OD
TOP +3.12 ft
BOTTOM 151.3 ft

SEAL: Bentonite
TOP Unknown
BOTTOM 138.0 ft

FILTER PACK: Sand
TOP 138.0 ft
BOTTOM 151.3 ft

SCREEN
TYPE: SS/SW/.01
DIA: 4.5-in. OD
TOP 141.0 ft
BOTTOM 151.3 ft

TOTAL DEPTH: 151.3 ft

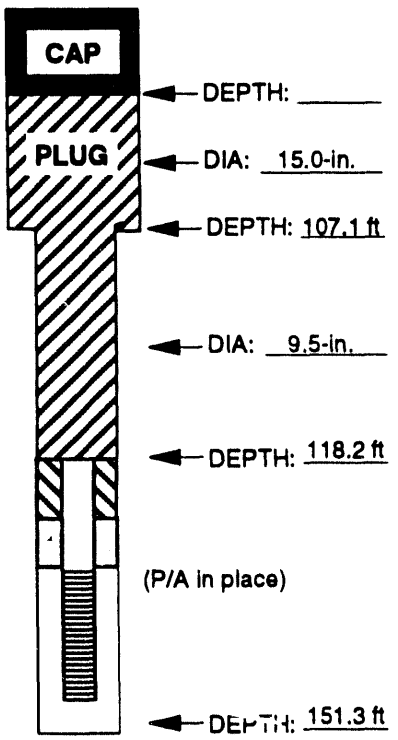
P&A SUMMARY

REAMED DIA: 15.0-in./9.5-in.

DRILLED/REAMED DEPTH: 107.1 ft/118.2 ft

PLUG MATERIAL: Cement grout

CAP MATERIAL: Clay



APPENDIX C

Waste Management Plan

1. INTRODUCTION

The ultimate objective of monitoring groundwater is gathering data to assess potential impacts to human health and the environment. It is also the objective of Y-12 Groundwater Protection Program (GWPP) to handle drill cuttings from the installation of groundwater monitoring wells or borings in a manner that protects the environment. The Y-12 philosophy has been and continues to be consistent with the EPA and Energy Systems E&SA guidance for managing well cuttings. Site-specific professional judgment is used to determine the potential for contamination prior to installation of each well. Factors considered in evaluating potential for site contamination include:

- previously collected sampling and analysis data;
- groundwater flow patterns;
- geologic and hydrogeologic setting; and
- purpose of well (containment plume assessment, background monitoring defining lines of compliance, etc.).

Based on the evaluation, one of two options is selected:

- stabilize material on site; or
- collect for treatment or storage.

2. DRILL CUTTINGS DISPOSAL

There are two levels of drill cuttings management at the Y-12 Plant: (1) drill-site disposal and (2) containerization for waste disposal. Disposal of drill cuttings at the drill-site following best management practices (BMP) is permitted if the cuttings do not exceed the field-screening criteria discussed below. If the field-screening criteria are exceeded, the cuttings must be containerized at the drill-site, labeled, and handled according to Y-12 Plant waste disposal procedures. Sampling and field screening of the drill cuttings will be conducted in accordance with the procedures specified in the Energy Systems Environmental Surveillance Procedures Quality Control Program document (ESH/Sub/87/21706/1).

2.1 FIELD SCREENING

Field screening of drill cuttings will consist of measuring three parameters: radioactivity, volatile organics, and pH. The Energy Systems procedures specified in Table 1 will be followed with some modification as described below.

Table 1. Y-12. Field-screening criteria for drill cuttings and development water

Field Analysis	Energy Systems Procedure No.	Limit
pH	ESP-307-2	4.0 - 10.5
Specific Conductivity [a]	ESP-307-8	< 1000 µmhos/cm
Organic	ESP-307-6	< 5 ppm
Radioactivity	ESP-307-7	beta/gamma < 600 dpm/100 cm^2 (< 100 cpm) alpha < 1000 dpm/100 cm^2 (< 500 cpm)

[a] Not applicable to drill cuttings.

Radioactivity will be measured using two separate meters: a survey meter with a pancake Geiger tube for determining beta and gamma activity and a scintillation counter with a zinc sulfide window for determining alpha activity. The meters will be passed over the surface area of the cuttings and the highest readings will be recorded.

Screening for organic vapors will be conducted on a composite sample from the cuttings generated at a single well. The sample will be collected with a hand trowel or similar tool to select cuttings from several depths. Enough cuttings will be placed in a clean 1-gal glass or metal container to half fill it. Aluminum foil will be placed over the mouth of the container to make an airtight seal. The sample will then be incubated for 1 h at 70°F or the ambient temperature, whichever is higher. Organic vapors in the headspace of the sample container will be measured by puncturing the aluminum foil and inserting the probe of an organic vapor analyzer. This instrument will have a photoionization detector with a 10.2 eV lamp and will be calibrated to isobutylene. The highest reading of the headspace vapors will be recorded.

The pH of the cuttings will be estimated by adding one quart of deionized water to the composite sample used to determine the presence of organic vapors. The sample will be agitated until well mixed. The pH of the mixture will be determined by moistening a piece of pH paper (range 4-9 or similar) and checking the color of the paper against the color key. This pH will be recorded.

2.2 CONTAINERIZATION FOR WASTE DISPOSAL

If the cuttings from a borehole exceed any one of the field screening limits, they will be containerized at the drill-site and labeled with the contents (drill cuttings), borehole number, and date. The cuttings will then be handled according to Y-12 Plant waste management procedures.

An exception to the above may be made if the cuttings only exceed the organic vapor limits. Weather permitting, those cuttings may be passively treated by aeration at the drill-site in order to reduce the organic vapor content. Such treatment shall not exceed five working days. If reanalysis following aeration indicates the cuttings continue to exceed the organic vapor limits, they must be containerized and handled as above.

2.3 BMP FOR DRILL-SITE DISPOSAL

Drill cuttings which do not exceed the field-screening criteria will be disposed of at the drill site, if practicable. BMP dictates that the cuttings be disposed in such a way as to not be unsightly or cause erosion/sedimentation impacts on nearby surface water. The cuttings shall therefore be used as part of the restoration of the drill site, to fill in low areas and tire tracks, or spread to conform to the natural topography. They will subsequently be seeded and mulched. If bedrock cuttings contain a liquid fraction, care shall be taken to ensure this liquid infiltrates or evaporates at the drill site and in no case runs off into surface waters, ephemeral drainages, or storm sewers. Drill cuttings that do not exceed the field-screening criteria but cannot be disposed at the drill site due to its location (parking lot, yard, etc.) will be transported to a designated location and disposed of as clean fill, following BMP.

2.4 DOCUMENTATION

The results of all field-screening analyses and a description of the disposition of the drill cuttings from each borehole will be documented on a Drill Cuttings Field Screening/Disposal Sheet, an example of which is attached. These forms will be completed for each borehole by the onsite geologist who conducts the screening. A copy of each form will be provided to the Project Manager of the GWPP within two days of its completion.

3. DEVELOPMENT WATER DISPOSAL

There are two levels of development water management at the Y-12 Plant: (1) drill-site disposal and (2) containerization for waste disposal. Disposal of development water at the drill-site following BMP is permitted if the water does not exceed the field-screening discussed below. If the field-screening criteria are exceeded, the water must be containerized at the drill-site, labeled, and handled according to Y-12 Plant waste disposal procedures. Sampling and field screening of development water will be conducted in accordance with the procedures specified in the Energy Systems Environmental Surveillance Procedures Quality Control Program document (ESH/Sub/87/21706/1).

3.1 FIELD SCREENING

Initial development water will be containerized until it has been screened. This is accomplished by pumping the water into drums or other suitable container(s). Screening will be conducted on grab samples taken approximately every hour after the first one-half hour of development. (An alternative to the hourly grab samples is to totally contain all the development water produced at a well, then analyze a composite sample.) If initial grab samples do not exceed the limits specified in Table 1, development water may be pumped directly on the ground (following BMP) unless or until a subsequent grab sample exceeds the limits.

Field screening of development water will consist of measuring four parameters: radioactivity, volatile organics, specific conductivity, and pH. The Energy Systems procedures specified in Table 1 will be followed with some modification, as described below.

Radioactivity will be measured using two separate meters: a survey meter with a pancake Geiger tube for determining beta and gamma activity and a scintillation counter with a zinc sulfide window for determining alpha activity. The meters will be passed over the surface area of the sample and the highest readings will be recorded.

Screening for organic vapors will be conducted by placing enough development water in a clean 1-gal glass or metal container to half fill it. Aluminum foil will be placed over the mouth of the container to make an airtight seal. The sample will then be incubated for 1 h at 70°F or the ambient temperature, whichever is higher. Organic vapors in the headspace of the sample container will be measured by puncturing the aluminum foil and inserting the probe of an organic vapor analyzer. This instrument will have a photoionization detector with a 10.2 eV lamp and will be calibrated to isobutylene. The highest reading of the headspace vapors will be recorded.

3.2 CONTAINERIZATION FOR WASTE DISPOSAL

If the development water from a well exceeds any one of the field screening limits, it will be containerized at the drill-site and labeled with the contents (development water), well number, and date. The water will then be handled according to Y-12 Plant waste management procedures.

An exception to the above may be made if the development water only exceeds the organic vapor limits. Weather permitting, the water may be passively treated at the drill-site by leaving the containers open for aeration in order to reduce the organic vapor content. Such treatment shall not exceed five working days and shall not be conducted over weekends without supervision. If reanalysis following aeration indicates the development water continues to exceed the organic vapor limits, it must be containerized and handled as above.

3.3 BMP FOR DRILL-SITE DISPOSAL

Development water that does not exceed the field-screening criteria will be disposed of at the drill site if practicable. BMP dictates that the water be disposed in such a way as to not cause erosion or enter nearby surface water or storm sewers. Precautions shall therefore be taken to ensure that development water pumped onto the ground or released from containers at the drill site either infiltrates or evaporates at the site and in no case runs off into surface waters, ephemeral drainages, or storm sewers. Development water that does not exceed the field screening (i.e., within a drainage, near a storm sewer, etc.) will be transported to a designated location and disposed as clean water following BMP.

3.4 DOCUMENTATION

The results of all field-screening analyses and a description of the disposition of the development water from each well will be documented on a Development Water Field Screening/Disposal Sheet, an example of which is attached. These forms will be completed for each well by the onsite geologist who conducts the screening. A copy of each form will be provided to the Project Manager of the GWPP within two days of its completion.

APPENDIX D

Site-Specific Waste Management Plans

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO: SEE ATTACHMENT
PLUGGING & ABANDONMENT WASTE MANAGEMENT PLAN	DATE:2/8/93

Borehole Diameter(s): 2" Borehole Depth(s) : MULTIPLE

ESTIMATED VOLUME OF CUTTINGS: cu. 50

ESTIMATED VOLUME OF FLUIDS: gal. 50-100

Potential contaminants and maximum concentration levels (if known) that may be encountered:

CONTAMINANT	CONCENTRATION

Please reference the site historical data
GWQAR 1990 and 1991

Source of data (attach analytical results if available):

DISCHARGE DRILLING MATERIALS TO:

XXXX	Ground surface at drill site
XXXX	Unlined containment pit at drill site
	Lined containment pit at drill site
	Containment vessels at drill site

SAMPLE ANALYSIS REQUIRED PRIOR TO DISPOSAL/TREATMENT FOR:

NO FLUIDS PARAMETERS:

NO CUTTINGS PARAMETERS:

PROPOSED DISPOSITION/TREATMENT OF CONTAINERIZED MATERIAL:

FLUIDS:

FLUIDS WILL REMAIN ON SITE AND DISPERSED ACROSS THE SURFACE TO ALLOW GROUND SATURATION AND EVAPORATION. FLUIDS WILL NOT BE ALLOWED TO REACH ANY DRAINAGE DITCH, STREAM, SEDIMENT BASIN OR TO CREAT A MUD HOLE.

CUTTINGS:

WELL CASING, CONCRETE PAD AND CUTTINGS WILL REMAIN AT THE SITE AND USED AS FILL IN MATERIAL. ENTIRE AREA IS TO BE CAPPED AT A LATER DATE BY ER CONTRACT PERSONNEL.

PPE WILL BE CONTAINED AND LABELLED BY HSE PROJECT PERSONNEL . BUT WILL BE THE RESPONSIBILITY OF THE ER PROJECT MANAGER. (WASTE GENERATOR CLAUSE)

APPROVALS

SITE MANAGER: M.S. ELLIOTT / W.E. THEDFORD DATE:

CWPP DRILLING PROJECTS: S.B. JONES S.B. Jones DATE: 2/2/93

H[illegible]A ENVIR COORD: C.C.HILL DATE:

[illegible] DISPOSAL COORD M.WIGINTON DATE:

564-2357

1.) **Project Name:** Walk In Pit Well Plugging & Abandonment

Plant: Y-12
Organization: Environmental Management, Groundwater Protection Program

2.) **Responsible Project Manager:** Jerome Miller

3.) **Expected Start/Completion Dates:** 1-18-93/1-28-93

4.) **Project Description(Brief):** Plug and Abandon 11 Monitoring Wells in WIP Area

5.) **Project Participants: (for waste management interface only)**
Waste Generator: ER
Waste Handler: Highland Rigging/Env. Management
Waste Transporter: WTSD
Interim Waste Storage: WTSD
Permanent Waste Storage: WTSD
Waste Treatment: WTSD
Waste Disposal: WTSD

6.) **Waste Generation**

Waste Stream	Category (RCRA, LLW, TSCA, Sanitary/Liquid, Solid, Sludge)	Contaminant	Analysis Available	Volume (ft³ or Gal)	Packaging	
Well water displacement to be drained to surface				500 gallons		
Concrete pad, steel posts, 7 ft. of casing to be placed in hole at each well & covered with soil				100 ft^3		
Personnel protective equip. to be transferred to a rad dumpster	Sanitary LLW	Rad	No	3 ft^3	Plastic Bag	
Equipment decon to be drained to surface at site boundary	LLW	Rad	No	500 gal	NA	

7.) **Transport Across Public Access Roads:** ☐Yes ☒No

Road Involved:

DOT Regulations to be applied: ☐Yes ☒No
Reportable quantities of participant DOT regulated hazardous materials (if required):

8.) Waste Storage Requirements:

Field Staging Area: ☐Yes ☒No ☐N/A
Location:
Responsible Organization:

90-Day Storage Area: ☐Yes ☐No ☒N/A
(Waste Handler Must Attain 90 Day Permit From Environmental Compliance Department)
Location:
Capacity:
Waste Acceptance Criteria Requirements:
Responsible Organization:

Permitted (or Interim Status) Storage: ☐Yes ☐No ☒N/A
Location:
Capacity:
Waste Acceptance Criteria Requirements:
Responsible Organization:

9.) Identification of Potential Treatment Options:
Location:
Capacity:
Responsible Organization:
Special Waste Acceptance Criteria Requirements:

10.) Identification of Potential Disposal Options: On Site
Location:
Capacity:
Responsible Organization:
Special Waste Acceptance Criteria Requirements:

11.) Waste Minimization and Reduction Techniques to be Implemented:

Segregation: X	In Field Pretreatment:
Decontamination: X	Waste Handling (Spill Control):
Compaction:	Material Recycle (Solvents, Containers):
Solvent Substitution:	Material Reuse (Solvents, Wash Waters):
Sludge Dewatering:	Cutting Fluids Recovery:
Section of PPE:	Section of Equipment: X
Other:	

Description of Special Techniques and Expected Effectiveness:

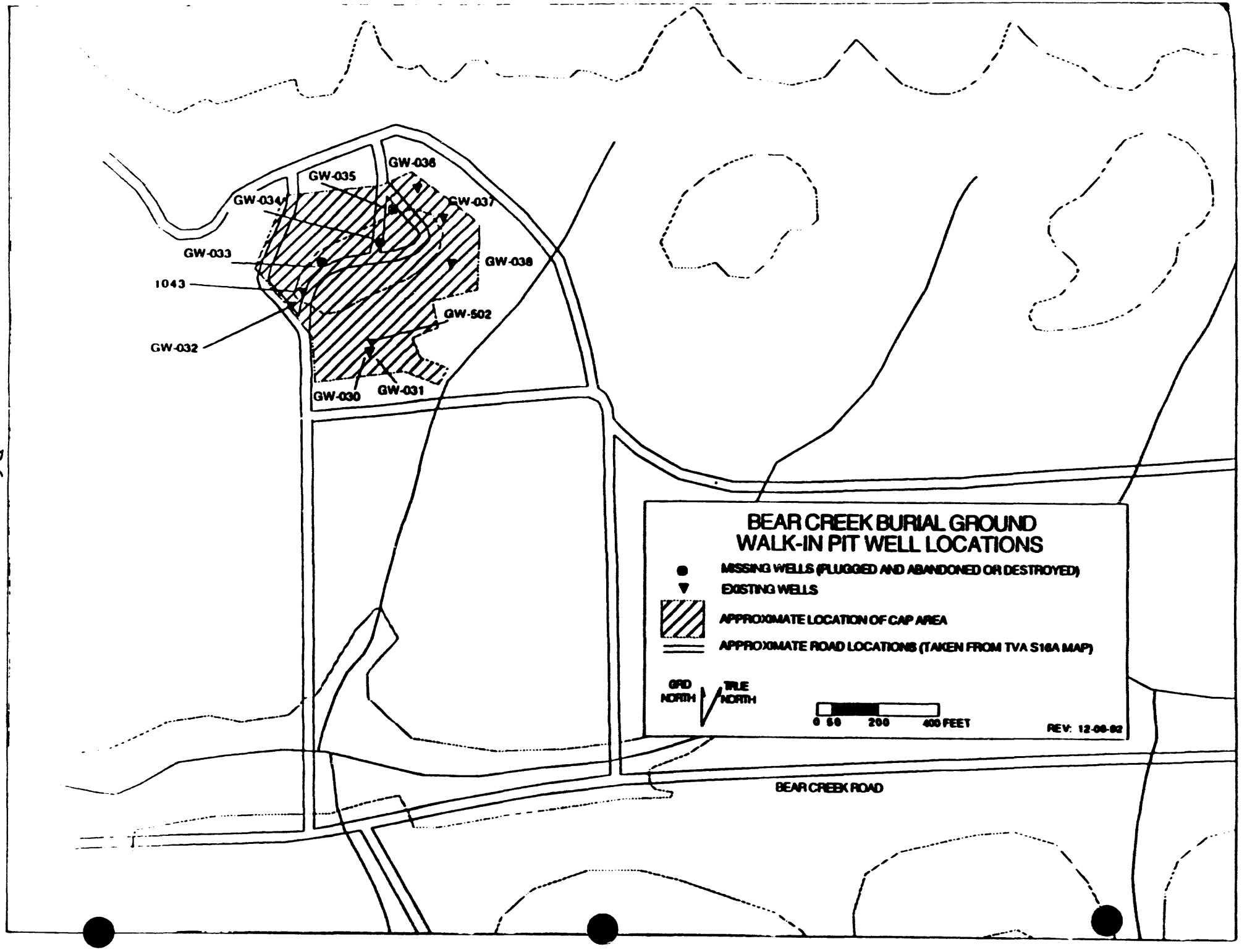
Prepared by: Mike Elliot Date: 1-15-93

Review:

3 Plant Environmental Compliance Organization:

2 Plant Coordinator:

1 ER Waste Management Coordinator: [signature] 1-18-93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GW-035
GW-034
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1043
GW-502
GW-032
GW-030
GW-031
BEAR CREEK BURIAL GROUND
WALK-IN PIT WELL LOCATIONS
MISSING WELLS (PLUGGED AND ABANDONED OR DESTROYED)
EXISTING WELLS
APPROXIMATE LOCATION OF CAP AREA
APPROXIMATE ROAD LOCATIONS (TAKEN FROM TVA S16A MAP)
GRID NORTH
TRUE NORTH
0 50 200 400 FEET
REV: 12-06-92
BEAR CREEK ROAD

Y-12 PLANT GROUNDWATER PROTECTION PROGRA	WELL NO: GW-63
PLUGGING & ABANDONMENT WASTE MANAGEMENT PLAN	DATE: 3/9/93

Borehole Diameter(s): 2" | Borehole Depth(s) : 35.0 FT

ESTIMATED VOLUME OF CUTTINGS: 15 CU. FT

ESTIMATED VOLUME OF FLUIDS: 100 GAL.

Potential contaminants and maximum concentration levels (if known) that may be encountered:

CONTAMINANT	CONCENTRATION
NONE ANTICIPATED	

Source of data (attach analytical results if available):

DISCHARGE DRILLING MATERIALS TO:

- ____ Ground surface at drill site
- XXXX Unlined containment pit at drill site
- ____ Lined containment pit at drill site
- ____ Containment vessels at drill site

SAMPLE ANALYSIS REQUIRED PRIOR TO DISPOSAL/TREATMENT FOR:

____ FLUIDS PARAMETERS:

____ CUTTINGS PARAMETERS:

PROPOSED DISPOSITION/TREATMENT OF CONTAINERIZED MATERIAL:

FLUIDS: FLUIDS TO BE CONTAINED IN PIT AND FILLED UPON COMPLETION EXTRA PRECAUTIONS ARE TO BE TAKEN SO THAT NO MATERIAL OR FLUIDS ARE TO ENTER SS3 SPRING. HAY BALES AND SILT FENCE ARE TO BE UTILIZED.

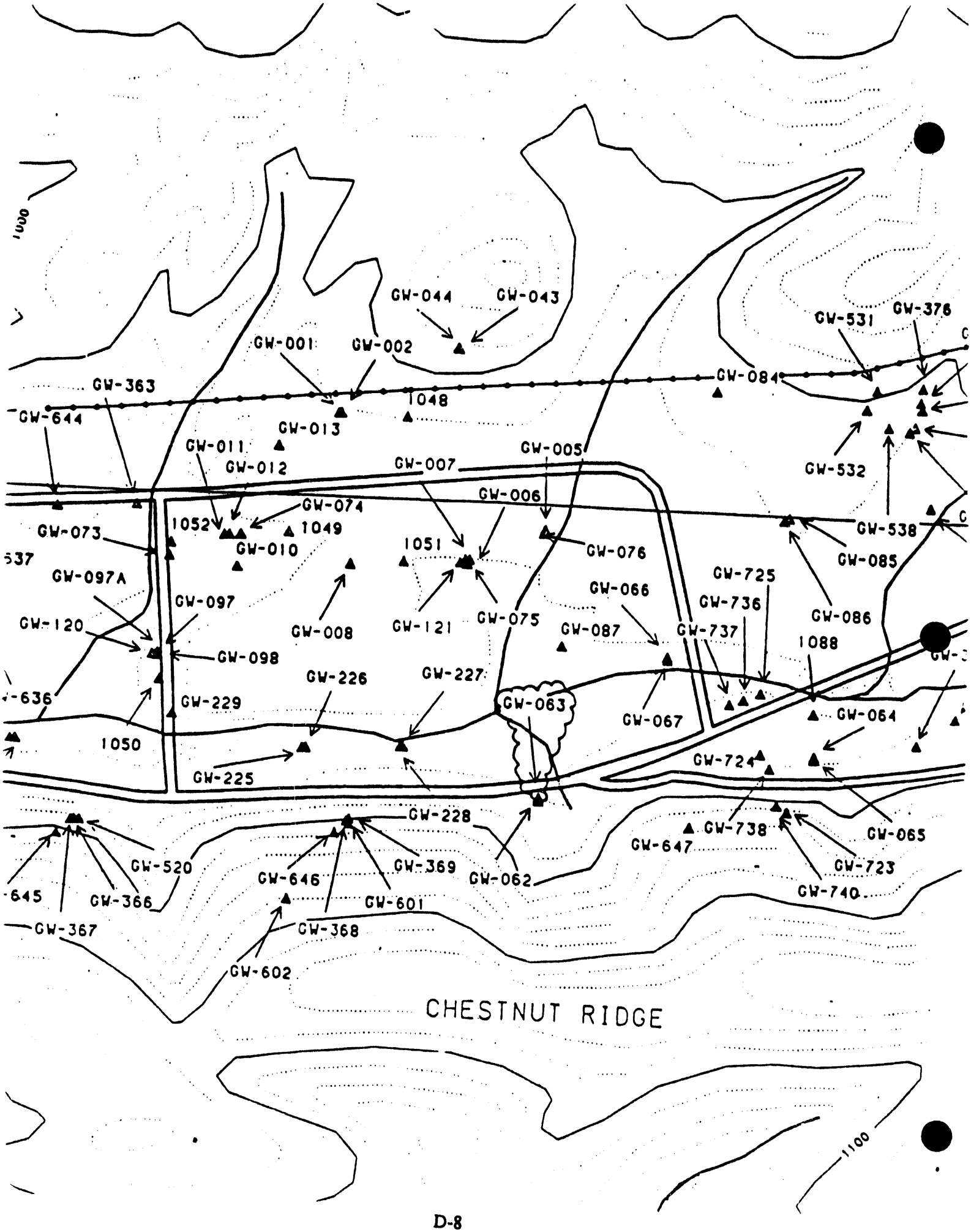
CUTTINGS: CUTTINGS TO BE CONTAINED IN PIT AND FILLED UPON COMPLETION EXTRA PRECAUTIONS ARE TO BE TAKEN SO THAT NO MATERIAL OR FLUIDS ARE TO ENTER SS3 SPRING. HAY BALES AND SILT FENCE ARE TO BE UTILIZED.

APPROVALS

SITE MANAGER: M.S. ELLIOTT / W.E. THEDFORD	M S Elliott	DATE: 3/15/93
GWPP DRILLING PROJECTS: S.B. JONES	S.B. Jones	DATE: 3/16/93
HSEA ENVIR COORD: C.C.HILL	C.C. Hall	DATE: 3/16/93
WTSD DISPOSAL COORD: M.WIGINTON	M.C. Wiginton	DATE: 3/16/93

(Signature required for disposal/treatment options)

1/17/91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GW-602
CHESTNUT RIDGE

Y-12 PLANT GROUNDWATER PROTECTION PROGRA	WELL NO: GW-63
PLUGGING & ABANDONMENT WASTE MANAGEMENT PLAN	DATE: 3/9/93

Borehole Diameter(s): 2" Borehole Depth(s) : 35.0 FT

ESTIMATED VOLUME OF CUTTINGS: 15 CU. FT

ESTIMATED VOLUME OF FLUIDS: 100 GAL.

Potential contaminants and maximum concentration levels (if known) that may be encountered:

CONTAMINANT	CONCENTRATION
NONE ANTICIPATED	

Source of data (attach analytical results if available):

DISCHARGE DRILLING MATERIALS TO:

- ____ Ground surface at drill site
- XXXX Unlined containment pit at drill site
- ____ Lined containment pit at drill site
- ____ Containment vessels at drill site

SAMPLE ANALYSIS REQUIRED PRIOR TO DISPOSAL/TREATMENT FOR:

____ FLUIDS PARAMETERS:

____ CUTTINGS PARAMETERS:

PROPOSED DISPOSITION/TREATMENT OF CONTAINERIZED MATERIAL:

FLUIDS: FLUIDS TO BE CONTAINED IN PIT AND FILLED UPON COMPLETION EXTRA PRECAUTIONS ARE TO BE TAKEN SO THAT NO MATERIAL OR FLUIDS ARE TO ENTER SS3 SPRING. HAY BALES AND SILT FENCE ARE TO BE UTILIZED.

CUTTINGS: CUTTINGS TO BE CONTAINED IN PIT AND FILLED UPON COMPLETION EXTRA PRECAUTIONS ARE TO BE TAKEN SO THAT NO MATERIAL OR FLUIDS ARE TO ENTER SS3 SPRING. HAY BALES AND SILT FENCE ARE TO BE UTILIZED.

APPROVALS

SITE MANAGER: M.S. ELLIOTT / W.E. THEDFORD	M.S. Elliott	DATE: 3/15/93
GWPP DRILLING PROJECTS: S.B. JONES	S.B. Jones	DATE: 3/16/93
HSEA ENVIR COORD: C.C.HILL	C.C. Hill	DATE: 3/16/93
WTSD DISPOSAL COORD M.WIGINTON	M.C. Wigint	DATE: 3/16/93

(Signature required for disposal/treatment options)

1/17 91

Y-12 PLANT GROUNDWATER PROTECTION PROGRAM

WELL NO: SEE ATTACHMENT

PLUGGING & ABANDONMENT WASTE MANAGEMENT PLAN

DATE:3/9/93

Borehole Diameter(s): 4" Borehole Depth(s) : MULTIPLE

ESTIMATED VOLUME OF CUTTINGS: cu. 100

ESTIMATED VOLUME OF FLUIDS: gal. 500-1000

Potential contaminants and maximum concentration levels (if known) that may be encountered:

CONTAMINANT	CONCENTRATION

Source of data (attach analytical results if available):

DISCHARGE DRILLING MATERIALS TO:

- XXXX Ground surface at drill site
- _____ Unlined containment pit at drill site
- _____ Lined containment pit at drill site
- _____ Containment vessels at drill site

SAMPLE ANALYSIS REQUIRED PRIOR TO DISPOSAL/TREATMENT FOR:

NO FLUIDS PARAMETERS:

NO CUTTINGS PARAMETERS:

PROPOSED DISPOSITION/TREATMENT OF CONTAINERIZED MATERIAL:

FLUIDS:

FLUIDS WILL REMAIN ON SITE AND DISPERSED ACROSS THE SURFACE TO ALLOW GROUND SATURATION AND EVAPORATION. FLUIDS WILL NOT BE ALLOWED TO REACH ANY DRAINAGE DITCH, STREAM, SEDIMENT BASIN OR TO CREAT A MUD HOLE.

CUTTINGS:

CUTTINGS WILL REMAIN AT THE SITE AND USED AS FILL IN MATERIAL. ALL SCRAPE MATERIALS WILL BE COLLECTED AT DESIGNATED LOCATIONS (SEE ATTACHED) . METAL WILL BE CLEANED AND RAD SURVEYED FOR DISPOSAL. PVC AND CONCRETE WILL BE DISPOSED OF IN THE LANDFILL.

APPROVALS

SITE MANAGER: M.S. ELLIOTT / W.E. THEDFORD	M.S. Elliott	DATE: 3/9/93
GWPP DRILLING PROJECTS: S.B. JONES	S.B. Jones	DATE: 3/16/93
HSE ENVIR COORD: C.C.HILL	C.C. Hill	DATE: 3/16/93
WTSD DISPOSAL COORD: M.WIGINTON	M.C. Wiginton	DATE: 3/16/93

(Signature required for disposal/treatment options)

1/17/91

I N T E R O F F I C E M E M O R A N D U M

Date: 09-Mar-1993 09:25am EST
From: Michael Scott Elliott
ELLIOTTMS
Dept: 2366
Tel No: 6-2815

TO: Use SH menu option to see recipients
Subject: PLUGGING AND ABANDONMENT

STEVE,

I HAVE BROKEN THE P&A REQUEST INTO THREE SECTIONS.
(1) S-3 POND AREA (1003, 1007, 1008, 1010 AND 1011)
(2) OIL LAND FARM (1048, 1049, 1050, 1051, 1052 1088 AND GW-063)
(3) BURIAL GROUNDS (1027, 1028, 1029, 1032, 1033, 1035, 1036, 1037, 1038, 1040, 1041, 1071, GW-088 AND GW-234)

CERTAIN REQUIREMENTS WILL NEED TO TAKEN TO ALLOW FOR THE DISPOSAL OF EXCESS MATERIALS. A EXCESS MATERIAL DISPOSAL STAGING AREA WILL NEED TO BE MADE AT EACH OF THE ABOVE SITES. AFTER EACH P&A WELL COMPLETION, TRANSPORT MATERIALS TO A DESIGINATED LOCATION AND SEGREGATE(METAL VS OTHER). PVC MATERIAL CANNOT BE IN LENGTHS GREATER THAN 5-6 FEET GOING TO THE LANDFILL.

KEVIN AND I AGREED THAT THE METAL/PIPE SHOULD BE STEAMED CLEANED AND ALLOWED TO DRY PRIOR TO HP SURVEY. OTHER MATERIAL WILL BE COLLECTED AND TRANSPORTED BY HIGHLAND TO THE LANDFILL UNDER THE CURRENT DISPOSAL PERMITS SIGNED BY MARY WIGINTON THAT YOU OR BILL POSSESS.

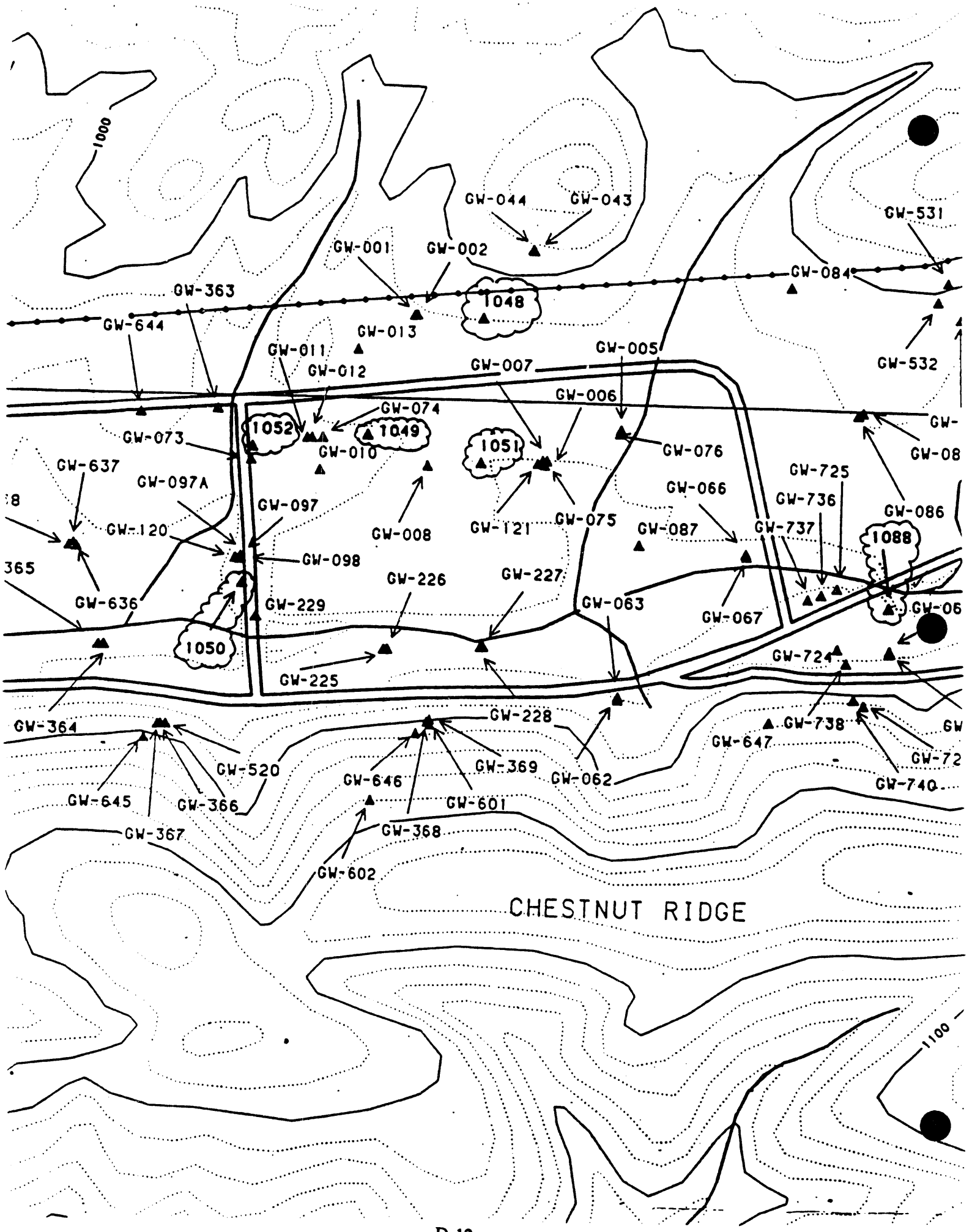
SUGGESTED LOCATIONS
(1) S-3 POND AREA-YOU COULD START A COLLECTION AREA AT WELL 1007 AFTER P&A WORK. ALL AREAS WILL NEED TO BE FLAGGED OFF.
(2) OIL LAND FARM-DESIGNATE AN AREA IN THE IMMEDIATE VICINITY OF OUR TRAILER 9983-79.
(3) BURIAL GROUNDS-THE AREA AROUND WELL 1033 MIGHT BE A GOOD CHOICE SEEING HOW ENTRANCES AND EXITS WILL BE OUT GATE 4 BY DARA IN MOST CASES.
(4) WELLS 1081 AND 1083 MATERIALS CAN EITHER GO WITH THE SPAD MATERIAL OR ANY OF THE OTHER LOCATIONS.

DUE TO THE NATURE OF THESE AREAS WE SHOULD ALSO HAVE A DRUM AT EACH LOCATION FOR PPE. IT WILL BE CONSIDERED NON-HAZARDOUS WITH A 2114B AND I'LL PREPARE THE PAPER WORK FOR DISPOSAL.

NOTE: JUST A REMINDER ABOUT THE ER WORK WITH THE 1000FT RESTRICTION AROUND THE WALK-IN PITS CAPPING ACTIVITIES. DEPENDING ON YOUR START WORK DATE YOU MAY NOT BE ABLE TO DO THE BG AREA.

WE DON'T WANT ANYTHING GOING TO THE YARD UNLESS WERE SURE ITS CLEAN!! EVERYTHING ELSE IS IN THE WORKS. ANY QUESTIONS GIVE ME A SHOUT.

MIKE ELLIOTT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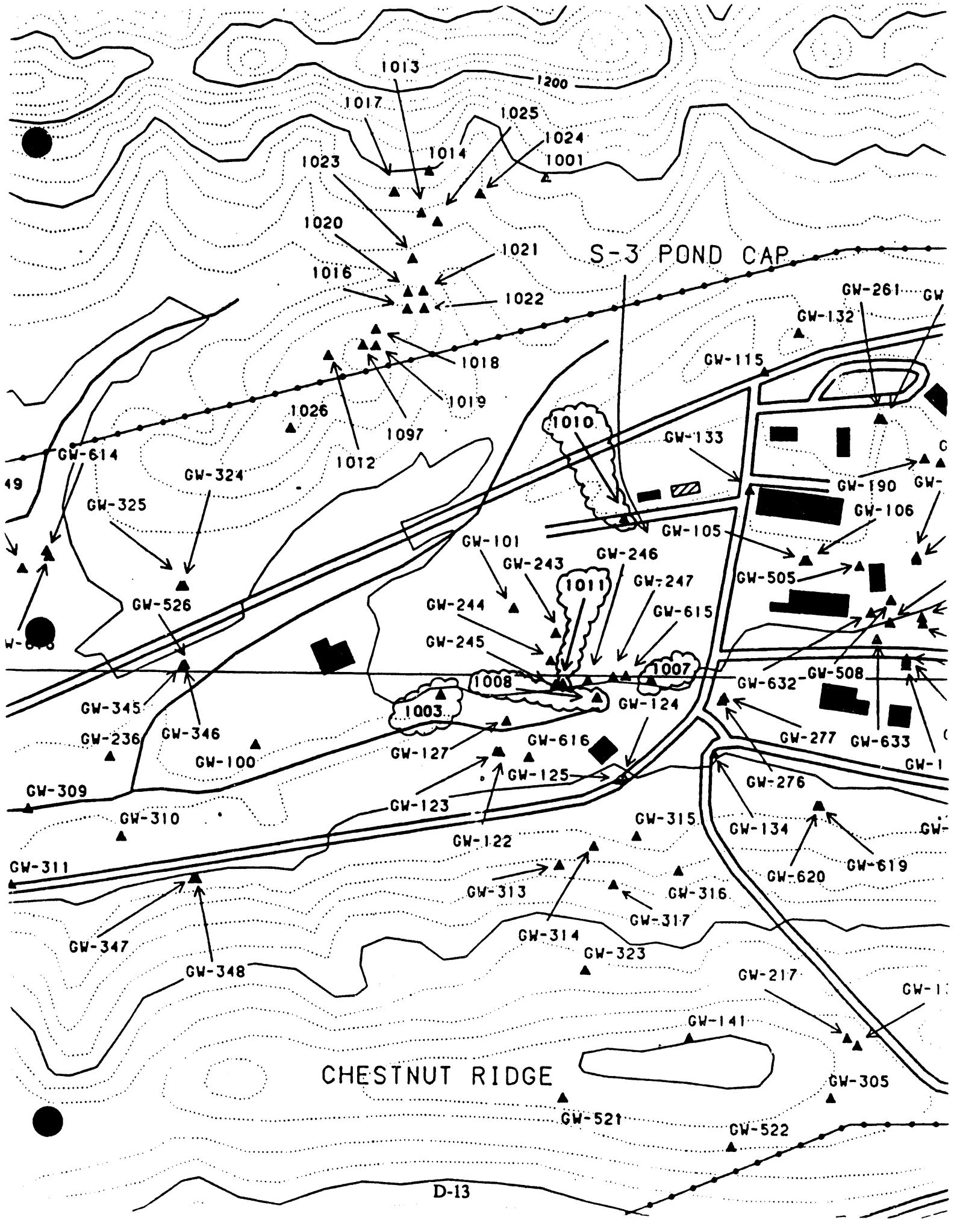
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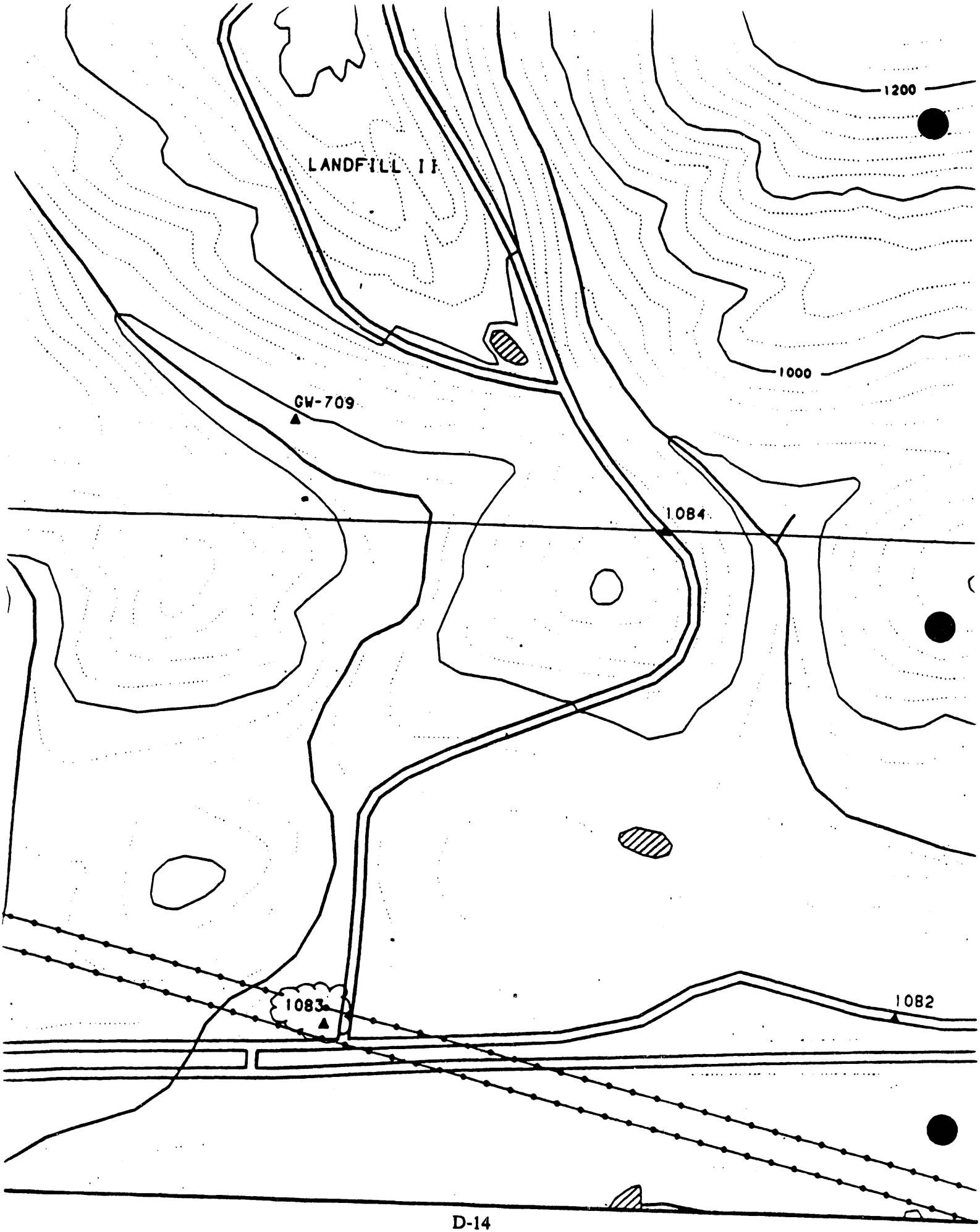
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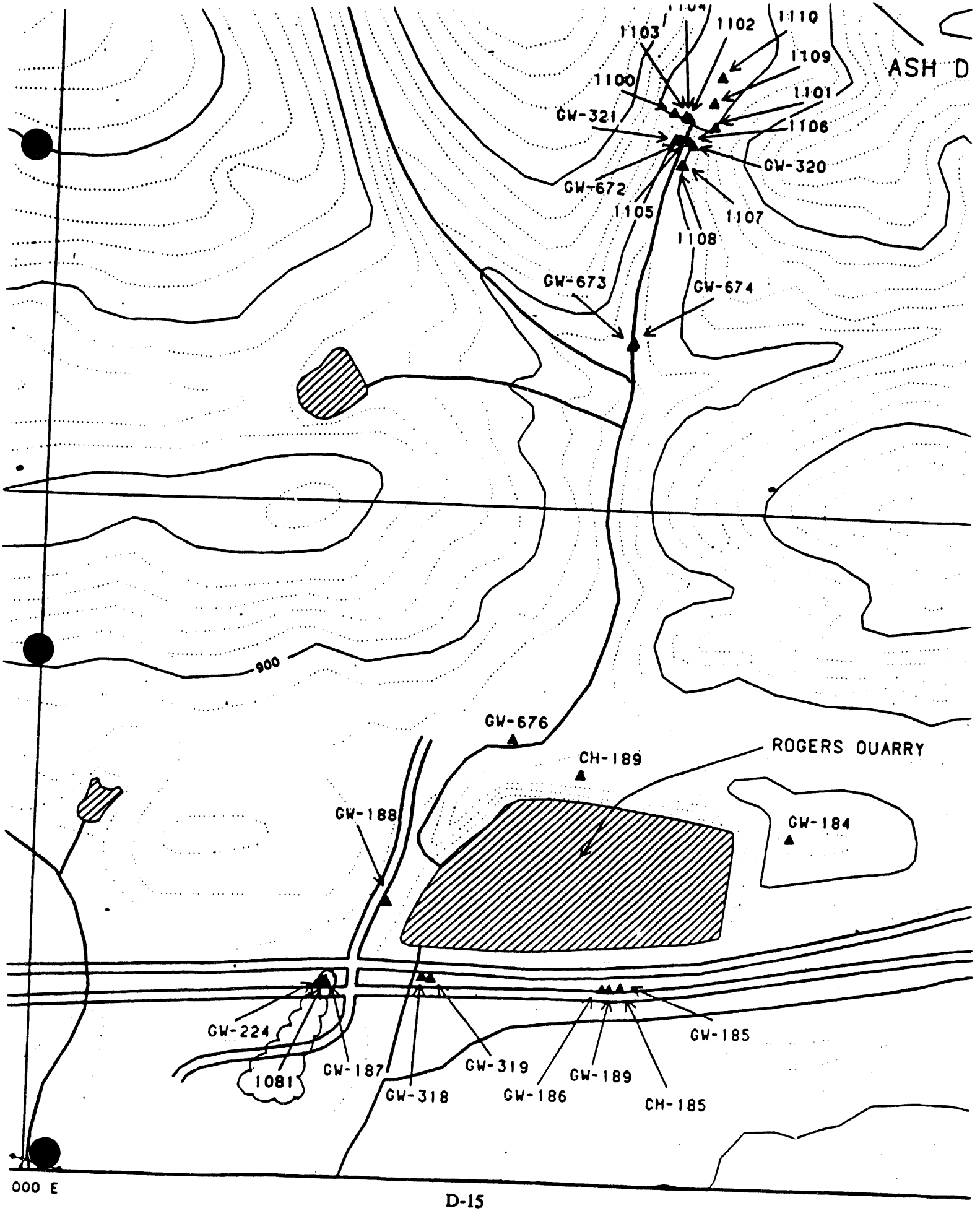
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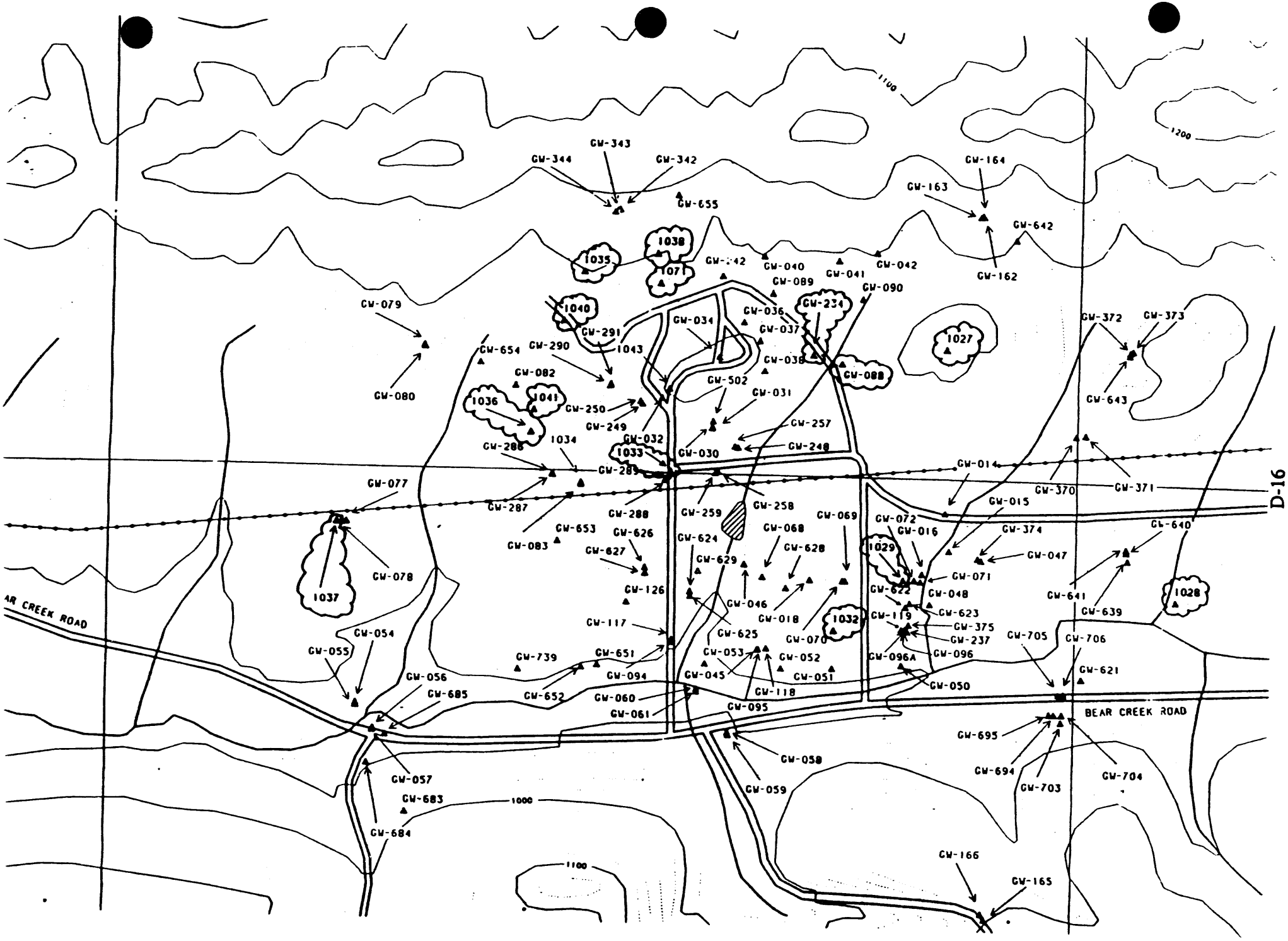
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Y-12 PLANT GROUNDWATER PROTECTION PROGRAM	WELL NO: SEE ATTACHMENT
PLUGGING & ABANDONMENT WASTE MANAGEMENT PLAN	DATE: 12/1/92

Borehole Diameter(s): 4" Borehole Depth(s) : MULTIPLE

ESTIMATED VOLUME OF CUTTINGS: cu. ft. 50

ESTIMATED VOLUME OF FLUIDS: gal. 500-1000

Potential contaminants and maximum concentration levels (if known) that may be encountered:

CONTAMINANT	CONCENTRATION
NONE ANTICIPATED	

Source of data (attach analytical results if available):

DISCHARGE DRILLING MATERIALS TO:

- XXXX — Ground surface at drill site
- _____ — Unlined containment pit at drill site
- _____ — Lined containment pit at drill site
- _____ — Containment vessels at drill site

SAMPLE ANALYSIS REQUIRED PRIOR TO DISPOSAL/TREATMENT FOR:

NO FLUIDS PARAMETERS:

NO CUTTINGS PARAMETERS:

PROPOSED DISPOSITION/TREATMENT OF CONTAINERIZED MATERIAL:

FLUIDS:

FLUIDS WILL REMAIN ON SITE AND DISPERSED ACROSS THE SURFACE TO ALLOW GROUND SATURATION AND EVAPORATION. FLUIDS WILL NOT BE ALLOWED TO REACH ANY DRAINAGE DITCH, STREAM, OR TO CREAT A MUD HOLE.

CUTTINGS:

CUTTINGS WILL REMAIN AT THE SITE AND USED AS FILL IN MATERIAL. THE REMAINING CUTTINGS ARE TO BE DISPLACED ONTO THE IMMEDIATE SURFACE THEN SEEDED AND MULCHED.

APPROVALS

SITE MANAGER: M.S. ELLIOTT / W.E. TWEDFORD M S Elliott DATE: 12/1/92

GWPP MANAGER: S.B. JONES S. B. Jones DATE: 12/1/92

HSE ENVIR COORD: C.C.HILL Ron Keyser for C C Hill DATE: 12/4/92

WTSD DISPOSAL COORD: M.WIGINTON M. Wiginton DATE: 12/15/92

(Signature required for disposal/treatment options)

1/17/91

SPAD Landfill Project Release
(Completion Date 3/18/93)

Phase I ILF5

Start Date: 12/1/92
Completion Date: 1/30/93

Install
MW11
MW13

P&A
1130
1131
1132
GW551
GW580
GW561
GW572
GW607***
GW571

SB12
PZ32
GW556
GW565
Core Rig
GW551
GW556
GW553*

Phase I
Sub Completion Date: 1/16/93
Maintenance Work
GW555
GW564
GW557
1134

* - P&A Phase II, Core Phase I
*** - State Approval Needed

Phase II CDL VII

Start Date: 2/1/93
Completion Date: 3/1/93

Install
MW 12
MW14

P&A
GW573S
GW573D
PZ34
SB44B
PZ24
SB14
SB 34
PZ 14
SB 24
GW553
GW566
SB 54

Phase II
Sub Completion Date: 2/12/93
Maintenance Work
GW560
GW562

SPAD Landfill Project Release
(Completion Date 3/18/93)

Phase I ILF5

Start Date: 12/1/92
Completion Date: 1/30/93

Install
MW11
MW13

P&A
1130
1131
1132
GW551
GW580
GW561
GW572
GW607***
GW571

SB12
PZ32
GW556
GW565
Core Rig
GW551
GW556
GW553*

Phase I
Sub Completion Date: 1/16/93
Maintenance Work
GW555
GW564
GW557
1134

* - P&A Phase II, Core Phase I
*** - State Approval Needed

APPENDIX E

Disposal and Screening Records

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. PZ-12 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; with Ludlum Scintillation Tube Y7015P

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	9.3	Date/Time	3-10-93/1431	(4.0 - 10.5)
Organic vapors	0 ppm	Date/Time	3-10-93/1431	(<5.0 ppm)
Beta/Gamma	60 cpm	Date/Time	3-10-93/1055	(<100 cpm)
Alpha	20 cpm	Date/Time	3-10-93/1426	(<500 cpm)

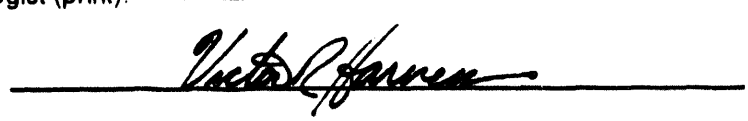
Weather: See field notes Temp.: See field notes

DISPOSITION: Drill-site Disposal X Containerization _____

(Labeled?) y/n

Describe: Cuttings and water discharged to ground.

Onsite Geologist (print): Victor R. Harness - SAIC, TN0025

Signature:  Date: 3/10/93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. PZ-14 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter Ludlum Model 44 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	8.6	Date/Time	2-5-93/1325	(4.0 - 10.5)
Organic vapors	0.3 ppm	Date/Time	2-4-93 2-5-93/All	(<5.0 ppm)
Beta/Gamma	60 cpm	Date/Time	2-4-93/0910	(<100 cpm)
Alpha	20 cpm	Date/Time	2-5-93/1125	(<500 cpm)

Weather: Refer to field notebooks Temp.: Refer to field notebooks

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Michael Klidzejs/Timothy Coffey - SAIC

Signature:  Date: 3-18-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. PZ-24 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS. -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter Ludlum Model 44 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	7.8	Date/Time	2-9-93/1800	(4.0 - 10.5)
Organic vapors	0.6 ppm	Date/Time	2-9-93/1800	(<5.0 ppm)
Beta/Gamma	70 cpm	Date/Time	2-9-93/1659	(<100 cpm)
Alpha	0 cpm	Date/Time	2-9-93/1659	(<500 cpm)

Weather: Cloudy Temp.: 50°F

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Susan L. Abston - SAIC

Signature: Susan L Abston Date: 3-18-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. PZ-32 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; with Ludlum Y71128P Scintillation Tube

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	10	Date/Time	1-22-93/1700
Organic vapors	6.8 ppm	Date/Time	1-25-93/1150
Beta/Gamma	70 cpm	Date/Time	1-22-93/1700
Alpha	30 cpm	Date/Time	1-25-93/1150

Weather: See field log Temp.: See field log

DISPOSITION: Drill-site Disposal X Containerization _____

(Labeled?) y/n

Describe: Cuttings and water discharged to ground surface.

Onsite Geologist (print): Victor R. Harness - SAIC, TN0025

Signature: Victor Harness Date: 1-25-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. PZ-34 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter Ludlum Model 44 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	10.8*	Date/Time	2-10-93/1735
Organic vapors	0.4 ppm	Date/Time	2-10-93/1735
Beta/Gamma	60 cpm	Date/Time	2-10-93/1547
Alpha	20 cpm	Date/Time	2-10-93/1547

*High pH due to cement fragments in sample.

Weather: Cloudy Temp.: 50°F

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Susan L. Abston - SAIC

Signature: Susan L Abston Date: 3-18-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. SB-12 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	OVA Model 128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Y71128P Ludlum Scintillation Tube Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	10	Date/Time	1-26-93
Organic vapors	4 ppm	Date/Time	1-26-93
Beta/Gamma	60 cpm	Date/Time	1-26-93
Alpha	20 cpm	Date/Time	1-26-93

Weather: See field log Temp.: See field log

DISPOSITION: Drill-site Disposal X Containerization _____

(Labeled?) y/n

Describe: Cuttings and water discharged to ground surface.

Onsite Geologist (print): Victor R. Harness - SAIC TN0025

Signature: Victor R Harness Date: 1-26-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. SB-14 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter Ludlum Model 44 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	10.8	Date/Time	3-8-93/1702	(4.0 - 10.5)
Organic vapors	0.6 ppm	Date/Time	3-8-93/All 3-9-93/0828, 0840	(<5.0 ppm)
Beta/Gamma	60 cpm	Date/Time	3-8-93/1544	(<100 cpm)
Alpha	30 cpm	Date/Time	3-8-93/1550	(<500 cpm)

Weather: Sunny and clear Temp.: ≈40°F

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n X

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Susan L. Abston - SAIC

Signature: Susan L Abston Date: 3-18-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. SB-24 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter Ludlum Model 44 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	9.6	Date/Time	2-17-93/1540	(4.0 - 10.5)
Organic vapors	0.0 ppm	Date/Time	2-17-93/1530	(<5.0 ppm)
Beta/Gamma	60 cpm	Date/Time	2-17-93/1455	(<100 cpm)
Alpha	40 cpm	Date/Time	2-17-93/1455	(<500 cpm)

Weather: Partly Cloudy Temp.: 30°F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Susan L. Abston - SAIC

Signature: Susan L Abston Date: 3-18-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. SB-34 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS:

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter Ludlum Model 44 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	10.6*	Date/Time	2-11-93/1733	(4.0 - 10.5)
Organic vapors	0.1 ppm	Date/Time	2-11-93/1727	(<5.0 ppm)
Beta/Gamma	70 cpm	Date/Time	2-11-93/1536	(<100 cpm)
Alpha	40 cpm	Date/Time	2-11-93/1536	(<500 cpm)

*High pH reading due to grout fragments in cuttings sample.

Weather: Raining Temp.: 55°F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Susan L. Abston - SAIC

Signature: Susan L Abston Date: 3-18-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. SB-44B SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter Ludlum Model 44 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	10.6*	Date/Time	2-12-93/1520
Organic vapors	11.0 ppm**	Date/Time	2-12-93/1520
Beta/Gamma	60 cpm	Date/Time	2-12-93/1520
Alpha	30 cpm	Date/Time	2-12-93/1520

*High pH reading due to cement fragments in cuttings.
**High headspace reading due to alcohol anti-freeze used to winterize the drill rig.

Weather: Drizzly Temp.: 50°F

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n X

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Susan L. Abston - SAIC

Signature: Susan L Abston Date: 3-18-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. SB-54 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter Ludlum Model 44 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	10.7*	Date/Time	2-17-93/1458
Organic vapors	10.2 ppm**	Date/Time	2-17-93/1458
Beta/Gamma	60 cpm	Date/Time	2-17-93/1100
Alpha	40 cpm	Date/Time	2-17-93/1100

*High pH reading due to cement fragments in cuttings.
**High headspace reading due to alcohol anti-freeze used to winterize drill rig.

Weather: Partly Cloudy Temp.: 30°F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Susan L. Abston - SAIC

Signature: Susan L Abston Date: 3-18-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. SB-72a SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: Not Applicable

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	N/A	(model)	N/A
Organic vapor meter	X	(model)	HNu Model PI-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter Ludlum Model 44 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	N/A	Date/Time	N/A	(4.0 - 10.5)
Organic vapors	8 ppm*	Date/Time	3-8-93/1330	(<5.0 ppm)
Beta/Gamma	60 cpm	Date/Time	3-8-93/1218	(<100 cpm)
Alpha	20 cpm	Date/Time	3-8-93/1226	(<500 cpm)

N/A: Not Analyzed

*HNu survey of the headspace of 8 ppm contributed by damp cuttings, condensation inside headspace jar and alcohol used to winterize drilling equipment.

Weather: Rain and overcast a.m. Clearing by 1200. Temp.: ≈65°F

DISPOSITION: Drill-site Disposal X Containerization _____

(Labeled?) y / n

Describe: Cuttings released to ground surface.

Onsite Geologist (print): Dwight Hollon/Victor Harness - SAIC

Signature: Dwight Hollon Victor Harness Date: 3/18/93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1003 SITE: S-3 Ponds Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	9.1	Date/Time	5-20-93/1523	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.0 ppm*	Date/Time	5-20-93/1523	(<5 ppm above background)
Beta/Gamma	50 cpm/80 cpm	Date/Time	5-20-93/1301	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-20-93/1318	(<500 cpm above background)

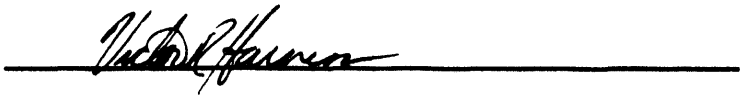
*Same for all BZA measurements and headspace analysis of cuttings.

Weather: See Field Logs Temp.: See Field Logs

DISPOSITION: Drill-site Disposal X Containerization N/A
(Labeled?) y / n

Describe: Cuttings and circulation waters disposed of in shallow on-site cuttings pit.

Onsite Geologist (print): Victor R. Harness TN0025

Signature:  Date: 5-20-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1007 SITE: S-3 Ponds Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	Foxboro Century OVA Model 138
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	10.4	Date/Time	5-25-93/1442	(4.0 - 10.5)
Organic vapors	0.0 ppm/26 ppm	Date/Time	5-25-93/1442	(<5 ppm above background)
Beta/Gamma	60 cpm/100 cpm	Date/Time	5-25-93/0956	(<100 cpm above background)
Alpha	0 cpm/20 cpm	Date/Time	5-25-93/1126	(<500 cpm above background)

Weather: See Field Log Temp.: See Field Log

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n N/A

Describe: Cuttings disposed of on ground surface.

Onsite Geologist (print): Victor R. Harness, TN0025

Signature:  Date: 5-25-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1010 SITE: S3 Ponds

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	OVA Model 101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M pancake probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	8.0	Date/Time	5-21-93/1551	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.6 ppm	Date/Time	5-21-93/1551	(<5 ppm Above Background)
Beta/Gamma	60 cpm/80 cpm	Date/Time	5-21-93/1433	(<100 cpm Above Background)
Alpha	0 cpm/0 cpm	Date/Time	5-21-93/1434	(<500 cpm Above Background)

Weather: see field log Temp.: see field log

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n

Describe: Cuttings discharged onto ground surface

Onsite Geologist (print): Victor R. Harness, TN0025

Signature: Victor R. Harness Date: 5-21-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1011 SITE: S3 Ponds Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	OVA Model 101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M pancake probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	10.0	Date/Time	5-24-93/1635	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.4 ppm	Date/Time	5-24-93/1635	(<5 ppm Above Background)
Beta/Gamma	60 cpm/700 cpm*	Date/Time	5-24-93/1348	(<100 cpm Above Background)
Alpha	0 cpm/0 cpm*	Date/Time	5-24-93/1505	(<500 cpm Above Background)

*Soils from approximately 9 ft BGS to15 ft BGS showed elevated beta emissions. Alpha emissions never exceeded 0 cpm.

Weather: see field log Temp.: see field log

DISPOSITION: Drill-site Disposal and Containerization Containerization (Labeled?) (Y)n X

Describe: Returned soils from 9 ft to 15 ft BGS showed beta emissions greater than 500 cpm and were containerized in one US DOT-approved 55-gal.drum which was labelled and left at site for disposition by HSE. All other returns showing beta emissions <160 cpm were disposed of on ground surface.

Onsite Geologist (print): Victor R. Harness, TN0025

Signature: Victor R Harness Date: 5-24-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1013 SITE: S3 Ponds

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	10.5	Date/Time	8-5-93/1147 (4.0–10.5)
Organic vapors	0.0 ppm/0.0 ppm	Date/Time	ALL (<5.0 ppm above background)
Beta/Gamma	50 cpm/60 cpm	Date/Time	8-5-93/1040 (<100 cpm above background)
Alpha	10 cpm/10 cpm	Date/Time	8-5-93/1036 (<500 cpm above background)

Weather: 8-5-93: Partly to mostly cloudy Temp.: 8-5-93: Low-70s to low-80s F

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n -NA-

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Susan L. Abston/Timothy Coffey - SAIC

Signature: Susan L Abston Timothy Coffey Date: 8-5-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1014 SITE: S3 Ponds Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	10.4	Date/Time	7-15-93/1410	(4.0 - 10.5 above bckground)
Organic vapors	0.0 ppm/0.4 ppm	Date/Time	7-15-93/1410	(<5.0 ppm above background)
Beta/Gamma	60 cpm/70 cpm	Date/Time	7-16-93/1028	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	7-16-93/1028	(<500 cpm above background)

Weather: See field notes. Temp.: See field notes.

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n

Describe: Cuttings and water discharged to ground surface.

Onsite Geologist (print): Susan L. Abston/Victor R. Harness - SAIC

Signature: Susan L. Abston Victor R. Harness Date: 7-19-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1017 SITE: S3 Ponds

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

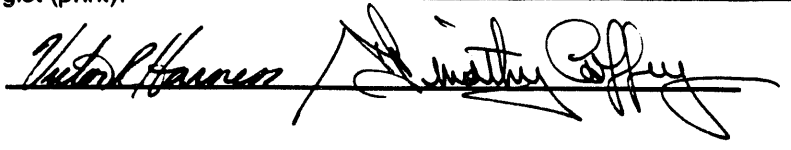
pH	9.9	Date/Time	7-22-93/1544	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.0 ppm	Date/Time	7-21-93/1230	(<5.0 ppm above background)
Beta/Gamma	60 cpm/70 cpm	Date/Time	7-21-93/0945	(<100 cpm above background)
Alpha	0 cpm/10 cpm	Date/Time	7-22-93/1402	(<500 cpm above background)

Weather: Refer to field logbook. Temp.: Refer to field logbook.

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n

Describe: Onsite cuttings pit.

Onsite Geologist (print): Victor Harness/Timothy Coffey - SAIC

Signature:  Date:

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1022 SITE: S3 Ponds Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101 Fox Century OVA Model 128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with Ludlum G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	9.6	Date/Time	7-14-93/1444	(4.0 - 10.5 above background)
Organic vapors	0.0 ppm/0.0 ppm	Date/Time	All	(<5.0 ppm above background)
Beta/Gamma	60 cpm/70 cpm	Date/Time	All	(<100 cpm above background)
Alpha	0 cpm/20 cpm	Date/Time	7-13-93/0915	(<500 cpm above background)

Weather: See field logs. Temp.: See field logs.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings and water discharged to ground surface.

Onsite Geologist (print): Victor R. Harness - SAIC

Signature: Victor R. Harness Date: 7-14-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1024 SITE: S3 Ponds Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M pancake probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	9.2	Date/Time	8-19-93/1055	(4.0 - 10.5)
Organic vapors	0.0 ppm/1.2 ppm	Date/Time	8-19-93/1054	(<5.0 ppm above background)
Beta/Gamma	30 cpm/65 cpm	Date/Time	8-19-93/0955	(<100 cpm above background)
Alpha	20 cpm/20 cpm	Date/Time	8-18-92/0920	(<500 cpm above background)

Weather: 8-18-93: clear and warm. 8-19-93: clear to partly cloudy.

Temp.: 8-18-93: Upper-70's to low-80's F. 8-19-93: Upper 70's to low-90's F.

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 8-19-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1025 SITE: S3 Ponds

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	Foxboro Century OVA Model 108 Foxboro Century OVA Model 128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with GM Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	8.3	Date/Time	7-26-93/1519	(4.0 - 10.5 above background)
Organic vapors	0.0 ppm/4.3 ppm	Date/Time	7-26-93/1517	(<5 ppm above background)
Beta/Gamma	60 cpm/60 cpm	Date/Time	8-2-93/1549	(<100 cpm above background)
Alpha	0 cpm/10 cpm	Date/Time	8-2-93/1549	(<500 cpm above background)

Weather: See field logs Temp.: See field logs

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey/Victor R. Harness - SAIC

Signature:  Date: 8-2-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1025A SITE: S3 Ponds

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; with G-M Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	11.2	Date/Time	8-9-93/1617	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.6 ppm	Date/Time	8-9-93/1108	(>5.0 ppm above background)
Beta/Gamma	50 cpm/70 cpm	Date/Time	8-9-93/0958	(>100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(>500 cpm above background)

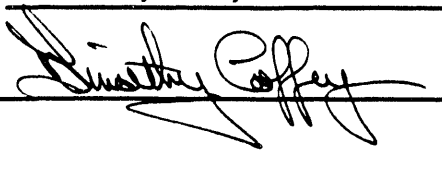
Weather: 8-6-93: Rain, clearing. 8-9-93: Clear to partly cloudy.

Temp.: 8-6-93: Low-to upper-70's F. 8-9-93: Low-70's to upper-80's F.

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n -NA-

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 8-10-93

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Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1027 SITE: Y-2 Burial Grounds

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model 108
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M pancake probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	0.0 ppm/8.1	Date/Time	4-28-93/1515	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.0 ppm	Date/Time	4-28-93/1515	(<5 ppm Above Background)
Beta/Gamma	60 cpm/80 cpm	Date/Time	4-28-93/1128	(<100 cpm Above Background)
Alpha	0 cpm/0 cpm	Date/Time	4-28-93/1458	(<500 cpm Above Background)

Weather: see field log Temp.: see field log

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n

Describe: Cuttings and drilling water disposed of into on-site cuttings pit.

Onsite Geologist (print): Victor R. Harness, TN0025

Signature: Victor R Harness Date: 5-5-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1028 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: - NA -

CALIBRATION OF INSTRUMENTS: (Check those instruments calibrated to manufacturer's specifications.)

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 G&M Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	10.9*	Date/Time	5-6-93/1511	(4.0-10.5)
Organic vapors	0.0 ppm/2.2 ppm	Date/Time	5-7-93/1010	(<5.0 ppm above background)
Beta/Gamma	50 cpm/65 cpm	Date/Time	5-6-93/1518	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(<500 cpm above background)

*High pH reading due to cement fragments in cuttings.

Weather: 5-6-93: Partly cloudy and warm. 5-7-93: Clear and warm.

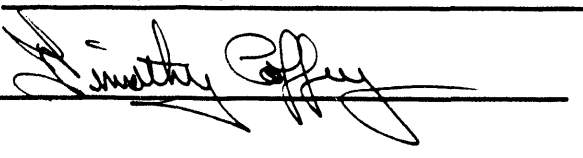
Temp.: 5-6-93: Low 80's F 5-7-93: Upper 50' s to low 60's F

DISPOSITION: Drill-site Disposal X Containerization _____

(Labeled?) y / n

Describe: Onsite cuttings pit.

On-site Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-7-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1029 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 G-M Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Scintillation Tube Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	6.5	Date/Time	5-5-93/0941	(4.0 - 10.5)
Organic vapors	0.3 ppm	Date/Time	5-5-93/0823	(<5.0 ppm)
Beta/Gamma	70 cpm	Date/Time	5-5-93/0825	(<100 cpm)
Alpha	10 cpm	Date/Time	5-5-93/0835	(<500 cpm)

Weather: Clear and warm Temp.: Upper-50's to low-60's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 5-5-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1032 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: - NA -

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 G-M Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Scintillation Tube Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	11.1*	Date/Time	5-5-93/1132	(4.0 - 10.5)
Organic vapors	0.6 ppm	Date/Time	5-5-93/1130	(<5.0 ppm)
Beta/Gamma	50 cpm	Date/Time	5-5-93/1103	(<100 cpm)
Alpha	0 cpm	Date/Time	All Readings	(<500 cpm)

*High pH reading due to cement fragments in cuttings.

Weather: Partly cloudy and warm Temp.: Mid- to upper-60's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Onsite cuttings pit.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 5-5-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1033 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: - NA -

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW 101 OVA Model 128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with Ludlum Pancake Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	9.1	Date/Time	4-12-93/1320	(4.0 - 10.5)
Organic vapors	4.4 ppm	Date/Time	4-6-93/1620	(<5.0 ppm)
Beta/Gamma	70 cpm	Date/Time	4-12-93/1223	(<100 cpm)
Alpha	60 cpm	Date/Time	4-8-93/1027	(<500 cpm)

Weather: See field notes Temp.: See field notes

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y / n

Describe: Cuttings and water disposed of at site in cuttings pit. Silt fencing and hay bales used to control run-off.

Onsite Geologist (print): T.J. Coffey/Victor R. Harness

Signature:  Date: 4-12-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1035 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: - NA -

CALIBRATION OF INSTRUMENTS: (Check those instruments calibrated to manufacturer's specifications.)

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

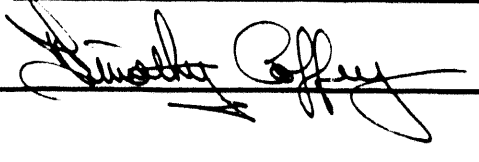
pH	8.2	Date/Time	5-11-93/0935	(4.0-10.5)
Organic vapors	0.0 ppm/0.3 ppm	Date/Time	5-11-93/0810	(<5.0 ppm above background)
Beta/Gamma	50 cpm/80 cpm	Date/Time	5-11-93/0905	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(<500 cpm above background)

Weather: Clear, becoming partly cloudy Temp.: Upper 70's to low 80's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

On-site Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-11-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1036 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: N/A

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 G&M Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	11.2*	Date/Time	5-3-93/1035	(4.0 - 10.5)
Organic vapors	0.0 ppm/200 ppm	Date/Time	5-3-93/1035	(<5.0 ppm above background)
Beta/Gamma	55 cpm/80 cpm	Date/Time	5-3-93/1006	(<100 cpm above background)
Alpha	0 cpm/20 cpm	Date/Time	5-3-93/0903	(<500 cpm above background)

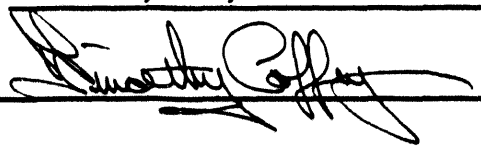
*High pH reading due to cement fragments in cuttings. Steve Jones (HSE) notified.

Weather: Overcast; spotty light rain showers Temp.: Low- to upper-60's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Onsite cutting pit.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-3-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1037 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: - NA -

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 G&M Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Scintillation Tube Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

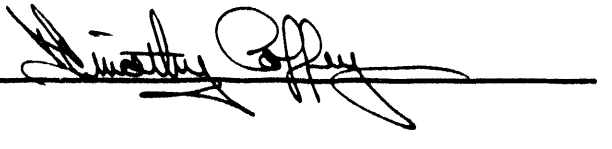
pH	10.5	Date/Time	5-4-93/1224	(4.0 - 10.5)
Organic vapors	0.6 ppm	Date/Time	5-4-93/0930	(<5.0 ppm)
Beta/Gamma	80 cpm	Date/Time	5-4-93/1042	(<100 cpm)
Alpha	10 cpm	Date/Time	5-4-93/1126	(<500 cpm)

Weather: Mostly cloudy to partly cloudy Temp.: Mid-60's to mid-70's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Onsite cutting pit.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-4-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1038 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: - NA -

CALIBRATION OF INSTRUMENTS: (Check those instruments calibrated to manufacturer's specifications.)

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 G&M Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	6.3	Date/Time	5-12-93/1307	(4.0-10.5)
Organic vapors	0.0 ppm/4.0 ppm	Date/Time	5-12-93/0930	(<5.0 ppm above background)
Beta/Gamma	60 cpm/100 cpm	Date/Time	5-12-93/1120	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(<500 cpm above background))

Weather: Partly cloudy becoming mostly cloudy Temp.: Low-60's to low-80's F

DISPOSITION: Drill-site Disposal X Containerization

(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

On-site Geologist (print): Timothy Coffey - SAIC

Signature: Timothy Coffey Date: 5-12-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1040 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: - NA -

CALIBRATION OF INSTRUMENTS: (Check those instruments calibrated to manufacturer's specifications.)

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	6.9	Date/Time	5-10-03/1422	(4.0-10.5)
Organic vapors	0.0 ppm/0.4 ppm	Date/Time	5-10-93/1420	(<5.0 ppm above background)
Beta/Gamma	80 cpm/120 cpm	Date/Time	5-10-93/1316	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(<500 cpm above background)

Weather: Clear, becoming mostly cloudy Temp.: Mid-70's to mid-80's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

On-site Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-10-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1041 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: - NA -

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 G&M Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

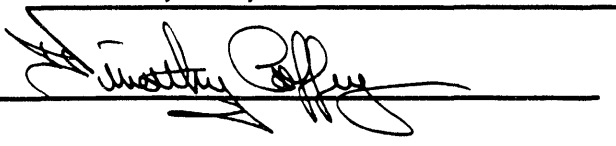
pH	5.2	Date/Time	5-6-93/1225	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.8 ppm	Date/Time	5-6-93/1120	(<5.0 ppm above background)
Beta/Gamma	50 cpm/70 cpm	Date/Time	5-6-93/0935	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(<500 cpm above background)

Weather: Partly cloudy and warm Temp.: Upper-60's to mid-70's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings discharged to ground surface.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-6-93

Y-12 PLANT GWPP WELL SITE FIELD SCREENING SHEET

WELL/BOREHOLE NO. 1043 SITE: Bear Creek Burial Grounds, Walk-ins Pits

APPROX. VOLUME OF CUTTINGS: - NA -

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	- NA -	(model)	- NA -
Organic vapor meter	X	(model)	Century-Foxboro OVA M-128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	- NA -	Date/Time	- NA -
Organic vapors	1.6 ppm*	Date/Time	2-9-93/1420
Beta/Gamma	900 cpm**	Date/Time	2-12-93/1004
Alpha	0 cpm	Date/Time	All Readings

* At well collar while sealing case with Hole Plug™.
** Local hot spot at 1.5 ft BGS, covered with cement and clean soil. Readings do not exceed 100 cpm at any other time. Y-12 HP was not notified, since they were conferred with prior to beginning work activities. They were already aware of localized hot spots and gave direction and cautions about their presence.

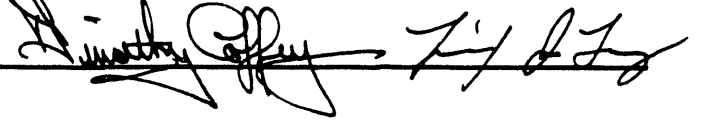
Weather: 2-9-93: Clear; 2-12-93: Mostly cloudy. Scattered T-storms p.m.

Temp.: 2-9-93: Low-30's to mid-60's F; 2-12-93: Low- to upper-50's F

DISPOSITION: Drill-site Disposal X Containerization _____ (Labeled?) y / n

Describe: No cuttings generated by P&A activities. Excavated soil returned to excavation and compacted.

Onsite Geologist (print): Timothy Coffey - SAIC/Tim Long - SAIC (SHSO)

Signature:  Date: 2-12-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1048 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: N/A

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	7.5	Date/Time	5-12-93/1230	(4.0-10.5)
Organic vapors	0.0 ppm/1.0 ppm	Date/Time	5-12-93/1023	(<5 ppm above background)
Beta/Gamma	50 cpm/90 cpm	Date/Time	5-12-93/1101	(<100 ppm above background)
Alpha	0 cpm/10 cpm	Date/Time	5-12-93/1101	(<500 ppm above background)

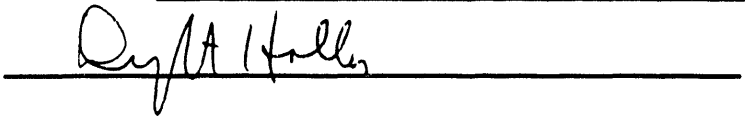
*Headspace of composite sample is 0.2 ppm. (1215 hrs.)
•Breathing zone value of 1 ppm due to alcohol in the Quick Foam™.

Weather: Sunny Temp.: 80°F to 84°F

DISPOSITION: Drill-site Disposal X Containerization N/A
(Labeled?) y / n

Describe: Cuttings and water discharged to ground surface.

Onsite Geologist (print): Dwight Hollon - SAIC

Signature:  Date: 5/12/93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1049 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS: (Check those instruments calibrated to manufacturer's specifications.)

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model12 Count Ratemeter; Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	9.9	Date/Time	5-14-93/0959	(4.0-10.5)
Organic vapors	0.6 ppm	Date/Time	5-14-93/1020	(<5 ppm)
Beta/Gamma	90 cpm	Date/Time	5-14-93/0915	(<100 cpm)
Alpha	0 cpm	Date/Time	5-14-93/0915	(<500 cpm)

Weather: Sunny Temp.: 80°-85° F

DISPOSITION: Drill-site Disposal X Containerization -NA-

(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

On-site Geologist (print): Dwight Hollon - SAIC

Signature: Dwight Hollon Date: 5-14-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1050 SITE: Oil Landfarm

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNU Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with Ludlum G-M pancake probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	8.0	Date/Time	5-17-93/1512	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.6 ppm	Date/Time	5-17-93/1512	(<5 ppm Above Background)
Beta/Gamma	60 cpm/60 cpm	Date/Time	5-18-93/1452	(<100 cpm Above Background)
Alpha	0 cpm/20 cpm	Date/Time	5-17-93/1005	(<500 cpm Above Background)

Weather: See Field Log Temp.: See Field Log

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings disposed of in on-site cuttings pit

Onsite Geologist (print): Victor R. Harness, TN0025

Signature: Victor R Harness Date: 5-18-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1051 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	5.3	Date/Time	1358	(4.0-10.5)
Organic vapors	0.0 ppm/0.4 ppm	Date/Time	1234	(<5 ppm above background)
Beta/Gamma	50 cpm/60 cpm	Date/Time	1108	(<100 ppm above background)
Alpha	0 cpm/10 cpm	Date/Time	1108	(<500 ppm above background)

*Due to cement cuttings in returns.

Weather: Sunny Temp.: 80°F to 85°F

DISPOSITION: Drill-site Disposal X Containerization -NA-
(Labeled?) y / n

Describe: Cuttings and water discharged to ground surface.

Onsite Geologist (print): Dwight Hollon - SAIC

Signature: Dwight A Hollon Date: 5-14-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1052 SITE: Oil Landfarm Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	OVA Model 108
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M pancake probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	8.0	Date/Time	5-19-93/1322	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.0 ppm	Date/Time	5-19-93/1322	(<5 ppm above background)
Beta/Gamma	60 cpm/90 cpm	Date/Time	5-19-93/1322	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	5-19-93/1322	(<500 cpm above background)

Weather: See Field Log Temp.: See Field Log

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings discharged onto ground surface per the Waste Management Plan

Onsite Geologist (print): Victor R. Harness, TN0025

Signature: Victor R Harness Date: 5-19-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1071 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: - NA -

CALIBRATION OF INSTRUMENTS: (Check those instruments calibrated to manufacturer's specifications.)

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	N/A	Date/Time	N/A	(4.0-10.5)
Organic vapors	0.0 ppm/1.0 ppm	Date/Time	5-12-93/1	(<5.0 ppm above background)
Beta/Gamma	150 cpm/200 cpm	Date/Time	5-12-93/1402	(<100 cpm above background)
Alpha	0 cpm/0 cpm	Date/Time	All Readings	(<500 cpm above background)

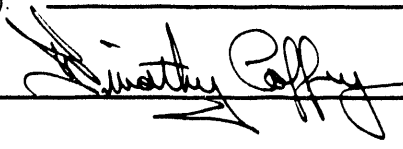
N/A: Not Analyzed

Weather: Partly cloudy becoming mostly cloudy Temp.: Low-60's to low-80's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings discharged to ground surface.

On-site Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 5-12-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1130 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	11.4	Date/Time	12-3-92/1335	(4.0 - 10.5)
Organic vapors	15 ppm*	Date/Time	12-3-92/1235	(<5.0 ppm)
Beta/Gamma	30-35 cpm	Date/Time	All Readings	(<100 cpm)
Alpha	0 cpm	Date/Time	All Readings	(<500 cpm)

* see notes in progress report

Weather: 12-2-92: Partly cloudy and windy; 12-3-92: Clear and cool

Temp.: 12-2-92: low- to mid 40's F; 12-3-92: upper- 20's to upper 40's F

DISPOSITION: Drill-site Disposal X Containerization -NA-

(Labeled?) y/n

Describe: Returns discharged to ground surface

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 12-15-92

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1131 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	12.1	Date/Time	12-3-92/1630	(4.0 - 10.5)
Organic vapors	2.4 ppm	Date/Time	12-4-92/1196	(<5.0 ppm)
Beta/Gamma	60 cpm	Date/Time	12-4-92/0953	(<100 cpm)
Alpha	0 cpm	Date/Time	All	(<500 cpm)

Weather: 12-3-92: clear and cool; 12-4-92: Intermittent drizzle, cool

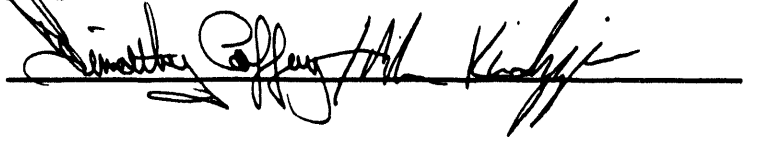
Temp.: 12-3-92: upper 20's to upper 40's F; 12-4-92: upper 30's to lower 40's F

DISPOSITION: Drill-site Disposal X Containerization -NA-

(Labeled?) y / n

Describe: Returns discharged to ground surface.

Onsite Geologist (print): Timothy Coffey/Mike Klidzejs - SAIC

Signature:  Date: 12-15-92

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1132 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	10.3	Date/Time	12-14-92/1531	(4.0 - 10.5)
Organic vapors	0.0 ppm	Date/Time	12-14-92/1530	(<5.0 ppm)
Beta/Gamma	60 cpm	Date/Time	12-14-92/1530	(<100 cpm)
Alpha	20 cpm	Date/Time	12-14-92/1426	(<500 cpm)

Weather: Cloudy with steady drizzle Temp.: low 50's F

DISPOSITION: Drill-site Disposal X Containerization -NA-
(Labeled?) y / n

Describe: Returns discharged to ground surface

Onsite Geologist (print): Mike Klidzejs - SAIC

Signature: [signature] Date: 12-15-92

93-001MS/092293

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1133 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube Probe Y70115P

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	10.4	Date/Time	3-3-93/1529	(4.0 - 10.5)
Organic vapors	0.5 ppm	Date/Time	3-3-93/1529	(<5.0 ppm)
Beta/Gamma	70 cpm	Date/Time	3-3-93/1122	(<100 cpm)
Alpha	40 cpm	Date/Time	3-3-93/1122	(<500 cpm)

Weather: See field log Temp.: See field log

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings and water discharged to ground surface.

Onsite Geologist (print): Victor R. Harness - SAIC/TN0025

Signature: Victor R Harness Date: 3/3/93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. 1134 SITE: Spad Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model 101
Beta/gamma meter	X	(model)	Ludlum model 3 Survey Meter with GM pancake probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation Tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	11.9*	Date/Time	6-8-93/1040	(4.0 - 10.5)
Organic vapors	0.0 ppm/1.0 ppm	Date/Time	5-27-93/1634	(<5 ppm above background)
Beta/Gamma	30 cpm/50 cpm	Date/Time	6-4-93/1056	(<100 cpm above background)
Alpha	0 cpm/10 cpm	Date/Time	6-3-93/1524	(<500 cpm above background)

*Steve Jones (HSE) gave permission to discharge high pH cuttings to cutting pit. Elevated pH values due to grout in cuttings.

Weather: Refer to field logbook Temp.: Refer to field logbook

DISPOSITION: Drill-site Disposal X Containerization (Labeled?) y/n

Describe: Onsite cuttings pit

Onsite Geologist (print): Victor Harness/ Timothy Coffey - SAIC

Signature: Victor R Harness / Timothy Coffey Date: 6-16-93

Y-12 PLANT GWPP WELL SITE FIELD SCREENING SHEET

WELL/BOREHOLE NO. GW-030 SITE: Bear Creek Burial Grounds, Walk-ins Pits

APPROX. VOLUME OF CUTTINGS: - NA -

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	- NA -	(model)	- NA -
Organic vapor meter	X	(model)	Century-Foxboro OVA M-128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	- NA -	Date/Time	- NA -
Organic vapors	0.0 ppm	Date/Time	All Readings
Beta/Gamma	70 cpm	Date/Time	2-10-93/1240
Alpha	0 cpm	Date/Time	All Readings

Weather: Generally clear Temp.: Low-30's to low-60's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: No cuttings generated by P&A activities. Excavated soil returned to excavation and compacted.

Onsite Geologist (print): Timothy Coffey - SAIC/Tim Long - SAIC (SHSO)

Signature:  Date: 2-10-93

Y-12 PLANT GWPP WELL SITE FIELD SCREENING SHEET

WELL/BOREHOLE NO. GW-031 SITE: Bear Creek Burial Grounds, Walk-ins Pits

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	-NA-	(model)	-NA-
Organic vapor meter	X	(model)	Century-Foxboro OVA M-128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

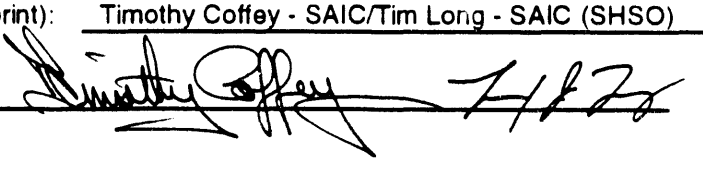
pH	-NA-	Date/Time	-NA-
Organic vapors	0.0 ppm	Date/Time	All Readings
Beta/Gamma	70 cpm	Date/Time	2-10-93/1240
Alpha	0 cpm	Date/Time	All Readings

Weather: Generally clear Temp.: Low-30's to low-60's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: No cuttings generated by P&A activities. Loose soil piled over wellhead and compacted.

Onsite Geologist (print): Timothy Coffey - SAIC/Tim Long - SAIC (SHSO)

Signature:  Date: 2-10-93

Y-12 PLANT GWPP WELL SITE FIELD SCREENING SHEET

WELL/BOREHOLE NO. GW-032 SITE: Bear Creek Burial Grounds, Walk-ins Pits

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	-NA-	(model)	-NA-
Organic vapor meter	X	(model)	Century-Foxboro OVA M-128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	-NA-	Date/Time	-NA-
Organic vapors	less than 1.0 ppm	Date/Time	2-12-93/0905
Beta/Gamma	90 cpm*	Date/Time	2-12-93/1440
Alpha	0 cpm	Date/Time	All Readings

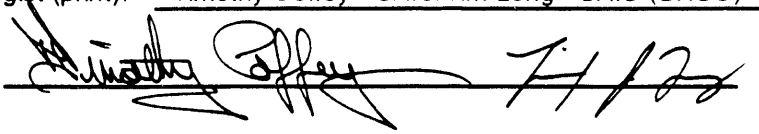
*Includes measurement taken of water displaced out of well casing while cementing.

Weather: 2-12-93: Cloudy with scattered T-storms p.m. Temp.: 2-12-93: Low- to upper-50's F.

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: No cuttings generated during P&A activities. Excavated soil returned to excavation and compacted.

Onsite Geologist (print): Timothy Coffey - SAIC/Tim Long - SAIC (SHSO)

Signature:  Date: 2-12-93

Y-12 PLANT GWPP WELL SITE FIELD SCREENING SHEET

WELL/BOREHOLE NO. GW-035 SITE: Bear Creek Burial Grounds, Walk-ins Pits

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	-NA-	(model)	-NA-
Organic vapor meter	X	(model)	Century-Foxboro OVA M-128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	-NA-	Date/Time	-NA-
Organic vapors	less than 1.0 ppm	Date/Time	2-12-93/1540
Beta/Gamma	120 cpm*	Date/Time	2-16-93/0850
Alpha	0 cpm	Date/Time	All Readings

Background = 50 cpm.

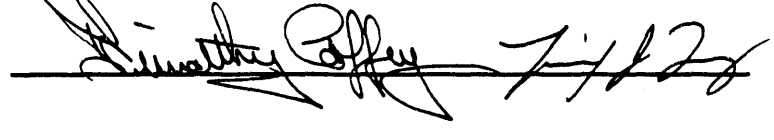
Weather: 2-12-93: Cloudy with scattered T-storms p.m.
2-16-93: Cloudy to partly cloudy and windy.

Temp.: 2-12-93: Low- to upper-50's F
2-16-93: Low- to upper-40's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: No cuttings generated by P&A activities. Excavated soil/weathered bedrock returned to excavation and compacted.

Onsite Geologist (print): Timothy Coffey - SAIC/Tim Long - SAIC (SHSO)

Signature:  Date: 2-16-93

Y-12 PLANT GWPP WELL SITE FIELD SCREENING SHEET

WELL/BOREHOLE NO. GW-036 SITE: Bear Creek Burial Grounds, Walk-ins Pits

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	-NA-	(model)	-NA-
Organic vapor meter	X	(model)	Century-Foxboro OVA M-128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	-NA-	Date/Time	-NA-
Organic vapors	0.0 ppm	Date/Time	All Readings
Beta/Gamma	90 cpm*	Date/Time	2-11-93/1315
Alpha	0 cpm	Date/Time	All Readings

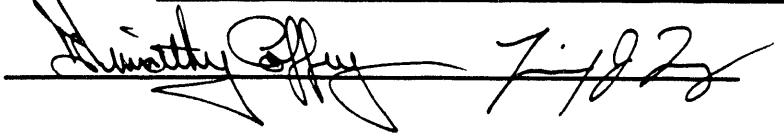
*Background = 60 cpm

Weather: 2-11-93: cloudy and rainy Temp.: Mid- to upper-40's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: No cuttings generated by P&A activities. Excavated soil returned to excavation and compacted.

Onsite Geologist (print): Timothy Coffey - SAIC/Tim Long - SAIC (SHSO)

Signature:  Date: 2-11-93

Y-12 PLANT GWPP WELL SITE FIELD SCREENING SHEET

WELL/BOREHOLE NO. GW-037 SITE: Bear Creek Burial Grounds, Walk-ins Pits

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	-NA-	(model)	-NA-
Organic vapor meter	X	(model)	Century-Foxboro OVA M-128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	-NA-	Date/Time	-NA-
Organic vapors	0.0 ppm	Date/Time	All Readings
Beta/Gamma	100 cpm	Date/Time	2-11-93/1425
Alpha	20 cpm	Date/Time	2-10-93/0952

Weather: 2-10-93: cloudy to partly cloudy; 2-11-93: cloudy, rain in p.m.

Temp.: 2-10-93: Mid-40's to upper-50's F; 2-11-93: Mid- to upper-40's F

DISPOSITION: Drill-site Disposal X Containerization _____ (Labeled?) y / n

Describe: No cuttings generated by P&A activities. Excavated soil/residuum/weathered bedrock fragments returned to excavation and compacted.

Onsite Geologist (print): Timothy Coffey - SAIC/Tim Long - SAIC (SHSO)

Signature: Timothy Coffey Date: 2-11-93

Y-12 PLANT GWPP WELL SITE FIELD SCREENING SHEET

WELL/BOREHOLE NO. GW-038 SITE: Bear Creek Burial Grounds, Walk-ins Pits

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	-NA-	(model)	-NA-
Organic vapor meter	X	(model)	Century-Foxboro OVA M-128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

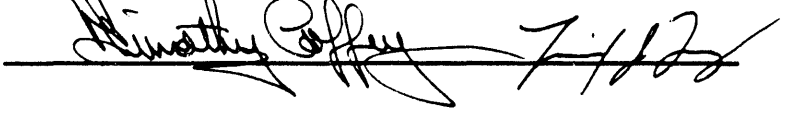
pH	-NA-	Date/Time	-NA-
Organic vapors	0.0 ppm	Date/Time	All Readings
Beta/Gamma	120 cpm	Date/Time	2-11-93/1445
Alpha	0 cpm	Date/Time	All Readings

Weather: 2-11-93: Cloudy, rain in p.m. Temp.: 2-11-93: Mid- to upper-40's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: No cuttings generated by P&A activities. Excavated soil returned to excavation and compacted.

Onsite Geologist (print): Timothy Coffey - SAIC/Tim Long - SAIC (SHSO)

Signature:  Date: 2-11-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-063 SITE: Oil Landform Functional Area

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with Ludlum Probe M44-9
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Probe Y70115P

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	10.6*	Date/Time	3/29/93 1430
Organic vapors	2.8 ppm	Date/Time	3/29/93 1533
Beta/Gamma	50 cpm	Date/Time	3/30/93 1514
Alpha	20 cpm	Date/Time	3/26/93 1559

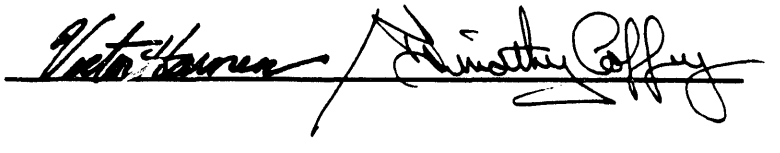
*High pH reading resulted from cement fragments in the cuttings.

Weather: See field log Temp.: See field log

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings and water from activities discharged to cuttings pit by trench. All activities mitigated by use of siltation fencing and straw bales. No contamination of adjacent surface waters.

Onsite Geologist (print): Victor R. Harness/Timothy J. Coffey

Signature:  Date: 3/30/93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-088 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with G-M pancake probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Scintillation tube Probe

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	9.8	Date/Time	4-27-93/1501	(4.0 - 10.5)
Organic vapors	0.0 ppm/0.2 ppm	Date/Time	4-27-93/1455	(<5.0 ppm Above Background)
Beta/Gamma	80 cpm/120 cpm	Date/Time	4-27-93/1343	(<100 cpm Above Background)
Alpha	20 cpm/20 cpm	Date/Time	4-27-93/1343	(<500 cpm Above Background)

Weather: see field log Temp.: see field log

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings and drilling water disposed of onto ground surface at site.

Onsite Geologist (print): Victor R. Harness, TN0025

Signature: Victor R Harness Date: 4-27-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-234 SITE: Bear Creek Burial Grounds

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44-9 G-M Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Scintillation Tube Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	11.5*	Date/Time	4-26-93/1425	(4.0 - 10.5)
Organic vapors	0.0 ppm	Date/Time	All Readings	(<5.0 ppm)
Beta/Gamma	30 cpm	Date/Time	4-26-93/1317	(<100 cpm)
Alpha	0 cpm	Date/Time	All Readings	(<500 cpm)

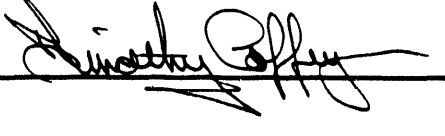
*High pH reading due to cement fragments in cuttings.

Weather: Partly cloudy, gradual clearing Temp.: Low- to mid-60's F

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Onsite cuttings pit.

Onsite Geologist (print): Timothy Coffey - SAIC

Signature:  Date: 4-26-93

Y-12 PLANT GWPP WELL SITE FIELD SCREENING SHEET

WELL/BOREHOLE NO. GW-502 SITE: Bear Creek Burial Grounds, Walk-in Pits

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	-NA-	(model)	-NA-
Organic vapor meter	X	(model)	Century-Foxboro OVA M-128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter w/LudlumModel 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	-NA-	Date/Time	-NA-
Organic vapors	less than 1 ppm	Date/Time	0910 2-11-93/1110
Beta/Gamma	70 cpm*	Date/Time	2-11-93/0938
Alpha	20 cpm	Date/Time	2-10-93/0830

*Includes screening of water displaced out of well while grouting and adding Hole Plug™ bentonite pellets.

Weather: 2-10-93: Cloudy; 2-11-93: Cloudy and rainy

Temp.: 2-10-93: Mid- to upper-40's F; 2-11-93: Mid-40's F

DISPOSITION: Drill-site Disposal X Containerization _____ (Labeled?) y / n

Describe: No cuttings generated by P&A activities. Excavated soil returned to excavation and compacted.

Onsite Geologist (print): Timothy Coffey - SAIC/Tim Long - SAIC (SHSO)

Signature: Timothy Coffey Date: 2-11-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-551 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter w/Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; w/Ludlum 40249 Scintillation Tube

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	11.1	Date/Time	12-3-92/1721	(4.0 - 10.5)
Organic vapors	18.4 ppm*	Date/Time	12-18-92/1552	(<5.0 ppm)
Beta/Gamma	70 cpm	Date/Time	12-16-92/1631	(<100 cpm)
Alpha	5 cpm	Date/Time	12-17-92/1603	(<500 cpm)

*High reading attributed to contamination of sample with alcohol used to anti-freeze rig water pipes.

Weather: See Field Logs Temp.: See Field Logs

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Disposal of cuttings and drilling water onto ground surface and to cuttings pit.

Onsite Geologist (print): Victor R. Harness - SAIC/Mike Klidzejs - SAIC/Susan Abston - SAIC

Signature: Victor R. Harness / Mike Klidzejs / Susan J. Abston Date: 12-18-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-553 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101 OVA Model 128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter with Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; with Ludlum Scintillation Probe Y-9635P or Y-70087P

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	10.7*	Date/Time	12-16-92/1516	(4.0 - 10.5)
Organic vapors	5.4** ppm	Date/Time	12-18-92/1615	(<5.0 ppm)
Beta/Gamma	60 cpm	Date/Time	12-16-92/1516	(<100 cpm)
Alpha	20 cpm	Date/Time	12-8-92/1430	(<500 cpm)

*High pH value due to grout in cuttings. Deviation approved by Steve Jones - HSE.
**Moisture in cuttings.

Weather: See Field Logs Temp.: See Field Logs

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings and drilling water discharged to surface.

Onsite Geologist (print): Susan L. Abston - SAIC/Victor R. Harness - SAIC

Signature: Susan L. Abston Victor R. Harness Date: 3/18/92

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-556 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7 Water Checker
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter w/Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe or Ludlum #Y71126P Scintillation Tube

FIELD SCREENING RESULTS (Background/Maximum Observed Values):

pH	12.3 *	Date/Time	1-6-93/1600	(4.0 - 10.5)
Organic vapors	0.0 ppm/10.4 ppm**	Date/Time	1-11-93/1720	(<5.0 ppm Above Background)
Beta/Gamma	30 cpm/60 cpm	Date/Time	1-19-93/1637	(<100 cpm Above Background)
Alpha	10 cpm/20 cpm	Date/Time	1-6-93/1600	(<500 cpm Above Background)

* Cement fragments in cuttings.
** Elevated headspace probably due to soap used to raise cuttings.

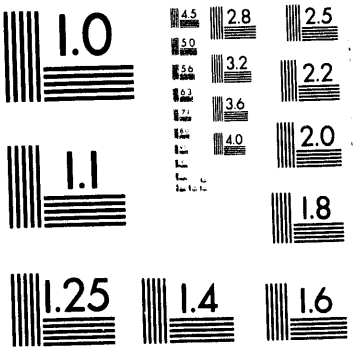
Weather: See Field Logbooks Temp.: See Field Logbooks

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Returns discharged to ground surface.

Onsite Geologist (print): V. Harness/T. Coffey/M. Klidzejs (SAIC)

Signature: [signature] Date: 1/19/93


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
6.3
7.1

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Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-561 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS:

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	Foxboro Century OVA Model 128 HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	10.9	Time/Date	1610/12-14-92
Organic vapors	21.0 ppm *	Time/Date	1247/12-14-92
Beta/Gamma	60 cpm/360 dpm	Time/Date	1134/12-14-92
Alpha	0 cpm/0 dpm	Time/Date	1134/12-14-92

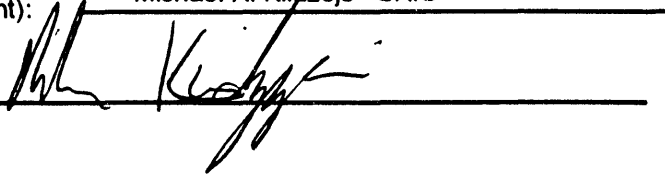
*High value attributed to contamination from alcohol in rig winterization. Steve Jones (HSE) notified of reading.

Weather: See field log Temp.: See field log

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y/n

Describe: Cuttings released to ground surface.

Onsite Geologist (print): Michael A. Klidzejs - SAIC

Signature:  Date: 12-23-92

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-565 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: - NA -

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter w/Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter w/Y71128P Ludlum Scintillation Tube Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

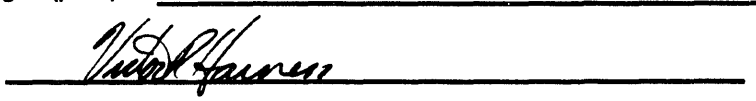
pH	10.3	Date/Time	1-21-93/1710	(4.0 - 10.5)
Organic vapors	2.8 ppm	Date/Time	1-21-93/1710	(<5.0 ppm)
Beta/Gamma	30 cpm	Date/Time	1-21-93/1710	(<100 cpm)
Alpha	20 cpm	Date/Time	1-21-93/1710	(<500 cpm)

Weather: See Field Logs Temp.: See Field Logs

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings and circulation water disposed of on ground surface.

Onsite Geologist (print): Victor R. Harness - SAIC, TN0025

Signature:  Date: 1-21-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-566 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter w/Ludlum Model 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter w/Ludlum Scintillation Tube

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	11.2*	Date/Time	2-23-93/1541	4.5 - 10.5
Organic vapors	0.2 ppm	Date/Time	2-24-93/1612	(<5.0 ppm above background)
Beta/Gamma	50 cpm	Date/Time	2-24-93/1510	(<100 cpm above background
Alpha	40 cpm	Date/Time	2-24-93/1510	(<500 cpm above background)

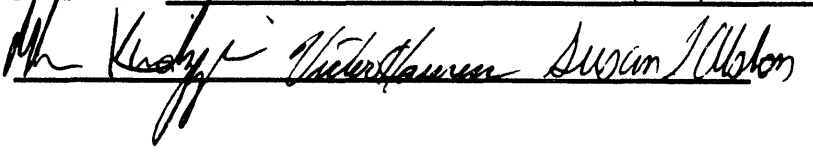
*Due to cement cuttings in returns.

Weather: See Field Logs Temp.: See Field Logs

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings and water discharged to ground surface.

Onsite Geologist (print): Mike Klidzejs/V.R. Harness/S.L. Abston (SAIC)

Signature:  Date: 2-24-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-571 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	9.9	Date/Time	12-30-92/1655	(4.0 - 10.5)
Organic vapors	3.8 ppm	Date/Time	12-30-92/1654	(<5.0 ppm)
Beta/Gamma	40 cpm	Date/Time	12-30-92/1520	(<100 cpm)
Alpha	20 cpm	Date/Time	12-30-92/1520	(<500 cpm)

Weather: Cloudy and hazy Temp.: 50°s

DISPOSITION: Drill-site Disposal X Containerization No

(Labeled?) y / n

Describe: Cuttings released to onsite cuttings pit.

Onsite Geologist (print): Susan Abston/Mike Klidzejs - SAIC

Signature: Susan J Abston / Mk Klidzejs Date: 1-18-93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-572 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	11.6*	Time/Date	1530/12-23-92
Organic vapors	9.1 ppm headspace**	Time/Date	1531/12-23-92
Beta/Gamma	60 cpm	Time/Date	1334/12-23-92
Alpha	10 cpm	Time/Date	1534/12-28-92

*High value of pH attributed to grout cuttings. Steve Jones (HSE) notified of reading.
**High headspace reading probably due to residual alcohol anti-freeze in drill rig water system.

Weather: See field log Temp.: See field log

DISPOSITION: Drill-site Disposal X Containerization -NA-
(Labeled?) y/n

Describe: Returns discharged to ground surface.

Onsite Geologist (print): Susan L. Abston - SAIC

Signature: Susan L Abston Date: 12-28-92

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-573D SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: N/A

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter Ludlum Model 44 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	12.0*	Date/Time	2-2-93/1618	(4.0 - 10.5)
Organic vapors	0.0 ppm	Date/Time	2-2-93/1618	(<5.0 ppm above background)
Beta/Gamma	50 cpm	Date/Time	2-2-93/1510	(<100 cpm above background)
Alpha	20 cpm	Date/Time	2-2-93/1510	(<500 cpm above background)

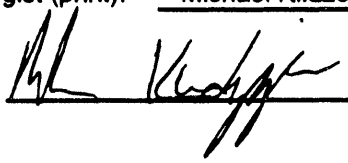
*Elevated pH reading from cement cuttings.

Weather: Clear Temp.: Upper 40°s

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings released to ground surface.

Onsite Geologist (print): Michael Klidzejs - SAIC

Signature:  Date: 2/5/93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-573S SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: N/A

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter Ludlum Model 44 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	10.7*	Date/Time	2-2-93/1036	(4.0 - 10.5)
Organic vapors	0.1 ppm	Date/Time	2-2-93/1036	(<5.0 ppm above background)
Beta/Gamma	60 cpm	Date/Time	2-2-93/0853	(<100 cpm above background)
Alpha	10-20 cpm	Date/Time	2-2-93/0853	(<500 cpm above background)

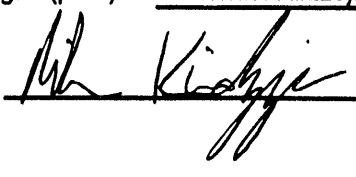
*Elevated pH reading from cement cuttings.

Weather: Clear Temp.: Mid 30°s

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings spread over ground surface at site.

Onsite Geologist (print): Michael Klidzejs - SAIC

Signature:  Date: 2/5/93

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-580 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS:

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101 Foxboro Century OVA Model 128
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter; Ludlum Model 44 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter; Ludlum Model 43-4 Air Probe

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	10.5	Time/Date	1627/12-8-92
Organic vapors	15.4 ppm	Time/Date	1622/12-8-92
Beta/Gamma	60 cpm	Time/Date	1405/12-8-92
Alpha	20 cpm	Time/Date	1405/12-8-92

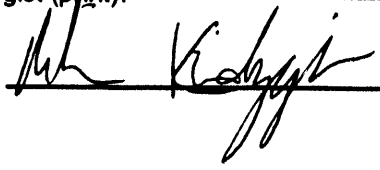
Weather: 12-8-92 Cloudy, light snow Temp.: Mid 30s F

DISPOSITION: Drill-site Disposal X Containerization _____

(Labeled?) y/n

Describe: Cuttings released to ground surface.

Onsite Geologist (print): Michael A. Klidzejs - SAIC

Signature:  Date: 12-18-92

Y-12 PLANT GWPP WELL CUTTINGS FIELD SCREENING/DISPOSAL SHEET

WELL/BOREHOLE NO. GW-607 SITE: SPAD Landfill Site

APPROX. VOLUME OF CUTTINGS: -NA-

CALIBRATION OF INSTRUMENTS (Check those instruments calibrated to manufacturer's specifications):

pH meter	X	(model)	Horiba Model U-7
Organic vapor meter	X	(model)	HNu Model HW-101
Beta/gamma meter	X	(model)	Ludlum Model 3 Survey Meter w/LudlumModel 44-9 Probe
Alpha meter	X	(model)	Ludlum Model 12 Count Ratemeter with Ludlum Scintillation Tube ProbeY70087P

FIELD SCREENING RESULTS (Maximum Observed Values):

pH	11 S.U.*	Date/Time	1-27-93/1730	(4.0-10.5)
Organic vapors	7.4 ppm**	Date/Time	1-29-93/1637	(<5.0 ppm)
Beta/Gamma	70 cpm/420 dpm	Date/Time	2-2-93/1755	(<100 cpm)
Alpha	40 cpm/80 dpm	Date/Time	1-27-93/1730	(<500 cpm)

*Received permission from Steve Jones HSE to deposit cutting & water returns into cuttings pit, despite high pH.
**Sample contained moisture which may have caused an anomalous elevated reading.

Weather: See Field Logs Temp.: See Field Logs

DISPOSITION: Drill-site Disposal X Containerization _____
(Labeled?) y / n

Describe: Cuttings and water returns discharged to adjacent cuttings pit.

Onsite Geologist (print): Susan Abston - SAIC/Victor R. Harness - SAIC

Signature: Susan J Abston Victor R Harness Date: 2-2-93

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